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New South Wales



# IPWEA (NSW) ROADS & TRANSPORT DIRECTORATE

## ROAD ASSET BENCHMARKING PROJECT 2014

# ROAD MANAGEMENT REPORT

May 2015

The Roads & Transport Directorate is a joint initiative with



LOCAL  
GOVERNMENT  
NSW



**IPWEA NSW Division Roads & Transport Directorate**  
**Road Asset Benchmarking Project 2014**  
**Road Management Report**

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**Road Management Report**

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**Project Manager**

Mick Savage, Manager Roads and Transport Directorate

**Prepared by**

Steve Verity & Jeff Roorda, Jeff Roorda & Associates



**Steering Group – Roads and Transport Directorate Management Committee**

Warren Sharpe OAM, IPWEA Board  
Ken Halstead, IPWEA Board  
Garry Hemsworth, IPWEA Board  
Clr Ben Shields, Local Government NSW  
David Andrews, IPWEA  
Tony Reed, IPWEA  
Cliff Toms, IPWEA  
Peter McMahon, RMS  
Amanda Fairley, Transport for NSW  
Richard Connors, LGNSW Roads & Transport Policy Officer  
John Roydhouse, Executive Officer IPWEA (NSW)  
Mick Savage, Manager Roads & Transport Directorate

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**Roads & Transport Directorate**

Level 12, 447 Kent Street  
SYDNEY NSW 2000  
T: +61 (02) 8267 3000  
F: +61 (02) 8267 3070  
M: +61 (0) 418 808 085  
E: [mick.savage@ipwea.org](mailto:mick.savage@ipwea.org)  
W: [www.ipwea.org/RoadsTransportDirectorate/home](http://www.ipwea.org/RoadsTransportDirectorate/home)

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# Executive Summary

## Introduction

The Directorate commissioned this report to update the 2012 Road Asset Benchmarking for the reporting period ending 30 June 2014. This report updates the estimates for the funding renewal gap based on life cycle costs and expenditures and provides specific recommendations about rectification of the problems identified and reports on whether councils have made any improvement in management of their road and bridge assets since the 2012 Road Asset Benchmarking Project study.

The first report in 2006 highlighted the scale of the long term underfunding of roads and bridges presenting a significant risk to Councils and their communities. The report concluded that current levels of road funding were not sustainable and identified a life cycle funding gap of \$783 million per annum. The life cycle funding gap at 30 June 2014 has reduced to \$447M.

In 2006 less than 30% of Councils had adopted roads asset management plans. This report shows the major improvement in asset management practice which has been consistent across all Councils and shows asset management capacity is independent of the scale and size of councils. In 2014, 89% of NSW Councils have adopted road asset management plans, a requirement under Integrated Planning and Reporting (IPR). This has corresponded with a substantial increase in the reported expenditure on road maintenance and renewal with a reduction in the renewal gap from \$783M in 2005/06 to \$447M in 2013/14. This is based on professional asset managers estimates of life cycle costs compared with expenditures. The introduction of Integrated Planning and Reporting (IPR) requirements was consistent with a national asset management framework and supported by the IPWEA NAMPLUS capacity building program.

This shows how significant changes can be made by a consistent focus on the Council controlled part of the infrastructure funding gap. Developing asset management plans has enabled road asset managers to communicate the risks and service level trends. The benefits of investing in asset management improvement and the importance of continuing this investment is clearly evident but the underlying problem remains. The past long term underfunding of roads and impact of increasing transport loads will take many years to reverse and will require a coordinated policy and funding response by the 3 levels of Australian Government. The current whole of government revenue and policy settings are also likely to result in a rebalancing of risks, service levels and rate levels as Councils consult with their communities on affordable service levels and in many cases, reduce service levels while managing risk.

The findings in this report show a clear trend resulting from asset managers' estimates of life cycle costs compared with expenditures. The renewal gap has reduced over the past 4 years. It is not known whether service levels have dropped as councils engage with their communities to rebalance revenues and services to remain sustainable. This is important to measure because reducing service levels could have a cumulative impact on local and regional economies. This is now being measured by the Australian Local Government Association (ALGA) in their "*National State of the Assets Report*" (NSOA) and the combination of data from this study with NSOA will provide an important guide for future policy development and advocacy.

## Asset Management Practices and Skills

Response to the survey, level of asset and risk management practices and identification of a funding gap for roads and bridges has improved markedly since the study commenced in 2005. Data from all 152 councils has been analysed and verified for use in the compilation of this report. A total of 150 Councils participated by contributing data for this report, again showing a major improvement in asset management capacity and data quality,

Much of the improvement can be attributed to investment in capacity building over the past 3 years. In 2008, IPWEA released NAMS.PLUS 'A guided pathway for asset management planning', essentially a system of templates and modelling tools to assist councils write their infrastructure asset management plans. In 2014, 141 NSW councils (93%) reported using NAMS.PLUS to develop their road asset management plans aligning with the NSW IPR requirements, a major factor in the improvement of asset management planning and infrastructure sustainability in NSW.

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Current asset management plans require further development to continue community engagement on service level and risk scenarios to balance revenues and service levels in the coming 10 year period. The NSW *Integrated Planning & Reporting Framework* provides the blueprint to ensure sustainable service delivery for their communities.

## Road Investment

The estimated investment to replace the NSW local transport infrastructure is \$65.7 billion based on the values reported in financial statements of all 152 councils.

The assets are reported as being consumed at an estimated \$907 million per annum.

## Road Funding Gap

The road funding gap for NSW councils is estimated at \$447 million based on the data from the 150 responding councils extrapolated to 152 councils. Funding at this level will require a 41% increase on 2013/14 road expenditures if asset management principles are not further developed to manage the gap. Asset management principles to be applied to managing the funding gap include:

- ensuring that all councils have adequate accurate knowledge on their road assets and how their assets are performing,
- ensuring that sealed roads are resurfaced/resealed at the optimum time to maintain waterproofing of pavements,
- consulting with and select appropriate levels of service and costs to meet community needs and available resources,
- ensuring that unsealed roads are resheeted at the optimum time to meet agreed service levels within available resources,
- making efficiencies in operations, maintenance, resurfacing and pavement renewal aimed at reducing life cycle costs,
- improving maintenance practices and funding if necessary to extend pavement life and defer projected renewal,
- rationalising (dispose) of unnecessary infrastructure assets,
- adjusting service levels in consultation with the community,
- identifying future renewal needs and expenditure required to meet agreed service levels and document in a road asset management plan,
- increasing funding, and
- a combination of all actions above.

## Bridge Funding

The life cycle cost and funding on bridges on regional and local roads has increased significantly in the past 2 years and this trend needs to be closely monitored. Trends on bridge service levels, load limits and risks are now being reported through the ALGA National State of the Assets (NSOA) report and the alignment of the data from this benchmarking survey with the NSOA will assist in understanding the risks faced by Councils in managing bridges and communicating the need for additional bridge funding.

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## Road and Bridge Funding Summary

The combined funding gap for roads and bridges can be estimated for all NSW councils from the extrapolated data from responding councils and is reported at \$447 million.

Life cycle cost (\$M/yr)	2005/06	2007/08	2009/10	2011/12	2013/14
Roads	\$1,441	\$1,381	\$1,422	<b>\$1,424</b>	<b>\$1,437</b>
Bridges	\$62	\$62	\$59	<b>\$69</b>	<b>\$89</b>
<b>Subtotal</b>	<b>\$1,503</b>	<b>\$1,442</b>	<b>\$1,482</b>	<b>\$1,493</b>	<b>\$1,527</b>
Life cycle expenditure (\$M)					
Roads	\$675	\$767	\$745	<b>\$857</b>	<b>\$1,004</b>
Bridges	\$45	\$58	\$63	<b>\$39</b>	<b>\$76</b>
<b>Subtotal</b>	<b>\$720</b>	<b>\$825</b>	<b>\$808</b>	<b>\$896</b>	<b>\$1,080</b>
<b>Estimated funding gap (\$M/yr)</b>	<b>\$783</b>	<b>\$618</b>	<b>\$674</b>	<b>\$597</b>	<b>\$447</b>

Apparent errors are due to rounding

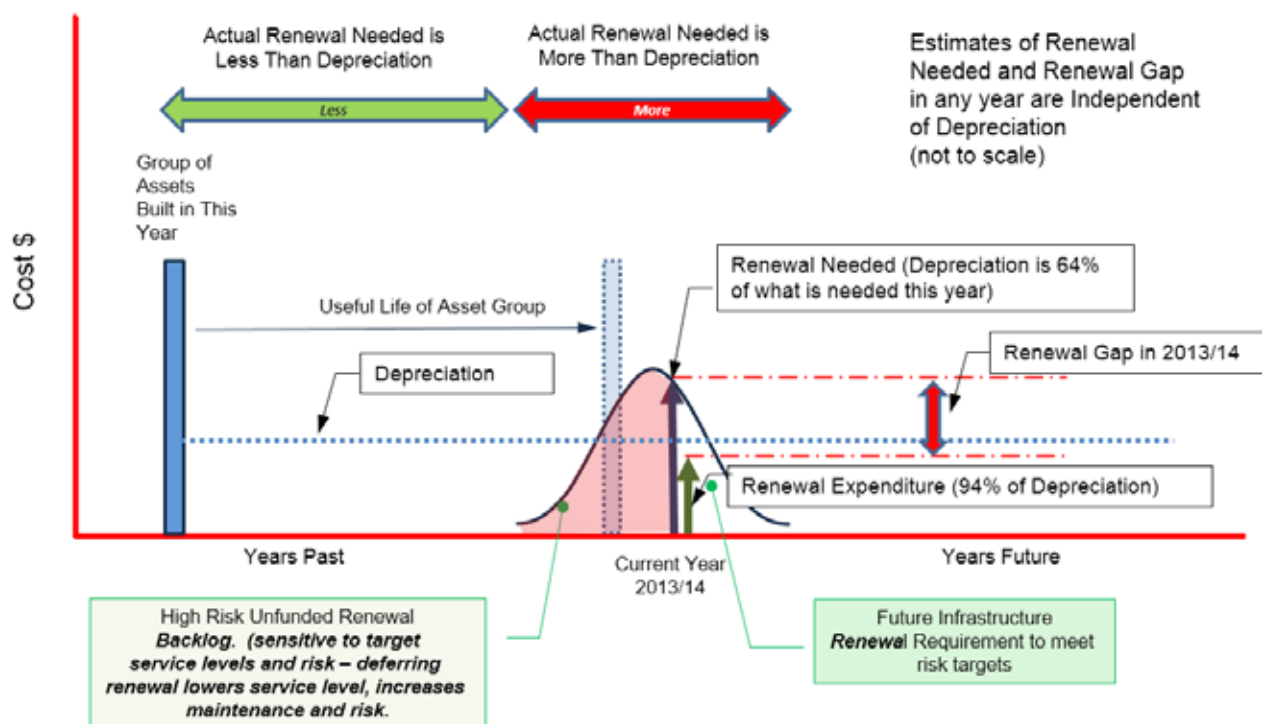
The estimated 2014 funding gap is equivalent to a 41% increase in funding above the current expenditure levels and emphasises the need to take action to manage the funding gap and ensure infrastructure services are sustainable.

## Asset Consumption and Depreciation Expense for Roads and Bridges

A considerable difference remains in the assessment of asset consumption of roads and bridges as reported by road asset managers in this survey and that reported by depreciation in council's financial reports.

Data collected on the average road and bridge renewal/replacement costs and in-service useful life estimates allowed a comparison to be made of the consumption of road and bridge assets determined from the technical data to the depreciation expense reported council's financial statements.

Reported depreciation expense for local roads and bridges (excluding roads ancillary assets) is less than what is required in the current year. This is consistent with an aging infrastructure profile where the annual renewal requirement is more than depreciation as assets age as shown in the figure below. Depreciation compared with asset managers assessment of expenditure needed in the current year 2013/14 is 64% (53% in 2007/08, 65% in 2009/10, and 77% in 2011/12).



2013/14 capital renewal expenditure is 94% (81% in 2007/08, 60% in 2009/10, and 58% in 2011/12) of local roads and bridge asset consumption as reported by depreciation expense. This is shown schematically in the figure above.

While the comparison of capital renewal expenditure with depreciation indicated a rate of asset renewal of 94% of consumption, the true picture is worse than this when the difference between the asset managers' assessment of asset consumption and depreciation is taken into account.

Using the depreciation expense figures reported in this survey as a measure of average asset renewal may give a false position of actual funding needed to sustain services from local roads and bridges.

Depreciation expense of roads and bridges as reported by NSW councils is \$703 million per annum (\$579 million in 2007/08, \$715 million in 2009/10, \$830M in 2011/12), some 64% (81% in 2007/08, 65% in 2000/10, 77% in 2011/12) of the asset manager's assessment of asset consumption.

The amount spent on capital renewal of roads and bridges assets for 2013/14 was \$659 million (\$470 million in 2007/08, \$433 million in 2009/10, \$479M in 2011/12). This is 60% (44% in 2007/8, 39% in 2009/10, 45% in 2011/12) of the life cycle cost and 94% (81% in 2007/08, 60% in 2009/10, 58% in 2011/12) of depreciation expense.

Use of depreciation expense as a measure of renewal need indicates that local road assets are being renewed at a rate of 94% of asset consumption. Asset renewal in 2013/14 was 60% (44% in 2007/08, 39% in 2009/10 and 45% in 2011/12) of the asset managers' assessment of asset consumption.

Reasons for the variation depreciation trends and long term renewal requirement trends may include:

- variation in the application of residual values and componentisation. This has been the subject of comment by the Australian Accounting Standards Board (AASB).<sup>2</sup>
- the estimated asset useful lives used by councils for financial reporting may be based on 'industry standards', not actual performance and field operating conditions of the assets and therefore may understate depreciation expense.

<sup>1</sup> Excludes Ancillary Assets because reliable renewal need estimates for this class not available.

<sup>2</sup> AASB Tentative agenda decision Feb 2015, RECOGNITION OF RESIDUAL VALUE FOR INFRASTRUCTURE ASSETS

- the estimated asset lives assessed by the asset managers may be based on technical measures, not community priorities/available resources and therefore overstate the life cycle renewal cost.
- the unit costs for the renewal of asset components may not reflect the modern equivalent renewal cost to renew the same service potential.
- the age profile of asset component groups.

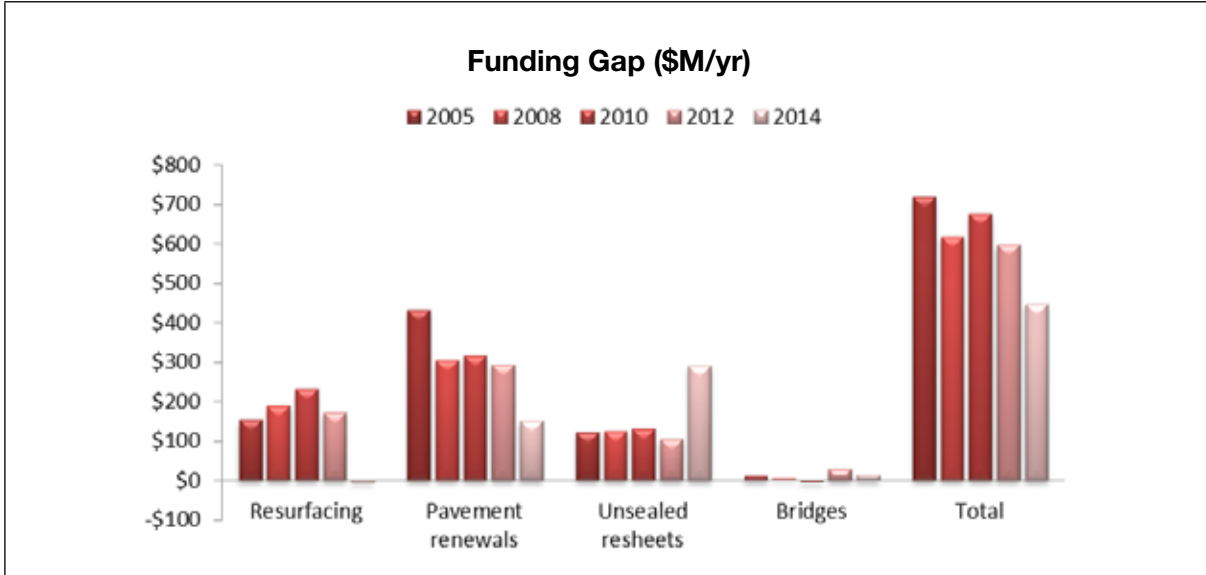
The measures of asset consumption, depreciation expense and long term average life cycle renewal cost should be consistent and based on the IPR resourcing strategy that provides a plan to balance service levels, efficient service delivery, revenues and risk. This requires asset managers and finance managers to work together to provide consistent and reliable decision support information.

## Managing the Gap

The Gap consists of several components. Each gap component requires a different treatment to reduce the gap and move towards sustainable service provision.

Gap Component	Gap (\$M / yr)				Asset Management Treatment
	2007/08	2009/10	2011/12	2013/14	
Resurfacing	\$187	\$230	\$171	- \$5	<ul style="list-style-type: none"> <li>• Increased knowledge of asset performance and useful life,</li> <li>• Develop and use resurfacing treatments that result in reduced life cycle cost,</li> <li>• Increased funding to meet life cycle cost.</li> </ul>
Pavement renewal	\$303	\$316	\$293	\$149	<ul style="list-style-type: none"> <li>• Increase knowledge of asset performance and useful life,</li> <li>• Develop and use optimum (low cost) renewal methods,</li> <li>• Develop renewal projections and funding plan and document in Road Asset Management Plan</li> </ul>
Unsealed resheeting	\$124	\$131	\$103	\$289	<ul style="list-style-type: none"> <li>• Increase knowledge of asset performance and useful life,</li> <li>• Develop/review road hierarchy and service levels for maintenance and resheeting to suit available resources.</li> <li>• Develop resheet projections and funding plan and document in Road Asset Management Plan</li> </ul>
Bridges	\$4	- \$3	\$30	\$11	<ul style="list-style-type: none"> <li>• Increase knowledge of asset performance and useful life,</li> <li>• Develop/review road hierarchy and service levels to suit available resources.</li> <li>• Develop renewal projections and funding plan and document in Road Asset Management Plan</li> </ul>
<b>Total</b>	<b>\$618</b>	<b>\$674</b>	<b>\$597</b>	<b>\$447</b>	

The gap is the most critical for the shorter lived asset components such as sealed road resurfacing and unsealed road resheeting as not resurfacing/resheeting roads at the optimum time will result in loss of pavement integrity and increase pavement replacement and renewal funding needs in the future.



*Funding Gap trend 2005-2014*

It is interesting to note the sealed road resurfacing gap has decreased significantly due to a combination of a 21% increase in expenditure on resurfacing since 2012 and an increase in the average in-service useful life.

New assets and upgrading of existing assets valued at \$512 M in 2013/14 are estimated to add \$12.8 M per annum to operating costs for roads and bridges in 2014/15 and in following years.

## Conclusion

Present funding to meet existing service levels for NSW regional and local roads and bridges is 71% of the life cycle costs, an improvement from 57% in 2007/08, 55% in 2009/10 and 60% in 2011/12. Even so, current levels of service with current levels of expenditure are not sustainable. The extent of reduction in service level and increase in risk is not known.

Councils may be facing a large and increasing risk exposure at present and in the future. These risks could include:

- a decline in the condition of road and bridge infrastructure,
- potential increase in personal injury and legal claims,
- road life cycle expenditure 'savings' will be passed onto road users through higher transportation operating costs,
- funding may not be available to renew ageing road and bridge assets,
- a reduction in services needed by communities in the medium-long term.

Renewal costs and/or service level reductions are consequently being transferred to future generations.

Asset consumption as reported by depreciation expense is understating the assessment of asset consumption by local road asset managers by 64%.

## Improvement Indicators

The initiative of the Roads and Transport Directorate to repeat the Road Asset Benchmarking Survey every two years since 2006 provides the opportunity to monitor and report on whether councils have made progress in:

- managing the road assets, and
- improving their asset management knowledge and capability.

The assessment of whether councils have improved their asset management practices, knowledge and capacity to manage their road and bridge bridges is measured by the following eleven (11) Performance Indicators shown in the Table below.

Performance Indicator	Improvement	Comment	
<b>Managing Road &amp; Bridge Assets</b>			
1.1	Funding of Life Cycle Cost	Yes	Funding of life cycle costs has increased from 49% of life cycle cost in 2005 to 71% in 2014.
1.2	Road & bridge asset life cycle funding gap	Yes	The funding gap has decreased from \$718 million in 2005 to \$447 in 2014, a reduction of 38% from 2005..
1.3	Road & bridge asset consumption ratio	No	The average proportion of 'as new' condition left in the assets has fallen from 61.0% in 2012 to 60.3% in 2014 indicating an overall 'ageing' of the assets.
1.4	Road & bridge asset sustainability ratio	Yes	Asset Sustainability Ratio has increased to 94% in 2014 from 58% in 2012.
<b>Knowledge and Capacity</b>			
2.1	Capacity to complete benchmarking survey	Yes	Overall response rate has increased by 2% since the 2012 survey. 99% of councils completed the benchmarking survey.
2.2	Use of IIMM principles	Yes	14% increase from 2012.
2.3	Adoption of road asset management plans	Yes	13% increase from 2012.
2.4	Management of road related risks	Yes	10% increase from 2012.
2.5	Use of long-term financial plans	Yes	9% increase from 2012.
2.6	Period of long-term financial plans	Yes	15% increase from 2012.
2.7	Infrastructure effects in long-term financial plans	Yes	20% increase from 2012.

Of the eleven (11) improvement indicators, ten (10) show a positive improvement in road and bridge management practices over the period 2012 to 2014.

The indicators showing a decrease in improvement are those relating to maintaining capital in the asset stock.

The indicators showing an improvement are those related to Councils' asset management practices and funding of lifecycle costs.

It is clear that Councils have made major improvements in their asset and financial management capacity since 2012.

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## Recommendations

The 2006 Final Report of the Independent Inquiry into the Financial Sustainability of Local Government identified that councils in NSW have a “huge backlog in infrastructure renewals (over \$6 billion), which is expected to grow to almost \$21 billion within 15 years”. The report highlighted challenges for councils in “managing rising community expectations, maintaining existing service commitments in the face of a huge infrastructure bill and constraints on rate income” and “overcoming skills shortages”.

In the 2013 Final Report of the NSW Independent Local Government Review Panel, both TCorp and DLG (now OLG) estimated the total infrastructure backlog at over \$7.2 – 7.4 billion and noted that this figure was based on unaudited council data.

The Australian Local Government Association reported a shortfall of \$17,664 million for maintenance and renewal expenditure for local roads in Australia for the period 2010 – 2024 equivalent to an increase of 39% over estimated available funding levels for the period.

This 2014 Road Asset Benchmarking report shows that NSW councils are responsible for managing 163,850 km of regional and local roads and 10,067 bridges with a replacement cost of \$65.7 billion. The life cycle cost of the road and bridge network is estimated at \$1.53 billion per annum for 2013/14. Expenditure of \$1.08 billion was 71% of the life cycle cost. Current service levels and expenditure levels are not sustainable.

As a result, competition for adequate funding to maintain council's infrastructure assets is also under pressure. However, it is of critical importance that councils:

- identify their infrastructure assets and the current condition of such assets,
- implement life cycle asset management plans,
- provide adequate funding to maintain and renew what are in effect their community's greatest financial assets.

To this end it is recommended that:

1. Council prioritise existing funding and seek additional funds for regional and local roads to allow road resurfacing/ resealing works to be undertaken at the optimum time to prevent loss of sealed pavement integrity and minimise future sealed pavement replacement/renewal costs.
2. Councils continue to improve their asset management capability to a position that will enable them to provide services to their communities in a sustainable manner. The survey analysis indicated that the current level of road infrastructure services that councils are currently providing to their communities is not sustainable.
3. Councils maintain and improve their Integrated Planning & Reporting Framework systems and documentation to provide evidence that they can provide a sustainable level of service for road and bridge services to their communities.
4. Councils use the road management model in the survey form as a tool to manage road infrastructure services and life cycle costs. This will be achieved by improving knowledge of assets and asset performance, developing road hierarchies and appropriate service levels, increasing funding for sealed resurfacing/ resealing and unsealed road resheeting to the life cycle cost and managing pavement and bridge renewals through asset management plans.
5. Councils set a target to ‘manage out’ the annual life cycle funding gap of \$447M within a 10 year timeframe and report biennially on performance of the industry towards the target. This recommendation is dependent on annual service level and risk reporting as per recommendation 7.
6. Councils continue with actions to improve the accuracy of financial reporting of infrastructure asset consumption and set a target to have technical and financial estimates of infrastructure consumption within 10% of each other within a 2 year timeframe. Application of evidence based useful lives and unit replacement costs in accordance with the IPWEA submission to AASB<sup>3</sup> would enable more reliable and consistent reporting.
7. Condition profile reporting identified in update 23 of the NSW Local Government Code of Accounting Practice (special schedule 7) should either be modified to report on modern equivalent renewal cost (MERC) instead of written down value (WDV) or the report should report on both WDV and MERC condition profiles. MERC condition profiles (% of assets by value in each condition group) are essential to monitor the service level and risk trends and is compatible with asset management plan and ALGA NSOA reporting.

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<sup>3</sup> INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALASIA, SUBMISSION TO AASB  
Feb 2015, Definition and Use of Residual Value

# 1. Introduction

The Roads & Transport Directorate of the IPWEA NSW Division (RTD) reported a snapshot of the current reported condition of Regional and Local Roads in NSW at 30 June 2005 in its *Road Management Report*. The report concluded that present levels of road funding were not sustainable and identified a life cycle funding gap of \$783 million per annum equivalent to a 108% increase in 2004-05 funding levels.

The 2006 NSW Local Government Inquiry identified a sum of \$6.3 billion required to bring existing (including road and bridge) assets to a satisfactory standard. The figure of \$6.3 billion is 13% of total asset value and eight times the current level of expenditure. In addition, a further \$14.6 billion was required for replacement of existing assets over the next 15 years.

The 2008 *Road Management Report* reported a life cycle funding gap of \$618 million per annum equivalent to an increase of 75% required over 2007-08 funding levels. The life cycle funding gap was reported at \$677 million in 2010, equivalent to an increase of 91% over 2009-10 funding levels. In 2012 the life cycle funding gap had reduced to \$597 million.

Estimates prepared for the Australian Local Government Association projecting maintenance and renewal expenditure for local roads in Australia for the period 2010 – 2024 indicated a shortfall of \$17,664 million over the 15 years equivalent to an increase of 39% over estimated available funding levels for the period.

The Directorate commissioned this report to update the 2012 Road Asset Benchmarking report on the condition on NSW roads and bridges at 30 June 2014, update the shortfall in funding required to bring these to a satisfactory condition, provide specific recommendations about rectification of the problems identified and report on whether councils have made any improvement in management of the road and bridge assets since the 2012 Road Asset Benchmarking Project survey.

The methodology for determining the renewal gap has been consistently applied across Australia, first in 1998 in Victoria in the “*Facing the Renewal Challenge*”<sup>4</sup> report then in a series of reports at both state and national level since. The infrastructure report prepared by JRA in 2006 for the NSW Independent Inquiry into the Financial Sustainability of Local Government (LGI) reported the renewal gap in 2006 was in the order of \$600 M based on asset registers and engineering estimates. This was lower than but consistent with the RTD 2005/2006 report estimate of \$783M. The JRA estimate was based on an audit of depreciation calculations in the financial statements and reconciliation to the technical asset registers and gave a lower result than the engineering estimates in the RTD report.

The renewal gap measure and approach is fundamentally different to the “bring to satisfactory” or “backlog” measure used in NSW Special Schedule 7 (SS7) because of differences in methodology. The renewal gap compares life cycle expenditure (renewal, maintenance and operating) with life cycle cost (estimated renewal need from asset management plan, maintenance and operating). The “bring to satisfactory” or “backlog” requires clear and consistent definition of target and affordable service levels and risks in consultation with communities under the IPR resourcing strategy framework. This practice area is likely to need improvement.

In the 2013 Final Report of the NSW Independent Local Government Review Panel, both TCorp and DLG (now OLG) estimated the total infrastructure backlog at over \$7.2 – 7.4 billion and noted that this figure was based on unaudited council data.

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4 Facing the renewal challenge: Victorian local government infrastructure study / prepared by AMQ International, Skilmar Systems & Jeff Roorda and Associates. 1998

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This compares with the 2006 LGI estimate of 6.3 billion or 13% of reported asset value. The 2006 report by JRA to LGI recommended that *“All Councils should identify, measure and communicate long-term service benefits and costs of renewing infrastructure. The determination of a satisfactory level of service is not just an engineering or accounting calculation. It also requires a deeper understanding of what levels of service the community expects by undertaking occasional public forums and opinion polls, estimating the short and long-term costs of those services and developing a funding strategy for how those services can be paid for. The associated asset management process will also be able to inform government of all the local, regional and national consequences of service reduction driven by funding constraints.”*

The “backlog” or cost to bring to satisfactory has increased from 2006 to 2013 but it is not known to what extent this has been caused by high levels of variability in methodology to calculate infrastructure backlog.

This report clearly shows substantial improvement in asset management practices aligned with substantial reduction in renewal gap from \$783 M to \$447 M over the past 9 years. The impact of the current “fit for the future” process is unknown, however the investment by NRDT over the past 9 years in this benchmarking study provides a reliable baseline to measure and report on the impact.

## 2. Background

The IPWEA New South Wales Division recognised the need for improved asset management practices by councils in managing infrastructure assets that provide essential services to the community including access and mobility, recreation, flood protection and cultural and community facilities.

The Division allocated asset management as a specific responsibility to a Director and formed the Roads & Transport Directorate in partnership with Local Government NSW.

In view of the estimated <sup>5</sup>\$30.8 billion investment in NSW local access and mobility infrastructure, the Directorate wanted to quantify the investment and life cycle funding needs, identify any funding 'gap' and identify and promote asset management practices that will assist Councils in sustaining the provision of access and mobility services to the community.

Good access and mobility services are essential for the modern community to survive. Good access and mobility services supports and makes possible needed community services from infrastructure including.

- transport of produce from farm to market and to the manufacturer and finished goods to the retailer and onto the consumer;
- mobility of the community to work, education, recreation and culture.
- mobility of the community to service, community and retail centres.

The 2014 survey is the fifth time the Benchmarking Survey has been conducted.

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5 2002-2003 Report on the operation of the *Local Government (Financial Assistance) Act 1995*

## 3. Road Asset Management Practices

The benchmarking survey included questions on road asset management practices of councils. Questions and responses are shown below.

### 3.1 Use of the International Infrastructure Management Manual

The International Infrastructure Management Manual (IIMM) published by the IPWEA is recognised as the international reference for infrastructure asset management. Councils were asked if they employed the principles contained within the IIMM. Responses are summarised in Table 1 and shown for each IPWEA region in Appendix A.

**Table 1: Use of IIMM Asset Management Principles**

	Response			
	No	In part	Yes	Total
Councils using IIMM Principles	2	50	100	152
Percent of total	1%	33%	66%	100%

66% of responding councils reporting using the IIMM principles in full (33% in 2007/08, 48% in 2009/10, 61% in 2013/14) and 33% in part. Only 1% of responding councils said they do not use the IIMM.

### 3.2 Road Management

Good practice in managing roads can be demonstrated by the adoption and use of methods and procedures for managing service levels, risks and costs. These may be documented in a Road Asset Management Plan and/or a Road Risk Management Plan/System.

Councils were asked if they had an adopted Road Management Plan and/or a documented system for managing road risks either in a Road Asset Management Plan or included within the corporate risk management system. Responses are shown in Tables 2 and 3 and shown for each IPWEA region in Appendix A.

**Table 2: Adoption and Use of Road Asset Management Plans**

	Response				
	No	Planned in 1 yr	In progress	Yes	Total
Councils with adopted Road Asset Management Plans	1	1	14	136	152
Percent of total	1%	1%	9%	89%	100%

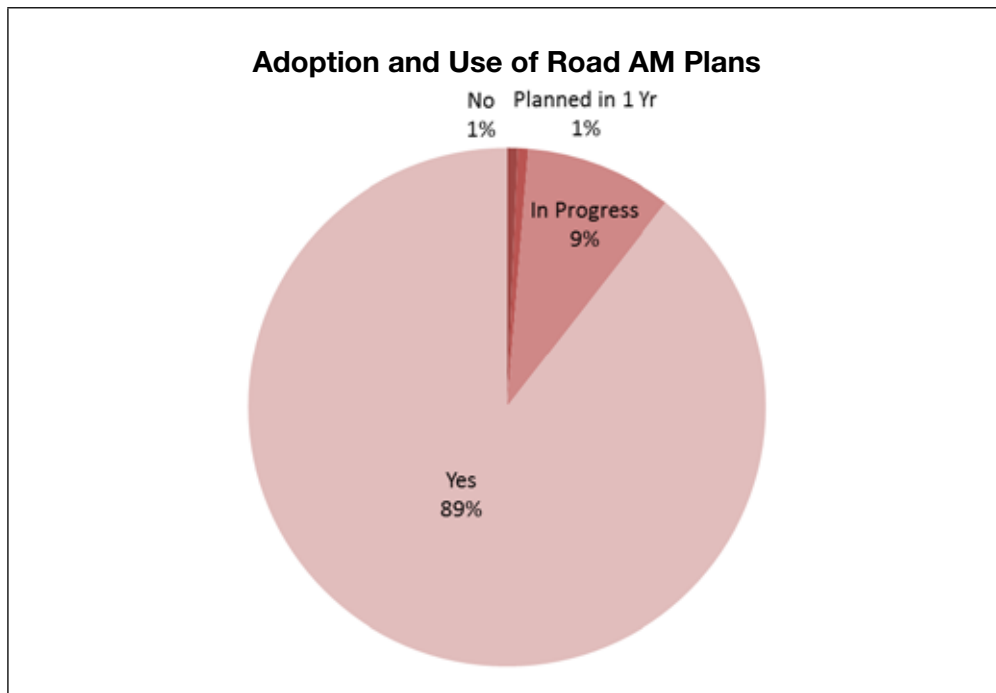


Figure 1: Use and Adoption of Road Asset Management Plans 2013/14

The adoption of Road Asset Management Plans is well progressed with 89% of Councils reporting having an adopted Road Asset Management Plan (29% in 2007/08, 42% in 2009/10 and 82% in 2011/12). A further 9% are in the process of developing a Road Asset Management Plan and 1 council plans to do so within 1 year. Only 1 of the responding councils is not planning the development of a Road Asset Management Plan.

Table 3: Use of Documented System for Managing Road Risks

	Response				
	No	Planned in 1 yr	In progress	Yes	Total
Councils with a documented system for managing road related risk	2	3	40	107	152
Percent of total	1%	2%	26%	70%	100%

Management of road related risk is more developed with 70% (46% in 2007/08, 52% in 2009/10 and 68% in 2011/12) of Councils having a documented system for managing road risk, either in a road management plan or incorporated into the corporate risk management plan. 26% of responding councils are in the process of developing a road risk management system with 2% planning to do so within 1 year.

Since the 2005 benchmarking survey, IPWEA has developed an online guided pathway for asset management planning called NAMS.PLUS which provides tools, templates and web based modelling to assist councils prepare their asset management plans. Councils reporting membership of NAMS.PLUS are shown in Table 4.

**Table 4: Membership of NAMS.PLUS Asset Management**

	Response			
	No	Planned in 1 Year	Yes	Total
Council members of NAMS.PLUS	18	1	133	152
Percent of total	12%	1%	88%	100%

88% of councils (58% in 2007/08, 68% in 2009/10 and 83% in 2011/12) are using NAMS.PLUS to develop their road asset management plans.

Long term financial plans are seen as an important tool by both finance and asset managers to manage service delivery and costs over the long term.

Councils were asked if they had a long term financial plan, the term of the plan and whether the plan contains infrastructure effects. Summary responses are shown in Tables 5 – 7 and for IPWEA regions in Appendix A.

**Table 5: Use of Long Term Financial Plans**

	Response				
	No	Planned in 1 Year	In progress	Yes	Total
Councils with Long Term Financial Plan	0	0	3	149	152
Percent of total	0%	0%	2%	98%	100%

98% of Councils (66% in 2007/08, 67% in 2009/10 and 94% in 2011/12) responding to the survey reported having long term financial plans. The remaining 2% were in the process of developing long term financial plans. This data indicates that most Councils have long term financial plans.

**Table 6: Length of Long Term Financial Plans**

	Length of Long Term Financial Plans					
	1 yr	3 yrs	5 yrs	10 yrs	10+ yrs	Total
Councils with Long Term Financial Plans	2	2	3	133	12	152
Percent of total	1%	1%	2%	88%	8%	100%

Good practice in asset management requires long term financial plans covering a minimum 10 year period supported by 20 year asset management plans. 96% of the responding councils (45% in 2007/08, 55% in 2009/10 and 87% in 2011/12) have developed 10 year financial plans. 3 councils have a 5 year plan and a further 2 councils have a 3 year plan. Only 2 councils manage by annual budgets.

**Table 7: Infrastructure Effects in Long Term Financial Plans**

	Response			
	No	In part	Yes	Total
Councils recognising infrastructure effects in long term financial plans	5	56	91	152
Percent of total	3%	37%	60%	100%

Infrastructure has long term financial impacts on councils including planning for and financing infrastructure renewal and providing for growth of networks, and life cycle costs for new infrastructure.

Long term financial effects of infrastructure services include:

- Infrastructure renewal.  
The NSW Local Government Inquiry reported data from councils' Special Schedule Seven reports estimating that \$6.3 billion is required to bring existing assets to a satisfactory standard with a further \$14.6 billion needed over the next 15 years to replace existing assets<sup>6</sup>.
- Infrastructure network growth.  
Councils need to provide for upgrade of existing services to meet higher levels of service and for expansion of services to new consumers. Upgrade adds to asset inventory generally without increasing revenue. Expansion also adds to asset inventory but may be associated with generation of additional revenue.
- Life cycle costs for new infrastructure.  
Councils acquire new infrastructure both funded by council and provided by developers and others at no cost. Each new infrastructure asset commits council to fund additional operating and maintenance costs over the life of the infrastructure service and to plan and fund infrastructure renewal.

It is critical that these infrastructure effects are fully incorporated into long term financial plans.

60% (22% in 2007/08, 32% in 2009/10 and 54% in 2011/12) of responding councils reported the inclusion of infrastructure effects in long term financial plans. 37% include part infrastructure effects with 3% reporting they do not include the financial impacts of infrastructure.

6 JRA, 2006a, p 4.

## 4. Regional and Local Roads as an Investment

### 4.1 Road Inventory

The responding councils reported a total road length of 163,850 km (150,178 for 142 councils in 2009/10 and 154,058km for 146 councils in 2011/12) as shown in Table 8. Road lengths for IPWEA regions are shown in Appendix B.

**Table 8: Regional & Local Road Length for Responding Councils**

	Road Length in km		
	Sealed	Unsealed	Total
Regional Roads	15,117	3,201	18,317
Local Roads	65,885	79,647	145,533
<b>Total</b>	<b>81,002</b>	<b>82,848</b>	<b>163,850</b>

Note: 152 Councils responded to question

### 4.2 Bridge Inventory

Responding councils reported a total of 10,067 bridges (9,028 in 2007/08, 9,289 in 2009/10 and 10,149 for 146 councils in 2011/12) as shown in Table 9. 23% are located on regional roads and 77% on local roads. Concrete / steel bridges account for 81% of the total (74% in 2007/08, 78% in 2009/10, 79% in 2011/12), with 19% of timber construction (26% in 2007/08, 22% in 2009/10, 21% in 2011/12). Bridge inventory for each IPWEA region is shown in Appendix B.

**Table 9: Bridges on Regional and Local Roads for Responding Councils**

	No. of Bridges		
	Concrete/steel	Timber	Total
Regional Roads	2,191	77	2,268
Local Roads	5,982	1,817	7,799
<b>Total</b>	<b>8,173</b>	<b>1,894</b>	<b>10,067</b>

Note: 152 Councils responded to question

The load capacity of bridges is important knowledge for councils in managing the bridges and considering requests for use of bridges by heavy loads and high mass vehicles. The number of bridges with percentage of totals reported by councils in the 2014 benchmarking survey is shown in Table 10. Load capacity inventory for each IPWEA region is shown in Appendix B.

**Table 10: Bridges with Known Load Capacity**

	No. of Bridges					
	Concrete/steel		Timber		Total	
Regional Roads	643	29.3%	33	42.9%	676	29.8%
Local Roads	1,489	24.9%	635	34.9%	2,124	27.2%
<b>Total</b>	<b>2,132</b>	<b>26.1%</b>	<b>668</b>	<b>35.3%</b>	<b>2,800</b>	<b>27.8%</b>

### 4.3 Roads and Bridges Investment

The responding councils reported a replacement value of \$65,676 million for road and bridge assets. 19% (9% in 2007/08, 18% in 2009/10 and 2011/12) of this value is held in non-depreciable assets such as earthworks/formation. The assets are reported to have a depreciated replacement cost of \$44,524 million. Annual consumption of the assets, reported by depreciation expense is estimated at \$907 million. Investment details are shown in Tables 11 and 12 and Figure II.

**Table 11: Road and Bridge Valuations**

	Replacement Cost (\$M)	Depreciable Amount (\$M)	Depreciated Replacement Cost (\$M)	Annual Depreciation Expense (\$M)
Sealed Roads	\$39,187	\$30,260	\$27,634	\$552
Unsealed Roads	\$6,886	\$3,939	\$5,020	\$103
Concrete/Steel Bridges	\$4,288	\$4,124	\$2,785	\$40
Timber Bridges	\$473	\$453	\$218	\$7
Roads Ancillary	\$14,842	\$14,517	\$8,867	\$204
<b>Total</b>	<b>\$65,676</b>	<b>\$53,293</b>	<b>\$44,524</b>	<b>\$907</b>

Note: Data from 152 councils.

**Table 12: Asset Management Position for Roads & Bridges**

Asset Category	Asset Consumption Ratio (DRC-RV)/DA	Rate of Asset Consumption (Deprn/DA)	Rate of Asset Renewal (Renewal Exp/ DA)
Sealed roads	61.8%	1.8%	1.1%
Unsealed roads	52.6%	2.6%	0.9%
Concrete/Steel bridges	63.5%	1.0%	0.3%
Timber bridges	43.7%	1.6%	3.2%
Roads ancillary	58.8%	1.4%	NA
<b>Total</b>	<b>60.3%</b>	<b>1.8%*</b>	<b>1.0%*</b>

Note: Data sources as for Table 11.  
 Asset renewal expenditures sourced from Tables 16 and 18.  
 \* excluding Roads Ancillary Assets

The Asset Consumption Ratio<sup>7</sup> (average proportion of 'as new' condition left in assets) of the road and bridge assets of the responding councils is reported at 60.3%. On average the assets are 39.7% through their expected life.

The assets are being consumed at a rate of 1.8% of the depreciable amount per annum (1.8% in 2007/08, 2009/10 and 2.2% in 2011/12). This is an average figure over the life cycle of the asset (up to 100 years).

7 IPWEA, 2012, AIFMG Ver. 1.3, Financial Sustainability Indicator 8 (DRC-RV)/Depreciable Amount), p 2.19.

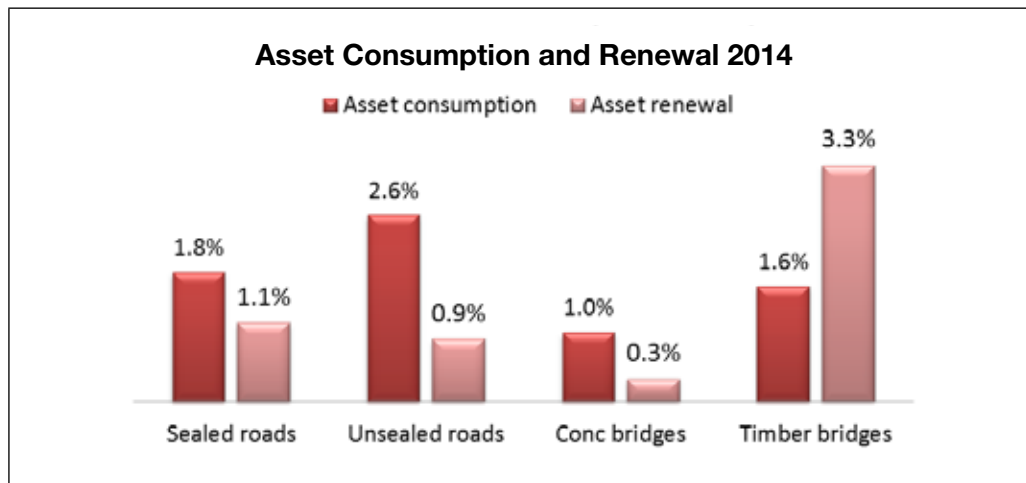


Figure II: Asset Consumption and Renewal

Asset renewal in 2013/14 was less than asset consumption for sealed and unsealed roads and concrete bridges.

- Sealed roads – asset renewal 1.1% (1.4% in 2007/08, 1.2% in 2009/10 and 1.3% in 2011/12) which is 61% of asset consumption (1.8%).
- Unsealed roads – asset renewal 0.9% (0.9% in 2007/08, 0.8% in 2009/10 and 1.4% in 2011/12) – 34% of asset consumption (2.6%)
- Concrete/steel bridges – asset renewal 0.3% (0.7% in 2007/08, 2009/10 and 0.2% in 2011/12) – 34% of asset consumption (1.0%)

For timber bridges, asset renewal was greater than asset consumption in 2013/14:

- Timber bridges – asset renewal 3.3% (10.1% in 2007/08, 6.4% in 2009/10 and 3.7% in 2011/12) – 204% of asset consumption (1.6%).

Timber bridges in the responding councils are being renewed at a rate significantly higher than asset consumption, which reflects the investment priority given by councils to renewing ageing timber bridges.

For sustainability in service delivery, the rate of asset renewal should be equal to the rate of asset consumption on average over the long term. This does not mean that asset renewal should equal asset consumption in each and every year. Asset consumption is an average figure, whereas the rate of annual asset renewal can vary widely, depending on community and council priorities and available funds.

It is important that councils understand their asset management position, know what asset renewals are required to continue to provide the levels of service that the community needs and how the asset renewals are to be funded.

An asset management plan documents the services to be provided, how the services are to be provided and the funds required for asset operation, maintenance and renewal over a 20 year period. The asset management plan expenditure forecasts feed into the long term financial plan and assist Councils in deciding the allocation of the community's resources.

## 4.4 Investment in New Roads & Bridge Assets in 2013/14

The community and Councils have made investments in new road and bridge assets in 2013/14. The investment includes road and bridge assets constructed by developers in subdivisions and contributed free-of-cost to councils and expenditure by councils to upgrade existing road and bridge assets.

The value of contributed road assets received by 42 councils was \$3,669,080.

Councils invested \$183 million in upgrading existing and new road assets in 2013/14 as shown in Table 13.

**Table 13: Roads Upgrade/New Expenditure in 2013/14**

	Upgrade/New Expenditure in 2013/14 (\$M)		
	Sealed Roads	Unsealed Roads	Total
Regional Roads	\$62	\$7	\$68
Local Roads	\$107	\$8	\$115
<b>Total</b>	<b>\$169</b>	<b>\$15</b>	<b>\$183</b>

Note: 84 Councils reported these figures.

Investment in upgrading existing and constructing new bridges was \$37 million in 2013/14 as illustrated in Table 14.

**Table 14: Bridges Upgrade/New Expenditure in 2013/14**

	Upgrade/New Expenditure in 2013/14 (\$M)		
	Concrete Bridges	Timber Bridges	Total
Regional Roads	\$17	\$2	\$18
Local Roads	\$10	\$9	\$19
<b>Total</b>	<b>\$27</b>	<b>\$10</b>	<b>\$37</b>

Note: 34 Councils reported these figures.

The total reported expenditure on upgrading existing assets and acquiring new road and bridge assets by the responding councils in 2013/14 was \$224 million as shown below.

Contributed assets	\$4 million
New road assets constructed by councils	\$183 million
New bridge assets constructed by councils	\$37 million
<b>Total</b>	<b>\$224 million</b>

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## 4.5 Planned Investment in Bridges 2015-2030

Councils reported a planned investment in bridges over the next 15 years of \$371 million as shown in Table 15.

**Table 15: Planned Bridge Investment 2015-2030**

	Planned Investment in Bridges 2015-30			
	Years 1-5	Years 6-10	Years 11-15	Total
Regional Concrete	\$34	\$11	\$6	\$51
Local Concrete	\$27	\$33	\$42	\$102
<b>Subtotal</b>	<b>\$61</b>	<b>\$44</b>	<b>\$49</b>	<b>\$154</b>
Regional Timber	\$12	\$12	\$3	\$27
Local Timber	\$78	\$60	\$54	\$192
<b>Subtotal</b>	<b>\$90</b>	<b>\$73</b>	<b>\$57</b>	<b>\$220</b>
<b>Total</b>	<b>\$151</b>	<b>\$117</b>	<b>\$105</b>	<b>\$374</b>

## 5. Funding Needs and Funding Gap

### 5.1 Regional and Local Roads

Councils were asked to provide details on actual road expenditure, estimated average costs and in-service useful lives for:

- Routine maintenance
- Sealed road resurfacing
- Sealed pavement rehabilitation
- Unsealed road resheeting

This data was collected for Regional and Local roads and analysed to provide a road management model for each council and is aggregated into a State-wide position for regional and local roads.

The road life cycle cost, expenditure and life cycle funding gap for the responding councils is shown in Table 16.

**Table 16: Regional and Local Roads Life Cycle Cost and Expenditure 2013/14**

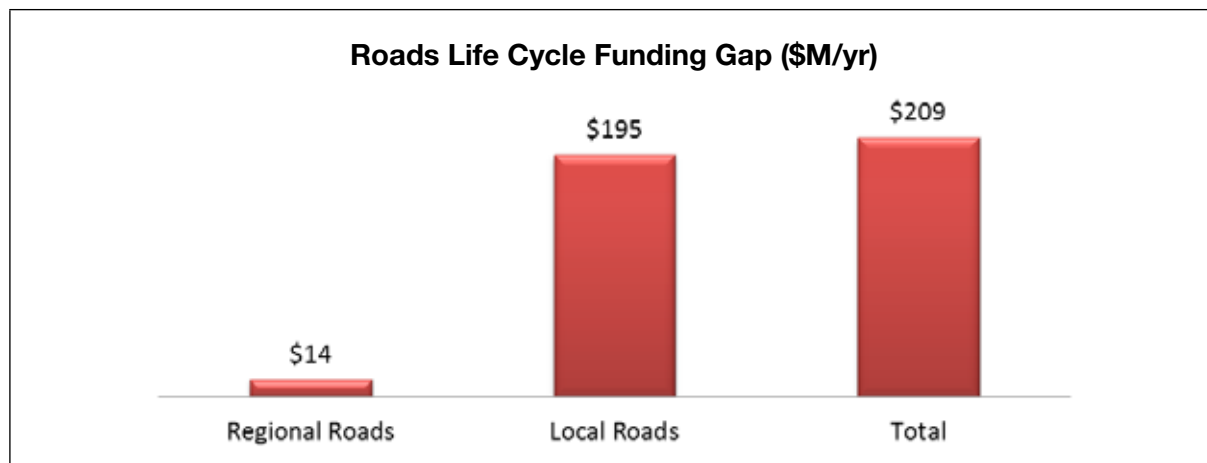
	Length (km)	Rate (\$/km/yr)	Life Cycle Cost (\$/yr)	Expenditure (\$/yr)	Funding Gap (\$/yr)	No of Responding Councils
<b>REGIONAL ROADS</b>						
<b>Sealed Roads</b>						
Routine maintenance	15,117	\$4,345	\$65,684,740	\$65,684,740		152
Resurfacing	11,428	\$2,850	\$32,565,600	\$26,649,058		86
Pavement renewal	8,844	\$6,505	\$57,530,363	\$50,654,389		107
Sub total		\$13,700	\$155,780,704	\$142,988,187	\$12,792,517	
<b>Unsealed Roads</b>						
Routine maintenance	3,201	\$2,777	\$8,886,635	\$8,886,635		152
Resheeting	598	\$2,947	\$1,761,235	\$602,868		13
Sub total		\$5,723	\$10,647,870	\$9,489,503	\$1,158,367	
<b>Total Regional</b>		<b>\$19,423</b>	<b>\$166,428,573</b>	<b>\$152,477,690</b>	<b>\$13,950,883</b>	
<b>LOCAL ROADS</b>						
<b>Sealed Roads</b>						
Routine maintenance	65,885	\$3,198	\$210,687,878	\$210,687,878		152
Resurfacing	46,327	\$2,543	\$117,790,998	\$126,800,280		105
Pavement renewal	41,913	\$5,295	\$221,918,259	\$134,590,226		86
Sub total		\$11,035	\$550,397,135	\$472,078,384	\$78,318,751	
<b>Unsealed Roads</b>						
Routine maintenance	79,647	\$1,492	\$118,814,490	\$118,814,490		152
Resheeting	32,898	\$4,598	\$151,265,439	\$34,278,896		65
Sub total		\$6,090	\$270,079,929	\$153,093,386	\$116,986,543	
<b>Total Local Roads</b>		<b>\$17,125</b>	<b>\$820,477,064</b>	<b>\$625,171,770</b>	<b>\$195,305,294</b>	
<b>Grand Total</b>		<b>\$36,548</b>	<b>\$986,905,637</b>	<b>\$777,649,460</b>	<b>\$209,256,178</b>	

Note: Apparent errors are due to rounding.

Road maintenance expenditure is assumed to be adequate.

Rates for total regional, total local and grand totals are averages for sealed and unsealed roads.

The survey indicated that the responding councils are responsible for life cycle costs of around \$987 million per annum. The responding Councils are currently spending \$778 million per annum leaving a funding gap of \$209 million per annum.



**Figure III: Roads Life Cycle Funding Gap for responding Councils**

The expenditure figures in 2013/14 may be affected by the inclusion of natural disaster relief and recovery funding and other 'one-off' grant funding.

Any flood damage repair expenditure included in 2013/14 road and bridge expenditure, will understate the life cycle funding gap, although any understatement may be offset by 'normal' Council funded works deferred to repair flood damage.

Councils will need to manage this funding gap by improving knowledge of assets and asset performance, reviewing service levels and costs of delivery, improving maintenance to extend asset lives, improving efficiency in service delivery, asset operation, maintenance and renewal, developing and using low cost asset renewal methods, rationalising assets, increasing funding and combinations of all actions.

## 5.2 Life Cycle Cost Apportioned to Usage

The survey asked councils to estimate the percentage use of their roads by traffic volumes for three vehicle usage categories:

- residential associate usage,
- business and commercial usage, and
- higher mass vehicle usage.

The survey form apportioned the percentage of road life cost to the three road usage categories. The results are summarised in Table 17.

**Table 17: Road Life Cycle Cost apportioned to Usage Categories**

Road Use Category	% of Road Life Cycle Cost
Residential	75.9%
Business/Commercial	20.9%
High Mass Vehicles	3.2%
<b>Total</b>	<b>100.0%</b>

## 5.3 Bridges

Councils were asked to provide details on bridge management actions and costs including routine maintenance and renewal (replacement) cycles and costs. This data was analysed to provide a bridge management model for each council and is aggregated into a State-wide position for regional and local roads.

**Table 18: Regional and Local Bridges Life Cycle Cost and Expenditure 2013/14**

	Area (m <sup>2</sup> )	Rate (\$/m <sup>2</sup> /yr)	Life Cycle Cost (\$/yr)	Expenditure (\$/yr)	Funding Gap (\$/yr)	No of Responding Councils
<b>REGIONAL ROADS</b>						
<b>Concrete/steel bridges</b>						
Routine maintenance	499,247	\$6.72	\$3,354,459	\$3,354,459		152
Bridge renewal	223,196	\$36.53	\$8,153,297	\$1,200,674		50
Sub total		\$43.25	\$11,507,756	\$4,555,132	\$6,952,624	
<b>Timber Bridges</b>						
Routine maintenance	13,669	\$70.17	\$959,176	\$959,176		152
Bridge renewal	10,757	\$41.74	\$448,950	\$282,368		21
Sub total		\$111.91	\$1,408,126	\$1,241,544	\$166,582	
<b>Total Regional</b>		<b>\$46.35</b>	<b>\$12,915,881</b>	<b>\$5,796,676</b>	<b>\$7,119,205</b>	
<b>LOCAL ROADS</b>						
<b>Concrete/steel bridges</b>						
Routine maintenance	1,084,343	\$5.17	\$5,602,493	\$5,602,493		152
Bridge renewal	425,380	\$41.23	\$17,539,685	\$12,488,895		62
Sub total		\$46.40	\$23,142,178	\$18,091,388	\$5,050,790	
<b>Timber Bridges</b>						
Routine maintenance	144,950	\$47.16	\$6,835,135	\$6,835,135		152
Bridge renewal	88,555	\$61.03	\$5,404,444	\$14,744,601		37
Sub total		\$108.18	\$12,239,579	\$21,579,736	-\$9,340,157	
<b>Total Local Roads</b>		<b>\$57.82</b>	<b>\$35,381,757</b>	<b>\$39,671,124</b>	<b>-\$4,289,367</b>	
<b>Grand Total</b>		<b>\$54.23</b>	<b>\$48,297,638</b>	<b>\$45,467,800</b>	<b>\$2,829,838</b>	

Note: Apparent errors are due to rounding.  
 Bridge maintenance expenditure is assumed to be adequate.  
 Rates for total regional, total local and grand totals are averages for concrete and timber bridges.

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The responding councils are responsible for life cycle cost of around \$48 million per annum. The responding Councils' expenditure in 2013/14 was \$45 million which was \$3 million less than the life cycle cost.

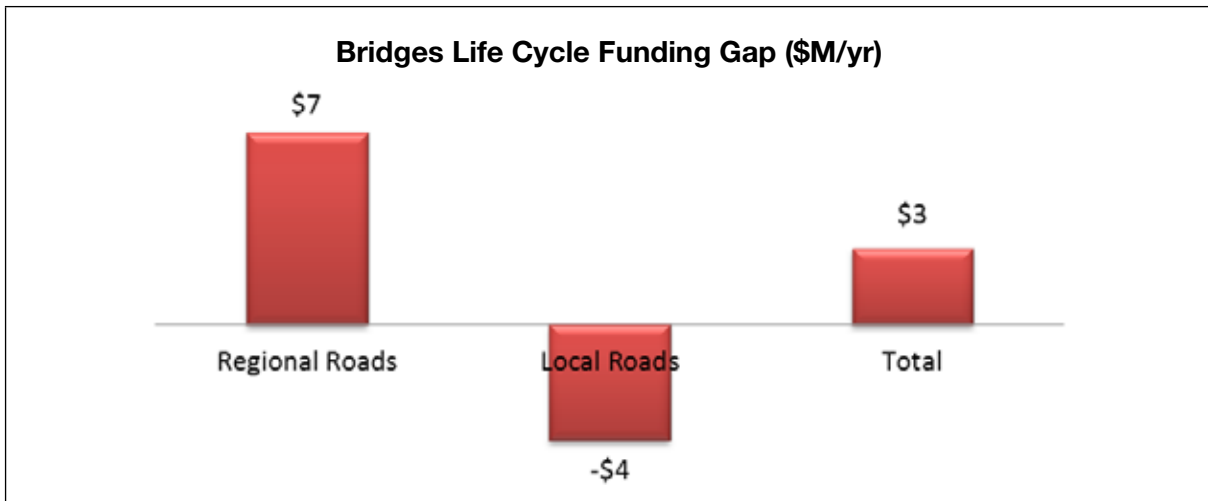


Figure IV: Bridges Life Cycle Funding Gap for responding Councils

## 6. Response to the Survey

### 6.1 Survey Response Rate

The Roads & Transport Directorate launched the 2014 Road Asset Benchmarking project by direct e-mail to 152 council General Managers on 14 December 2014.

The 2014 survey was made available for the first time in a web-based format known as Datashare and completion was requested by 30 January 2015.

By 30 January 2015, 97 councils (64%) had started or completed the data forms in Datashare.

A two week extension was granted and communicated by email to the remaining 55 councils and by 13 February 2015 115 data returns were received achieving a 75% response rate.

The consultant followed up the remaining 37 councils who had not responded by e-mail with an offer to assist.

As a result of the follow up a further 12 data returns were received by 27 February 2015 bringing the total number of returns received to 127, increasing the response rate to 83%.

To assist the 25 councils who had not returned a completed data form by the end of February 2015, the consultant prepared a draft data return for each council using readily available road and bridge inventory, expenditure and valuation data from publicly available sources such as annual reports, financial statements and the Office of Local Government Grants Commission data return for the National Local Roads Data System. This information was e-mailed to each council with a request to check the draft figures in Datashare and confirm if the data was a reasonable reflection of council's position as at the end of the reporting period.

The consultant followed up by e-mail and telephone to the 25 councils throughout March and April 2015 offering to assist the relevant contact officer in each council to review the draft data returns over the telephone.

By closure of the survey on 30 April 2015, a further 23 councils amended and/or confirmed the draft data returns bringing the total of completed and confirmed data forms received to 150, a 98% response rate.

The 2 remaining councils whose data forms were prepared using publicly available information (e.g. annual reports and audited financial statements) declined to participate however their data has been incorporated into the report where appropriate presenting arguably the highest confidence data return for all 152 NSW councils since the project commenced in 2005.

The resulting response rate of 100% over a four month period provides a measure of asset management capability. This high response rate was only achieved through the continued follow up by the Roads Directorate Manager and consultant and preparation of draft data returns for the 25 councils that had not responded by the end of February 2015.

### 6.2 Reasons for Delayed Response

Reasons for the level of response could include:

- staff changes in council and resulting loss of asset management knowledge,
- staff on extended leave of absence,
- lack of data and confidence in the reported information,
- lack of resources to complete survey,
- community emergency management and natural disaster events during the data collection period,
- little to no understanding of the issues,
- lack of asset management skills.

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## 6.3 Data Validation

All data returns were checked and validated for analysis.

Survey form responses are shown in Appendix C. Some data returns were incomplete and validation considered whether the survey data contained sufficient and reasonable data for analysis. The majority of councils were queried on the completeness and reasonableness of the data received.

The survey results show the number of councils responding to that question as a note on relevant tables.

## 6.4 Organisational Commitment to Asset Management

The level of response and quality of responses may indicate a low level of asset management capability in some councils. Given the funding gap indicated by the survey response, councils will need to increase asset management capability if they are to manage their funding gap and satisfy community demands for services.

## 6.5 Data Quality Issues

The survey requested data that should be readily accessible and available from councils being:

- asset management practice data
- asset valuation data
- road management data
  - sealed and unsealed road lengths
  - sealed and unsealed roads maintenance costs
  - resurfacing costs and average useful lives
  - sealed pavement renewal costs and average useful lives
  - unsealed resheeting costs and average useful lives.
- bridge management data
  - concrete/steel and timber bridge inventory and attribute data
  - concrete/steel and timber bridge maintenance costs
  - concrete bridge renewal average costs and average useful lives
  - timber bridge renewal average costs and average useful lives.

There are inherent inaccuracies in use of averaging data for a complex and highly varied road and bridge network. Options were made for councils to provide road data at a network level or asset/service hierarchy level. Councils predominately provided data at the network level indicating a low level of use of road hierarchies and service levels to manage road networks.

The consultant queried survey forms with councils where data was not provided for all fields, typographical errors were evident or where the data appeared inappropriate, to assist in validating the survey forms and maximising the number of valid survey form returns.

There was a large variability in data values provided for key datasets being:

- average cost of sealed road resurfacing (\$/km)
- average useful life of sealed road surfaces (yrs)
- average life of sealed pavement renewal (\$/km)
- average useful life of sealed pavements (yrs)
- average cost of unsealed road resheets (\$/km)
- average useful life of unsealed road gravel sheeting (yrs)

The distributions of maintenance costs for regional and local roads are shown in Figs V and VI as an example of the variability in data values.

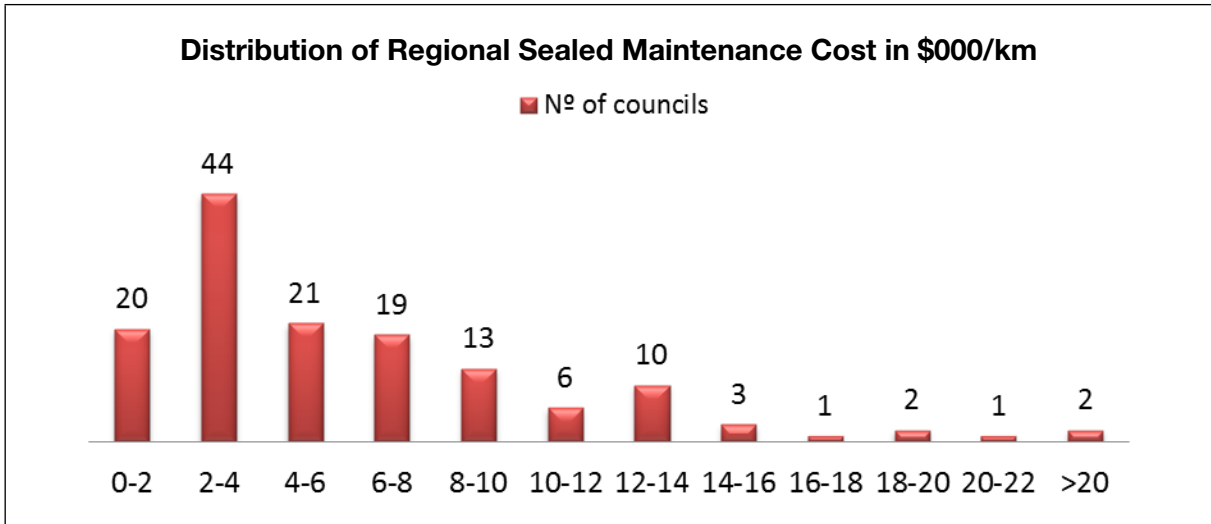


Figure V: Distribution of Regional Sealed Road Maintenance Costs 2013/14

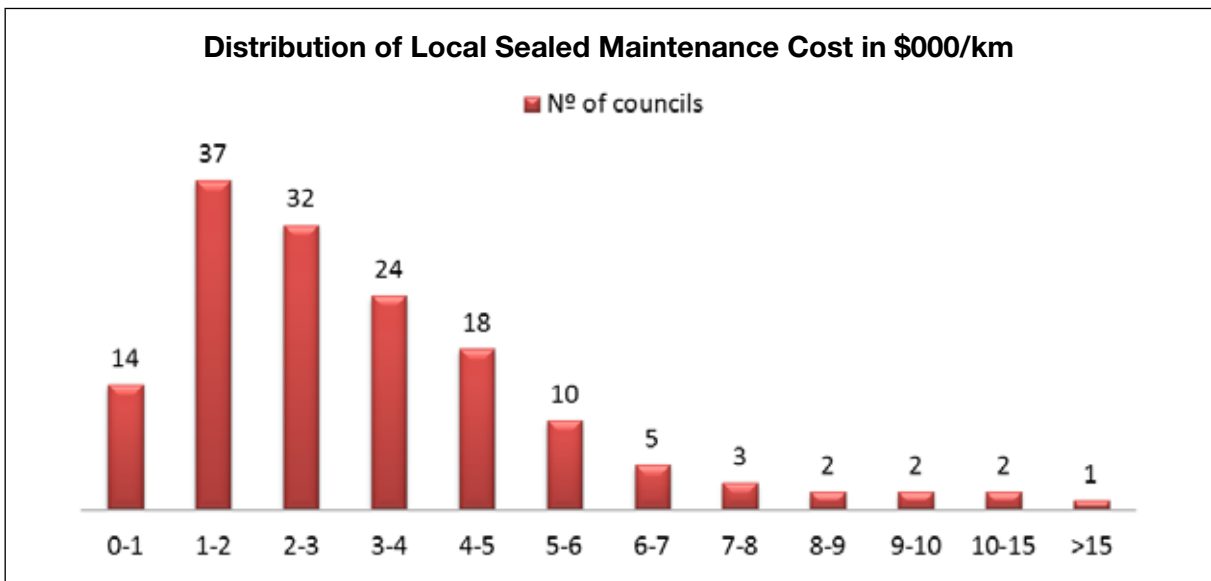


Figure VI: Distribution of Local Sealed Road Maintenance Costs 2013/14

The large variations may be explained by the relative condition of sealed surfaces and inclusion of capital renewal and non-road maintenance items such as resurfacing, street lighting, street sweeping, verge mowing and similar operational activities.

## 7. Findings

- 7.1 98% (150) of NSW councils responded to the IPWEA NSW Roads & Transport Directorate's Road Asset Benchmarking Survey and the Local Government Inquiry survey.
- 7.2 Asset management practice and capability is improving limited with 66% or 100 councils (33% in 2007/08, 48% in 2009/10, 61% in 2011/12) of responding councils reporting that they used the principles of the International Infrastructure Management Manual, the internationally recognised reference on infrastructure asset management, in full. 89% (136) of councils (82% in 2011/12) have an adopted Road Asset Management Plan. 93% (141) of councils (83% in 2011/12) have joined IPWEA NAMS.PLUS Asset Management, the IPWEA's system to assist them in developing their road asset management plans
- 7.3 Road related risk was being addressed through a road asset management plan or within a corporate risk management plan in 70% (107) of the responding councils (46% in 2007/08, 52% in 2009/10 and 68% in 2011/12).
- 7.4 98% (149) (66% in 2007/08, 67% in 2009/10, 94% in 2011/12) of responding councils indicated they have a long term financial plan, 95% (145) (45% in 2007/08, 55% in 2009/10, 87% in 2011/12) of the responding councils' plans cover a period of at least 10 years.
- 7.5 60% (91) (22% in 2007/08, 33% in 2009/10, 54% in 2011/12) of responding councils' long term financial plans recognise the effects of infrastructure including financing infrastructure renewal, and providing for growth and life cycle costs for new infrastructure.
- 7.6 The responding councils are responsible for the management of 163,850 km of regional and local roads combined and 10,067 concrete/steel and timber bridges.
- 7.7 Councils knowledge of the load capacity of their bridges is limited to 26% of concrete bridges and 35% of timber bridges.
- 7.8 The responding councils' roads and bridges have a replacement value of \$65.7 billion, which is being consumed at the rate of \$907 million per annum.
- 7.9 Road and bridge assets for the reporting councils are reported to have 60.3% of their average 'as new' condition (service life) remaining (67.7% in 2007/08, 68.8% in 2009/10, 61.0% in 2011/12). The assets are being consumed at a rate of 1.8% of the depreciable amount. Asset renewal in 2013/14 was less than asset consumption for roads being:
- 61% of consumption for sealed roads (82% in 2007/08, 64% in 2009/10, 62% in 2011/12),
  - 34% for unsealed roads (50% in 2007/08, 30% in 2009/10, 40% in 2011/12) and
  - 34% for concrete/steel bridges (45% in 2007/08, 59% in 2009/10, 17% in 2011/12).
- Timber bridge renewal is 197% of consumption recognising the investment priority given by councils to renewal of ageing timber bridges (542% in 2007/08, 453% in 2009/10, 241% in 2011/12).
- 7.10 The road life cycle cost for the responding councils was estimated at \$987 million per annum. Funding in 2013/14 was reported at \$778 million leaving a funding gap of \$209 million per annum below the life cycle cost.
- 7.11 Sealed road resurfacing/resealing life cycle cost for the responding councils was estimated at \$150 million per annum. Expenditure of \$153 million in 2013/14 was \$3 million more than the annual life cycle cost.
- 7.12 Unsealed road resheeting life cycle cost for the responding councils was estimated at \$153 million per annum. 2013/14 funding was \$35 million which is \$118 million less than the annual life cycle cost.
- 7.13 The estimated apportionment of road life cycle cost to the three major road usage categories based on councils' best estimate of percentage traffic usage of roads was that residential use was responsible for 76% of the road life cycle cost, business and commercial usage 21% and high mass vehicles 3%.
- 7.14 The life cycle cost for the responding councils' concrete/steel bridges was estimated at \$11.5 million for regional roads and \$23.1 million for local roads per annum. Expenditure in 2013/14 of \$4.6 million for bridges on regional roads and \$18.0 million for bridges on local roads was \$6.9 million and \$5.1 million less than the respective life cycle cost.
- 7.15 The life cycle cost for the responding councils' timber bridges was estimated at \$1.4 million for regional roads and \$12.2 million for local roads per annum. Funding in 2013/14 of \$1.2 million for regional roads and \$21.6 million for local roads was \$0.2 million less for regional roads and \$9.4 million per annum **greater** than the life cycle cost. This indicates the investment priority given to timber bridge renewal on local roads in 2013/14.
- 7.16 Survey data quality was variable with a few of the responding councils having good and reliable data and others lacking in both quantity and quality of data.

## 8. Discussion on Findings

### 8.1 Asset Management Practices and Skills

Whilst there was a very high response rate to the survey very few councils provided a fully completed survey dataset in a form suitable for database analysis. The data sought was considered to be basic financial data and data used for strategic and day-to-day management of roads and bridges.

Notwithstanding this, financial valuation and asset management practice data was received for all councils therefore increasing the confidence in the replacement value, depreciation and status of asset management practices of roads and bridges across NSW for which local government has responsibility.

On the other hand response to maintenance and capital expenditures, unit costs and renewal cycles was low resulting in a low confidence assessment of lifecycle costs and identification of a credible funding gap prompting the need for improved awareness in councils to understand lifecycle costs and ongoing sustainability of service delivery.

Guidelines to assist councils in asset management and for preparing asset management plans have been available since 1994 with the National Asset Management Manual 1994<sup>8</sup> and International Infrastructure Management Manual 2006<sup>9</sup>. All Councils should be using the International Infrastructure Management Manual as their asset management reference.

In 2008, IPWEA released the online guided pathway for Asset Management planning known as NAMS.PLUS (<http://www.ipwea.org/namsplus>) a system of templates and modelling tools to assist councils write their infrastructure asset management plans. The increasing number of councils using IPWEA's NAMS.PLUS standardised templates and modelling tools to develop their roads asset management plans as shown in Figure VII is a positive result.

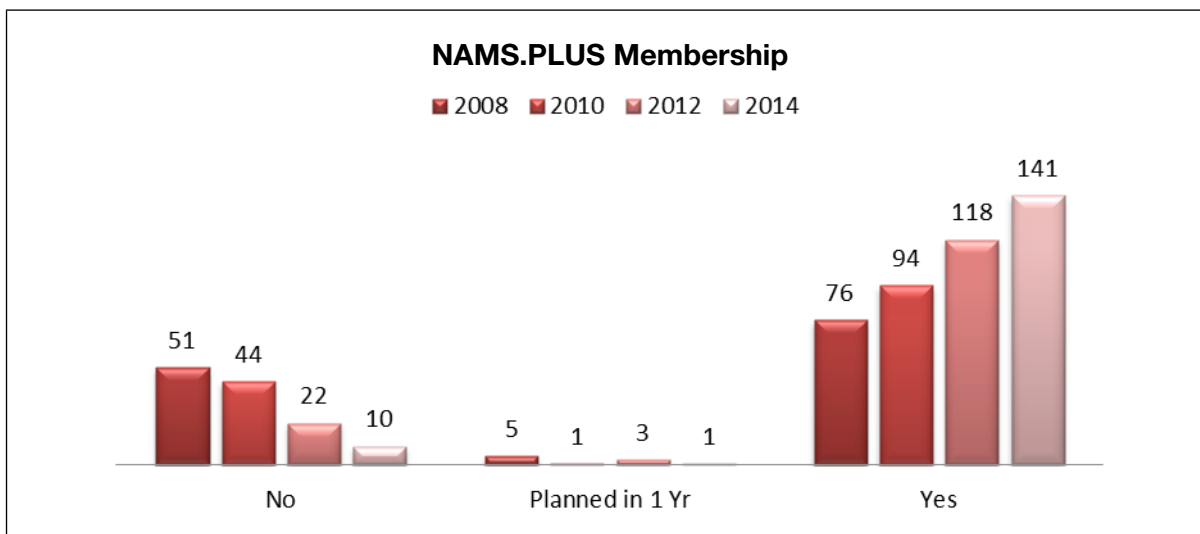


Figure VII: Councils using NAMS.PLUS for AM Plans 2008-2014

The NSW *Integrated Planning & Reporting Framework* requires councils to have a 10 year financial plan supported by 10+ year asset management plans to ensure sustainable service delivery for their communities.

Councils have made great improvements in developing asset management plans and a long-term financial plan. 89% of councils have an adopted road asset management plan, an 13% increase since 2011/12. 98% of council have a long-term financial plan with 95% having financial plans covering 10 or more years.

The funding gap identified in the survey and level of road related risk practices also requires councils to improve their road related risk management practices to sustain service delivery, minimise liability exposure and potential for increases in insurance premiums. 70% of councils have a risk management plan for road related risks, which is an increase from the 10% reported in 2011/12.

8 IMEA, 1994

9 IPWEA, 2006

## 8.2 Road Transport Infrastructure Investment

The estimated investment to replace the NSW local transport infrastructure is \$65.7 billion (\$45.9 billion in 2007/08, \$59.2 billion in 2009/10 and \$61.8 billion in 2011/12). This represents an investment of \$8,997 for each of the 7.3 million people<sup>10</sup> in NSW.

The assets are reported as being consumed at an estimated \$907 million per annum (\$735 million in 2007/08, \$889 million in 2009/10 and \$1,049 million in 2011/12).

Road infrastructure investment values are shown in Table 19.



**Table 19: Road and Bridge Values Extrapolated to 152 Councils**

	Replacement Cost (\$M)	Depreciable Amount (\$M)	Depreciated Replacement Cost (\$M)	Annual Depreciation Expense (\$M)
Sealed Roads	\$39,187	\$30,260	\$27,634	\$552
Unsealed Roads	\$6,886	\$3,939	\$5,020	\$103
Concrete/Steel Bridges	\$4,288	\$4,124	\$2,785	\$40
Timber Bridges	\$473	\$453	\$218	\$7
Roads Ancillary	\$14,842	\$14,517	\$8,867	\$204
<b>Total</b>	<b>\$65,676</b>	<b>\$53,293</b>	<b>\$44,524</b>	<b>\$907</b>

Note: Data from Table 11, includes all 152 councils.

New road and bridge assets contributed to and constructed by councils in 2013/14 are estimated to increase the replacement value of road and bridge assets by \$608 million or 1.1%. Table 20 shows the estimated value extrapolated to 152 councils.

**Table 20: Estimated Investment in New Assets 2013/14**

Source of New Assets	Sample Size	New Asset Value (\$M)	Value extrapolated to all Councils (\$M)
Contributed by Others	42	\$4	\$13
Upgrade & New Roads	84	\$183	\$332
Upgrade & New Bridges	34	\$37	\$167
<b>Total</b>		<b>\$224</b>	<b>\$512</b>

Note: Data sourced from Sec 4.4. Sample size extrapolated to 152 councils. (e.g. \$4 M/42 x 152 = \$13 M)

<sup>10</sup> ABS 3218.0 – Regional Population Growth, Australia, 2011-12

## 8.3 Road Funding

Extrapolating the 2013/14 funding gap of \$209 million for the responding councils to all of the 152 NSW councils will give an indication of the size of the road funding gap.

The extrapolated road funding gap for all councils in NSW is estimated at \$433 million (\$614 M in 2007/08, \$677 M in 2009/10, \$567 M in 2011/12).

Table 21 shows the road model for the responding councils extrapolated to 152 councils. Funding the life cycle cost will require a 43% increase in expenditure (80% in 2007/08, 91% in 2009/10, 66% in 2011/12).

**Table 21: Roads Life Cycle Cost and Expenditure extrapolated to 152 Councils**

	Length (km)	Rate (\$/km/yr)	Life Cycle Cost (\$/yr)	Expenditure (\$/yr)	Funding Gap (\$/yr)
<b>REGIONAL ROADS</b>					
<b>Sealed Roads</b>					
Routine maintenance	15,117	\$4,345	\$65,684,740	\$65,684,740	
Resurfacing	15,117	\$2,850	\$43,077,831	\$35,251,419	
Pavement renewal	15,117	\$6,505	\$98,334,716	\$86,581,844	
Sub total	15,117	\$13,700	\$207,097,287	\$187,518,003	\$19,579,284
<b>Unsealed Roads</b>					
Routine maintenance	3,201	\$2,777	\$8,886,635	\$8,886,635	
Resheeting	3,201	\$2,947	\$9,431,094	\$3,228,249	
Sub total	3,201	\$5,723	\$18,317,729	\$12,114,884	\$6,202,845
<b>Total Regional</b>	<b>18,317</b>	<b>\$12,306</b>	<b>\$225,415,016</b>	<b>\$199,632,887</b>	<b>\$25,782,128</b>
<b>LOCAL ROADS</b>					
<b>Sealed Roads</b>					
Routine maintenance	65,885	\$3,198	\$210,687,878	\$210,687,878	
Resurfacing	65,885	\$2,543	\$167,520,395	\$180,333,246	
Pavement renewal	65,885	\$5,295	\$348,845,814	\$211,569,959	
Sub total	65,885	\$11,035	\$727,054,088	\$602,591,083	\$124,463,004
<b>Unsealed Roads</b>					
Routine maintenance	79,647	\$1,492	\$118,814,490	\$118,814,490	
Resheeting	79,647	\$4,598	\$366,214,336	\$82,989,368	
Sub total	79,647	\$6,090	\$485,028,826	\$201,803,857	\$283,224,968
<b>Total Local Roads</b>	<b>145,533</b>	<b>\$8,329</b>	<b>\$1,212,082,913</b>	<b>\$804,394,940</b>	<b>\$407,687,973</b>
<b>Grand Total</b>	<b>163,850</b>	<b>\$8,773</b>	<b>\$1,437,497,929</b>	<b>\$1,004,027,828</b>	<b>\$433,470,101</b>

Note: Data from responding Councils extrapolated to 152 councils, apparent errors are due to rounding.  
Road maintenance expenditure is assumed to be adequate.  
Rates for total regional, total local and grand totals are averages for sealed and unsealed roads.

The life cycle cost and 2013/14 expenditure for NSW regional roads and local roads is shown in Fig VIII. The life cycle funding gap for regional and local roads is shown in Fig IX.

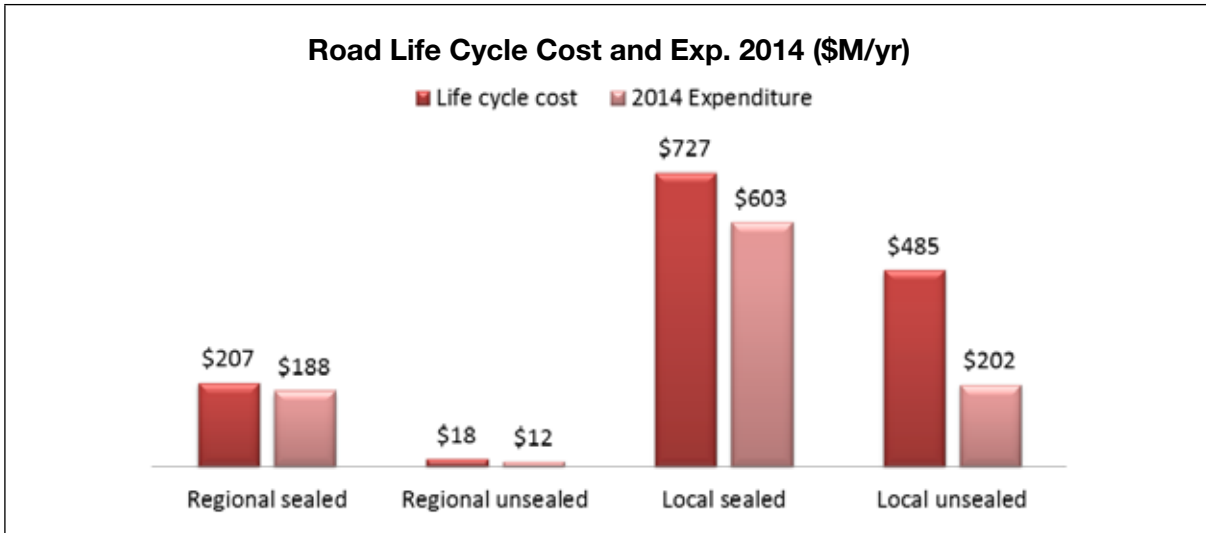


Figure VIII: Road Life Cycle Cost and Expenditure 2013/14

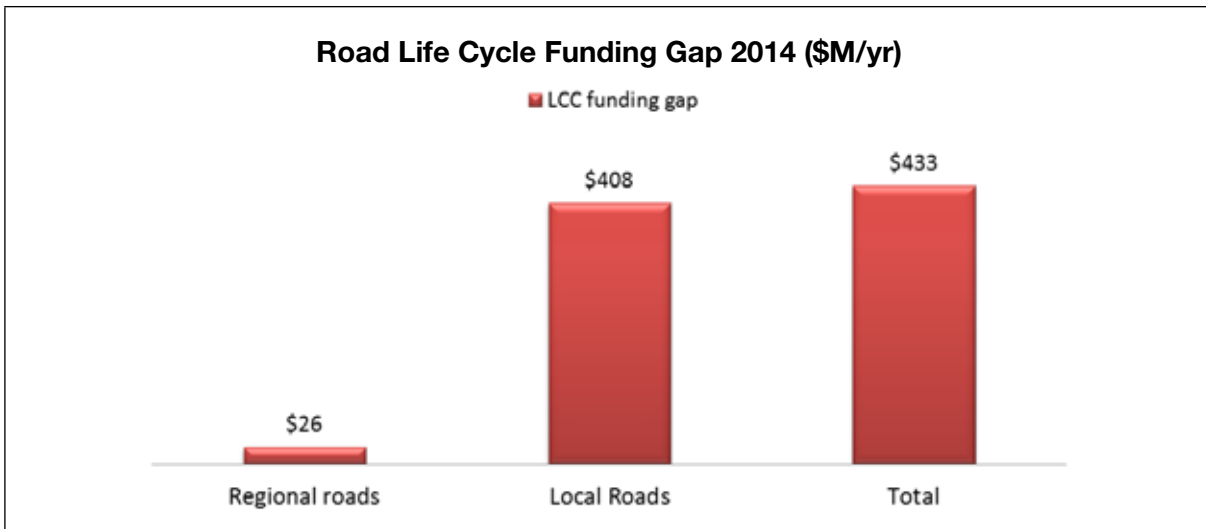


Figure IX: Road Life Cycle Cost Funding Gap 2013/14

## 8.4 Road Life Cycle Cost and Road Usage

Table 17 showed the calculated percentages of the road life cycle cost that is estimated to be related to usage of the roads by residential, business and commercial and high mass vehicles for the responding councils. The estimated road life cycle cost related to usage for all 152 councils is shown in Table 22.

Note that the sample traffic volumes used in this instance are 'best estimates' only as no data is held for traffic volumes classified by road use.

This usage data and life cycle cost analysis was included in the benchmarking survey to test the methodology. Further research into the life cycle cost and road usage focus on firstly improving the accuracy of road usage traffic volume involving detailed sampling of typical urban and rural category road, and secondly, relating the traffic usage to effect on the road usage on useful life of the road asset components. This will take into account load effects on surfaces and pavements for the three road uses.

**Table 22: Road Life Cycle Cost and Road Usage 2013/14**

Road Use Category	% of Road Life Cycle Cost	Road life cycle cost for 152 councils (\$/yr)
Residential	75.9%	\$1,091,050,991
Business/Commercial	20.9%	\$300,452,616
High Mass Vehicles	3.2%	\$45,994,322
<b>Total</b>	<b>100.0%</b>	<b>\$1,437,497,929</b>

## 8.5 Bridge Funding

Extrapolating the sample data for the responding councils will also give an indication of sustainable funding levels for bridges on regional and local roads. 2013/14 expenditure on bridges on regional and local roads is estimated at approximately \$13.4 million less than the life cycle cost (\$3.9 M greater in 2007/08, \$3.3M greater in 2009/10, \$29.6 million less in 2011/2). Funding the life cycle cost will require a 18% increase in expenditure.

**Table 23: Bridge Life Cycle Cost and Expenditure 2013/14**

	Area (m <sup>2</sup> )	Rate (\$/m <sup>2</sup> /yr)	Life Cycle Cost (\$/yr)	Expenditure (\$/yr)	Funding Gap (\$/yr)
<b>REGIONAL ROADS</b>					
<b>Concrete/steel bridges</b>					
Routine maintenance	499,247	\$6.7	\$3,354,459	\$3,354,459	
Bridge renewal	499,247	\$36.5	\$18,237,375	\$2,685,678	
Sub total	499,247	\$43.2	\$21,591,834	\$6,040,137	\$15,551,697
<b>Timber Bridges</b>					
Routine maintenance	13,669	\$70.2	\$959,176	\$959,176	
Bridge renewal	13,669	\$41.7	\$570,484	\$358,807	
Sub total	13,669	\$111.9	\$1,529,660	\$1,317,983	\$211,676
<b>Total Regional</b>	<b>512,916</b>	<b>\$45.1</b>	<b>\$23,121,493</b>	<b>\$7,358,120</b>	<b>\$15,763,373</b>
<b>LOCAL ROADS</b>					
<b>Concrete/steel bridges</b>					
Routine maintenance	1,084,343	\$5.2	\$5,599,993	\$5,599,993	
Bridge renewal	1,084,343	\$41.2	\$44,710,692	\$31,835,642	
Sub total	1,084,343	\$46.4	\$50,313,185	\$37,438,135	\$12,875,050
<b>Timber Bridges</b>					
Routine maintenance	144,950	\$47.2	\$6,835,135	\$6,835,135	
Bridge renewal	144,950	\$61.0	\$8,846,188	\$24,134,492	
Sub total	144,950	\$108.2	\$15,681,323	\$30,969,627	-\$15,288,304
<b>Total Local</b>	<b>1,229,293</b>	<b>\$53.7</b>	<b>\$65,994,508</b>	<b>\$68,407,762</b>	<b>-\$2,413,254</b>
<b>Grand Total</b>	<b>1,742,209</b>	<b>\$51.2</b>	<b>\$89,116,002</b>	<b>\$75,765,882</b>	<b>\$13,350,120</b>

Note: Data from responding Councils extrapolated to 152 councils, apparent errors due to rounding.  
 Bridge maintenance expenditure is assumed to be adequate.  
 Rates for total regional, total local and grand totals are averages for concrete and timber bridges.

The life cycle cost and 2013/14 expenditure for bridges on NSW regional roads and local roads is shown in Fig X. The life cycle funding gap for regional and local road bridges is shown in Fig XI.

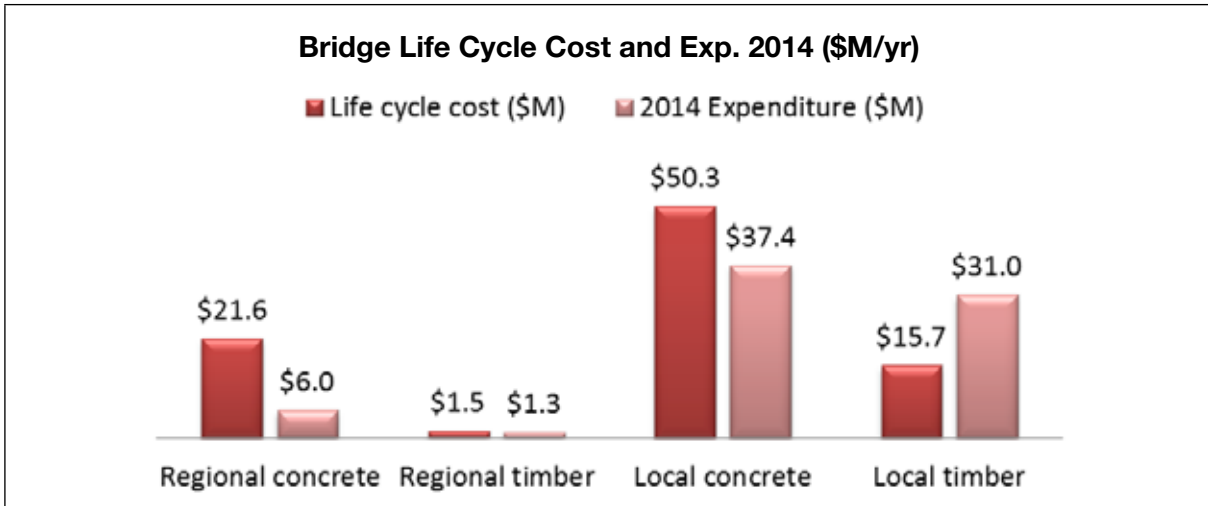


Figure X: Bridges Life Cycle Cost and Expenditure 2013/14

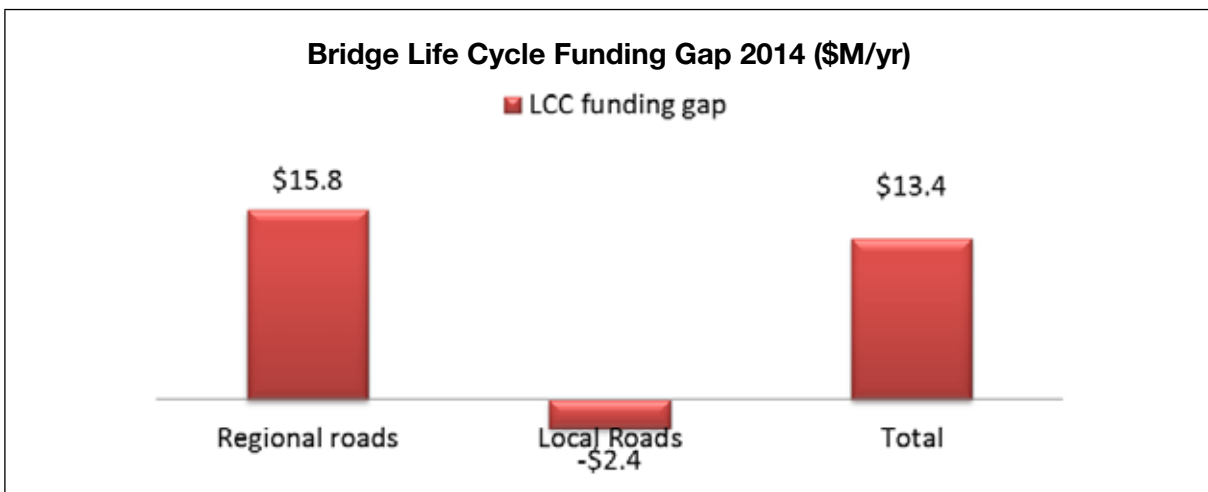


Figure XI: Bridges Life Cycle Cost Funding Gap 2013/14

The funding gap for regional and local road bridges is \$13.4 million a decrease from the \$29.6 million life cycle gap in 2011/12.

## 8.6 Roads and Bridges Combined Funding Position

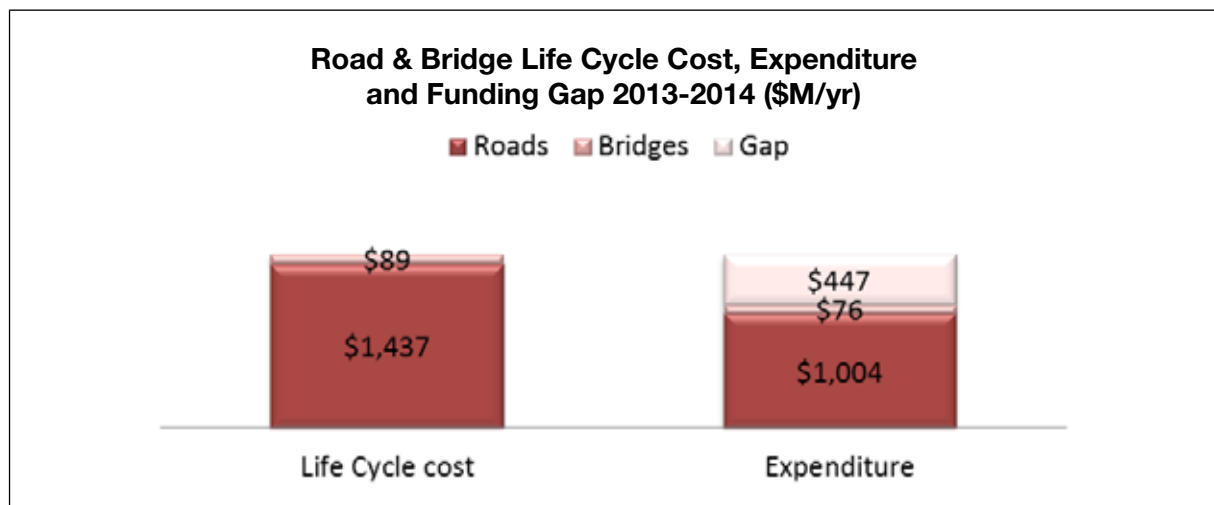
The estimated funding position for roads and bridges extrapolated for all NSW councils is shown in Table 24 and Fig XII.

**Table 24: Roads and Bridges Life Cycle Funding Position 2013/14**

Life cycle cost (\$M/yr)	2005/06	2007/08	2009/10	2011/12	2013/14
Roads	\$1,441	\$1,381	\$1,422	\$1,424	<b>\$1,437</b>
Bridges	\$62	\$62	\$59	\$69	<b>\$89</b>
<b>Subtotal</b>	\$1,503	\$1,442	\$1,482	\$1,493	<b>\$1,527</b>
Life cycle expenditure (\$M)					
Roads	\$675	\$767	\$745	\$857	<b>\$1,004</b>
Bridges	\$45	\$58	\$63	\$39	<b>\$76</b>
<b>Subtotal</b>	\$720	\$825	\$808	\$896	<b>\$1,080</b>
<b>Estimated funding gap (\$M/yr)</b>	\$783	\$618	\$674	\$597	<b>\$447</b>

Apparent errors are due to rounding

The estimated funding gap is equivalent to a 41% increase in funding above the 2013/14 expenditure levels (75% in 2007/08, 83% in 2009/10, 66% in 2011/12) and emphasises the need to continue action to manage the funding gap and ensure infrastructure services are sustainable.



*Figure XII: Roads & Bridges Life Cycle Costs and Expenditure 2013/14*

The road and bridge funding gap for all 152 NSW councils is estimated at \$447 million per annum based on the data from the responding councils extrapolated to all 152 councils. This is equivalent to a 41% increase in 2013/14 road and bridge expenditure or significant decline in services and service levels if asset management principles are not applied to managing the gap.

Asset management principles to be applied to managing the funding gap include:

- Ensuring that all councils have adequate accurate knowledge of their road assets and how their assets are performing.
- Ensuring that sealed roads are resurfaced/resealed at the optimum time to maintain waterproofing of pavements and minimise failure.
- Consultation and selection of appropriate levels of service and costs to meet community needs and available resources.
- Ensuring that unsealed roads are resheeted at the optimum time to meet agreed service levels within available resources. This will require an increase in funding from \$86 million in 2013/14 to \$375 million for all councils if service levels reported in the survey are to be maintained (a 336% increase, 416% in 2009/10, 192% in 2011/12).
- Making efficiencies in operations, maintenance, resurfacing and pavement renewal aimed at reducing life cycle costs.
- Improving maintenance practices and funding if necessary to extend pavement life and defer projected renewal.
- Rationalise (dispose) of unnecessary infrastructure assets.
- Reduce service levels in consultation with the community.
- Identify future renewal needs and expenditure required to meet agreed service levels and document in a Road Asset Management Plan
- Increase funding, and
- Combinations of all actions above.

## 8.7 Comparison of 2013/14 Depreciation with Renewal Cost and Expenditure

The Asset Sustainability Ratio is used as a measure of whether assets are being replaced at the rate they are wearing out. It is the rate of asset replacement expenditure relative to depreciation for a period. Depreciation expense reports the consumption of service potential of assets for a financial year in financial terms.

A comparison of life cycle renewal cost (the local road asset managers' assessment of what it costs on average to renew the assets) and reported depreciation expense for the 152 NSW councils is shown in Table 25.

**Table 25: Life Cycle Renewal Cost and Depreciation Expense 2013/14**

	Sealed Roads (\$M)	Unsealed Roads (\$M)	Conc. bridges (\$M)	Timber bridges (\$M)	Total (\$M)
<b>LIFE CYCLE RENEWAL COST</b>					
Renewal (Required Capex) 2013/14					
- Resurfacing (reseals)	\$211				\$211
- Pavement renewal	\$447				\$447
- Resheets		\$376			\$376
- Bridge renewal			\$63	\$9.4	\$72
<b>Subtotal Life Cycle Renewal Cost</b>	<b>\$658</b>	<b>\$376</b>	<b>\$63</b>	<b>\$9.4</b>	<b>\$1,106</b>
Depreciation Expense (2013/14)	\$552	\$103	\$40	\$7.4	\$703
<b>Depreciation / LC Renewal Cost</b>	<b>84%</b>	<b>28%</b>	<b>64%</b>	<b>78%</b>	<b>64%</b>

Table 25 indicates that there is a considerable difference in assessment of asset consumption as reported by local road asset managers in this survey and that reported by depreciation expense in council's financial reports.

Reported depreciation expense for 2013/14 is 84% of the local road asset managers' assessment of asset consumption of sealed roads (54% in 2007/08, 60% in 2009/10, 74% in 2011/12), 28% for unsealed roads (44% in 2007/08, 80% in 2009/10, 85% in 2011/12), 64% for concrete/steel bridges (70% in 2007/08, 93% in 2009/10, 100% in 2011/12), 78% for timber bridges (65% in 2007/08, 89% in 2009/10, 96% in 2011/12) and 64% overall for local roads and bridges (53% in 2007/08, 65% in 2009/10, 77% in 2011/12).

Table 26 compares 2013/14 capital renewal expenditure with 2013/14 depreciation expense.

**Table 26: Life Cycle Renewal Expenditure and Depreciation Expense 2013/14**

	Sealed Roads (\$M)	Unsealed Roads (\$M)	Conc. bridges (\$M)	Timber bridges (\$M)	Total (\$M)
<b>LIFE CYCLE RENEWAL EXP.</b>					
Capital Renewal Exp. 2013/14					
- Resurfacing (reseals)	\$216				\$216
- Pavement renewal	\$298				\$298
- Resheets		\$86			\$86
- Bridge renewal			\$35	\$24.5	\$59
<b>Subtotal renewal expenditure</b>	<b>\$514</b>	<b>\$86</b>	<b>\$35</b>	<b>\$24.5</b>	<b>\$659</b>
Depreciation Expense 2013/14	\$552	\$103	\$40	\$7.4	\$703
<b>Renewal Exp / Depreciation</b>	<b>93%</b>	<b>83%</b>	<b>85%</b>	<b>333%</b>	<b>94%</b>

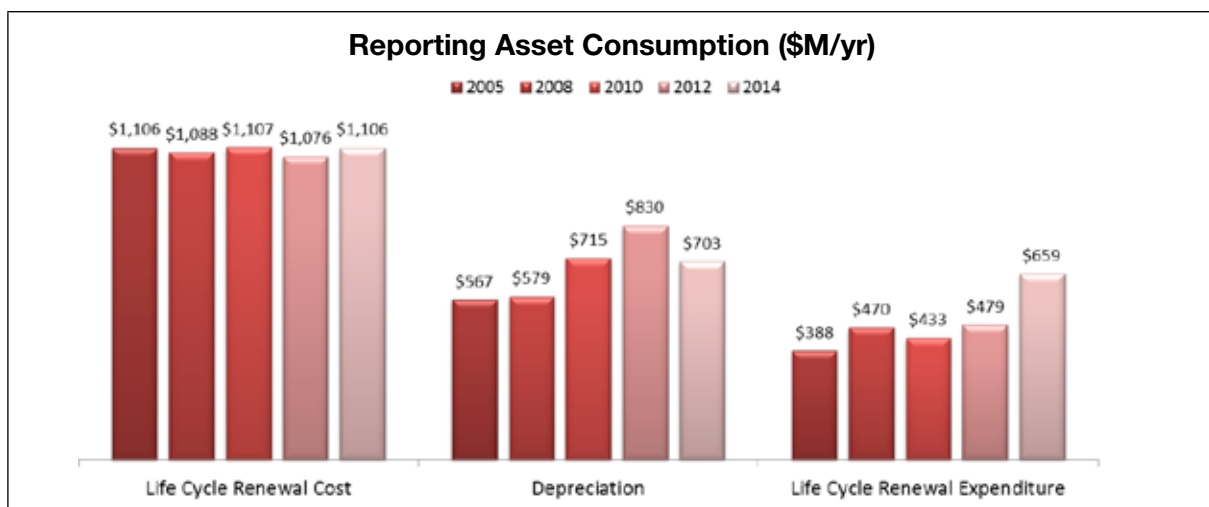
2013/14 capital renewal expenditure is 94% of asset consumption (81% in 2007/08, 61% in 2009/10 and 58% in 2011/12) as reported by depreciation expense. For sealed roads, capital renewal expenditure is 93% of depreciation expense (82%, 64% & 62%), 83% for unsealed roads (50%, 30% & 40%), 85% for concrete/steel bridges (54%, 59% & 17%) and 333% for timber bridges (542% in 2007/08, 453% in 2009/10 and 241% in 2011/12).

The Asset Sustainability Ratio for roads and bridges in 2013/14 is 94%.

Using the depreciation expense figures reported in this survey as a measure of average asset renewal may give a false position of actual funding need. The measures asset renewal cost, depreciation and actual expenditure are shown in Table 27 and Figure XIII.

**Table 27: Life Cycle Renewal Cost, Depreciation and Expenditure 2013/14**

	Sealed Roads (\$M)	Unsealed Roads (\$M)	Conc. bridges (\$M)	Timber bridges (\$M)	Total (\$M)
Life Cycle Renewal Cost	\$658	\$376	\$63	\$9	\$1,106
Depreciation Expense	\$552	\$103	\$40	\$7	\$703
Capital Renewal Exp.	\$514	\$86	\$35	\$24	\$659



*Figure XIII: Technical & Financial Measures of Asset Consumption 2005-2014*

The local road asset managers' assessment of life cycle renewal cost is \$1,106 million per annum. This is their estimate of the value of the local road assets that is being consumed (used up) each year.

Depreciation expense is the financial representation of this asset consumption. Depreciation expense as reported by NSW councils is \$703 million per annum, some 64% of the asset manager's assessment of asset consumption (53% in 2007/08, 65% in 2009/10 and 77% in 2011/12).

The amount spent on capital renewal of the assets for 2013/14 was \$659 million. This is 60% (44% in 2007/08, 39% in 2009/10 and 45% in 2011/12) of the life cycle cost and 94% of depreciation expense (81% in 2007/08, 60% in 2009/10 and 58% in 2011/12).

Calculation of the Asset Sustainability Ratio using the above financial and technical data illustrates the difference between technical estimates of asset consumption and depreciation.

The Asset Sustainability Ratio indicates that local road assets are being renewed at a rate of 94% of asset consumption. Calculating the Asset Sustainability Ratio using the technical estimates shows that road assets are being renewed at 60% of consumption.

Consistency in the technical and financial reporting of asset consumption and renewal has greatly improved over the seven years of the benchmarking reports as shown in Figure XIV.

The improvement in reporting asset consumption is largely due to NSW councils moving to the fair value basis for asset valuations from the deemed cost basis adopted when the assets were recognised in the mid 1990's.

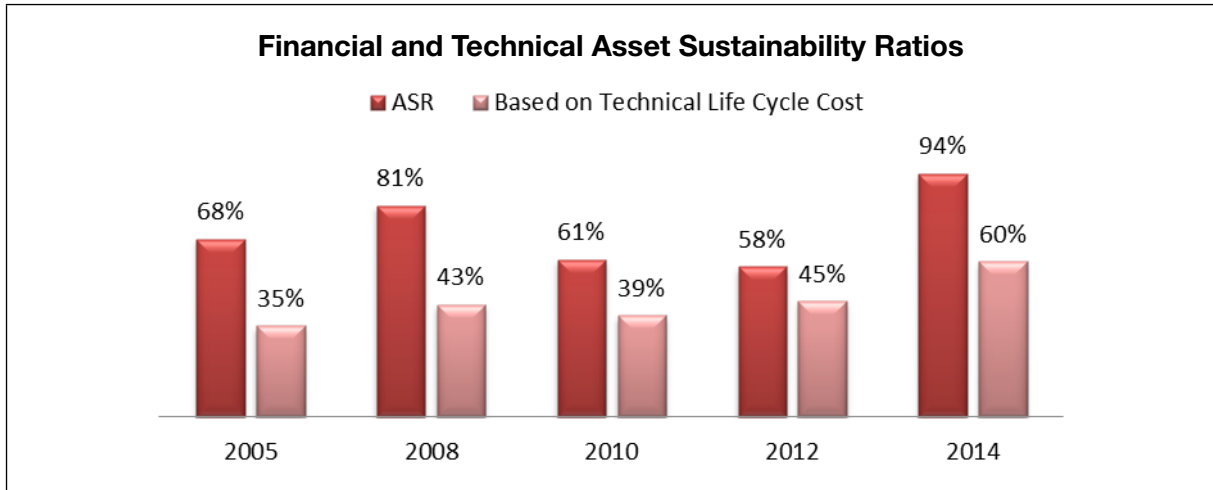


Figure XIV: Improvement in Technical and Financial Reporting of Asset Consumption 2005-2014

Reasons for the variation may include:

- some councils may be valuing assets at 'greenfield' (cost to acquire the asset in an undeveloped location) values rather than 'brownfield' (cost to replace the asset's service potential in existing location) values.
- the estimated asset useful lives used by councils for financial reporting may be based on 'industry standards', not actual performance and field operating conditions of the assets and understate depreciation expense.
- the estimated asset lives assessed by the asset managers may be based on technical measures, not community priorities/available resources and overstate the life cycle renewal cost.

The two measures of asset consumption, depreciation expense and life cycle renewal cost should be the same. Asset managers and finance managers should be providing the same information on asset consumption.

Trends in the comparison of renewal expenditure and life cycle renewal cost can be used as an indicator of whether councils are maintaining the operating capability of their assets. Over the life of the assets, asset renewal should equal asset consumption if the services from the assets are to be sustained.

The survey compared life cycle cost (maintenance plus required renewal) with life cycle expenditure. Life cycle cost and expenditure is summarised in Table 28.

**Table 28: Life Cycle Cost and Life Cycle Expenditure 2013/14**

	Sealed Roads (\$M/yr)	Unsealed Roads (\$M/yr)	Conc. Bridges (\$M/yr)	Timber bridges (\$M/yr)	Total (\$M/yr)
<b>LIFE CYCLE COST</b>					
Maintenance	\$276	\$128	\$9	\$8	\$421
Renewal (Required Capex)					
- Resurfacing (reseals)	\$211				\$211
- Pavement renewal	\$447				\$447
- Resheets		\$376			\$376
- Bridge renewal			\$63	\$9	\$72
<b>Subtotal renewal</b>	<b>\$658</b>	<b>\$376</b>	<b>\$63</b>	<b>\$9</b>	<b>\$1,106</b>
Life Cycle Cost (maint & renewal)	<b>\$934</b>	<b>\$503</b>	<b>\$72</b>	<b>\$17</b>	<b>\$1,527</b>
<b>LIFE CYCLE EXPENDITURE</b>					
Maintenance	\$276	\$128	\$9	\$8	\$421
Renewal (2013/14 Capex)					
- Resurfacing (reseals)	\$216				\$216
- Pavement renewal	\$298				\$298
- Resheets		\$86			\$86
- Bridge renewal			\$35	\$24	\$59
<b>Subtotal renewal</b>	<b>\$514</b>	<b>\$86</b>	<b>\$35</b>	<b>\$24</b>	<b>\$659</b>
Life cycle expenditure (maint & renewal)	<b>\$790</b>	<b>\$214</b>	<b>\$43</b>	<b>\$32</b>	<b>\$1,080</b>
<b>Life Cycle Exp / Life Cycle Cost</b>	<b>85%</b>	<b>42%</b>	<b>60%</b>	<b>188%</b>	<b>71%</b>

Note: Data extrapolated to 152 councils.

## 8.8 Conclusion

Present funding to meet existing service levels for NSW regional and local roads and bridges is 71% of the life cycle costs.

Funding levels have risen from 57% of life cycle costs in 2007/08, 55% in 2009/10 and 60% in 2013/14. Overall, current service and expenditure levels are not sustainable, although evidence suggests improvements in sustainability of road services in areas such as sealed surfaces.

Councils may be facing a large and increasing risk exposure at present and in the future. These risks include:

- the condition of roads and bridges infrastructure will decline,
- potential increase in personal injury and legal claims,
- road life cycle expenditure 'savings' will be passed onto road users through higher transportation operating costs,
- funding will not be available to renew ageing road and bridge assets,
- councils will not be able to provide services needed by communities in medium-long term.

Renewal costs are being transferred to the next generation.

Councils have a low level of knowledge of the load carrying capacity of bridges. This applies to only 26% of concrete bridges and 35% of timber bridges. Lack of knowledge is an additional risk to councils and inhibits community benefits from more efficient use of regional and local roads by the transport industry.

Asset consumption as reported by depreciation expense is understating the assessment of asset consumption by local road asset managers by almost 60% (50% in 2007/08, 35% in 2009/10 and 23% in 2011/12), although councils have made significant improvements in improving the consistency of technical and financial reporting of infrastructure consumption.

## 8.9 Managing the Gap

The Gap consists of several components as shown in Fig XV. Each gap component requires a different approach to manage the gap and move towards sustainable service provision. Table 29 summarises the recommended management treatments to 'manage out' the funding gap.

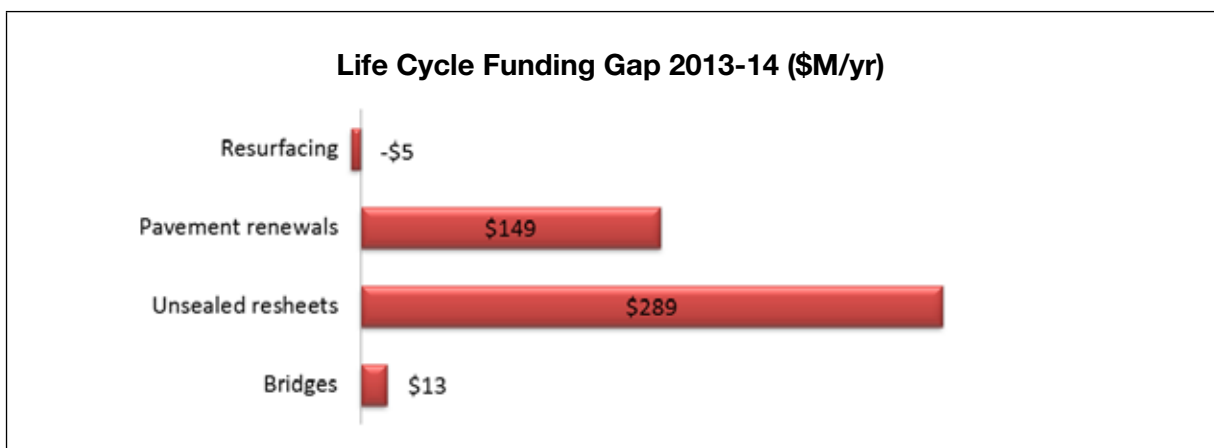


Figure XV: Life Cycle Funding Gap Components 2013/14

**Table 29: Life Cycle Funding Gap Components and Asset Management Treatments**

Gap Component	Gap (\$M / yr)				Asset Management Treatment
	2007/08	2009/10	2011/12	2013/14	
Resurfacing	\$187	\$230	\$171	- \$5	<ul style="list-style-type: none"> <li>Increased knowledge of asset performance and useful life,</li> <li>Develop and use resurfacing treatments that result in reduced life cycle cost,</li> <li>Increase funding to finance life cycle cost.</li> </ul>
Pavement renewal	\$303	\$316	\$293	\$149	<ul style="list-style-type: none"> <li>Increase knowledge of asset performance and useful life,</li> <li>Develop and use optimum (low cost) renewal methods,</li> <li>Develop renewal projections and funding plan and document in Road Asset Management Plan</li> </ul>
Unsealed resheeting	\$124	\$131	\$103	\$289	<ul style="list-style-type: none"> <li>Increase knowledge of asset performance and useful life,</li> <li>Develop/review road hierarchy and service levels for maintenance and resheeting to suit available resources.</li> <li>Develop resheet projections and funding plan and document in Road Asset Management Plan</li> </ul>
Bridges	\$4	- \$3	\$30	\$13	<ul style="list-style-type: none"> <li>Increase knowledge of asset performance and useful life,</li> <li>Develop/review road hierarchy and service levels to suit available resources.</li> <li>Develop renewal projections and funding plan and document in Road Asset Management Plan</li> </ul>
<b>Total</b>	<b>\$618</b>	<b>\$674</b>	<b>\$597</b>	<b>\$447</b>	

The investment of \$680 million on new assets and upgrading of existing assets in 2013/14 shown in Table 20 and below will add to the future life cycle cost and potentially add to the funding gap.

Contributed by Others	\$13 M
Upgrade & New Roads	\$332 M
Upgrade & New Bridges	\$167 M
<b>Total</b>	<b>\$512 M</b>

This is estimated to add \$12.8 M to operating costs for roads and bridges in 2014/15 and following years.<sup>11</sup>

<sup>11</sup> Calculation \$512M x 2.5% (0.7% maintenance [ref Table F2] + 1.8% depreciation [ref Table 12])

## 9. Improvement Indicators

The initiative of the Roads and Transport Directorate to repeat the 2004-05 Road Asset Benchmarking Survey every two years provides the opportunity to report on whether councils had made any progress in:

- managing the road assets, and
- improving their asset management knowledge and capability.

The assessment of performance indicators is undertaken in these two areas.

### 9.1 Managing Road Assets

#### Performance measure 1.1 Funding of Life Cycle Cost

Road asset sustainability measures funding of life cycle cost of providing the service. For sustainability in providing services from infrastructure, funding of the life cycle cost is required on average over the life cycle. An increase in the sustainability measure indicates an increase in funding of the life cycle cost.

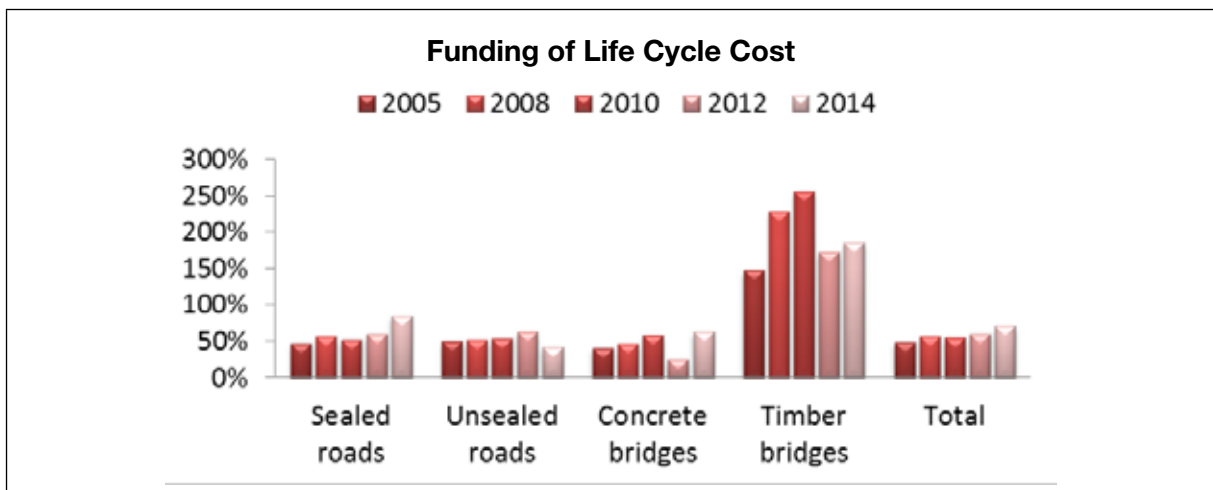


Figure XVI: Road & Bridge Asset Sustainability 2005-2014

Funding of the life cycle costs of road and bridge assets has increased from 49% of life cycle cost in 2005 to 71% in 2014.

The sustainability of sealed and unsealed roads increased in the period with concrete and timber bridges seeing a significant reduction in sustainability funding. Timber bridges continue to be funded at well above life cycle cost as a consequence of allowing ageing timber bridges to deteriorate to levels requiring expenditure well above the life cycle cost.

Similar funding levels above life cycle costs may be required for other road assets at some time in the future.

Developing asset management and risk management plans and long-term financial plans will assist in managing the financial impact of deteriorating assets and potential reduction in service levels.

**Performance measure 1.2 Road & bridge asset life cycle funding gap**

The road asset life cycle funding gap is a snapshot of the gap between life cycle costs and annual expenditure.

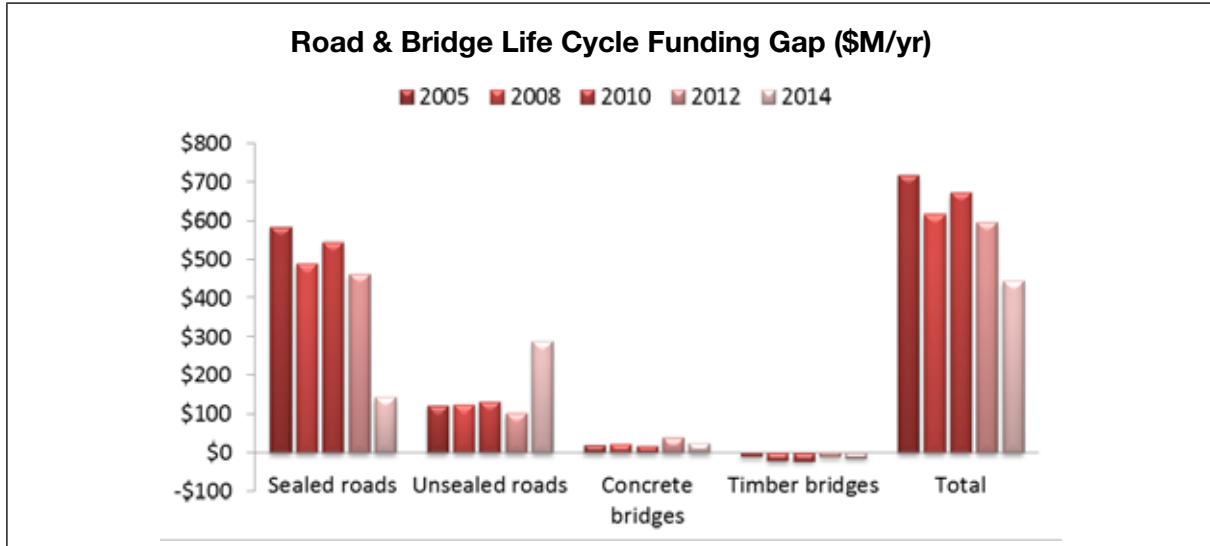


Figure XVII: Road & Bridge Life Cycle Funding Gap 2005-2014

The Roads and Bridges life cycle funding gap has decreased from \$718 million in 2005 to \$447 in 2014, a reduction of 38% from 2005.

Sealed roads saw a reduction in life cycle funding gap of \$320 million from \$464 million in 2012 to \$144 million in 2014. The funding gap for unsealed roads has increased and concrete and timber bridges has decreased with timber bridge funding consistently above the life cycle cost.

**Performance measure 1.3 Road & Bridges Asset Consumption Ratio**

The Asset Consumption Ratio indicator gives a snapshot of the average proportion of ‘as new’ condition left in assets.<sup>12</sup>

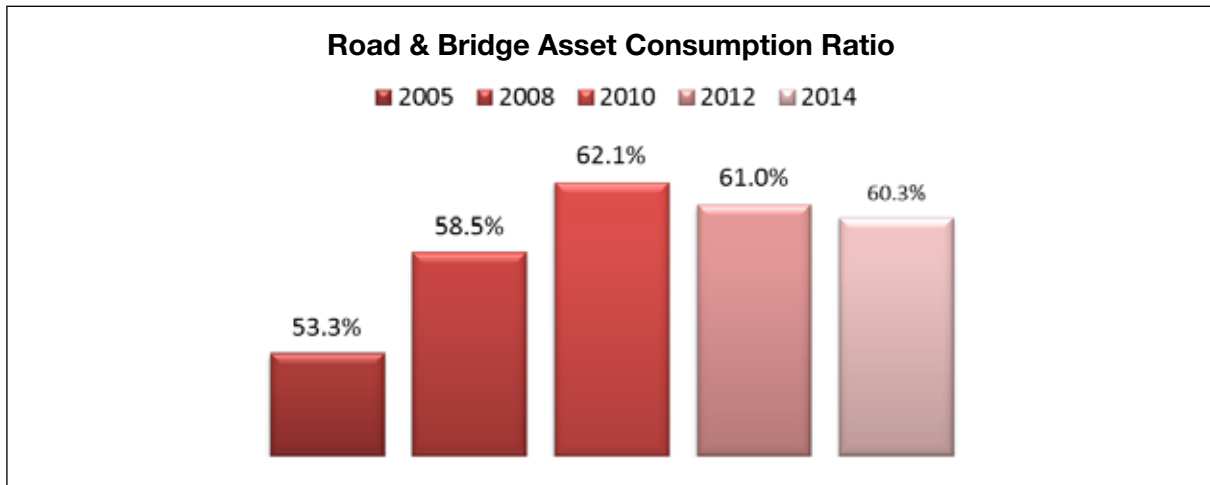


Figure XVIII: Road & Bridges Asset Consumption Ratio 2005-2014

Figure XVIII indicates that the asset consumption ratio (average proportion of ‘as new’ condition) of road and bridge assets has increased since 2005. In 2010, road and bridge assets had 62.1% of their service life remaining. The remaining service reduced to 60.3% in 2014 indicating an overall ‘ageing’ of the assets.

12 IPWEA, 2012, AIFMG V1.3, Financial Sustainability Indicator 8, p 2.19. Calculation (DRC-RV)/Dep. Amount)

If a council is operating sustainably, with asset renewal equal to asset consumption and annual revaluation of assets, the change in the Asset Consumption Ratio indicator would be due to the value of contributed assets.

A council that is renewing assets at a rate less than consumption and with no or limited contributed growth assets should see its Asset Consumption Ratio indicator reducing.

**Performance measure 1.4 Road & Bridges Asset Sustainability Ratio**

For sustainability, asset renewals should equal asset consumption on average over the life of the assets. The Asset Sustainability Ratio measures whether assets are being replaced at the rate they are wearing out. It is the ratio of asset replacement expenditure relative to depreciation for a period.

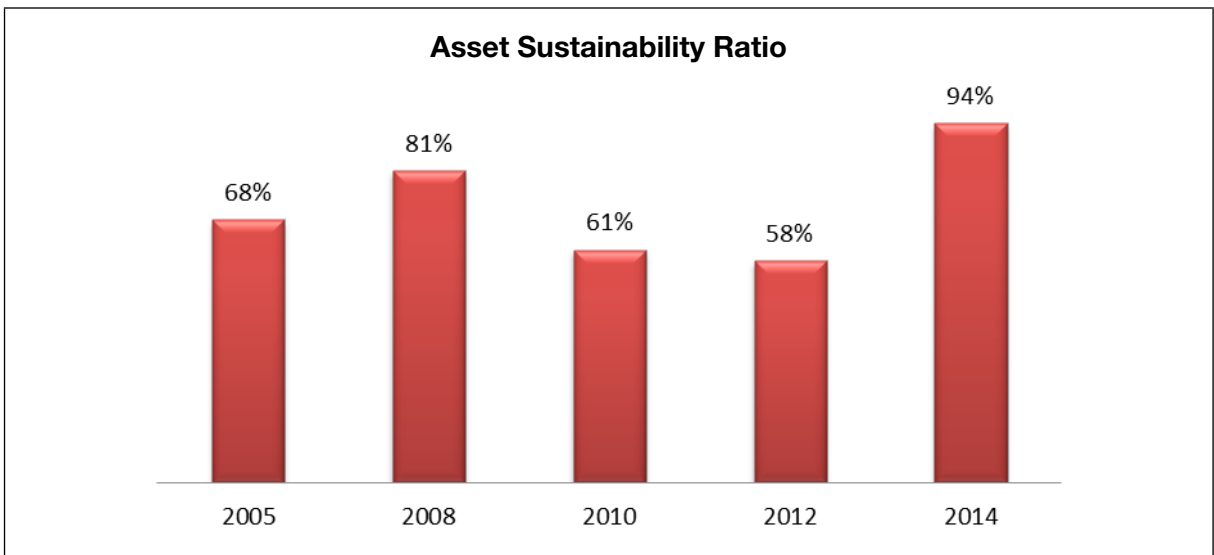


Figure XIX: Road & Bridges Asset Sustainability Ratios 2005-2014

The Asset Sustainability Ratio has increased to 94% in 2014 from 58% in 2012.

Calculating the Asset Sustainability Ratio using technical life cycle cost, discussed in Section 8.7 gives a different result as shown in Figure XX

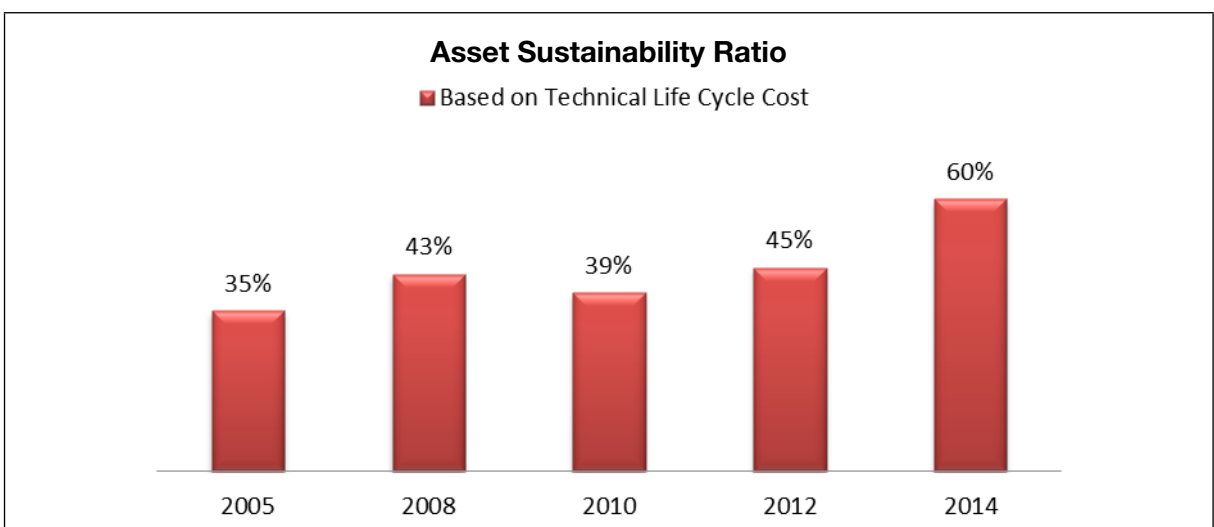


Figure XX: Asset Sustainability Ratios based on Technical Estimates

A technically based Asset Sustainability Ratio has increased from 45% in 2011/12 to 60% in 2013/14.

This supports the need for technical and financial estimates of asset consumption as discussed in Section 8.7, to be in alignment.

## 9.2 Improving Asset Management Knowledge and Capability

### Performance Measure 2.1 Capacity to Complete Benchmarking Survey

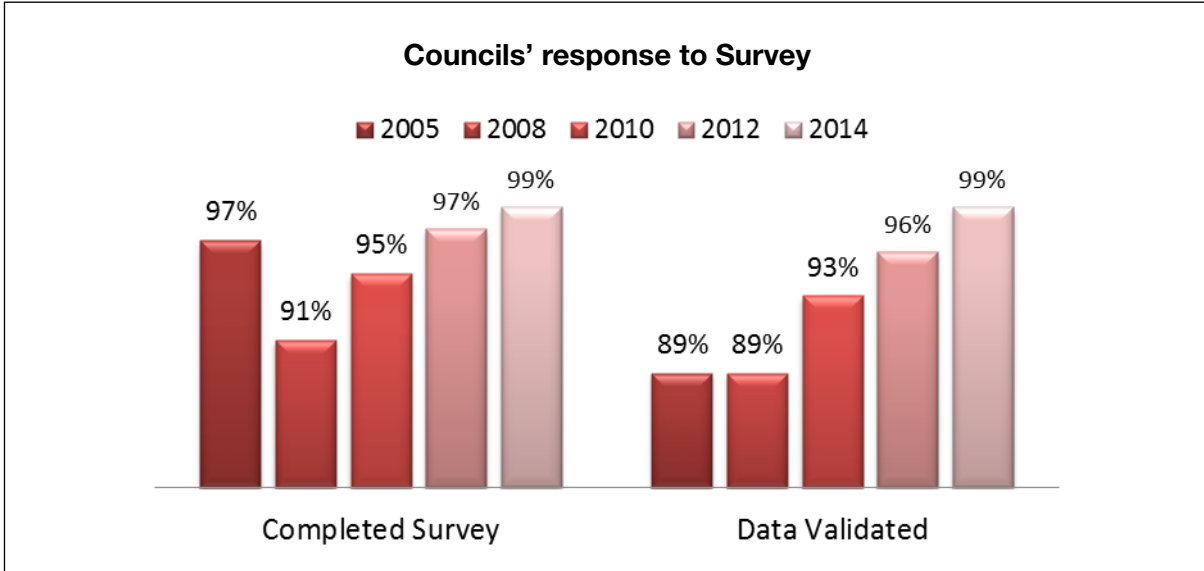


Figure XXI: Capacity to Complete Benchmarking Survey 2005-2014

Figure XXI indicates that the number of councils providing data to the benchmarking survey increased from 97% in 2012 to 99% in 2014. The number of validated survey forms has increased from 96% to 97%.

### Performance measure 2.2 Use of IIMM principles

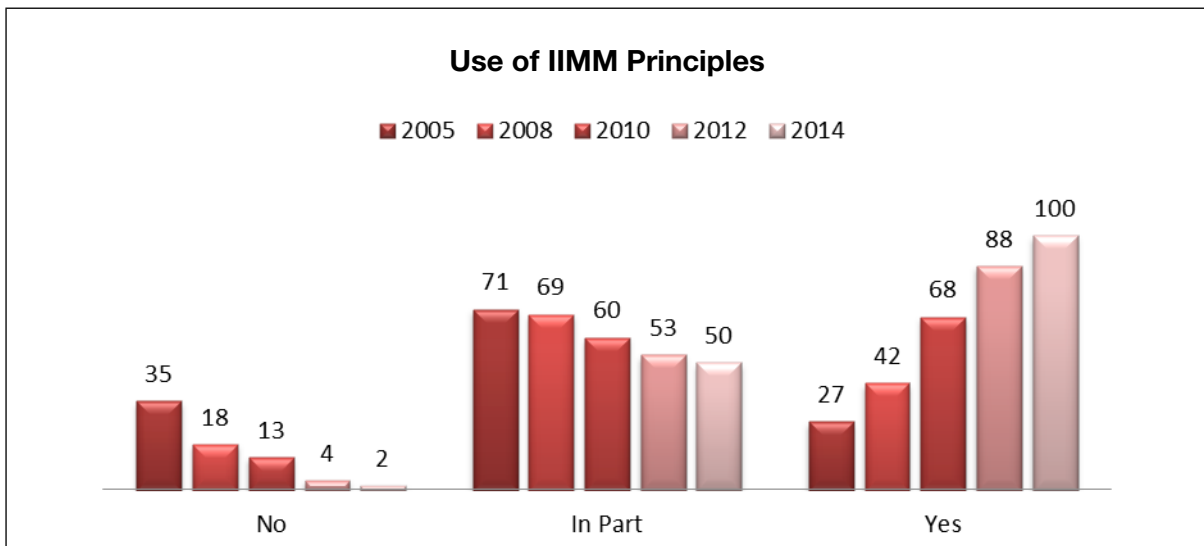


Figure XXII: Use of IIMM principles 2005-2014

Figure XXII indicates that the number of councils adopting the international reference manual for asset management, IPWEA's *International Infrastructure Management Manual* to guide their asset management practices has increased from 88 in 2012 to 100 in 2014, an increase of 14%.

**Performance measure 2.3 Adoption of road asset management plans**

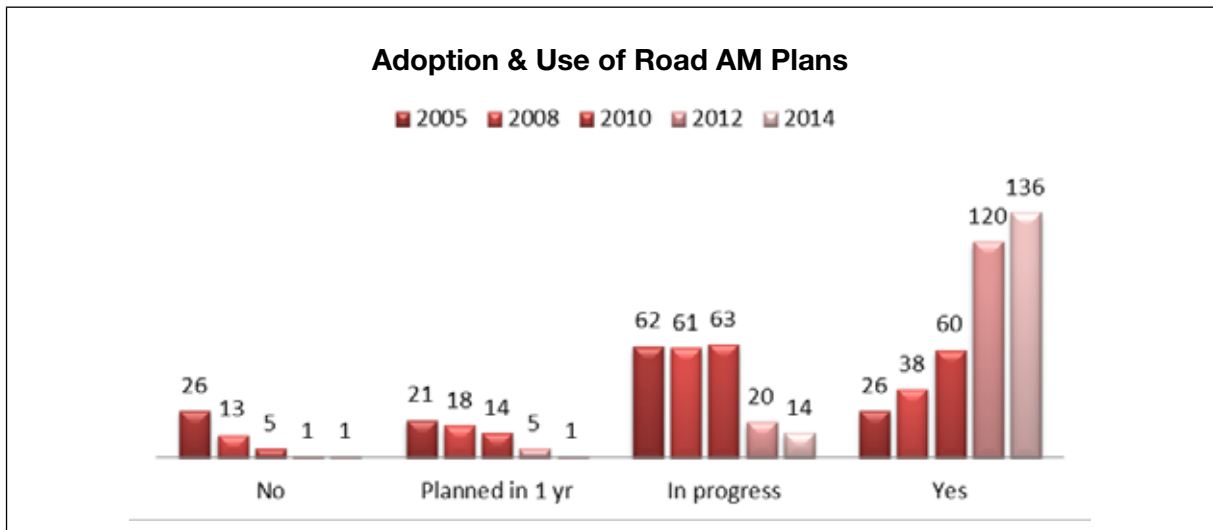


Figure XXIII: Adoption and Use of Road Asset Management Plans 2005-2014

The number of councils who have adopted road asset management plans has increased by 13% from 120 in 2012 to 136 in 2014.

**Performance measure 2.4 Management of road related risks**



Figure XXIV: System for Managing Road Related Risks 2005-2014

Fig XXIV illustrates an increased number of councils have adopted systems for managing road related risks either in a corporate risk management system or in an adopted road asset management plan. 107 councils have such a system in 2014 compared to 97 in 2012. This represents a 10% increase from 2012.

**Performance measure 2.5 Use of long-term financial plans**

A long-term financial plan provides a long term strategy to balance competing priorities with the available finance.

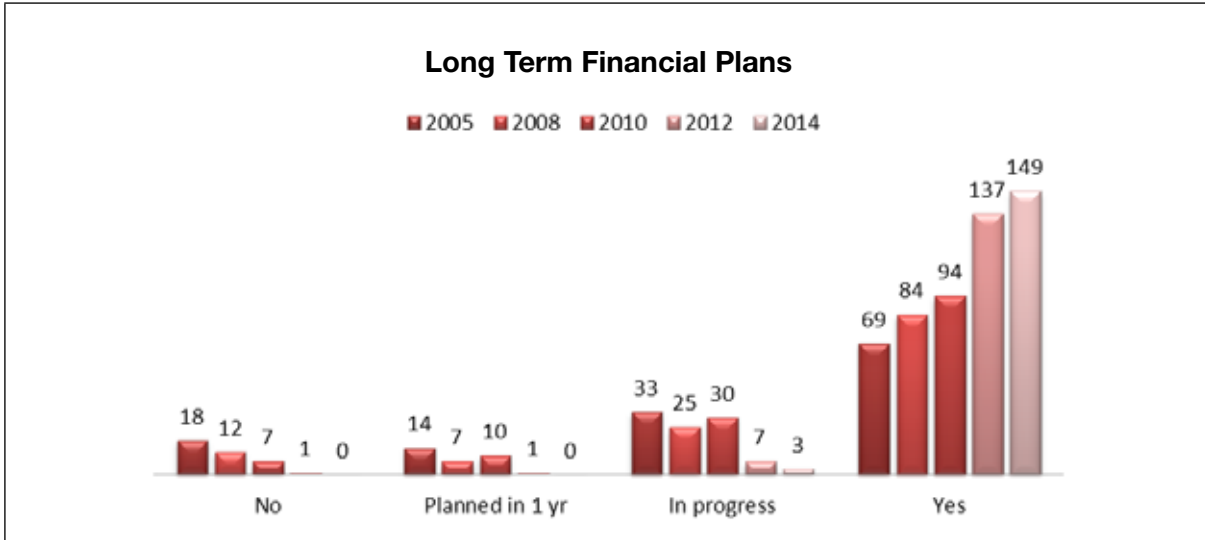


Figure XXV: Use of Long-Term Financial Plans 2005-2014

The use of long-term financial plans by NSW councils has increased from 137 in 2012 to 149 in 2014. This is an increase of 9% from the 2012 capability levels as illustrated in Fig XXV.

**Performance measure 2.6 Period of long-term financial plans**

For councils providing services from infrastructure a long-term plan covering a period of at least 10 years is recommended.<sup>13</sup>

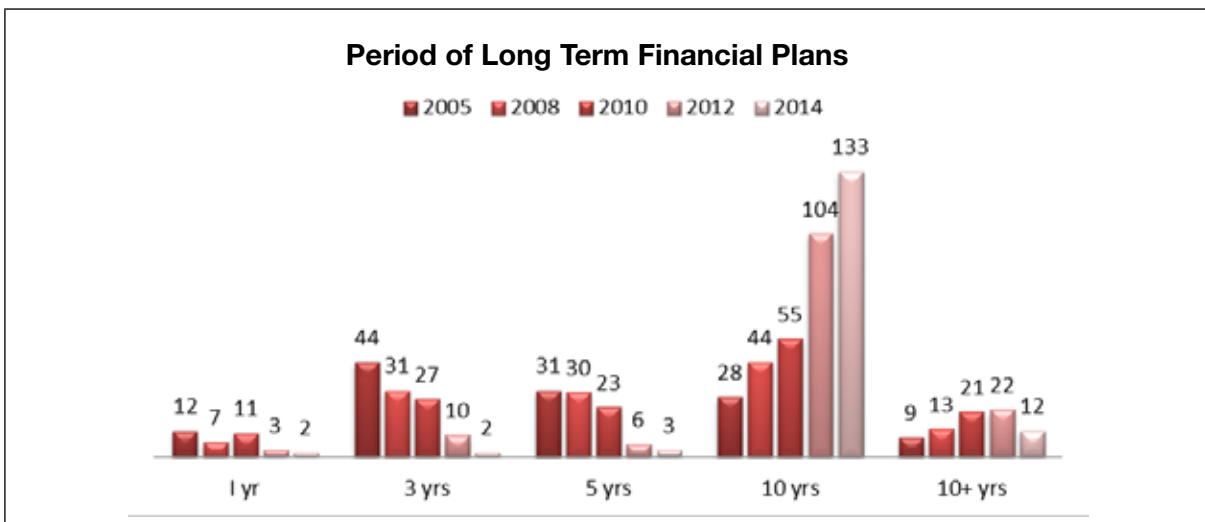


Figure XXVI: Period of Long-Term Financial Plans 2005-2014

Fig XXVI indicates that councils are making good progress in long-term financial planning. 126 councils in 2012 had long-term financial plans of at least 10 years. This has increased to 145 in 2014, an increase of 15% from 2012.

<sup>13</sup> DLG, 2006, Recommendation 6, p 19.

**Performance measure 2.7 Infrastructure effects in long-term financial plans**

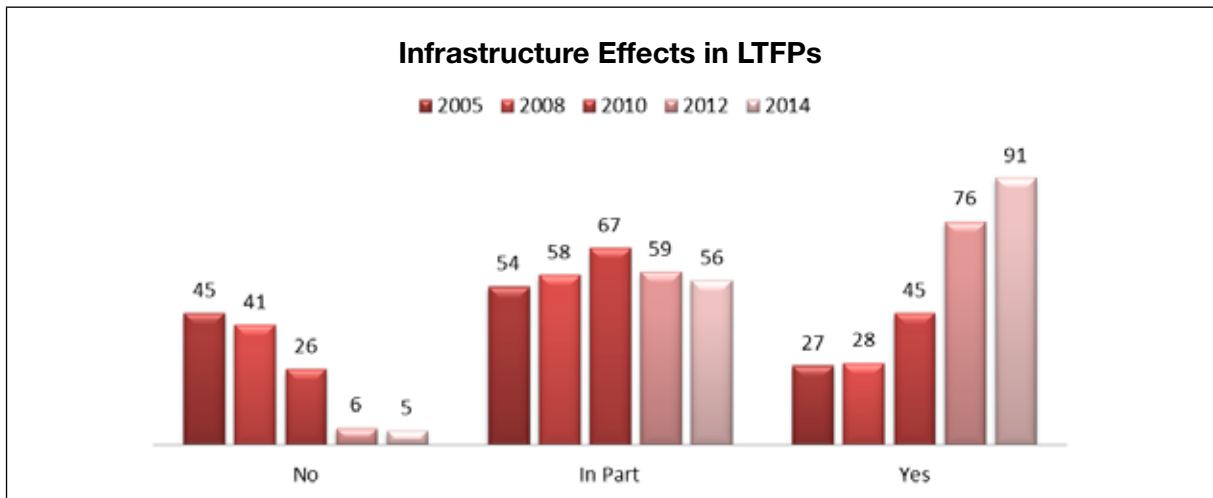


Figure XXVII: Infrastructure Effects in Long-Term Financial Plans 2005-2014

Recognition of infrastructure effects in long-term financial plans has increased from 2012 with an additional 15 councils recognising the financial effects of infrastructure effects including renewal of assets, provision of growth and life cycle costs for new assets. This is a 20% increase in capability as shown in Fig XXVII.

### 9.3 Improvement Assessment

Table 30 summarises the assessment of whether councils have improved their asset management practices, knowledge and capacity to manage their timber bridges.

Of the eleven (11) improvement indicators, ten (10) show a positive improvement in road and bridge management practices over the period 2012 to 2014.

The indicators showing a decrease in improvement are those relating to funding of asset renewal.

The indicators showing an improvement are those related to Councils' asset management practices.

It is clear that Councils have made major improvements in their asset and financial management capacity since 2012.

**Table 30: Road & Bridge Asset Management Improvement Assessment**

Performance Indicator		Improvement	Comment
<b>Managing Road &amp; Bridge Assets</b>			
1.1	Funding of Life Cycle Cost	Yes	Funding of life cycle costs has increased from 49% of life cycle cost in 2005 to 71% in 2014.
1.2	Road & bridge asset life cycle funding gap	Yes	The funding gap has decreased from \$718 million in 2005 to \$446 in 2014, a reduction of 38% from 2005..
1.3	Road & bridge asset consumption ratio	No	The average proportion of 'as new' condition left in the assets has fallen from 61.0% in 2012 to 60.3% in 2014 indicating an overall 'ageing' of the assets.
1.4	Road & bridge asset sustainability ratio	Yes	Asset Sustainability Ratio has increased to 94% in 2014 from 58% in 2012.
<b>Knowledge and Capacity</b>			
2.1	Capacity to complete benchmarking survey	Yes	Overall response rate has increased by 2% since the 2012 survey. 99% of councils completed the benchmarking survey.
2.2	Use of IIMM principles	Yes	14% increase from 2012.
2.3	Adoption of road asset management plans	Yes	13% increase from 2012.
2.4	Management of road related risks	Yes	10% increase from 2012.
2.5	Use of long-term financial plans	Yes	9% increase from 2012.
2.6	Period of long-term financial plans	Yes	15% increase from 2012.
2.7	Infrastructure effects in long-term financial plans	Yes	20% increase from 2012.

## 10. Recommendations

The Final Report<sup>14</sup> of the Independent Inquiry into the Financial Sustainability of Local Government identified that councils in NSW have a “huge backlog in infrastructure renewals (over \$6 billion), which is expected to grow to almost \$21 billion within 15 years”. The report highlighted challenges for councils in “managing rising community expectations, maintaining existing service commitments in the face of a huge infrastructure bill and constraints on rate income” and “overcoming skills shortages”.

The Australian Local Government Association reported a shortfall of \$17,664 million for maintenance and renewal expenditure for local roads in Australia for the period 2010 – 2024 equivalent to an increase of 39% over estimated available funding levels for the period.<sup>15</sup>

This 2014 Road Asset Benchmarking report found that NSW councils are responsible for managing 163,850 km of regional and local roads and 10,067 bridges with a replacement cost of \$65.7 billion. The life cycle cost of the road and bridge network is estimated at \$1.5 billion per annum for 2013/14. Expenditure of \$1.08 billion was 71% of the life cycle cost. Current service levels and expenditure levels are not sustainable.

As a result, competition for adequate funding to maintain council's infrastructure assets is also under pressure. However, it is of critical importance that councils:

- identify their infrastructure assets and the current condition of such assets,
- implement life cycle asset management plans,
- provide adequate funding to maintain and renew what are in effect their community's greatest financial assets.

To this end it is recommended that:

1. Council prioritise existing funding and seek additional funds for regional and local roads to allow road resurfacing/ resealing works to be undertaken at the optimum time to prevent loss of sealed pavement integrity and minimise future sealed pavement replacement/renewal costs.
2. Councils continue to improve their asset management capability to a position that will enable them to provide services to their communities in a sustainable manner. The survey analysis indicated that the current level of road infrastructure services that councils are currently providing to their communities is not sustainable.
3. Councils maintain and improve their Integrated Planning & Reporting Framework systems and documentation to provide evidence that they can provide a sustainable level of service for road and bridge services to their communities.
4. Councils use the road management model in the survey form as a tool to manage road infrastructure services and life cycle costs. This to be achieved by improving knowledge of assets and asset performance, developing road hierarchies and appropriate service levels, increasing funding for sealed resurfacing/ resealing and unsealed road resheeting to the life cycle cost and managing pavement and bridge renewals through asset management plans.
5. Councils set a target to ‘manage out’ the annual life cycle funding gap of \$447 M within a 10 year timeframe and report biennially on performance of the industry towards the target.
6. Councils continue with actions to improve the accuracy of financial reporting of infrastructure asset consumption and set a target to have technical and financial estimates of infrastructure consumption within 10% of each other within a 2 year timeframe.

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14 Local Govt Association of NSW & Shires Association of NSW, May 2006.

15 JRA, 2010, Figure 41, p 30.

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# Appendices

Appendix A	Councils by IPWEA Region
Appendix B	Asset Management Practices by IPWEA Region
Appendix C	Road and Bridge Inventory by IPWEA Region
Appendix D	Response from Councils
Appendix E	Cost Distributions by IPWEA Region
Appendix F	Asset Values, Maintenance and Renewal Rates by Region
Appendix G	Road Renewal Cost and Estimated Useful Life Distributions
Appendix H	Bridge Renewal Cost and Estimated Useful Life Distributions

## Appendix A Councils by IPWEA Region

### A1. Councils by IPWEA Region 2013/14

Region & Council	N°
<b>Central West</b>	<b>13</b>
Bathurst Regional Council	
Blayney Shire Council	
Cabonne Shire Council	
Cowra Shire Council	
Forbes Shire Council	
Lachlan Shire Council	
Lithgow City Council	
Mid-Western Regional Council	
Oberon Council	
Orange City Council	
Parkes Shire Council	
Weddin Shire Council	
Young Shire Council	
<b>Hunter</b>	<b>11</b>
Cessnock City Council	
Dungog Shire Council	
Gosford City Council	
Lake Macquarie City Council	
Maitland City Council	
Muswellbrook Shire Council	
Newcastle City Council	

Region & Council	N°
Port Stephens Council	
Singleton Council	
Upper Hunter Shire Council	
Wyong Shire Council	
<b>Illawarra</b>	<b>6</b>
Kiama Municipal Council	
Shellharbour City Council	
Shoalhaven City Council	
Wingecarribee Shire Council	
Wollondilly Shire Council	
Wollongong City Council	
<b>Metro North</b>	<b>12</b>
Hornsby Shire Council	
Hunters Hill Council	
Ku-ring-gai Council	
Lane Cove Municipal Council	
Manly Council	
Mosman Municipal Council	
North Sydney Council	
Pittwater Council	
Ryde City Council	
The Hills Shire Council	

Region & Council	N°
Warringah Council	
Willoughby City Council	
<b>Metro South</b>	<b>15</b>
Ashfield Municipal Council	
Botany Bay City Council	
Burwood Council	
Canada Bay Council	
Canterbury City Council	
Hurstville City Council	
Kogarah City Council	
Leichhardt Municipal Council	
Marrickville Council	
Randwick City Council	
Rockdale City Council	
Sutherland Shire Council	
Sydney City Council	
Waverley Council	
Woollahra Municipal Council	
<b>Metro West</b>	<b>13</b>
Auburn City Council	
Bankstown City Council	
Blacktown City Council	
Blue Mountains City Council	
Camden Council	
Campbelltown City Council NSW	
Fairfield City Council	
Hawkesbury City Council	
Holroyd City Council	
Liverpool City Council	
Parramatta City Council	
Penrith City Council	
Strathfield Municipal Council	
<b>Mid North Coast</b>	<b>8</b>
Bellingen Shire Council	
Coffs Harbour City Council	

Region & Council	N°
Gloucester Shire Council	
Great Lakes Council	
Greater Taree City Council	
Kempsey Shire Council	
Nambucca Shire Council	
Port Macquarie-Hastings Council	
<b>New England</b>	<b>13</b>
Armidale Dumaresq Council	
Glen Innes Severn Council	
Gunnedah Shire Council	
Guyra Shire Council	
Gwydir Shire Council	
Inverell Shire Council	
Liverpool Plains Shire Council	
Moree Plains Shire Council	
Narrabri Shire Council	
Tamworth City Council	
Tenterfield Shire Council	
Uralla Shire Council	
Walcha Council	
<b>North Coast</b>	<b>7</b>
Ballina Shire Council	
Byron Shire Council	
Clarence Valley Council	
Kyogle Council	
Lismore City Council	
Richmond Valley Council	
Tweed Shire Council	
<b>Orana</b>	<b>14</b>
Bogan Shire Council	
Bourke Shire Council	
Brewarrina Shire Council	
Broken Hill City Council	
Central Darling Shire Council	
Cobar Shire Council	

Region & Council	N°
Coonamble Shire Council	
Dubbo City Council	
Gilgandra Shire Council	
Narromine Shire Council	
Walgett Shire Council	
Warren Shire Council	
Warrumbungle Shire Council	
Wellington Council	
<b>South East</b>	<b>11</b>
Bega Valley Shire Council	
Bombala Council	
Boorowa Council	
Cooma-Monaro Shire Council	
Eurobodalla Shire Council	
Goulburn Mulwaree Council	
Palerang Council	
Queanbeyan City Council	
Snowy River Shire Council	
Upper Lachlan Shire Council	
Yass Valley Council	
<b>South West</b>	<b>29</b>
Albury City Council	
Balranald Shire Council	
Berrigan Shire Council	
Bland Shire Council	
Carrathool Shire Council	
Conargo Shire Council	
Coolamon Shire Council	
Cootamundra Shire Council	
Corowa Shire Council	
Deniliquin Council	
Greater Hume Shire Council	
Griffith City Council	
Gundagai Shire Council	

Region & Council	N°
Harden Shire Council	
Hay Shire Council	
Jerilderie Shire Council	
Junee Shire Council	
Leeton Shire Council	
Lockhart Shire Council	
Murray Shire Council	
Murrumbidgee Shire Council	
Narrandera Shire Council	
Temora Shire Council	
Tumbarumba Shire Council	
Tumut Shire Council	
Urana Shire Council	
Wagga Wagga City Council	
Wakool Shire Council	
Wentworth Shire Council	
<b>Grand Total</b>	<b>152</b>

## Appendix B Asset Management Practices by IPWEA Region

### B1. Use of International Infrastructure Management Manual Principles 2013/14

Region	No	In part	Yes	Total
Central West	0	2	11	13
Hunter	0	5	6	11
Illawarra	0	1	5	6
Metro North	0	3	9	12
Metro South	0	4	11	15
Metro West	1	2	10	13
Mid North Coast	1	4	3	8
New England	0	6	7	13
North Coast	0	2	5	7
Orana	0	8	6	14
South East	0	4	7	11
South West	0	9	20	29
<b>Total</b>	<b>2</b>	<b>50</b>	<b>100</b>	<b>152</b>
<b>Percent of total</b>	<b>1%</b>	<b>33%</b>	<b>66%</b>	<b>100%</b>

### B2. Adoption and Use of Road Asset Management Plans 2013/14

Region	No	Planned in 1 yr	In progress	Yes	Total
Central West	0	0	0	13	13
Hunter	1	0	1	9	11
Illawarra	0	0	2	4	6
Metro North	0	0	0	12	12
Metro South	0	0	2	13	15
Metro West	0	0	2	11	13
Mid North Coast	0	0	1	7	8
New England	0	0	1	12	13
North Coast	0	0	0	7	7
Orana	0	0	2	12	14
South East	0	0	2	9	11
South West	0	1	1	27	29
<b>Total</b>	<b>1</b>	<b>1</b>	<b>14</b>	<b>136</b>	<b>152</b>
<b>Percent of total</b>	<b>1%</b>	<b>1%</b>	<b>9%</b>	<b>89%</b>	<b>100%</b>

**B3. Use of Documented System for Managing Road Related Risk 2013/14**

Region	No	Planned in 1 yr	In progress	Yes	Total
Central West	0	1	2	10	13
Hunter	0	0	2	9	11
Illawarra	0	0	1	5	6
Metro North	0	0	2	10	12
Metro South	0	0	2	13	15
Metro West	0	0	3	10	13
Mid North Coast	0	0	3	5	8
New England	2	1	4	6	13
North Coast	0	0	1	6	7
Orana	0	0	7	7	14
South East	0	0	4	7	11
South West	0	1	9	19	29
<b>Total</b>	<b>2</b>	<b>3</b>	<b>40</b>	<b>107</b>	<b>152</b>
<b>Percent of total</b>	<b>1%</b>	<b>2%</b>	<b>26%</b>	<b>70%</b>	<b>100%</b>

**B4. Membership of IPWEA NAMS.PLUS guided pathway for Asset Management 2013/14**

Region	No	Planned in 1 Yr	Yes	Total
Central West	1	0	12	13
Hunter	1	0	10	11
Illawarra	0	0	6	6
Metro North	1	0	11	12
Metro South	0	0	15	15
Metro West	0	0	13	13
Mid North Coast	0	0	8	8
New England	1	0	12	13
North Coast	2	0	5	7
Orana	0	0	14	14
South East	1	0	10	11
South West	3	1	25	29
<b>Total</b>	<b>10</b>	<b>1</b>	<b>141</b>	<b>152</b>
<b>Percent of total</b>	<b>7%</b>	<b>1%</b>	<b>93%</b>	<b>100%</b>

**B5. Use of Long Term Financial Plan 2013/14**

Region	No	Planned in 1 Year	In progress	Yes	Total
Central West	0	0	1	12	13
Hunter	0	0	0	11	11
Illawarra	0	0	0	6	6
Metro North	0	0	0	12	12
Metro South	0	0	1	14	15
Metro West	0	0	0	13	13
Mid North Coast	0	0	0	8	8
New England	0	0	1	12	13
North Coast	0	0	0	7	7
Orana	0	0	0	14	14
South East	0	0	0	11	11
South West	0	0	0	29	29
<b>Total</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>149</b>	<b>152</b>
<b>Percent of total</b>	<b>0%</b>	<b>0%</b>	<b>2%</b>	<b>98%</b>	<b>100%</b>

**B6. Planning period of Long Term Financial Plans 2013/14**

Region	1 yr	3 yrs	5 yrs	10 yrs	10+ yrs	Total
Central West	0	1	0	10	2	13
Hunter	0	1	0	10	0	11
Illawarra	0	0	0	6	0	6
Metro North	0	0	0	10	2	12
Metro South	1	0	0	9	5	15
Metro West	0	0	0	13	0	13
Mid North Coast	0	0	0	8	0	8
New England	1	0	0	12	0	13
North Coast	0	0	0	6	1	7
Orana	0	0	0	13	1	14
South East	0	0	0	10	1	11
South West	0	0	3	26	0	29
<b>Total</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>133</b>	<b>12</b>	<b>152</b>
<b>Percent of total</b>	<b>1%</b>	<b>1%</b>	<b>2%</b>	<b>88%</b>	<b>8%</b>	<b>100%</b>

## B7. Infrastructure Effects in Long Term Financial Plans 2013/14

Region	No	In part	Yes	Total
Central West	0	6	7	13
Hunter	0	3	8	11
Illawarra	0	3	3	6
Metro North	0	2	10	12
Metro South	1	3	11	15
Metro West	1	2	10	13
Mid North Coast	1	6	1	8
New England	1	4	8	13
North Coast	1	4	2	7
Orana	0	5	9	14
South East	0	7	4	11
South West	0	11	18	29
<b>Total</b>	<b>5</b>	<b>56</b>	<b>91</b>	<b>152</b>
<b>Percent of total</b>	<b>3%</b>	<b>37%</b>	<b>60%</b>	<b>100%</b>

## Appendix C Road and Bridge Inventory by IPWEA Region

### C1. Road Lengths 2013/14

Region	Road Length in km						Total
	Regional Roads			Local Roads			
	Sealed	Unsealed	Subtotal	Sealed	Unsealed	Subtotal	
Central West	1,922	147	2,069	6,644	11,249	17,893	19,963
Hunter	871	13	884	7,490	2,184	9,674	10,558
Illawarra	473	39	511	4,286	746	5,031	5,543
Metro North	288	1	289	3,614	62	3,676	3,965
Metro South	254	0	254	3,360	0	3,360	3,614
Metro West	583	35	618	7,742	365	8,106	8,724
Mid North Coast	697	0	697	3,850	3,529	7,379	8,076
New England	2,109	192	2,302	5,438	14,297	19,735	22,037
North Coast	887	48	935	4,563	3,089	7,651	8,587
Orana	2,580	1,978	4,558	3,813	15,613	19,426	23,983
South East	1,240	230	1,470	4,302	5,967	10,269	11,739
South West	3,213	517	3,731	10,784	22,547	33,331	37,062
<b>Total</b>	<b>15,117</b>	<b>3,201</b>	<b>18,317</b>	<b>65,885</b>	<b>79,647</b>	<b>145,533</b>	<b>163,850</b>

Note: Data for all 152 councils

## C2. Bridge Inventory 2013/14

Region	No. of Bridges							Total
	Regional Roads			Local Roads				
	Conc.	Timber	Subtotal	Conc.	Timber	Subtotal		
Central West	208	5	213	640	68	708	921	
Hunter	149	3	152	590	162	752	904	
Illawarra	62	2	64	380	47	427	491	
Metro North	17	0	17	69	3	72	89	
Metro South	27	0	27	84	0	84	111	
Metro West	137	0	137	455	11	466	603	
Mid North Coast	169	13	182	740	667	1,407	1,589	
New England	432	4	436	677	209	886	1,322	
North Coast	186	18	204	669	392	1,061	1,265	
Orana	235	7	242	327	33	360	602	
South East	286	20	306	584	170	754	1,060	
South West	283	5	288	767	55	822	1,110	
<b>Total</b>	<b>2,191</b>	<b>77</b>	<b>2,268</b>	<b>5,982</b>	<b>1,817</b>	<b>7,799</b>	<b>10,067</b>	

Note: Data for all 152 councils

## C3. Knowledge of Bridge Load Capacity 2013/14

Region	No. of Bridges								
	Regional Roads				Local Roads				Total
	Conc.	%	Timber	%	Conc.	%	Timber	%	
Central West	37	18%	0	0%	168	26%	24	35%	25%
Hunter	65	44%	0	0%	129	22%	41	25%	26%
Illawarra	18	29%	0	0%	61	16%	6	13%	17%
Metro North	6	35%	0	NA	16	23%	1	33%	26%
Metro South	1	4%	0	NA	0	0%	0	NA	1%
Metro West	6	4%	0	NA	20	4%	1	9%	4%
Mid North Coast	49	29%	3	23%	113	15%	121	18%	18%
New England	209	48%	4	100%	388	57%	97	46%	53%
North Coast	29	16%	5	28%	139	21%	186	47%	28%
Orana	31	13%	3	43%	45	14%	11	33%	15%
South East	137	48%	17	85%	270	46%	133	78%	53%
South West	55	19%	1	20%	140	18%	14	25%	19%
<b>Grand Total</b>	<b>643</b>	<b>29%</b>	<b>33</b>	<b>43%</b>	<b>1,489</b>	<b>25%</b>	<b>635</b>	<b>35%</b>	<b>28%</b>

## Appendix D Response from Councils

Council	Survey Form Received	Survey Form Validated
1. Albury City Council	x	x
2. Armidale Dumaresq Council	x	x
3. Ashfield Municipal Council	x	x
4. Auburn Council	x	x
5. Ballina Shire Council	x	x
6. Balranald Shire Council	x	x
7. Bankstown City Council	x	x
8. Bathurst Regional Council	x	x
9. Baulkham Hills Shire Council	x	x
10. Bega Valley Shire Council	x	x
11. Bellingen Shire Council	x	x
12. Berrigan Shire Council	x	x
13. Blacktown City Council	x	x
14. Bland Shire Council	x	x
15. Blayney Shire Council	x	x
16. Blue Mountains City Council	x	x
17. Bogan Shire Council	x	x
18. Bombala Council	x	x
19. Boorowa Council	x	x
20. Botany Bay City Council	x	x
21. Bourke Shire Council	x	x
22. Brewarrina Shire Council	x	x
23. Broken Hill City Council	x	x
24. Burwood Council	x	x
25. Byron Shire Council	x	x
26. Cabonne Shire Council	x	x
27. Camden Council		
28. Campbelltown City Council	x	x
29. Canada Bay City Council	x	x
30. Canterbury City Council	x	x
31. Carrathool Shire Council	x	x
32. Central Darling Shire Council	x	x
33. Cessnock City Council	x	x
34. Clarence Valley Council	x	x

Council	Survey Form Received	Survey Form Validated
35. Cobar Shire Council	x	x
36. Coffs Harbour City Council	x	x
37. Conargo Shire Council	x	x
38. Coolamon Shire Council	x	x
39. Cooma-Monaro Council	x	x
40. Coonamble Shire Council	x	x
41. Cootamundra Shire Council	x	x
42. Corowa Shire Council	x	x
43. Cowra Shire Council	x	x
44. Deniliquin Council	x	x
45. Dubbo City Council	x	x
46. Dungog Shire Council	x	x
47. Eurobodalla Shire Council	x	x
48. Fairfield City Council	x	x
49. Forbes Shire Council	x	x
50. Gilgandra Shire Council	x	x
51. Glen Innes Severn Shire Council	x	x
52. Gloucester Shire Council	x	x
53. Gosford City Council	x	x
54. Goulburn Mulwaree Council	x	x
55. Great Lakes Council	x	x
56. Greater Hume Shire Council	x	x
57. Greater Taree City Council	x	x
58. Griffith City Council	x	x
59. Gundagai Shire Council	x	x
60. Gunnedah Shire Council	x	x
61. Guyra Shire Council	x	x
62. Gwydir Shire Council	x	x
63. Harden Shire Council	x	x
64. Hastings Council	x	x
65. Hawkesbury City Council	x	x
66. Hay Shire Council	x	x
67. Holroyd City Council	x	x
68. Hornsby Shire Council	x	x
69. Hunters Hill Municipal Council	x	x

Council	Survey Form Received	Survey Form Validated
70. Hurstville City Council	x	x
71. Inverell Shire Council	x	x
72. Jerilderie Shire Council	x	x
73. Junee Shire Council	x	x
74. Kempsey Shire Council	x	x
75. Kiama Municipal Council	x	x
76. Kogarah Municipal Council	x	x
77. Ku-ring-gai Council	x	x
78. Kyogle Council	x	x
79. Lachlan Shire Council	x	x
80. Lake Macquarie City Council	x	x
81. Lane Cove Municipal Council	x	x
82. Leeton Shire Council	x	x
83. Leichhardt Municipal Council	x	x
84. Lismore City Council	x	x
85. Lithgow City Council	x	x
86. Liverpool City Council	x	x
87. Liverpool Plains Shire Council	x	x
88. Lockhart Shire Council	x	x
89. Maitland City Council	x	x
90. Manly Council	x	x
91. Marrickville Council	x	x
92. Mid-Western Regional Council	x	x
93. Moree Plains Shire Council	x	x
94. Mosman Municipal Council	x	x
95. Murray Shire Council	x	x
96. Murrumbidgee Shire Council	x	x
97. Muswellbrook Shire Council	x	x
98. Nambucca Shire Council	x	x
99. Narrabri Shire Council	x	x
100. Narrandera Shire Council	x	x
101. Narromine Shire Council	x	x
102. Newcastle City Council	x	x
103. North Sydney Council	x	x
104. Oberon Council	x	x

Council	Survey Form Received	Survey Form Validated
105. Orange City Council	x	x
106. Palerang Council	x	x
107. Parkes Shire Council	x	x
108. Parramatta City Council	x	x
109. Penrith City Council	x	x
110. Pittwater Council		
111. Port Stephens Council	x	x
112. Queanbeyan City Council	x	x
113. Randwick City Council	x	x
114. Richmond Valley Council	x	x
115. Rockdale City Council	x	x
116. Ryde City Council	x	x
117. Shellharbour City Council	x	x
118. Shoalhaven City Council	x	x
119. Singleton Shire Council	x	x
120. Snowy River Shire Council	x	x
121. Strathfield Municipal Council	x	x
122. Sutherland Shire Council	x	x
123. Sydney City Council	x	x
124. Tamworth Regional Council	x	x
125. Temora Shire Council	x	x
126. Tenterfield Shire Council	x	x
127. Tumbarumba Shire Council	x	x
128. Tumut Council	x	x
129. Tweed Shire Council	x	x
130. Upper Hunter Shire Council	x	x
131. Upper Lachlan Council	x	x
132. Uralla Shire Council	x	x
133. Urana Shire Council	x	x
134. Wagga Wagga City Council	x	x
135. Wakool Shire Council	x	x
136. Walcha Council	x	x
137. Walgett Shire Council	x	x
138. Warren Shire Council	x	x
139. Warringham Council	x	x

Council	Survey Form Received	Survey Form Validated
140. Warrumbungle Shire Council	x	x
141. Waverley Council	x	x
142. Weddin Shire Council	x	x
143. Wellington Council	x	x
144. Wentworth Shire Council	x	x
145. Willoughby City Council	x	x
146. Wingecarribee Shire Council	x	x
147. Wollondilly Shire Council	x	x
148. Wollongong City Council	x	x
149. Woollahra Municipal Council	x	x
150. Wyong Shire Council	x	x
151. Yass Valley Council	x	x
152. Young Shire Council	x	x
<b>TOTAL</b>	<b>150</b>	<b>150</b>

Note: For non-responding councils the report used NSW Grants Commission data where appropriate.

## Appendix E Cost Distributions by IPWEA Region

### E1. Regional Sealed Road Maintenance Costs by IPWEA Region 2013/14

Region	Length (km)	Rate \$/km/yr
Central West	1,922	\$3,649
Hunter	871	\$9,413
Illawarra	473	\$7,274
Metro North	288	\$4,570
Metro South	254	\$5,019
Metro West	583	\$7,519
Mid North Coast	697	\$6,883
New England	2,109	\$3,277
North Coast	887	\$6,258
Orana	2,580	\$2,327
South East	1,240	\$5,110
South West	3,213	\$3,256
<b>Total</b>	<b>15,117</b>	<b>\$4,345</b>

**E2. Regional Sealed Surfacing Life Cycle Costs by IPWEA Region 2013/14**

<b>Region</b>	<b>Length (km)</b>	<b>Resurfacing Life Cycle Cost (\$/km/yr)</b>
Central West	1,922	\$1,520
Hunter	871	\$2,013
Illawarra	473	\$2,768
Metro North	288	\$2,703
Metro South	254	\$1,540
Metro West	583	\$1,459
Mid North Coast	697	\$4,301
New England	2,109	\$2,214
North Coast	887	\$2,830
Orana	2,580	\$1,533
South East	1,240	\$1,979
South West	3,213	\$2,482
<b>Total</b>	<b>15,117</b>	<b>\$2,154</b>

**E3. Regional Sealed Pavement Life Cycle Costs by IPWEA Region 2013/14**

<b>Region</b>	<b>Length (km)</b>	<b>Pavement LCC (\$/km/yr)</b>
Central West	1,922	\$2,023
Hunter	871	\$6,945
Illawarra	473	\$8,273
Metro North	288	\$3,080
Metro South	254	\$2,861
Metro West	583	\$7,687
Mid North Coast	697	\$10,546
New England	2,109	\$4,034
North Coast	887	\$4,243
Orana	2,580	\$2,213
South East	1,240	\$1,865
South West	3,213	\$3,095
<b>Total</b>	<b>15,117</b>	<b>\$3,806</b>

**E4. Regional Unsealed Road Maintenance Costs by IPWEA Region 2013/14**

Region	Length (km)	Rate \$/km/yr
Central West	147	\$6,417
Hunter	13	\$3,563
Illawarra	39	\$0
Metro North	1	\$0
Metro South	0	NA
Metro West	35	\$911
Mid North Coast	0	NA
New England	192	\$2,827
North Coast	48	\$2,993
Orana	1,978	\$2,222
South East	230	\$5,007
South West	517	\$3,150
<b>Total</b>	<b>3,201</b>	<b>\$2,777</b>

**E5. Regional Unsealed Road Resheeting Life Cycle Costs by IPWEA Region 2013/14**

Region	Length (km)	Resheet LCC \$/km/yr
Central West	147	\$597
Hunter	13	\$839
Illawarra	39	\$0
Metro North	1	\$0
Metro South	0	NA
Metro West	35	\$1,600
Mid North Coast	0	NA
New England	192	\$190
North Coast	48	\$2,064
Orana	1,978	\$101
South East	230	\$57
South West	517	\$2,429
<b>Total</b>	<b>3,201</b>	<b>\$550</b>

**E6. Local Sealed Road Maintenance Costs by IPWEA Region 2013/14**

Region	Length (km)	Rate \$/km/yr
Central West	6,644	\$2,412
Hunter	7,490	\$4,391
Illawarra	4,286	\$3,665
Metro North	3,614	\$4,233
Metro South	3,360	\$4,230
Metro West	7,742	\$2,780
Mid North Coast	3,850	\$3,907
New England	5,438	\$3,083
North Coast	4,563	\$3,723
Orana	3,813	\$2,483
South East	4,302	\$2,346
South West	10,784	\$2,474
<b>Total</b>	<b>65,885</b>	<b>\$3,198</b>

**E7. Local Sealed Road Reseal Life Cycle Costs by IPWEA Region 2013/14**

Region	Length (km)	Rate \$/km/yr
Central West	6,644	\$959
Hunter	7,490	\$1,702
Illawarra	4,286	\$2,219
Metro North	3,614	\$2,092
Metro South	3,360	\$2,264
Metro West	7,742	\$2,453
Mid North Coast	3,850	\$3,106
New England	5,438	\$1,992
North Coast	4,563	\$1,524
Orana	3,813	\$1,206
South East	4,302	\$896
South West	10,784	\$1,558
<b>Total</b>	<b>65,885</b>	<b>\$1,788</b>

**E8. Local Sealed Road Pavement Life Cycle Costs by IPWEA Region 2013/14**

Region	Length (km)	Rate \$/km/annum
Central West	6,644	\$1,775
Hunter	7,490	\$3,843
Illawarra	4,286	\$5,926
Metro North	3,614	\$3,122
Metro South	3,360	\$2,194
Metro West	7,742	\$5,920
Mid North Coast	3,850	\$6,149
New England	5,438	\$1,823
North Coast	4,563	\$3,324
Orana	3,813	\$3,745
South East	4,302	\$1,231
South West	10,784	\$2,146
<b>Total</b>	<b>65,885</b>	<b>\$3,368</b>

**E9. Local Unsealed Road Maintenance Costs by IPWEA Region 2013/14**

Region	Length (km)	Rate \$/km/annum
Central West	11,249	\$1,490
Hunter	2,184	\$3,974
Illawarra	746	\$838
Metro North	62	\$5,417
Metro South	0	NA
Metro West	365	\$5,671
Mid North Coast	3,529	\$2,644
New England	14,297	\$1,569
North Coast	3,089	\$2,677
Orana	15,613	\$786
South East	5,967	\$1,876
South West	22,547	\$1,190
<b>Total</b>	<b>79,647</b>	<b>\$1,492</b>

**E10. Local Unsealed Road Resheeting Life Cycle Costs by IPWEA Region 2013/14**

Region	Length (km)	Rate \$/km/annum
Central West	11,249	\$1,387
Hunter	2,184	\$1,075
Illawarra	746	\$2,294
Metro North	62	\$437
Metro South	0	NA
Metro West	365	\$2,053
Mid North Coast	3,529	\$3,209
New England	14,297	\$1,226
North Coast	3,089	\$1,745
Orana	15,613	\$699
South East	5,967	\$1,164
South West	22,547	\$3,491
<b>Total</b>	<b>79,647</b>	<b>\$1,899</b>

**Appendix F Asset Values, Maintenance and Renewal Rates by Region**

**F1. Regional and Local Sealed Road Asset Values 2013/14**

Region	Length (km)	CRC (\$000)	CRC/Km (\$000/km)	Deprn (\$000)	Deprn/Km (\$000/km)
Central West	8,566	\$2,056,589	<b>\$240</b>	\$31,009	<b>\$3.62</b>
Hunter	8,361	\$4,787,522	<b>\$573</b>	\$69,452	<b>\$8.31</b>
Illawarra	4,759	\$2,622,098	<b>\$551</b>	\$51,643	<b>\$10.85</b>
Metro North	3,902	\$3,083,971	<b>\$790</b>	\$41,032	<b>\$10.51</b>
Metro South	3,614	\$5,127,017	<b>\$1,419</b>	\$47,983	<b>\$13.28</b>
Metro West	8,325	\$6,575,479	<b>\$790</b>	\$103,473	<b>\$12.43</b>
Mid North Coast	4,546	\$3,453,691	<b>\$760</b>	\$50,704	<b>\$11.15</b>
New England	7,547	\$2,183,806	<b>\$289</b>	\$30,354	<b>\$4.02</b>
North Coast	5,450	\$2,564,627	<b>\$471</b>	\$38,976	<b>\$7.15</b>
Orana	6,393	\$1,600,208	<b>\$250</b>	\$21,068	<b>\$3.30</b>
South East	5,542	\$2,330,528	<b>\$420</b>	\$29,024	<b>\$5.24</b>
South West	13,997	\$2,801,791	<b>\$200</b>	\$37,487	<b>\$2.68</b>
<b>Grand Total</b>	<b>81,002</b>	<b>\$39,187,327</b>	<b>\$484</b>	<b>\$552,205</b>	<b>\$6.82</b>

**F2. Regional and Local Sealed Roads Maintenance and Renewal Rates 2013/14**

Region	Length (km)	CRC (\$000)	Maint (\$000)	Maint / CRC	Capital Renewal (\$000)	Renewal / CRC
Central West	8,566	\$2,056,589	\$23,041	<b>1.1%</b>	\$17,184	<b>0.8%</b>
Hunter	8,361	\$4,787,522	\$41,087	<b>0.9%</b>	\$44,955	<b>0.9%</b>
Illawarra	4,759	\$2,622,098	\$19,145	<b>0.7%</b>	\$17,412	<b>0.7%</b>
Metro North	3,902	\$3,083,971	\$16,615	<b>0.5%</b>	\$15,912	<b>0.5%</b>
Metro South	3,614	\$5,127,017	\$15,488	<b>0.3%</b>	\$27,670	<b>0.5%</b>
Metro West	8,325	\$6,575,479	\$25,905	<b>0.4%</b>	\$66,521	<b>1.0%</b>
Mid North Coast	4,546	\$3,453,691	\$19,837	<b>0.6%</b>	\$28,512	<b>0.8%</b>
New England	7,547	\$2,183,806	\$23,676	<b>1.1%</b>	\$27,272	<b>1.2%</b>
North Coast	5,450	\$2,564,627	\$22,535	<b>0.9%</b>	\$24,582	<b>1.0%</b>
Orana	6,393	\$1,600,208	\$15,472	<b>1.0%</b>	\$12,693	<b>0.8%</b>
South East	5,542	\$2,330,528	\$16,429	<b>0.7%</b>	\$12,160	<b>0.5%</b>
South West	13,997	\$2,801,791	\$37,142	<b>1.3%</b>	\$43,821	<b>1.6%</b>
<b>Total</b>	<b>81,002</b>	<b>\$39,187,327</b>	<b>\$276,373</b>	<b>0.7%</b>	<b>\$338,694</b>	<b>0.9%</b>

**F3. Regional & Local Unsealed Asset Values 2013/14**

Region	Length (km)	CRC (\$000)	CRC/Km (\$000/km)	Deprn (\$000)	Deprn/Km (\$000/km)
Central West	11396	\$672,285	<b>\$59</b>	\$14,600	<b>\$1.28</b>
Hunter	2197	\$346,790	<b>\$158</b>	\$4,202	<b>\$1.91</b>
Illawarra	784	\$162,841	<b>\$208</b>	\$3,063	<b>\$3.91</b>
Metro North	63	\$19,866	<b>\$315</b>	\$134	<b>\$2.13</b>
Metro South	0	\$0	<b>NA</b>	\$0	<b>NA</b>
Metro West	400	\$67,215	<b>\$168</b>	\$1,009	<b>\$2.52</b>
Mid North Coast	3529	\$881,016	<b>\$250</b>	\$17,556	<b>\$4.97</b>
New England	14490	\$1,121,074	<b>\$77</b>	\$14,094	<b>\$0.97</b>
North Coast	3137	\$358,824	<b>\$114</b>	\$10,153	<b>\$3.24</b>
Orana	17591	\$997,500	<b>\$57</b>	\$9,574	<b>\$0.54</b>
South East	6196	\$1,027,702	<b>\$166</b>	\$7,181	<b>\$1.16</b>
South West	23065	\$1,230,505	<b>\$53</b>	\$21,779	<b>\$0.94</b>
<b>Grand Total</b>	<b>82848</b>	<b>\$6,885,618</b>	<b>\$83</b>	<b>\$103,345</b>	<b>\$1.25</b>

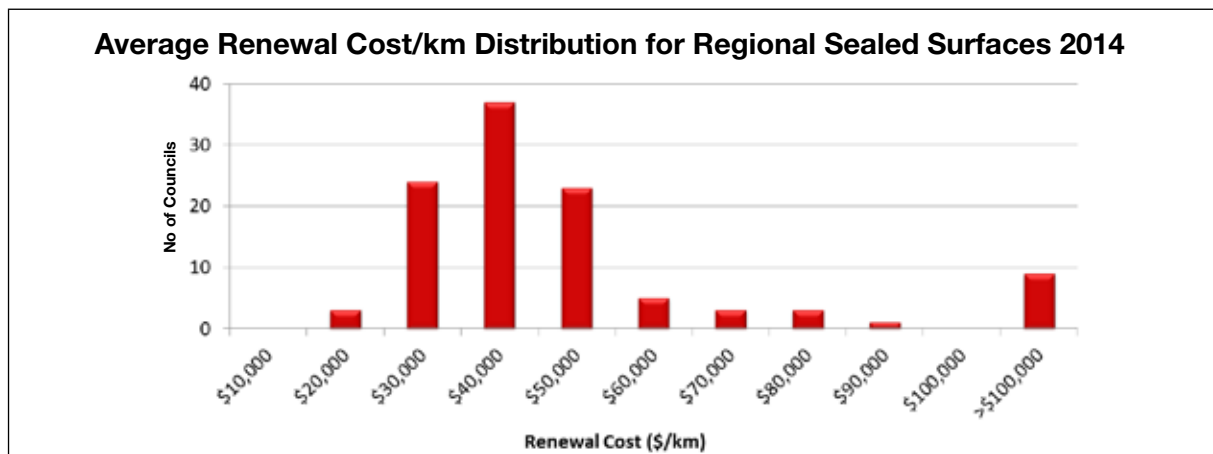
**F4. Regional and Local Unsealed Roads Maintenance and Renewal Rates 2013/14**

Region	Length (km)	CRC (\$000)	Maint (\$000)	Maint / CRC	Capital Renewal (\$000)	Renewal / CRC
Central West	11,396	\$672,285	\$17,702	<b>2.6%</b>	\$4,346	<b>0.6%</b>
Hunter	2,197	\$346,790	\$8,726	<b>2.5%</b>	\$1,508	<b>0.4%</b>
Illawarra	784	\$162,841	\$625	<b>0.4%</b>	\$503	<b>0.3%</b>
Metro North	63	\$19,866	\$335	<b>1.7%</b>	\$0	<b>0.0%</b>
Metro South	0	\$0	\$0	<b>NA</b>	\$0	<b>NA</b>
Metro West	400	\$67,215	\$2,100	<b>3.1%</b>	\$767	<b>1.1%</b>
Mid North Coast	3,529	\$881,016	\$9,330	<b>1.1%</b>	\$3,323	<b>0.4%</b>
New England	14,490	\$1,121,074	\$22,978	<b>2.0%</b>	\$6,463	<b>0.6%</b>
North Coast	3,137	\$358,824	\$8,414	<b>2.3%</b>	\$3,054	<b>0.9%</b>
Orana	17,591	\$997,500	\$16,674	<b>1.7%</b>	\$1,622	<b>0.2%</b>
South East	6,196	\$1,027,702	\$12,346	<b>1.2%</b>	\$2,429	<b>0.2%</b>
South West	23,065	\$1,230,505	\$28,470	<b>2.3%</b>	\$10,866	<b>0.9%</b>
<b>Grand Total</b>	<b>82,848</b>	<b>\$6,885,618</b>	<b>\$127,701</b>	<b>1.9%</b>	<b>\$34,882</b>	<b>0.5%</b>

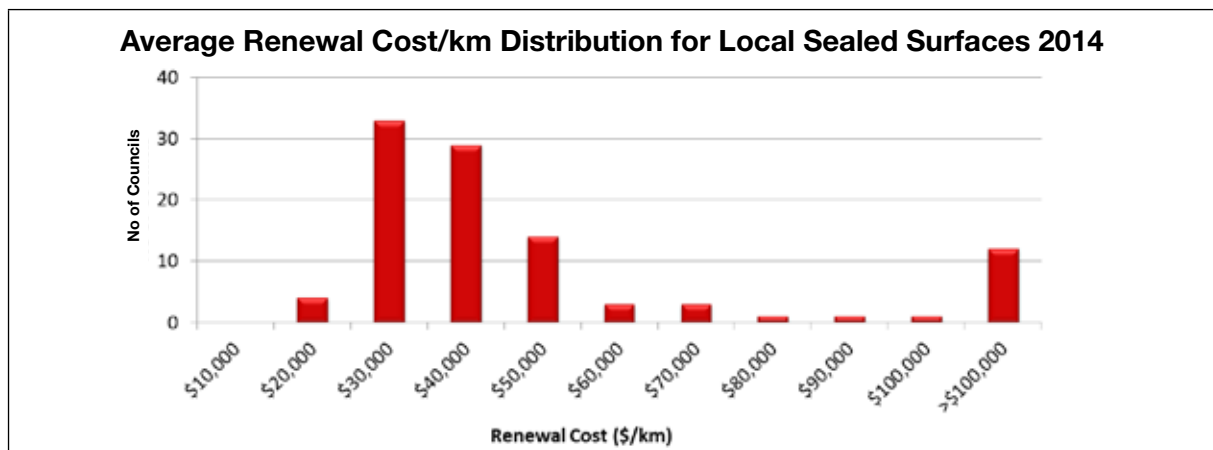
## Appendix G Road Renewal Cost and Estimated Useful Life Distributions

### G1. Sealed Road Resurfacing Renewal Cost Distribution 2013/14

Renewal Cost (< \$/km)	No of Councils reporting at this value	
	Regional Sealed Surfaces	Local Sealed Surfaces
\$10,000	0	0
\$20,000	3	4
\$30,000	24	33
\$40,000	37	29
\$50,000	23	14
\$60,000	5	3
\$70,000	3	1
\$80,000	3	0
\$90,000	1	1
>\$100,000	9	12
<b>Average</b>	<b>\$53,897 / km</b>	<b>\$54,864 / km</b>



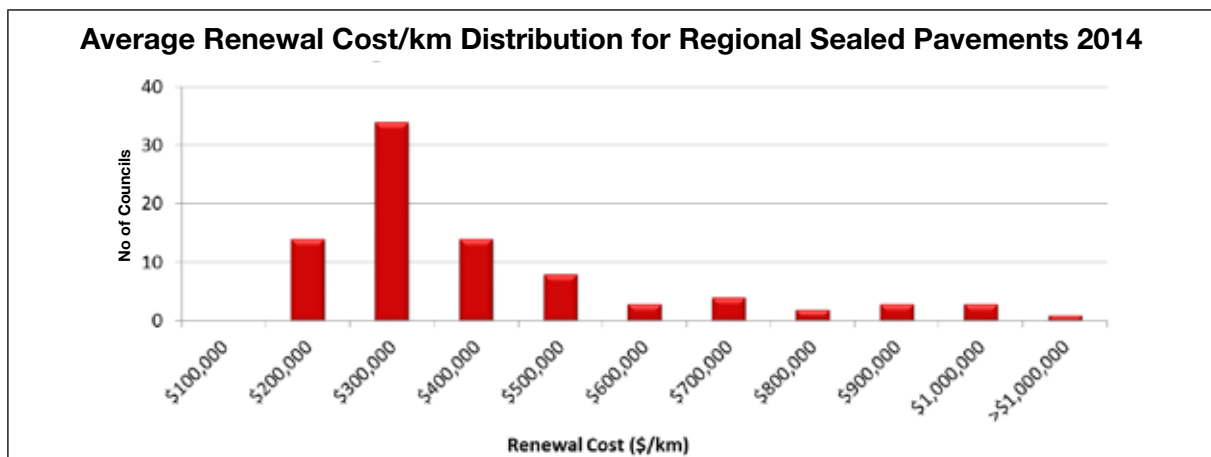
108 responses



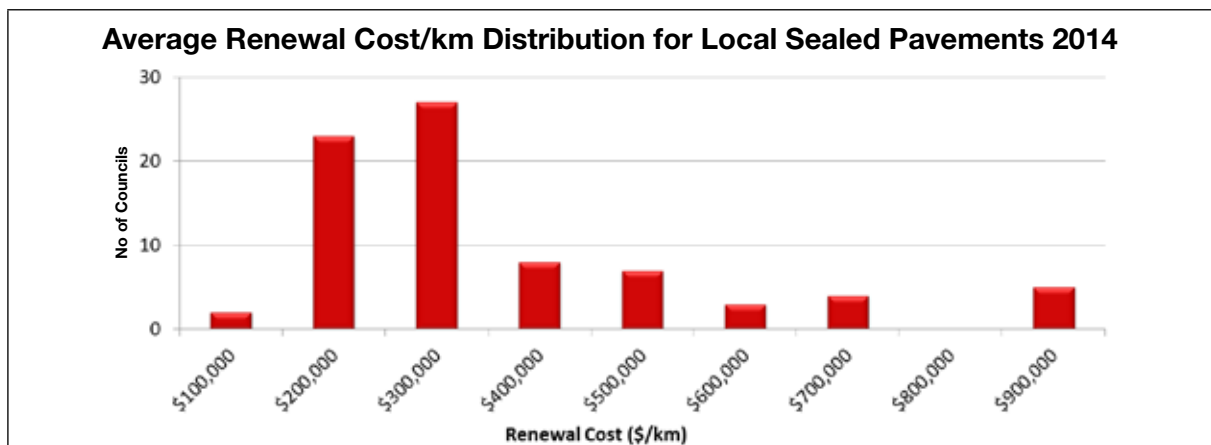
101 responses

**G2. Sealed Road Pavements Renewal Cost Distribution 2013/14**

Renewal Cost (< \$/km)	No of Councils reporting at this value	
	Regional Sealed Pavements	Local Sealed Pavements
\$100,000	0	2
\$200,000	14	23
\$300,000	34	27
\$400,000	14	8
\$500,000	8	7
\$600,000	3	3
\$700,000	4	4
\$800,000	2	0
\$900,000	3	5
\$1,000,000	3	0
>\$1,000,000	1	0
<b>Average</b>	<b>\$373,414 / km</b>	<b>\$326,062 / km</b>



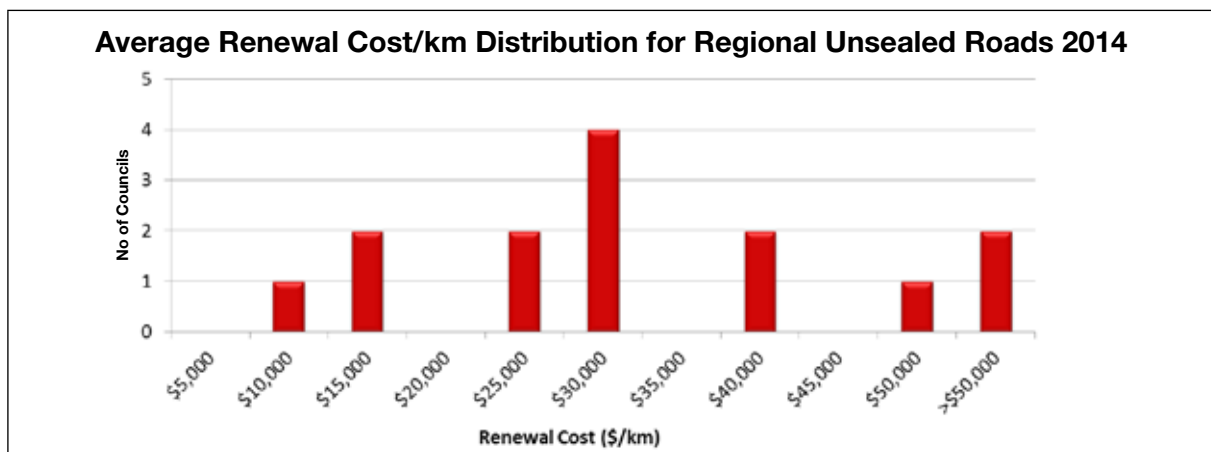
86 responses



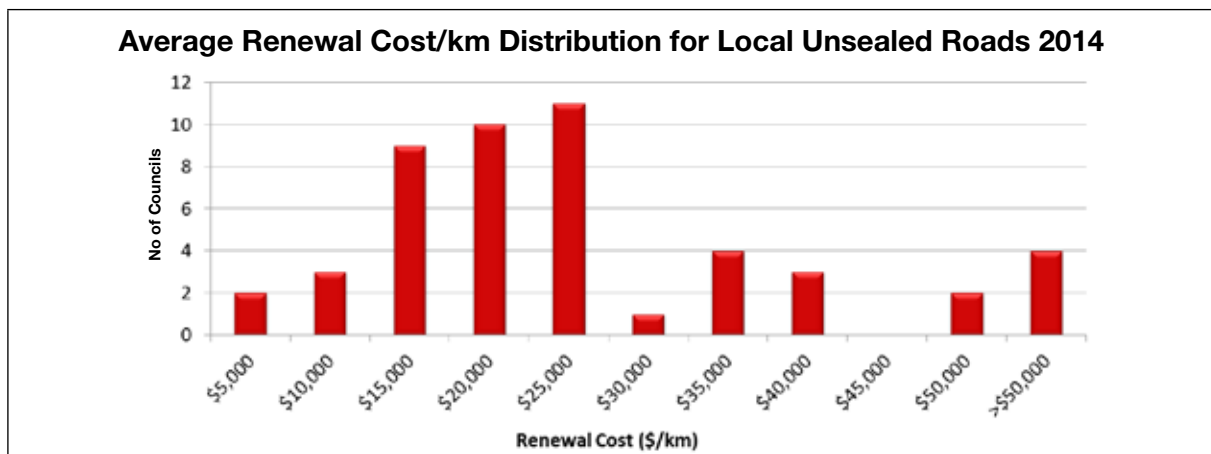
79 responses

**G3. Unsealed Road Resheeting Renewal Cost Distribution 2013/14**

Renewal Cost (< \$/km)	No of Councils reporting at this value	
	Regional Unsealed Roads	Local Unsealed Roads
\$5,000	0	2
\$10,000	1	3
\$15,000	2	9
\$20,000	0	10
\$25,000	2	11
\$30,000	4	1
\$35,000	0	4
\$40,000	2	3
\$45,000	0	0
\$50,000	1	2
>\$50,000	2	4
<b>Average</b>	<b>\$35,806 / km</b>	<b>\$26,006 / km</b>



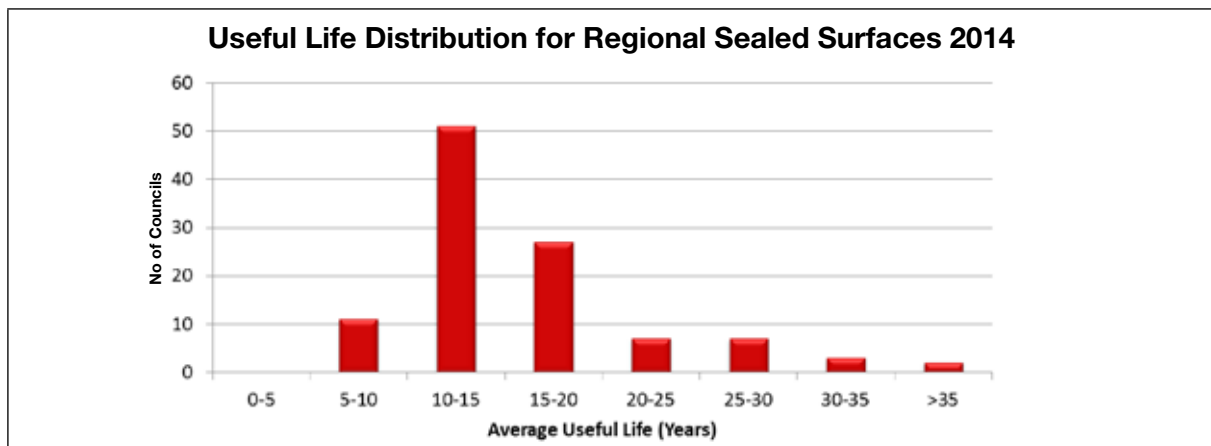
14 responses



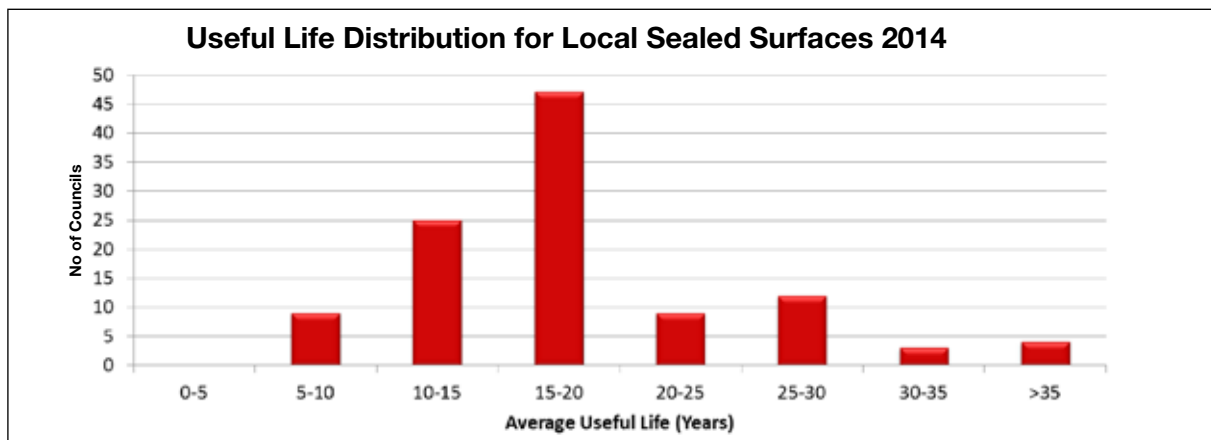
49 responses

**G4. Sealed Road Resurfacing Estimated Useful Life Distribution 2013/14**

Estimated Useful Life (yrs)	No of Councils reporting at this value	
	Regional Roads Sealed Surfaces	Local Roads Sealed Surfaces
0-5	0	0
5-10	11	9
10-15	51	25
15-20	27	47
20-25	7	9
25-30	7	12
30-35	3	3
>35	2	4
<b>Average</b>	<b>18 years</b>	<b>20 years</b>



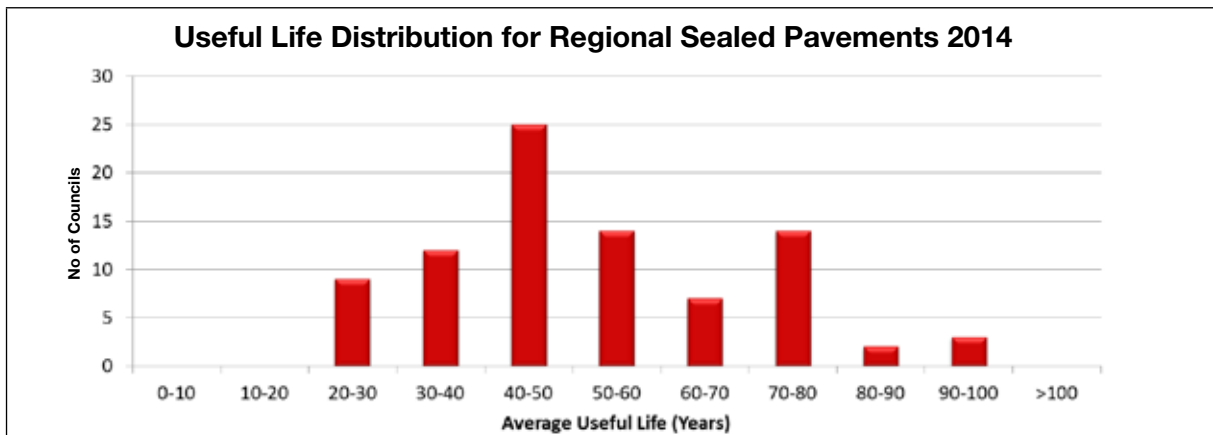
108 responses



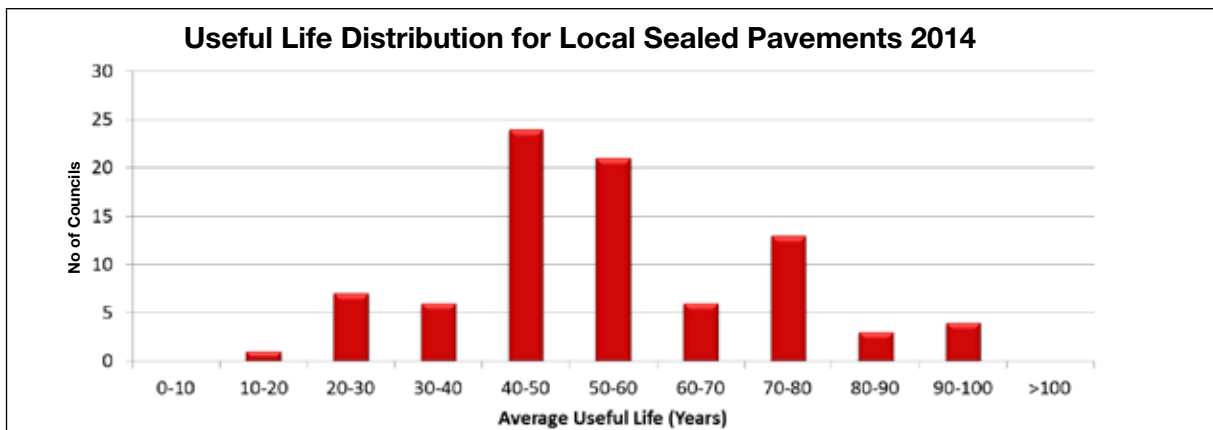
109 responses

**G5. Sealed Road Pavement Estimated Useful Life Distribution 2013/14**

Estimated Useful Life (yrs)	No of Councils reporting at this value	
	Regional Roads Sealed Pavements	Local Roads Sealed Pavements
0-10	0	0
10-20	0	1
20-30	9	7
30-40	12	6
40-50	25	24
50-60	14	21
60-70	7	6
70-80	14	13
80-90	2	3
90-100	3	4
>100	0	0
<b>Average</b>	<b>56 years</b>	<b>58 years</b>



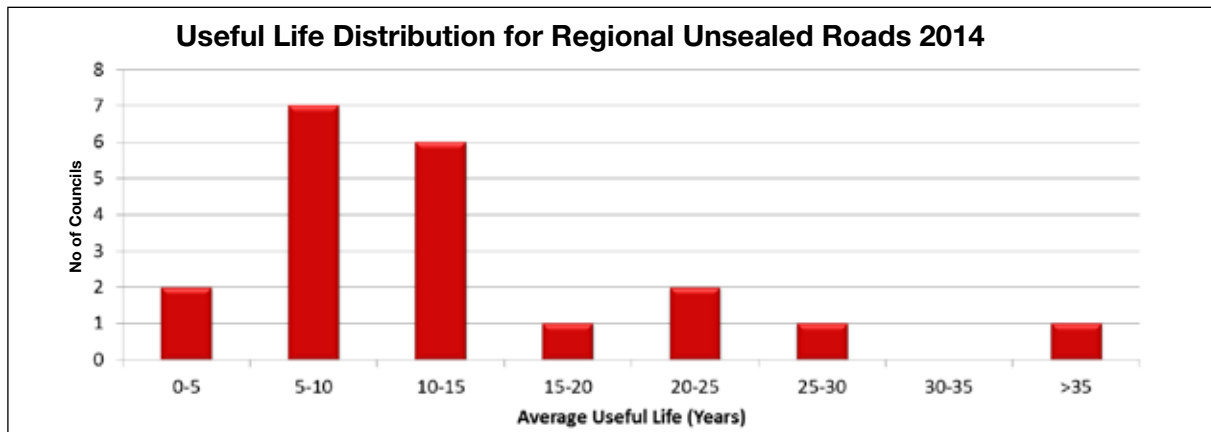
86 responses



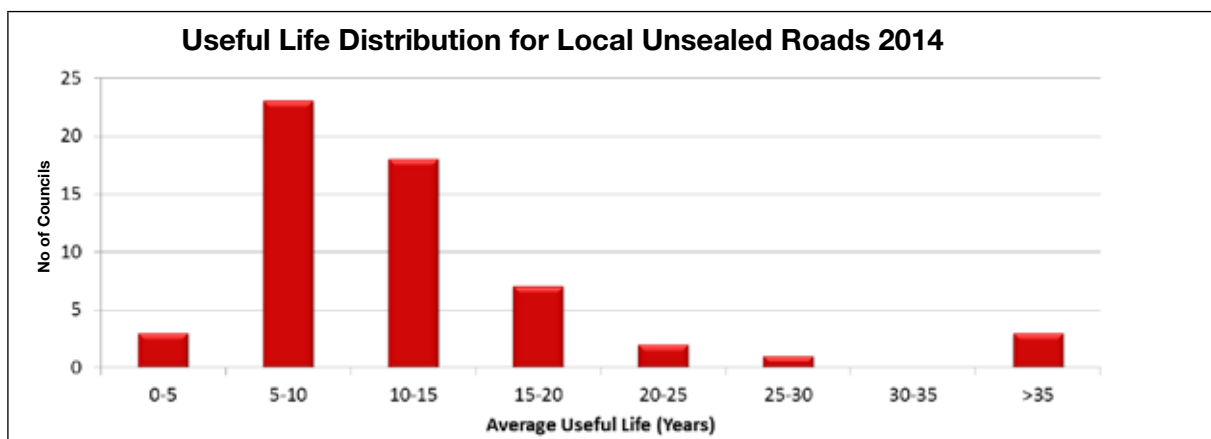
85 responses

**G6. Unsealed Road Estimated Useful Life Distribution 2013/14**

Estimated Useful Life (yrs)	No of Councils reporting at this value	
	Regional Unsealed Roads	Local Unsealed Roads
0-5	2	3
5-10	7	23
10-15	6	18
15-20	1	7
20-25	2	2
25-30	1	1
30-35	0	0
>35	1	3
<b>Average</b>	<b>15 years</b>	<b>15 years</b>



20 responses

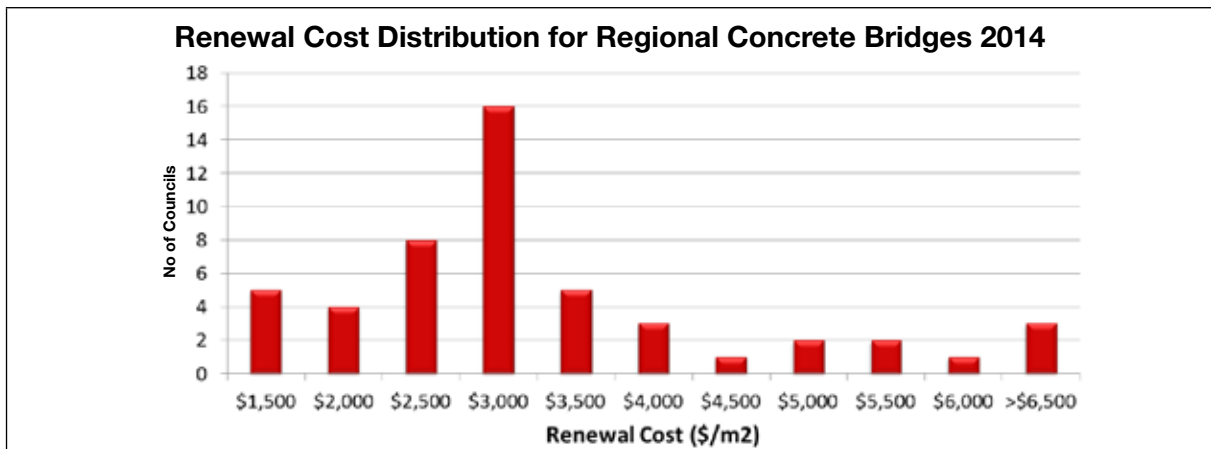


57 responses

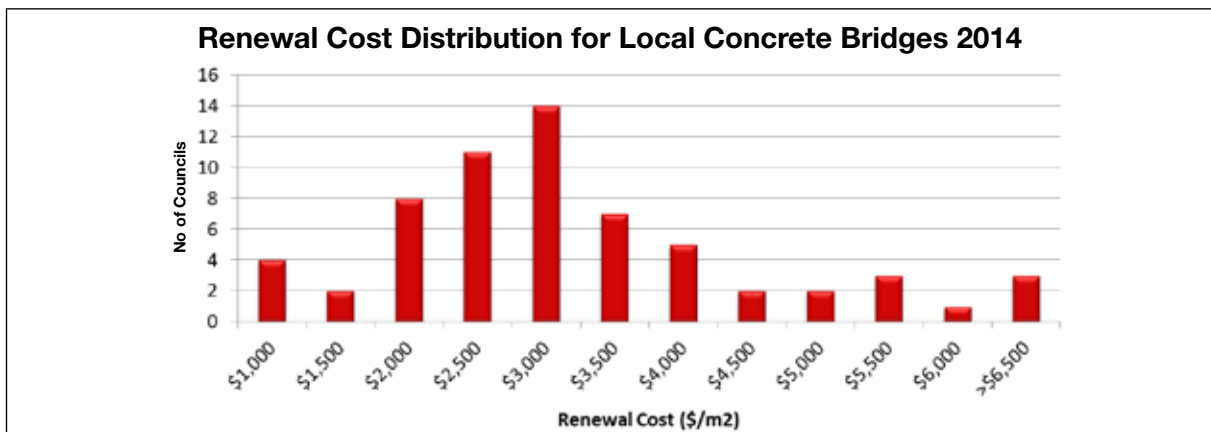
## Appendix H Bridge Renewal Cost and Estimated Useful Life Distributions

### H1. Concrete Bridges Renewal Cost Distribution 2013/14

Renewal Cost (< \$/m <sup>2</sup> )	No of Councils reporting at this value	
	Bridges on Regional Roads	Bridges on Local Roads
\$1,000	0	4
\$1,500	5	2
\$2,000	4	8
\$2,500	8	11
\$3,000	16	14
\$3,500	5	7
\$4,000	3	5
\$4,500	1	2
\$5,000	2	2
\$5,500	2	3
\$6,000	1	1
>\$6,500	3	3
<b>Average</b>	<b>\$3,299 / m<sup>2</sup></b>	<b>\$3,164 / m<sup>2</sup></b>



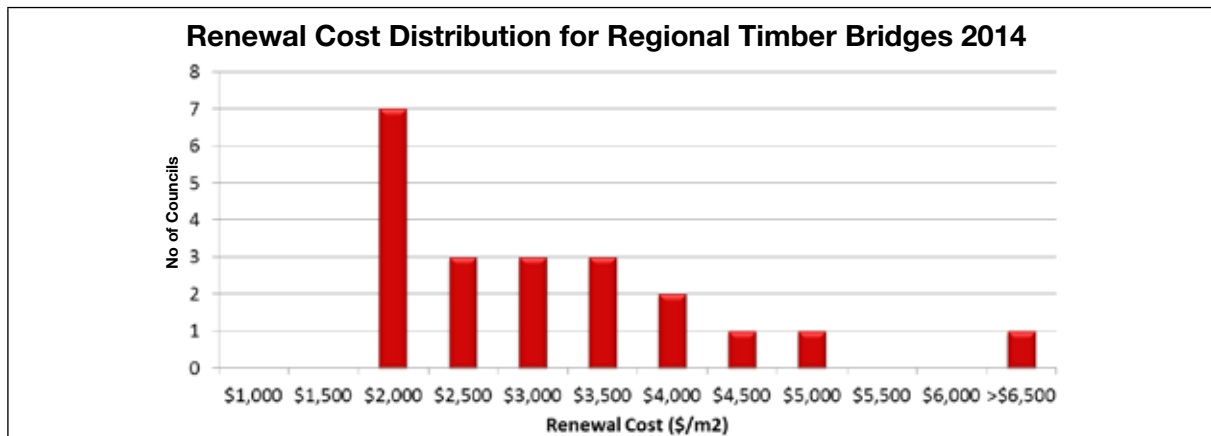
50 responses



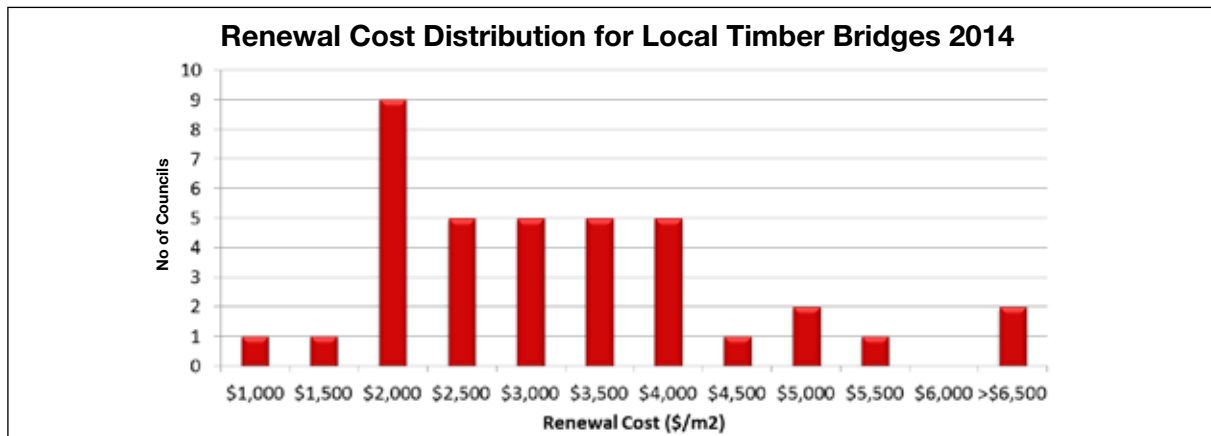
62 responses

**H2. Timber Bridges Renewal Cost Distribution 2013/14**

Renewal Cost (< \$/m <sup>2</sup> )	No of Councils reporting at this value	
	Bridges on Regional Roads	Bridges on Local Roads
\$1,000	0	1
\$1,500	0	1
\$2,000	7	9
\$2,500	3	5
\$3,000	3	5
\$3,500	3	5
\$4,000	2	5
\$4,500	1	1
\$5,000	1	2
\$5,500	0	1
\$6,000	0	0
>\$6,500	1	2
<b>Average</b>	<b>\$3,028 / m<sup>2</sup></b>	<b>\$3,158 / m<sup>2</sup></b>



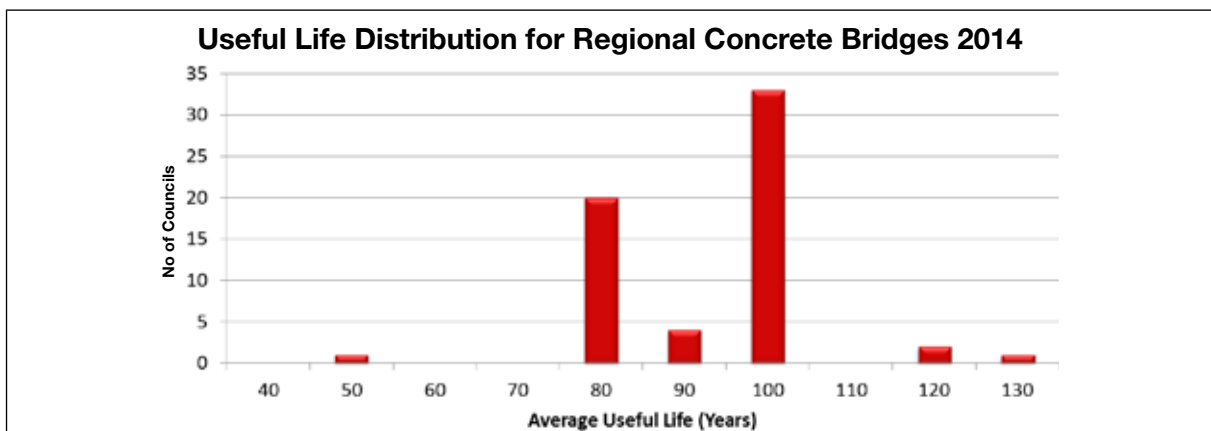
21 responses



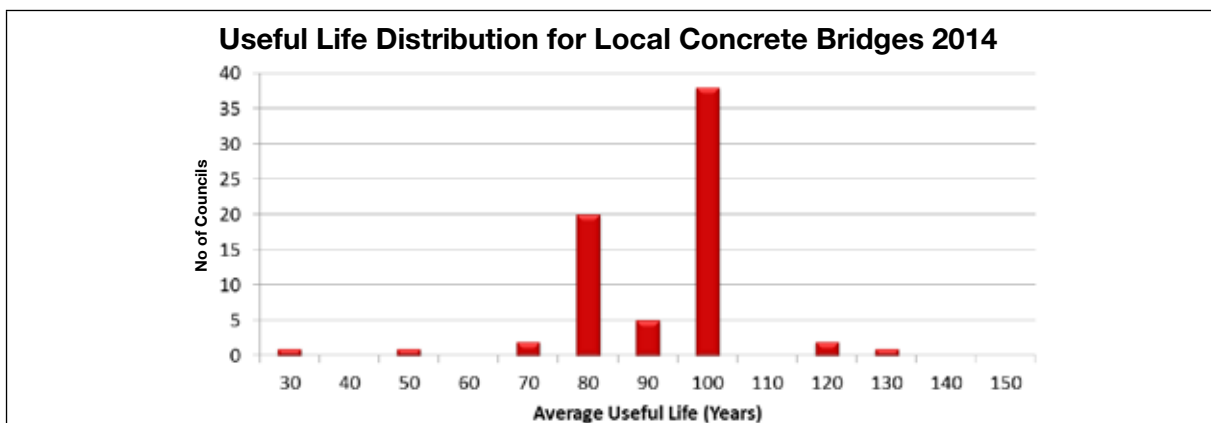
37 responses

**H3. Concrete Bridges Estimated Useful Life Distribution 2013/14**

Estimated Useful Life (yrs)	No of Councils reporting at this value	
	Bridges on Regional Roads	Bridges on Local Roads
30	0	1
40	0	0
50	1	1
60	0	0
70	0	2
80	20	20
90	4	5
100	33	39
110	0	0
120	2	2
130	1	1
140	0	0
150	0	0
<b>Average</b>	<b>92 years</b>	<b>91 years</b>



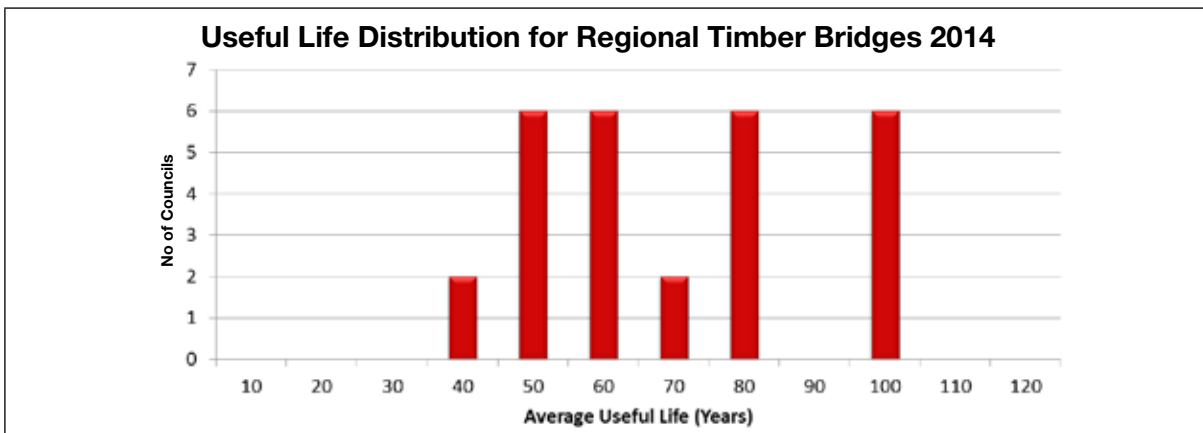
61 responses



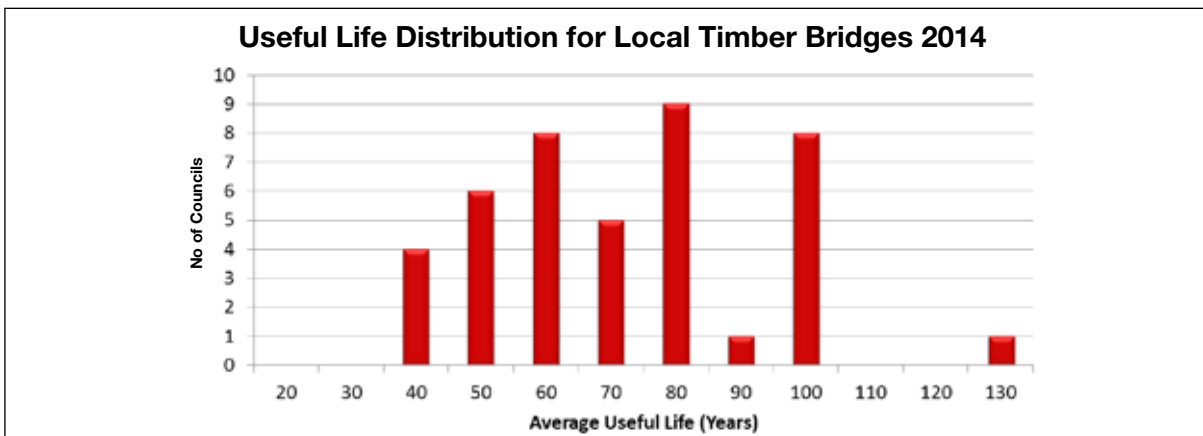
71 responses

**H4. Timber Bridges Estimated Useful Life Distribution 2013/14**

Estimated Useful Life (yrs)	No of Councils reporting at this value	
	Bridges on Regional Roads	Bridges on Local Roads
10	0	0
20	0	0
30	0	0
40	2	2
50	6	6
60	6	6
70	2	2
80	6	6
90	0	0
100	6	6
110	0	0
120	0	0
130	0	0
<b>Average</b>	<b>69 years</b>	<b>71 years</b>



28 responses



42 responses



