Upper Hunter Shire Council

Bridges Asset Management Plan

A Quality Rural Lifestyle in a Caring and Thriving Community

Document Control	

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Rev No	Date	Revision Details	Author	Reviewer	Approver
1	May 2011	Initial draft	JB/GD	JB	JB
2	February 2013	Update Financial Data	JB/GD	JB	JB

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1. EXECUTIVE SUMMARY

What Council provides

Council provides a Bridge network in partnership with the Roads and Maritime Services NSW (RMS) to ensure that Upper Hunter Shire Council's extensive transport network is accessible, safe and efficient for motorists, cyclists and pedestrians.

This plan is concerned with bridges and their components as follows:

- Regional Road bridges and culverts greater than 6m in width
- Shire Road bridges and culverts greater than 6m in width

Within the Upper Hunter Shire Council area there are 43 bridges and culverts on Regional Roads, and 94 bridges and culverts on Local Shire Roads.

What does it cost?

There are two key indicators of cost to provide the bridge network service:

- The lifecycle cost being the average cost over the life cycle of the asset, and
- The total maintenance and capital renewal expenditure required to deliver existing service levels in the next 10 years covered by Council's long term financial plan.

The lifecycle cost to provide the bridge network service is estimated at $710,000 per annum. Council's planned lifecycle expenditure over the 10yr asset management plan is $962,000 pa which gives a lifecycle sustainability index of 1.35.

The total maintenance and capital renewal expenditure required to provide the bridge network service in the next 10 years is estimated at $9,602,000.

Levels of Service

The community has an expectation that the level of service provided for bridges will continue to be improved into the future. Council recognises that existing funding is sufficient to maintain the existing level of service but is conscious that in order to meet the expectations of the community further funding is needed. As such there is a 'gap' between the level of service that Council is currently able to provide and community expectations.

Future Demand

Council plans to operate and maintain the bridge network to achieve the following strategic objectives:-

1. ensure the bridge network is maintained at a safe and functional standard as set out in this asset management plan;
2. undertake bridge maintenance and construction works in a cost effective, sustainable manner.
3. undertake the construction of new bridges within urban areas to provide flood free access.

Lifecycle Management Plan

The model for management of bridges and culverts relates particularly to the maintenance and renewal stages of asset life. Early in the life of an asset, its condition deteriorates slowly and maintenance is generally not required. This is often referred to the "Do Nothing" phase of an asset's life. As the asset ages, it moves into what is known as the "Maintain" phase. Maintenance activities will need to be performed to minimise continued deterioration. As the asset moves towards the end of its life, activities are undertaken that restore the asset to a condition close to that of the original. This is referred to as the "Renewal" phase.

The importance of the time for intervention for renewal is paramount. If renewal activities are not undertaken in a timely manner, the condition of the asset will deteriorate rapidly to failure, and the cost of reconstruction may be many times that of renewal activities.

Financial Summary

An analysis of existing bridge and culvert conditions and costs has been undertaken to determine funding implications for the bridge network. Annual adjustment for increases in the cost of bridge construction materials and services would need to be made to accurately represent long term results.

Modelling indicates that an annual renewal allocation of $720,000 is sufficient to keep the bridge network in the current overall condition.

Plan Improvement and Monitoring

An asset management plan is a dynamic document, reflecting and responding to changes over time. Monitoring of this Bridge Asset Management plan is required to:

- ensure compliance with the proposed improvement program milestones;
- ensure compliance with adopted standards and procedures for condition and performance.

A full review of this asset management plan should be undertaken every three to five years to document progress and set out proposals for the next five years. The recommendations below summarise the improvement program contained in Section 8 of this document.

Recommendations

The actions resulting from this asset management plan are to:

1. obtain Council approval of plan;
2. confirm desired levels of service by establishing current performance and setting performance targets. Have these levels of service adopted by Council;
3. review the level of service for routine maintenance response times;
4. further Investigate and improve estimates of growth in modelling;
5. systematically separate capital upgrade expenditure from capital renewal expenditure and capital new expenditure;
6. improve the delineation between planned, cyclic and reactive maintenance;
7. develop data collection methods to ensure consistency and ongoing improvement of condition data collection;
8. assess the structure and resources within Council, to ensure that the asset management plan can be implemented.

2. INTRODUCTION

2.1 Background

This asset management plan is to demonstrate responsive management of assets (and services provided from assets), compliance with regulatory requirements, and to communicate funding required to provide the required levels of service. The asset management plan is to be read with the following associated planning documents:

- Delivery and Operational Plan 2013/14 – 2016/17
- Community Strategic Plan 2010+
- Upper Hunter Shire Council Resident Satisfaction Survey Results

The assets covered by this Bridge Asset Management Plan are summarised in Table 2.1.

Table 2.1

Asset category	No. of Bridges/Culverts	Replacement Value ($)
Concrete/Timber Bridges	90	39,408,288
Concrete culverts greater than 6m	47	4,901,507
TOTAL	**137**	**44,309,795**

The following groups have been identified as key stakeholders in the management and use of the road network and road related assets:

Elected Members	Endorsement of the asset management policy, strategy and plans. Set high level direction through the development of asset management principles in the Community Strategic Plan
Senior Management	Endorse the development of asset management plans and provide the resources required to complete this task. Set high level priorities for asset management development in Council and raise the awareness of this function among Council staff and contractors. Support the implementation of actions resulting from this plan and be prepared to make changes to a better way of managing assets and delivering services. Support for an asset management driven budget.
Asset Management	Develop asset management plans and implement effective asset management principles within Council. Endorse asset revaluation methodology.
Corporate Services	Consolidating the asset register and ensuring the asset valuations are accurate. Development of supporting policies such as capitalisation and depreciation. Preparation of asset sustainability and financial reports incorporating asset depreciation in compliance with current Australian accounting standards.
Field Services Staff	Provide local knowledge level detail on all road assets. They verify the size, location and condition of assets. They can describe the maintenance standards deployed and Council's ability to meet technical and customer levels of service.
External Parties	▪ Community residents and businesses ▪ Tourist and visitors (as occasional users) ▪ Neighbouring Councils ▪ Road users ▪ Emergency services ▪ Developers and utility companies ▪ Local businesses ▪ Federal and State government authorities and agencies such as RMS, local law enforcement and land use/development planning.

2.2 Goals and Objectives of Asset Management

Council exists to provide services to its community. Some of these services are provided by infrastructure assets. Council has acquired infrastructure assets by 'purchase', by contract, construction by council staff and by donation of assets constructed by developers and others to meet increased levels of service.

Council's goal in managing infrastructure assets is to meet the required level of service in the most cost effective manner for present and future consumers. The focus of the asset management plan for roads is to be pro-active. It will enable Council to:

- take a life cycle approach
  - have precise knowledge of what Council owns or has responsibility or legal liability for;
  - record and extract information on these assets in a register down to an identifiable level;
  - report on our annual depreciations and asset consumption at an asset component level;

- develop cost-effective management strategies for the long term
  - understand the long term (10-20 years) funding needs of our road network to meet our strategic expectations in both capital and maintenance expenditure;
  - develop intergenerational plans for future infrastructure needs;

- provide a defined level of service and monitoring performance
  - measure and monitor the condition, performance, utilisation and costs of assets down to the managed component level and aggregate this data up to give outputs of cost and performance at the portfolio level;
  - understand and record the current levels of service in terms of responsiveness and performance;
  - understand the likely future levels of service required based on population growth, demographic changes and community expectations;

- advocate, facilitate and provide traffic management and public transport facilities to meet the needs of the community;
- understand and meet the demands of growth through demand management and infrastructure investment;

- provide for replacement and improvement of community infrastructure through best practice and risk management;

- support sustainable use of physical resources;

- support continuous improvement in asset management practices
  - have uniform processes across our whole organisation for the evaluation of any investment in:
    (a) renewal, upgrades and expansions of existing assets;
    (b) creation of new assets;
    (c) maintenance of existing assets; and
    (d) operational expenditure to deliver services.

- Maintain the road network with consideration given to additional sealing only on an economically justifiable basis.

This asset management plan is prepared under the direction of Council's vision, mission, goals and objectives. Council's vision is:

- A quality rural lifestyle in a caring and thriving community

Council's mission is:

- to enhance the quality of life of all Shire residents by the provisions of appropriate services and facilities through effective and efficient management of resources;
- to serve the community through equality of opportunity and involvement;
- to building a prosperous environmentally sustainable future;
- to foster sustainable, economic and social growth.

Council's corporate values are:-

- accessibility and equity
- openness and accountability
- courtesy, honesty and integrity
- competent, efficient and effective service
- teamwork
- environmental responsibility

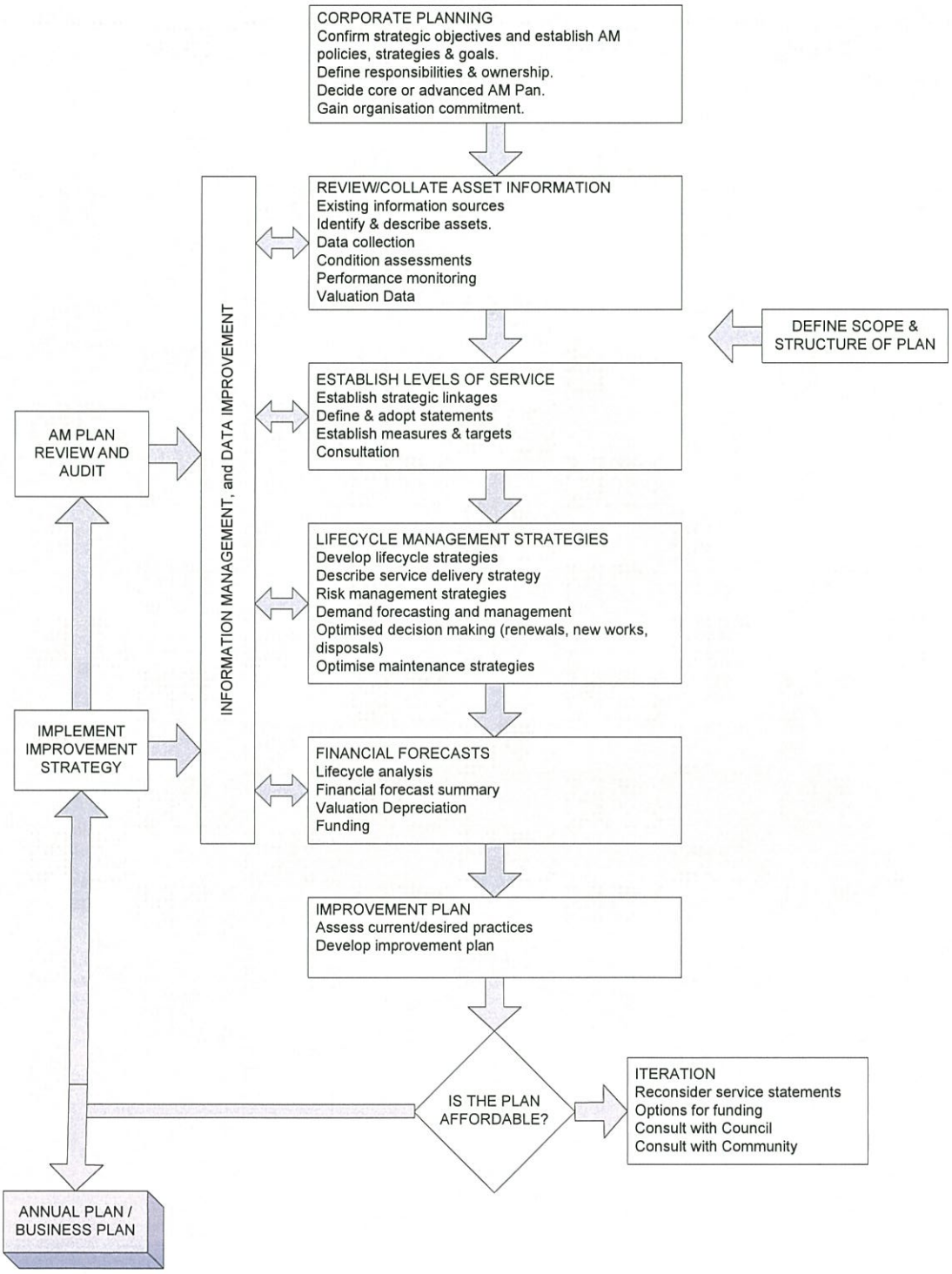
2.3 Plan Framework

Key elements of the plan are:-

- levels of service – specifies the services and levels of service to be provided by council;
- future demand – how this will impact on future service delivery and how this is to be met;
- lifecycle management – how Council will manage its existing and future assets to provide the required services;
- financial summary – what funds are required to provide the required services;
- asset management practices;
- monitoring – how the plan will be monitored to ensure it is meeting Council's objectives;
- asset management improvement plan.

A road map for preparing an asset management plan is shown below.

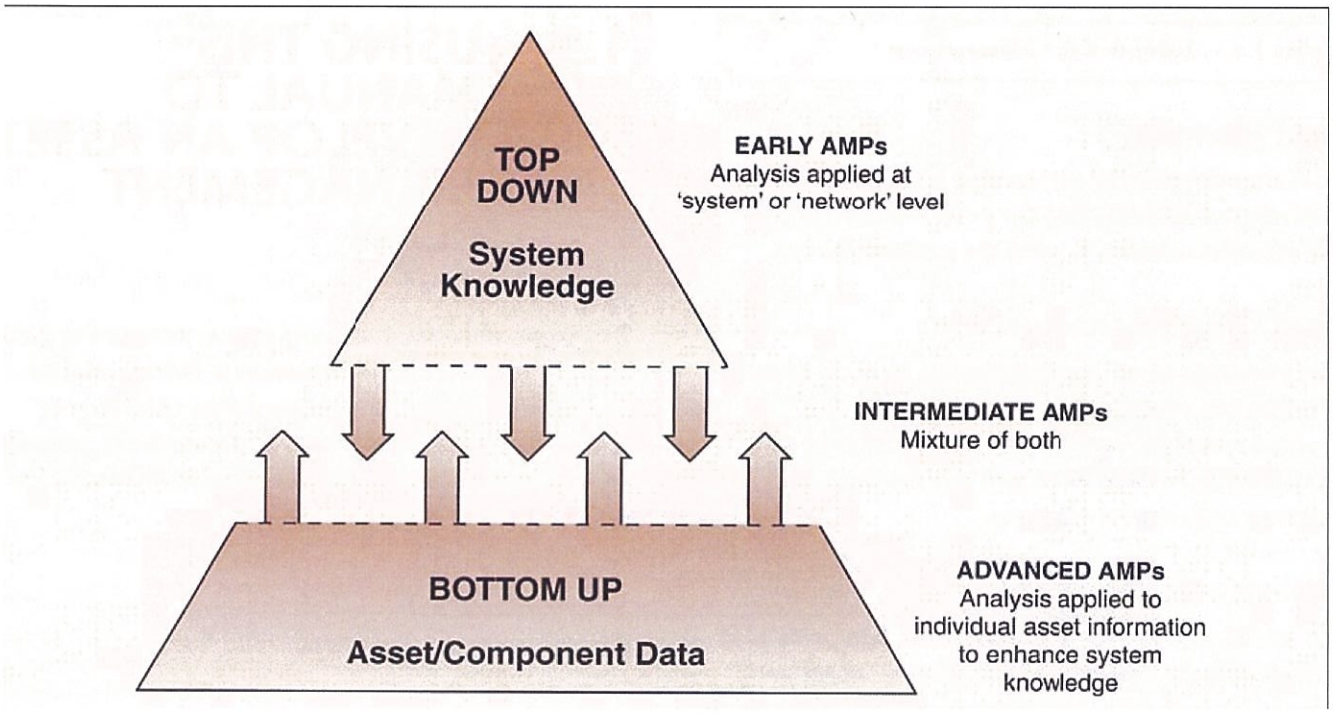
Road Map for preparing an Asset Management Plan
Source: IIMM Fig 1.5.1, p 1.11



2.4 Core and Advanced Asset Management

This asset management plan is prepared as a 'core' asset management plan in accordance with the International Infrastructure Management Manual. It is prepared to meet minimum legislative and organisational requirements for sustainable service delivery and long term financial planning and reporting. Core asset management is a 'top down' approach where analysis is applied at the 'system' or 'network' level.

Future revisions of this asset management plan will move towards 'advanced' asset management using a 'bottom up' approach for gathering asset information for individual assets to support the optimisation of activities and programs to meet agreed service levels.



3. LEVELS OF SERVICE

Levels of Service relate to outcomes the customer receives in terms of quality, quantity, responsiveness and performance as provided by the asset. To achieve and sustain acceptable standards of service for Council's road asset network requires an annual commitment of funds. These funds provide regular and responsive maintenance and the timely renewal or replacement of the asset. The provision of adequate financial resources ensures that the Bridge network is appropriately managed and preserved. Financial provisions below requirements impacts directly on community development and if prolonged, results in substantial needs for "catch up" expenditure imposed on ratepayers in the future. Additionally, deferred renewal results in increased and escalating reactive maintenance as aged assets deteriorate at increasing rates.

In developing the levels of service as documented in this Bridge Asset Management Plan, Council has given due regard to the strategic goals and objectives in the Community Strategic Plan 2010+ which sets out the strategic direction of Council to implement its Delivery Program and Operational Plan over the following four years. Council has also given due consideration to Legislative requirements and Australian Standards and stakeholder expectations in the form of customer research and expectation surveys.

The levels of service documented in this Bridge Asset Management Plan therefore reflect the best assumptions of current levels of service provided by Council, for the benefit of the community, in the context of Council's financial and human resources.

3.1 Customer Research and Expectations

In an effort to assess the priorities of the community and their attitudes to Council's performance, Council contracted Micromex Research Consultants to conduct a community survey. In December 2009 a sample population was randomly selected and the survey was conducted by telephone. The Likert Scale of 1-5 was used in all rating questions where 1 was the lowest importance or satisfaction and 5 was the highest importance or satisfaction

Respondents in the survey did not make any specific reference to bridge maintenance/construction matters and most road maintenance concerns appeared to be related to maintenance of unsealed roads.

Council uses this information in developing the Strategic Management Plan and in allocation of resources in the budget.

Further research on customer expectations will be investigated in future updates of this Asset management Plan.

3.2 Legislative Requirements

Council has to meet many legislative requirements including Australian and State legislation and State regulations. These include:

Table 3.1

Legislation	Requirement
Local Government Act 1993	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan supported by asset management plans for sustainable service delivery.
National Asset Management Framework Legislation 2010	Focuses on long term financial sustainability and provides a mandate to have long term strategy, financial statements and annual reporting mechanisms. AM plans are likely to be audited.
DLG Integrated Planning NSW	Key requirement is to integrated community plans with operational and delivery plans.
Road Transport (Safety and Traffic Management) Act 1999	Facilitates the adoption of nationally consistent road rules in NSW, the Australian Road Rules. It also makes provision for safety and traffic management on roads and road related areas including alcohol and other drug use, speeding and other dangerous driving, traffic control devices and vehicle safety accidents.

Legislation	Requirement
Work Health & Safety Act 2012	Aims to secure the health, safety and welfare of people at work. It lays down general requirements which must be met at places of work in New South Wales. The provisions of the Act cover every place of work in New South Wales. The Act covers self employed people as well as employees, employers, students, contractors and other visitors.
The Protection of the Environment Operations Act 1997 (POEO Act)	Is the key piece of environment protection legislation administered by the Department of Environment, Climate Change and Water. The POEO Act enables the Government to set our explicit protection of the environment policies (PEPs) and adopt more innovative approaches to reducing pollution.
Disability Discrimination Act	Sets out the responsibilities of Council and staff dealing with access and use of public infrastructure.

3.3 Current Levels of Service

Council has defined two tiers of service levels.

Tier 1 - Customer Levels of Service – what Council expects to provide in terms of key customer outcomes

- Ensure the bridge network is maintained at a safe and functional standard as set out in this asset management plan.
- Ensure efficient use of Councils Resources.
- Affordability – acknowledging that Council can only deliver what it can afford.
- Relevance of the service being provided – in terms of demand characteristics, future demographics, current backlogs and where the pressure points are.
- Improvement – robust asset management processes to improve Council's long-term planning and assist in the prioritisation of works.

The table below outlines the performance measures and targets that will be used to measure Council's achievements in this area.

Table 3.2

Key Performance Measure	Customer Level of Service	Performance Measure Process	Performance Target	Current Performance
Quality	Well maintained and suitable bridge network	Customer satisfaction survey – performance gap (importance – satisfaction index – Likert scale)	1.0	<1.0 assumed
	Provide smooth ride	Customer Action requests	50 per annum	Achieved
Function	Bridge network is appropriate for purpose	No. of customer complaints	5 per annum	0
Accessibility and availability	Bridge infrastructure to be provided in accordance with demonstrated community needs and Council policy	Conformance to asset hierarchies and Council policy	75% of community consider bridges in good condition or better	Not measured
Appearance	Infrastructure in public areas maintained and improved to enhance appearance of townships	Community satisfaction survey Condition inspections	High satisfaction rate	Not measured

Tier 2 - Operational or Technical Level of Service

Operational or Technical Levels of Service are what Council does in day to day delivery terms, i.e. reliability, functionality and adequacy of the services provided. Typically, this Bridge Asset Management Plan has documented these standards i.e. at what point Council repair will renew or upgrade to meet the customer outcomes listed in the customer levels of service.
Operational Levels of Service or Technical Levels of Service and have been defined for each of the following:

- Service provision through new assets: If Council provides new bridge structures/assets, then what design and maintainability standards shall apply to make them meet Council's strategic outcomes?
- Council will use design standards as required by legislation as well as in line with providing fit for purpose assets. This includes the criteria of functionality and asset capacity.
- Service alignment based on future needs: Upgrade, expand or reconstruct an asset to original standard or improved standard: At what point, condition, capacity and functionality will Council intervene to renew/upgrade/expand an asset?
- Service Continuity through Maintenance Responsiveness: When will Council intervene with a maintenance repair and what will be council responsiveness in terms of customer requests for maintenance faults?

Table 3.3

Key Performance Measure	Technical Level of Service	Performance Measure Process	Performance Target	Current Performance
Maintenance and condition	Council will maintain its bridge infrastructure in a sustainable manner so that it is safe and fit for the purpose	Compliance with inspection regimes and maintenance intervention levels specified within this Plan.	95% compliance with inspection and maintenance targets specified in this Plan	Inspection and maintenance intervention levels not measured.
		Overall condition of bridge	100% of bridge infrastructure to be below intervention levels	
Function	Infrastructure designed, constructed and maintained to meet current/anticipated usage and capacity.	Percentage of infrastructure which meets dimensions required for type of usage	All assets designed and constructed to meet capacity as specified in Councils road hierarchy	New construction meets current and anticipated usage
Environment	Infrastructure designed, constructed and maintained taking into account local environment.	Assessment of additional cost caused by environmental impacts. Number of complaints regarding environmental damage as a result of Council works.	All infrastructure designed to minimise damage to local environment. Appropriate work practices to achieve this objective.	Current design practices account for assessment of soil types, water movement, storm frequencies and natural environment.
Cost/Affordability	Bridge infrastructure services provided at best value for money	Costs comparison with other similar LGA'S/industry standards	Industry data identifies that costs are competitive	Measured through tender processes where applicable

Key Performance Measure	Technical Level of Service	Performance Measure Process	Performance Target	Current Performance
		Programmed work completed within time and budget constraints	95%	>95%

3.4 Desired Levels of Service

At present, indications of desired levels of service are obtained from various sources including the 2009 Resident Satisfaction Survey, residents feedback to Councillors and staff, service requests and correspondence. In the preparation of the Upper Hunter Shire Council's Community Strategic Plan 2010+, extensive community consultations were undertaken.

Council has yet to quantify desired levels of service. This will be done in future revisions of this infrastructure and asset management plan.

4. FUTURE DEMAND

4.1 Demand Forecast

Factors affecting demand include population change, changes in demographics, seasonal factors, vehicle ownership, consumer preferences and expectations, economic factors, agricultural practices, environmental awareness, etc.

Demand factor trends and impacts on service delivery are summarised in Table 4.1.

Table 4.1

Demand factor	Present position	Projection	Impact on services
Population	Upper Hunter Shire Council's population in 2011 was 13,754. This represents a 1.0% per annum increase in population between 2001 and 2011.	Upper Hunter Shire Council's population is predicted to continue to grow over the next 10 years. Future growth is likely due to the area's proximity to the coal mining industry and the continued attraction of a rural lifestyle.	There will be some impact on services and infrastructure as road congestion increases.
Demographics	27.0% of the Shire's population is aged between 15 – 39 years. This is lower than the national average of 34.0% and can be attributed to fewer job opportunities and lack of higher educational institutions in the area.	The percentage of the population in this age group is expected to remain static or increase slightly.	Negligible impact on bridge network.
	15.5% of the Shire's population is aged over 65 years compared to the national average of 14.7%. This may be able to be attributed to the attraction and relative safety of the area as a retirement base and the relatively low house prices in some areas of the Shire.	The number of people aged over 65 will continue to increase. This is consistent with the national trend toward an ageing population and longer life expectancy.	Increase in demand for accessibility for mobility impaired people

4.2 Changes in Technology

Technology changes are forecast to affect the delivery of services covered by this plan in the following areas.

Table 4.2

Technology Change	Effect on Service Delivery
Introduction of new machinery	Reduced costs, improved productivity and OH&S
Bridge renewal treatments	Increased residual life and lower lifecycle costs
Asset data capture by video inspection and the transportation of this information onto Council's GIS	Spatial location and condition of assets able to be verified from GIS reducing the need for reactive inspections

4.3 Demand Management Plan

Demand for new services will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand and demand management. Demand management practices include non-asset solutions, insuring against risks and managing failures.

Opportunities identified to date for demand management are shown in Table 4.3. Further opportunities will be developed in future revisions of this asset management plan.

Table 4.3

Service Activity	Demand Management Plan
Community engagement	Engage with the community to identify justifiable community needs from other expectations and consider only community needs consistent with Council's Charter.
Customer requests	Analyse customer requests to optimise the use and performance of existing road services and look for non-asset based solutions to meet demand for services
Traffic load and volume control	Improve bridge performance through road mass restrictions and reducing traffic volumes. Load limits to be placed on bridges in poor condition, where reasonable alternate access is available.
Explanatory marketing and education campaigns	Help modify community behaviour through explanatory marketing and education campaigns.

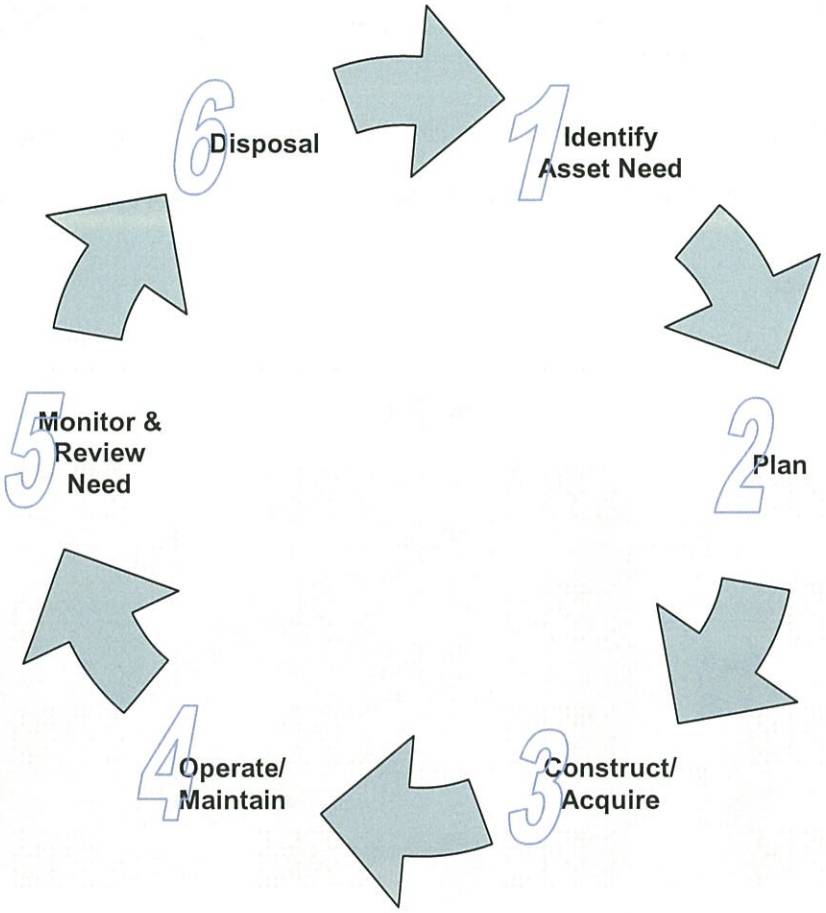
4.4 New Assets from Growth

It is anticipated that any addition of major bridge infrastructure will be a result of subdivision development. In this case the developer would be responsible for the construction of the asset with the Shire eventually assuming renewal and maintenance responsibilities.

5. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how Council plans to manage and operate bridge assets at the agreed levels of service (defined in section 3) while optimising life cycle costs. To undertake lifecycle asset management, means considering all management options and strategies as part of the asset lifecycle, from planning to disposal. The objective of managing the assets in this manner is to look at long-term cost impacts (or savings) when making asset management decisions. Figure 1 below provides a graphical representation of the asset lifecycle including each of the stages an asset passes through during its life.

Figure 1 The Asset Lifecycle



5.1 Background Data

5.1.1 Physical parameters

The assets covered by this asset management plan are as follows;

- Concrete Bridges
- Timber Bridges
- Major Culverts ie. > 6m in length.

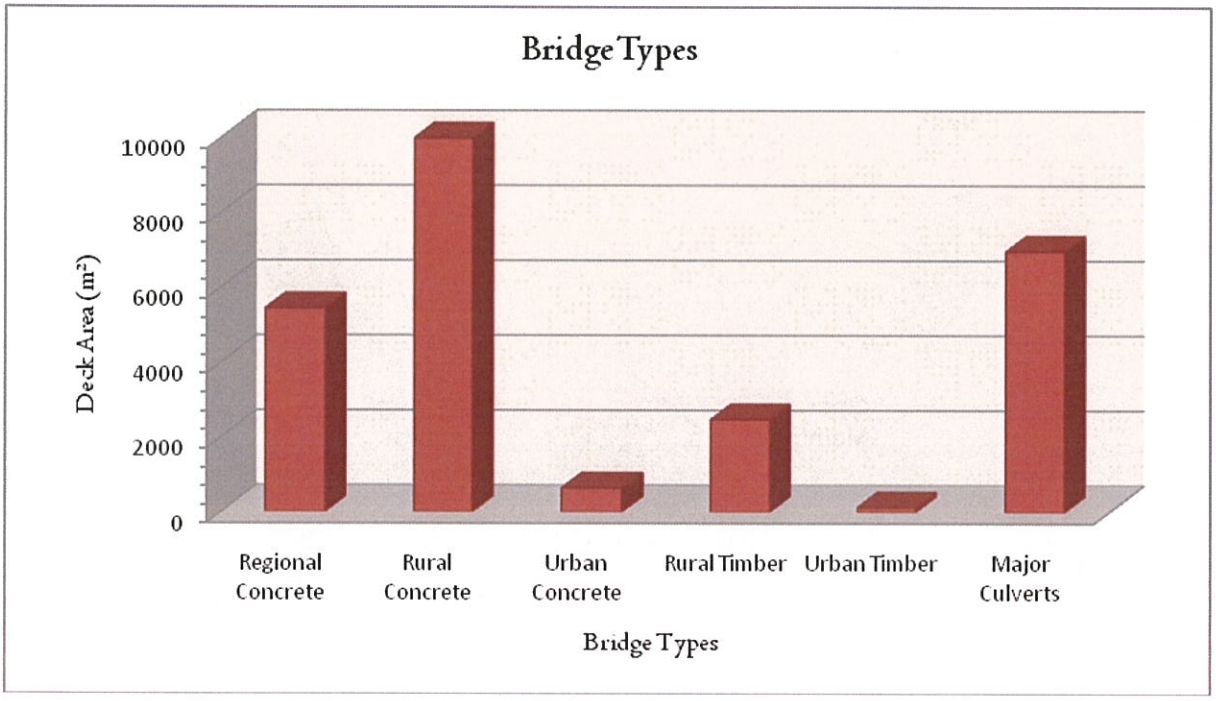
Table 5.1

Bridge Type	No.	Length (m)	Area (m²)
Concrete - Regional	18	791	5436
Concrete – Rural Local	39	1496	9978
Concrete – Urban Local	5	128	640
Timber – Rural Local	25	619	2468
Timber – Urban Local	3	85	125
Major Culverts	47	630	6966
Total	**137**	**3749**	**25613**

Upper Hunter Shire Council's bridge network consists of a mixture of concrete and timber bridges and major culverts.

Concrete bridges account for 85% of the network's bridge deck area. Figure 2 details the various types of bridge structures in the network.

Figure 2. Bridge Type



5.1.2 Asset capacity and performance

Bridges and major drainage structures are crucial components of the road network by virtue of their capital value, strategic and operational importance, and the effect on the road network. In the Upper Hunter Shire's largely rural network, where alternative waterway crossings are rare, bridge service restrictions can have significant social and economic impacts. While both bridges and road pavements are designed and built in accordance with contemporary standards, bridges are far more sensitive to increasing loads and changing vehicle dynamics.

Whilst Council's new bridge assets are designed to meet relevant standards there are service deficiencies in the older bridge network as shown in Table 5.2.

Table 5.2

Location	Service Deficiency
Local Rural and Urban Roads	Some bridge widths are below the desirable width for road classification. Some bridges have load limit restrictions Some bridges and culverts are subject to inundation

5.1.3 Asset condition

A number rating system has been used to describe asset condition. Condition is measured using a rating system as described in the following tables below.

Table 5.3 – Bridges

Rating Scale	Condition Description
Concrete	**This element defines the condition and load carrying capacity of the concrete members.**
1	No significant deterioration.
2	Minor cracks and spalls. No exposed reinforcement or evidence of corrosion.
3	Some delimitation or spalls may be present and some reinforcement may be exposed. Corrosion of reinforcement may be present but loss of section is minor and does not significantly affect the serviceability of the element or bridge.
4	Advanced deterioration. Corrosion of reinforcement and/or loss of section is sufficient to warrant analysis to ascertain the impact on the strength and/or serviceability of either the element or the bridge.
Steel	**This element defines the condition of protective coatings and section loss of steel members.**
1	There is no evidence of corrosion and the protective coating is sound and functioning as intended to protect the metal surface.
2	There is little or no corrosion. The protective coating may be chalking, peeling, cracking or showing early signs of deterioration. There is no exposed metal.
3	The protective coating has failed. Rust and pitting may be present but section loss is minor and does not yet affect the serviceability of the member or structure.
4	Corrosion is advanced. Section loss is sufficient to warrant analysis to ascertain the impact on the strength and/or serviceability of either the element or the structure.
Timber	**This element defines timber condition and load carrying capacity**
1	Investigation indicates no decay. There may be cracks, checks or splits having no affect on strength or serviceability.
2	Decay, insect infestation, splitting, cracking, checking or crushing may exist but none is sufficiently advanced to affect serviceability.
3	Decay, insect infestation, splitting, cracking, checking or crushing has resulted in loss of strength of the element but not of sufficient magnitude to affect the serviceability of the structure.
4	Advanced deterioration. Decay, insect infestation, splitting, cracking, checking or crushing has produced loss of strength that affects the serviceability of the structure.

Frequency of Assessment: Every 2 years.

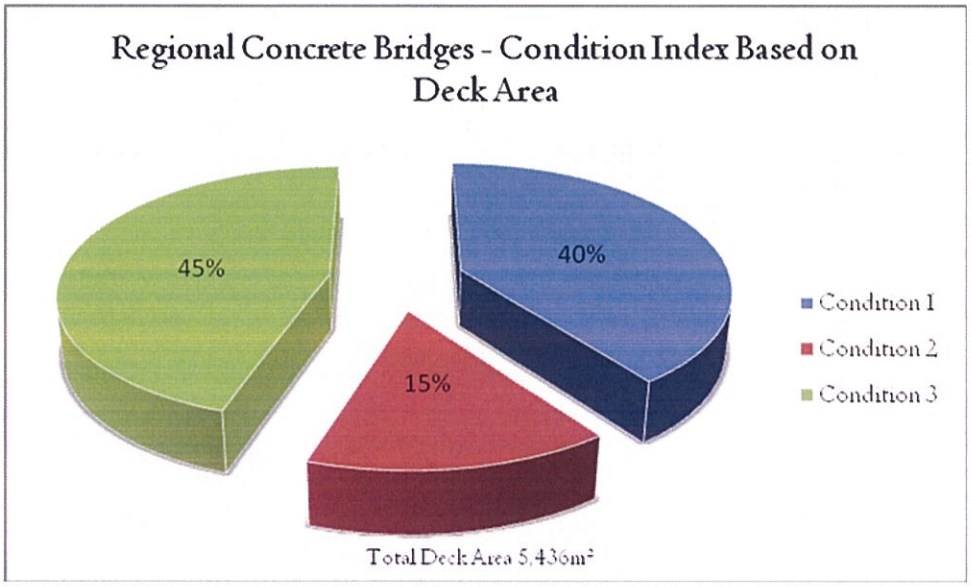
Rating Criteria

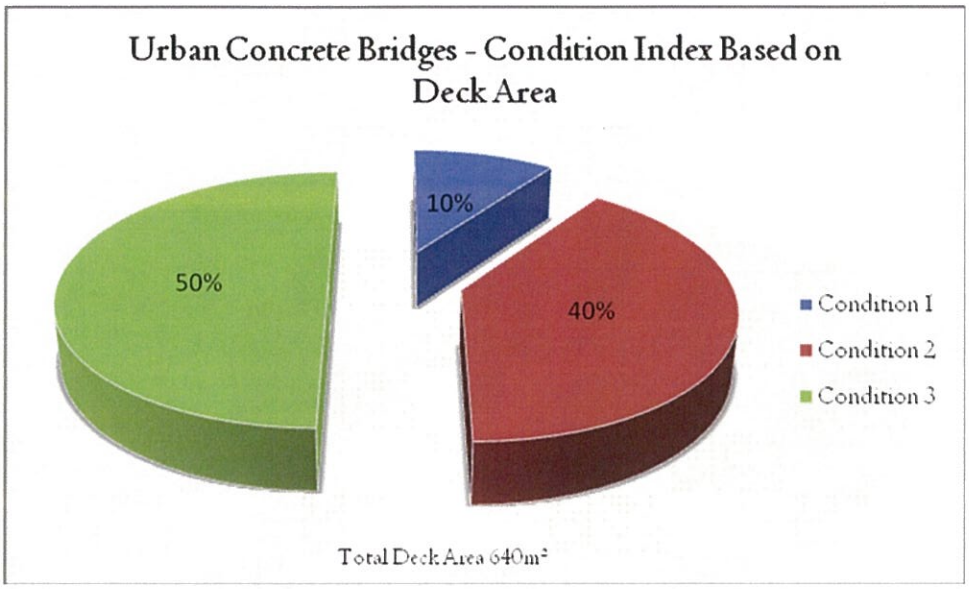
Condition assessment is undertaken for the following criteria and an average rating established.

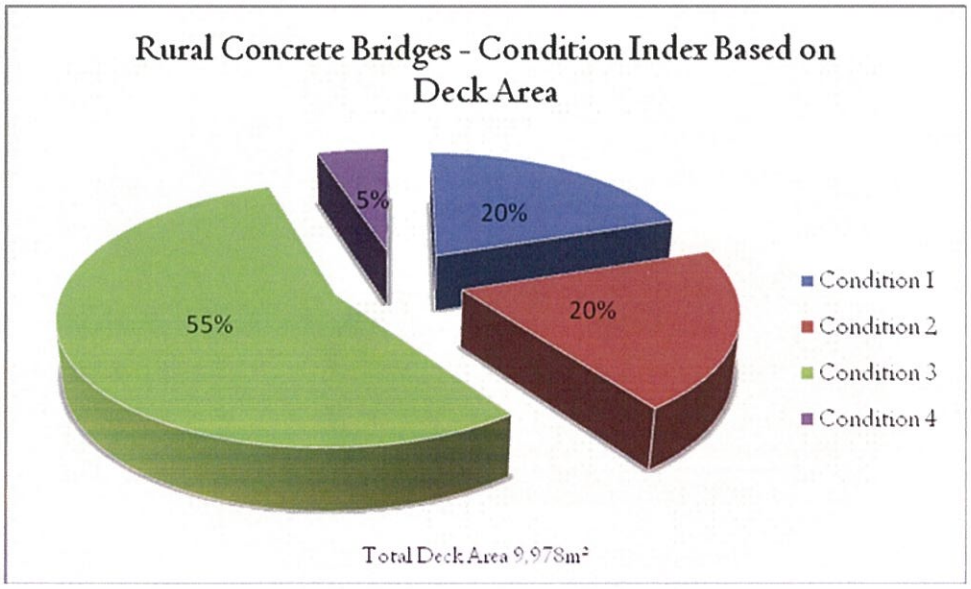
- Abutments and abutment bearings
- Deck and Deck seal
- Projection angles
- Bearing
- Expansion joints
- Girders and corbels
- Approaches
- Signs
- Handrails, crash rails and approach rails
- Kerbs
- Piers

Asset Condition Profile

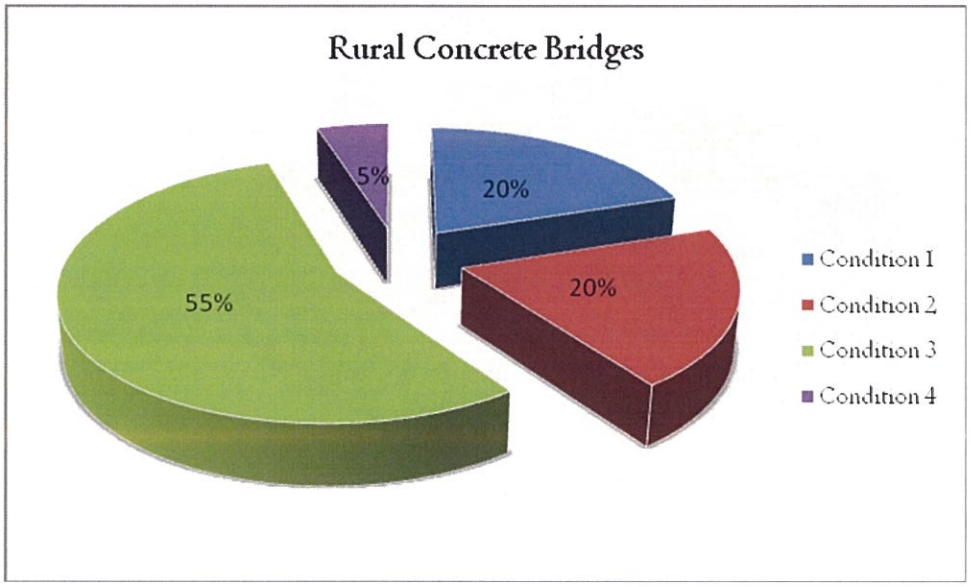
The current condition profile of concrete bridges is shown below (percentages are calculated on deck area)

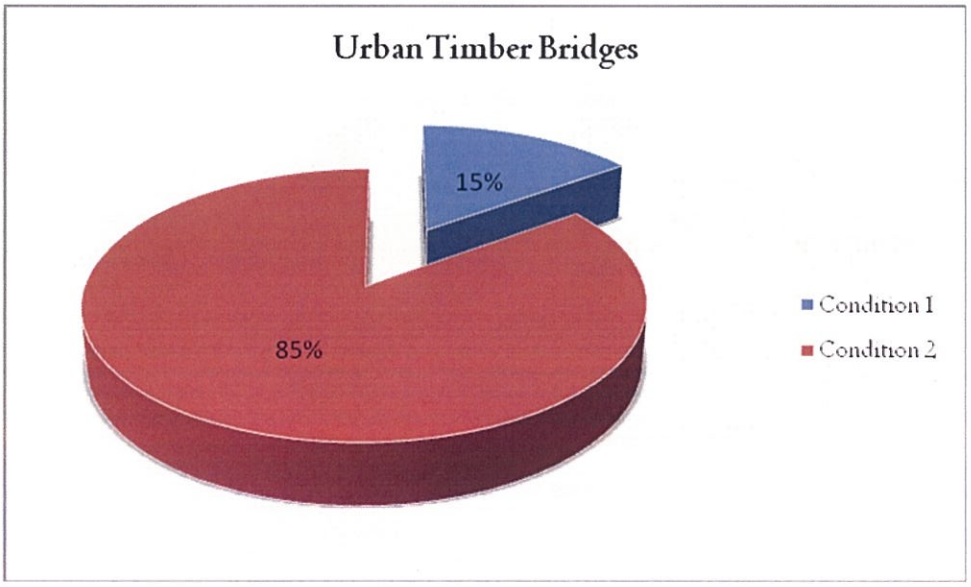



Urban Concrete Bridges - Condition Index Based on Deck Area
10%
40%
50%
Condition 1
Condition 2
Condition 3
Total Deck Area 640m²


Rural Concrete Bridges - Condition Index Based on Deck Area
5%
20%
20%
55%
Condition 1
Condition 2
Condition 3
Condition 4
Total Deck Area 9,978m²

The current condition profile of timber bridges is shown below (percentages are calculated on deck areas).





5.1.4 Asset valuations

The value of assets as at 30 June 2010 covered by this asset management plan is summarised below.

Table 5.4

Asset Type	Replacement Value ($,000)	Annual Depreciation ($,000)	Accumulated Depreciation ($,000)	Written Down Value ($,000)
Bridges	39,408	399	13,002	26,406
Culverts	4,902	61	1,000	3,902
Total	44,310	460	14,002	30,308

As at 30 June 2012, the annual depreciation (annual asset consumption) for bridge assets is calculated at $ 460,000

Depreciable Amount $ 44,310,000

Depreciated Replacement Cost $ 30,308,000

Council's sustainability reporting reports the rate of annual asset consumption and compares this to asset renewal and asset upgrade and expansion.

Asset Consumption 1.0%

Asset renewal/upgrade 1.35%

5.2 Risk Management Plan

Council's road network is inspected in accordance with its procedures titled 'Inspection, Evaluation, and Maintenance of Roads'. The Procedure is used to determine the types of hazards that require consideration for repair, and the setting of priorities and appropriate timetables for repair.

During the inspection process, roads and associated infrastructure such as bridges, are inspected in accordance with set criteria based on the location of the defect within the road reserve, and the hazard type and severity.

A road hierarchy weighting is the third parameter used in the evaluation process.
The above values are used to determine a Road Risk Rating (RRR) which then allows Council to prioritise the corrective action it intends to take, or allows control measures to be scheduled.

5.3 Routine Maintenance Plan

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again.

5.3.1 Maintenance plan

Maintenance includes reactive, planned and cyclic maintenance work activities.

Reactive maintenance is unplanned repair work carried out in response to service requests, risk assessment priorities and management/supervisory directions. Assessment and prioritisation of reactive maintenance is undertaken by Council staff using experience and judgement, and risk management procedures.

Planned maintenance is repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown experience, prioritising, scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance. At present Council does not have an MMS system in use for bridges and culvert maintenance.

Cyclic maintenance is the service of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting steelwork, repair or replacement of deck joints or seals, barrier repairs, timber member replacement etc.

Maintenance expenditure trends are shown in Table 5.5.

Table 5.5

Year	Maintenance Expenditure		
	Cyclic	Reactive	Total
2009/2010	$147,000	$79,500	$226,000
2010/2011	$141,000	$76,000	$217,000
2011/2012	$172,000	$93,000	$265,000

Reactive maintenance work associated with bridges is currently estimated at 35% which is above the desired 10% level.

Maintenance expenditure levels are considered to be adequate to meet required service levels. Future revision of this asset management plan will include linking required maintenance expenditures with required service levels.

5.3.2 Standards and specifications

Maintenance work is carried out in accordance with the following Standards and Specifications.

- Austroads Guide to Bridge Technology Part 7 Maintenance and Management of Existing Bridges

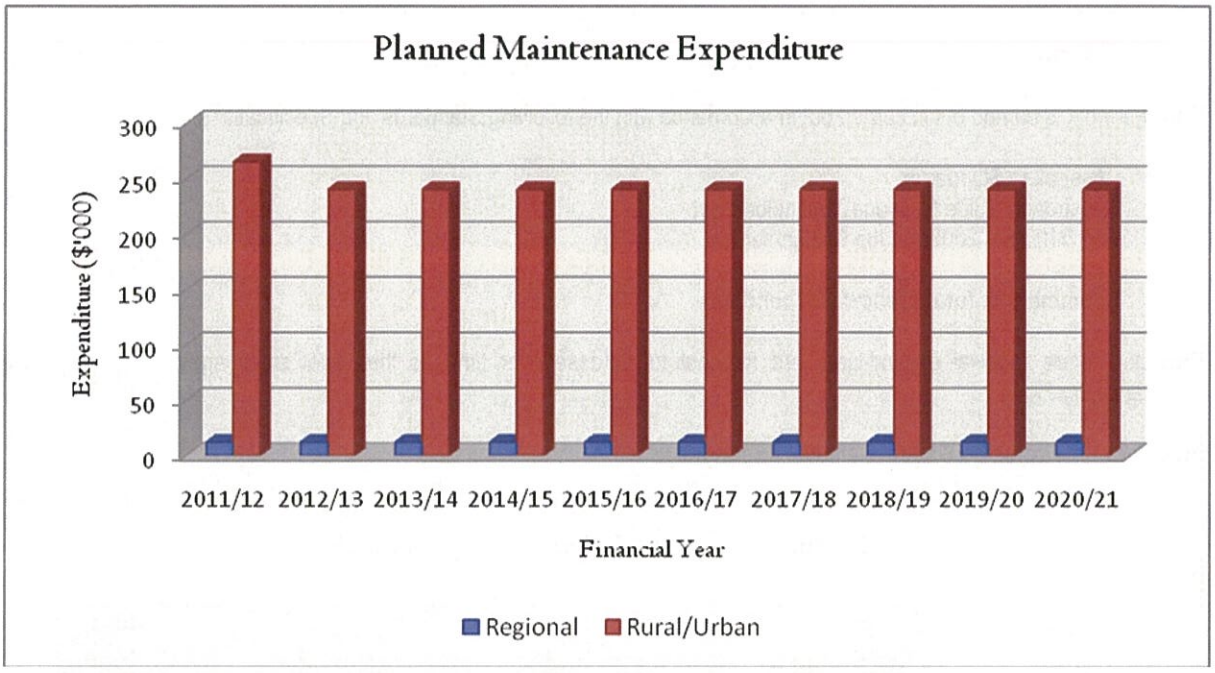
5.3.3 Summary of future maintenance expenditures

Maintenance refers to works undertaken to address minor defects. These treatment works are undertaken to keep Council's bridge assets in a safe and operational condition, but not necessarily to improve the overall condition of these assets.

It should be noted that when undertaking the lifecycle modelling, these types of costs are taken into consideration by assuming that, each year a percentage of these distresses will be repaired as part of Council's routine maintenance. If these assets are left to deteriorate (i.e. sufficient capital expenditure is not allocated), then the amount of distresses being fixed under routine maintenance will increase and hence the routine maintenance expenditure required will also increase. Equally, if the condition of these assets improves then the routine maintenance expenditure required will decrease.

Future maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Fig 3. Note that all costs are shown in current 2012/13 dollar values.

Figure 3. Planned Maintenance Expenditure



Deferred maintenance, ie works that are identified for maintenance and unable to be funded are to be included in the risk assessment process.

Maintenance is funded from Council's operating budget and grants where available. This is further discussed in Section 6.2.

5.4 Renewal/Replacement Plan

Renewal expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is upgrade/expansion or new works expenditure.

5.4.1 Renewal plan

Assets requiring renewal are identified from estimates of remaining life obtained from the asset register worksheets. See Appendix A. Proposals are inspected to verify accuracy of remaining life estimate and to develop a preliminary renewal estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programmes. The priority ranking criteria is detailed in Table 5.6.

Table 5.6

Criteria	Ranking
Accident potential	1
Heavy vehicle volume	2
Local Network significance	3
Regional network significance	4
Light traffic volume	5
Cost/Benefit ratio	6
Existing maintenance costs	7
Environmental issues	8

Renewal will be undertaken using 'low-cost' renewal methods where practical. The aim of 'low-cost' renewals is to restore the service potential or future economic benefits of the asset by renewing the assets at a cost less than replacement cost.

5.4.2 Renewal standards

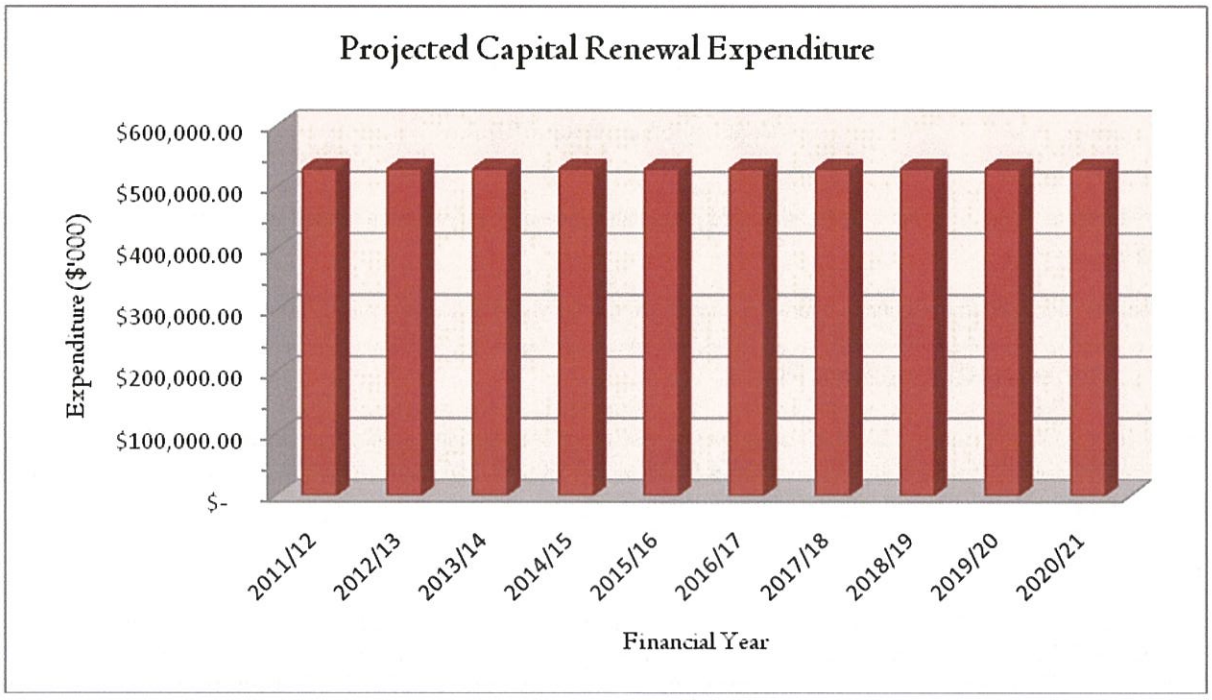
Renewal work is carried out in carried out in accordance with the following Standards and Specifications.

- Australian Standards
- Austroads Guide to Bridge Technology Set
- AS 5100 Set 2007: Bridge Design set

5.4.3 Summary of future renewal expenditure

Projected future renewal expenditures are forecast to increase over time as the asset stock ages. The costs are summarised in Fig 4.

Figure 4. Projected Capital Renewal Expenditure



Deferred renewal, ie those assets identified for renewal and not scheduled for renewal in capital works programs are to be included in the risk assessment process in the risk management plan.

Renewals are to be funded from Council's capital works program and grants where available. This is further discussed in Section 6.2.

5.5 Creation/Acquisition/Upgrade Plan

New works are those works that create a new asset that did not previously exist, or works which upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost to the Council from land development. These assets from growth are considered in Section 4.4.

5.5.1 Selection criteria

New assets and upgrade/ expansion of existing assets are identified from various sources such as councillor or community requests, proposals identified by strategic plans or partnerships with other organisations. Candidate proposals are inspected to verify need and to develop a preliminary renewal estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programmes. The priority ranking criteria is the same as that used for assets requiring renewal (Table 5.6).

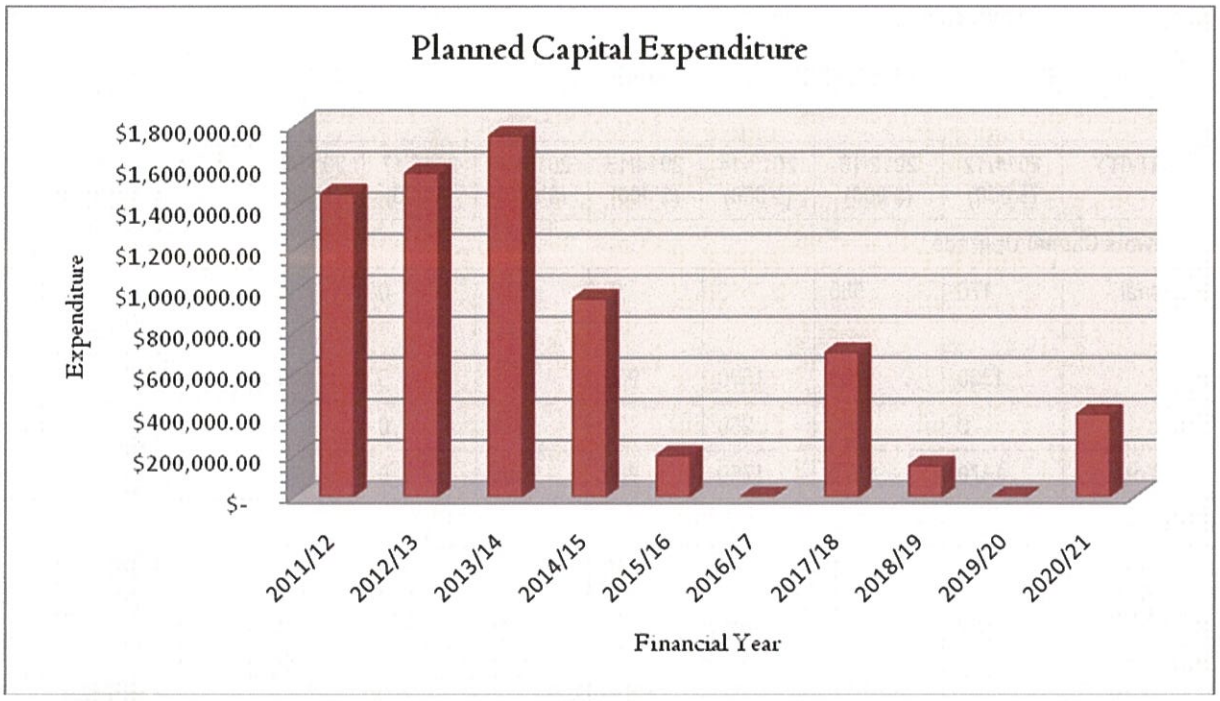
5.5.2 Standards and specifications

Standards and specifications for new assets and for upgrade/expansion of existing assets are the same as those for renewal shown in Section 5.4.2.

5.5.3 Summary of future upgrade/new assets expenditure

Planned upgrade/new asset expenditures are summarised in Fig 5.

Figure 5. Planned Capital Upgrade/New Asset Expenditure



New assets and services are to be funded from Council's capital works program and grants where available. This is further discussed in Section 6.2.

5.6 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. It is unlikely that any bridge would be disposed of while it is still in service. Demolition and disposal of bridge assets is only likely to occur during the replacement process.

6. FINANCIAL SUMMARY

This section contains the financial requirements resulting from all the information presented in the previous sections of this asset management plan. The financial projections will be improved as further information becomes available on desired levels of service and current and projected future asset performance.

6.1 Financial Statements and Projections

The financial projections are shown in Table 6 for planned operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion/new assets).

Table 6.1 Planned Operating and Capital Expenditure

ACTIVITY	2011/12 ($'000)	2012/13 ($'000)	2013/14 ($'000)	2014/15 ($'000)	2015/16 ($'000)	2016/17 ($'000)	2017/18 ($'000)	2018/19 ($'000)	2019/20 ($'000)	2020/21 ($'000)
Renewals/Capital Upgrade										
Regional	170	530	0	0	0	0	0	0	0	0
Rural	1300	790	1500	960		0	700	0		400
Urban	0	250	250	0	200	0	0	150	0	0
Sub Total	**1470**	**1570**	**1750**	**960**	**200**	**0**	**700**	**150**		**400**
Maintenance										
Regional	12	12	12	12	12	12	12	12	12	12
Rural/Urban	265	240	240	240	240	240	240	240	240	240
Sub Total	**277**	**252**	**252**	**252**	**252**	**252**	**252**	**252**	**252**	**252**
Total	**1627**	**1822**	**2002**	**1212**	**452**	**252**	**952**	**402**	**252**	**652**

Note: all costs are shown in current 2012/13 dollar values.

6.1.1 Sustainability of service delivery

There are two key indicators for financial sustainability that have been considered in the analysis of the services provided by this asset category, these being long term life cycle costs and medium term costs over the 10 year financial planning period.

Long term - Life Cycle Cost

Life cycle costs (or whole of life costs) are the average costs that are required to sustain the service levels over the longest asset life. Life cycle costs include maintenance and asset consumption (depreciation expense). The annual average life cycle cost for the services covered in this asset management plan is $700,000.

Life cycle costs can be compared to life cycle expenditure to give an indicator of sustainability in service provision. Life cycle expenditure includes maintenance plus capital renewal expenditure. Life cycle expenditure will vary depending on the timing of asset renewals. The annual average lifecycle cost for the services covered in this asset management plan is $840,000.

A gap between life cycle costs and life cycle expenditure gives an indication as to whether present consumers are paying their share of the assets they are consuming each year. The purpose of this bridge asset management plan is to identify levels of service that the community needs and can afford and develop the necessary long term financial plans to provide the service in a sustainable manner.

The life cycle gap (positive) for services covered by this asset management plan is $140,000 per annum. The life cycle sustainability index is 1.20.

Medium term – 10 year financial planning period

This asset management plan identifies the estimated maintenance and capital expenditures required to provide an agreed level of service to the community over a 10 year period for input into a 10 year financial plan and funding plan to provide the service in a sustainable manner.

This may be compared to existing or planned expenditures in the 10 year period to identify any gap. In a core asset management plan, a gap is generally due to increasing asset renewals.

The projected asset renewals are compared to planned renewal expenditure in the capital works program in Fig 7. Table 6.1 shows the annual and cumulative funding gap between projected and planned renewals.

Figure 7. Projected and Planned Renewals

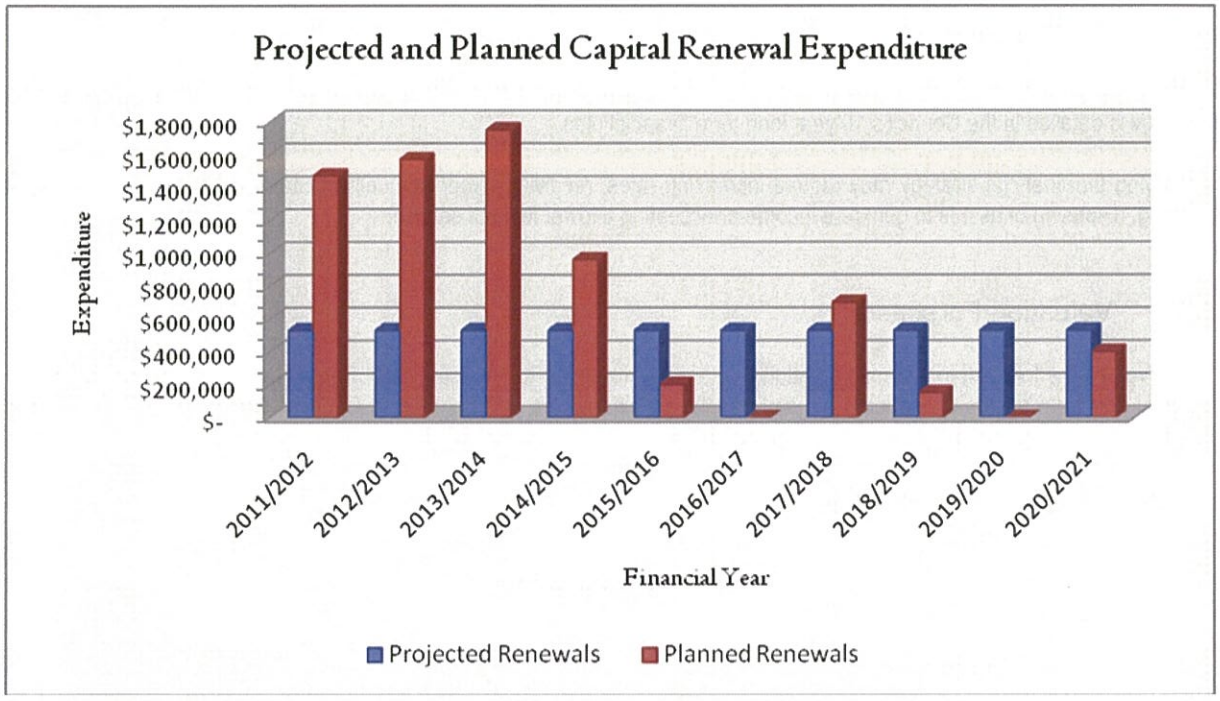


Table 6.2 shows the gap between projected and planned renewals.

Table 6.2

Year	Projected Renewals $	Planned Renewals $	Renewal Funding Gap $	Cumulative Gap $
2011/2012	530,000	1,470,000	$940,000	940,000
2012/2013	530,000	1,570,000	$1,040,000	1980,000
2013/2014	530,000	1,750,000	$1,220,000	3,200,000
2014/2015	530,000	960,000	$430,000	3,630,000
2015/2016	530,000	200,000	-$330,000	3,300,000
2016/2017	530,000	0	-$530,000	2,770,000
2017/2018	530,000	700,000	$170,000	2,940,000
2018/2019	530,000	150,000	-$380,000	2,560,000
2019/2020	530,000	0	-$530,000	2,030,000
2020/2021	530,000	400,000	-$130,000	1,900,000

Providing services in a sustainable manner will require matching of projected asset renewals to meet agreed service levels with planned capital works programs and available revenue.

A gap between projected asset renewals, planned asset renewals and funding indicates that further work is required to manage required service levels and funding to eliminate any funding gap.

Council will manage the 'gap' by developing this asset management plan to provide guidance on future service levels and resources required to provide these services, and what will be the result if the gap is not funded such as:

- reduced levels of service.
- reduced customer satisfaction levels.
- increased risk/safety.
- greater proportion of asset in poor condition

6.2 Funding Strategy

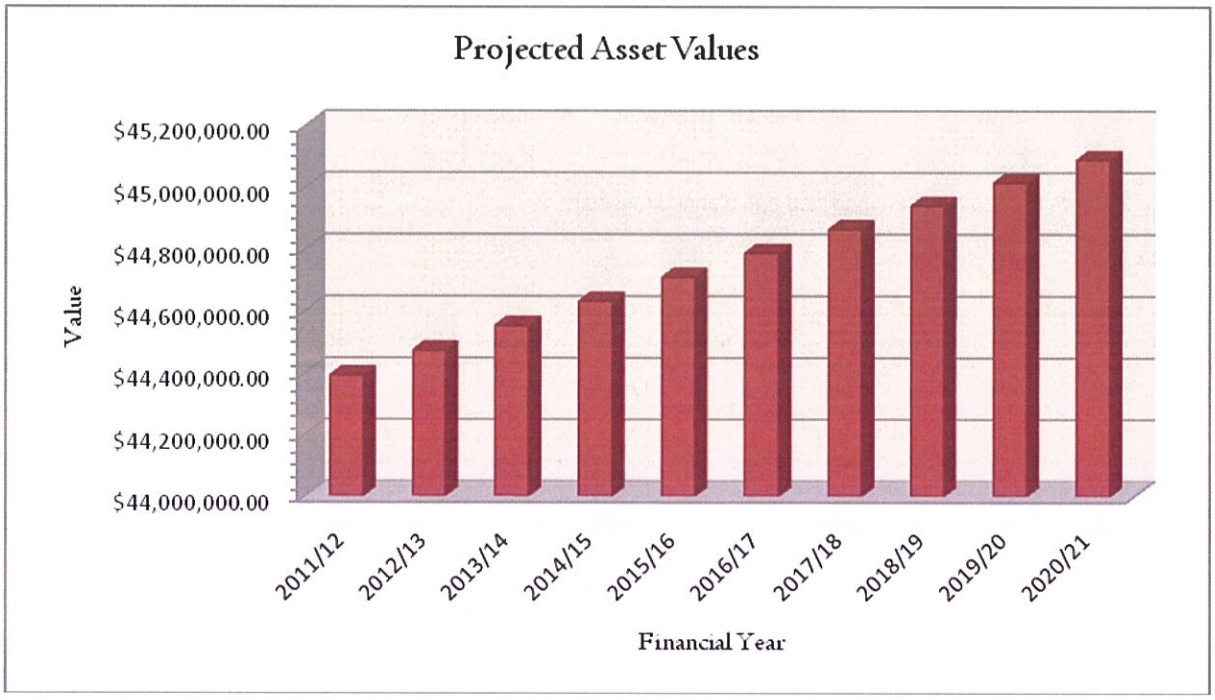
Projected expenditure identified in Section 6.1 is to be funded from Council's operating and capital budgets. The funding strategy is detailed in the Council's 10 year long term financial plan.

Achieving the financial strategy may require increasing rates, receiving larger amounts of State and Federal Government funding, disposing of assets to generate income or accepting a lower level of service.

6.3 Valuation Forecasts

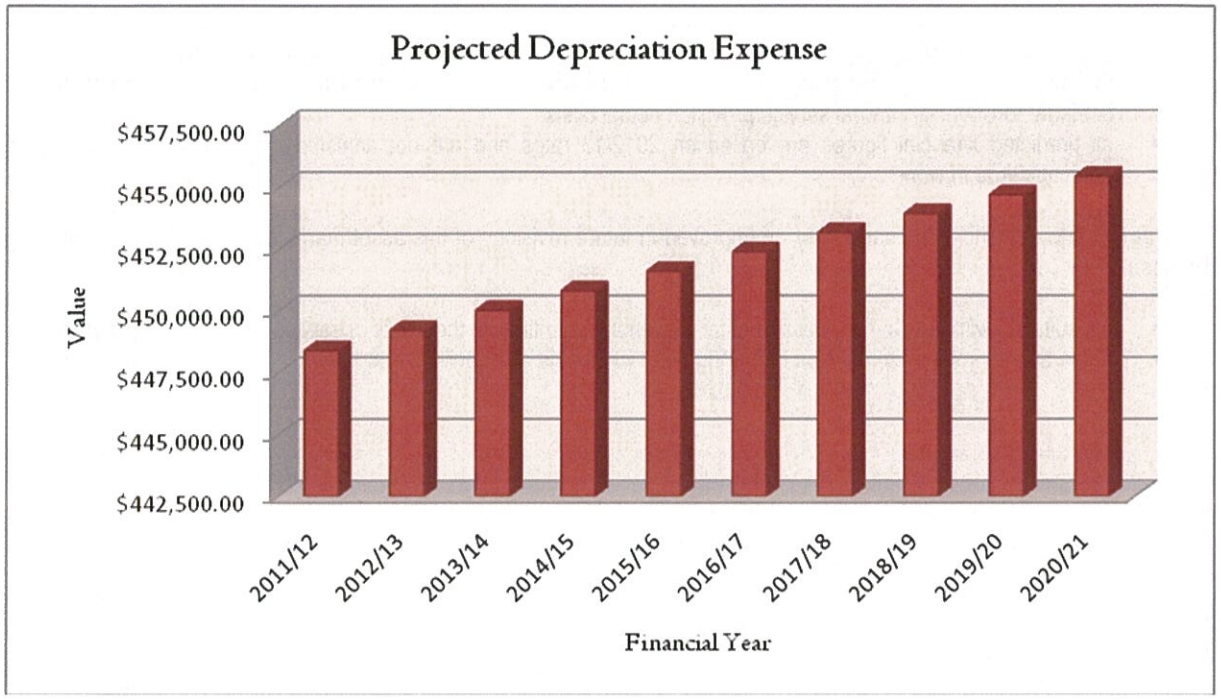
Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by Council and from assets constructed by land developers and others and donated to Council. Fig 8 shows the projected replacement cost asset values over the planning period in current 2011/12 dollar values.

Figure 8. Projected Asset Values



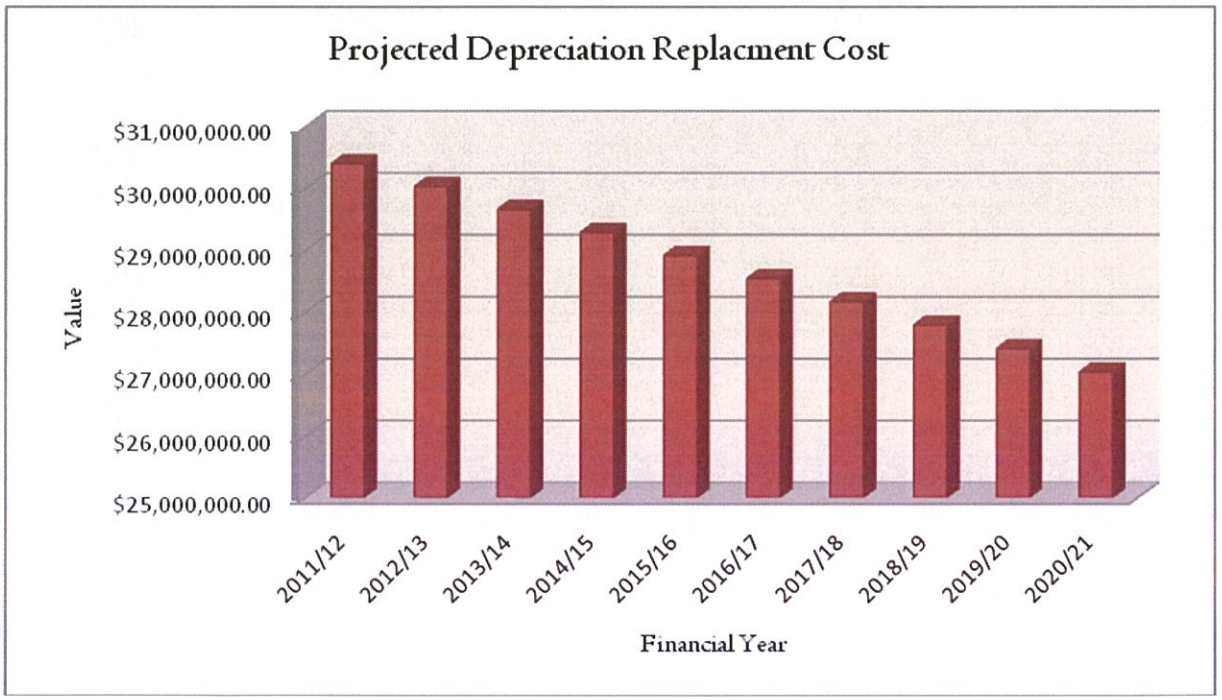
Depreciation expense values are forecast in line with asset values as shown in Fig 9.

Figure 9. Projected Depreciation Expense



The depreciated replacement cost (current replacement cost less accumulated depreciation) will vary over the forecast period depending on the rates of addition of new assets, disposal of old assets and consumption and renewal of existing assets. Forecast of the assets' depreciated replacement cost is shown in Fig 10.

Figure 10. Projected Depreciated Replacement Cost



6.4 Key Assumptions made in Financial Forecasts

This section details the key assumptions made in presenting the information contained in this asset management plan and in preparing forecasts of required operating and capital expenditure and asset values, depreciation expense and carrying

amount estimates. It is presented to enable readers to gain an understanding of the levels of confidence in the data behind the financial forecasts.

Key assumptions made in this asset management plan are:

- the current levels of service will remain constant over the life of this bridge asset management plan;
- the treatment and maintenance costs are based on Council's current schedule of rates and may not directly compare to Councils internal service provision actual costs;
- all predicted financial figures are based on 2012/13 rates and are not adjusted by the inflation rate for the particular year of work.

Accuracy of future financial forecasts may be improved in future revisions of this asset management plan by the following actions:-

- consultation with the Community and other stakeholders to finalise the levels of service currently being delivered;
- refine and improve the prediction modelling (life cycle paths and decision matrices).

7. ASSET MANAGEMENT PRACTICES

7.1 Accounting/Financial Systems

Council uses CIVICA's 'Authority' as its corporate computer system. Authority has a suite of accounting/financial modules to meet all day to day operational and reporting requirements.

The Director Corporate Services is delegated the statutory responsibility as Council's 'Responsible Accounting Officer'. The Responsible Accounting Officer is to ensure that Council has adequate control systems, processes and procedures in place and these being applied to meet all financial operating and reporting requirements.

The Local Government Act 1993 (Act) Chapter 13 sets of requirements for management reporting, accounting, auditing and financial reporting requirements for Council. The NSW Division of Local Government also issues the 'Local Government Code of Accounting Practice and Financial Reporting', which assist in the interpretation and application of the Act, and the application of Australian Accounting Standards to the audit and financial reporting functions.

The Government Code of Accounting Practice and Financial Reporting also provides a mechanism which ensures appropriate accounting policies and practices are adopted. For infrastructure, significant accounting policies are detailed in the annual financial reports. These include polices on the acquisition of assets, initial asset recognition, subsequent costs, asset revaluations, capitalisation thresholds, depreciation and disposal and de-recognition.

It is possible that changes will be required to accounting policies and practices resulting from this Road Asset Management Plan. These will be assessed and implemented as soon as practical.

7.2 Asset Management Systems

Council's adopted Asset Management System is 'Confirm'.
Asset valuation information is currently stored in excel spreadsheets.
The Manager Civil Assets is ultimately responsible for Council's Asset Management System. Confirm securely stores asset data by restricting access to staff delegated with the responsibility of updating information.

7.3 Information Flow Requirements and Processes

The key information that flows *into* this asset management plan are:

- the asset register data on size, age, value, remaining life of the network;
- the unit rates for categories of work/material;
- the adopted service levels;
- projections of various factors affecting future demand for services;
- correlations between maintenance and renewal, including decay models;
- data on new assets acquired by council.

The key information that flows *from* this asset management plan are:

- the assumed Works Program and trends;
- the resulting budget, valuation and depreciation projections;
- the useful life analysis.

These will impact the Long Term Financial Plan, Strategic Business Plan, annual budget and departmental business plans and budgets.

Council recognises that the process for recognising new assets and capitalisation requires reviewing and improving.

7.4 Standards and Guidelines

This Bridge Asset Management Plan has been written using Nams Plus Asset Management Guidelines which are an initiative of the Institute of Public Works Engineering Australia (IPWEA).

At present Council does not have a dedicated Asset Management Policy.

8. PLAN IMPROVEMENT AND MONITORING

8.1 Performance Measures

The effectiveness of the asset management plan can be measured in the following ways:

- the degree to which the required cashflows identified in this asset management plan are incorporated into Council's long term financial plan and Strategic Management Plan;
- the degree to which 1-5 year detailed works programs, budgets, business plans and organisational structures take into account the 'global' works program trends provided by the asset management plan.

8.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 8.1.

Table 8.1

Task No	Task	Responsibility	Resources Required	Timeline
1.	Obtain Council approval of this Asset Management Plan	MCA		complete
2.	Confirm desired levels of service by establishing current performance and setting performance targets. Have these levels of service adopted by Council.	MCA		complete
3.	Review the level of service for routine maintenance response times	MCA		complete
4.	Further investigate and improve estimates of growth modelling	MCA		complete
5.	Ensure the asset groups covered by this plan are appropriate	MCA		complete
6.	Systematically separate capital upgrade expenditure from capital renewal expenditure and capital new expenditure	MCA		June 2013
7.	Improve the delineation between cyclic and reactive maintenance	MCA		June 2013
8.	Develop data collection methods to ensure consistency and ongoing improvement of condition data collection.	MCA	ongoing	
9.	Assess the structure and resources within Council to ensure that the asset management plan can be implemented.	MCA	ongoing	
10.	Review budget allocations to ensure they match levels of service	MCA		annually
11.	Undertake a consultation exercise with stakeholders to determine if the levels of service are appropriate and meet community expectations.	MCA	ongoing	

8.3 Monitoring and Review Procedures

This asset management plan will be reviewed during annual budget preparation and amended to recognise any changes in service levels and/or resources available to provide those services as a result of the budget decision process. The Plan has a life of 4 years and is due for revision and updating within 2 years of each Council election.

GLOSSARY

Annual service cost (ASC)
An estimate of the cost that would be tendered, per annum, if tenders were called for the supply of a service to a performance specification for a fixed term. The Annual Service Cost includes operating, maintenance, depreciation, finance/ opportunity and disposal costs, less revenue.

Asset class
Grouping of assets of a similar nature and use in an entity's operations (AASB 166.37).

Asset condition assessment
The process of continuous or periodic inspection, assessment, measurement and interpretation of the resultant data to indicate the condition of a specific asset so as to determine the need for some preventative or remedial action.

Asset management
The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost effective manner.

Assets
Future economic benefits controlled by the entity as a result of past transactions or other past events (AAS27.12).

Property, plant and equipment including infrastructure and other assets (such as furniture and fittings) with benefits expected to last more than 12 month.

Average annual asset consumption (AAAC)*
The amount of a local government's asset base consumed during a year. This may be calculated by dividing the Depreciable Amount (DA) by the Useful Life and totalled for each and every asset OR by dividing the Fair Value (Depreciated Replacement Cost) by the Remaining Life and totalled for each and every asset in an asset category or class.

Brownfield asset values**
Asset (re)valuation values based on the cost to replace the asset including demolition and restoration costs.

Capital expansion expenditure
Expenditure that extends an existing asset, at the same standard as is currently enjoyed by residents, to a new group of users. It is discretional expenditure, which increases future operating, and maintenance costs, because it increases council's asset base, but may be associated with additional revenue from the new user group, eg. extending a drainage or road network, the provision of an oval or park in a new suburb for new residents.

Capital expenditure
Relatively large (material) expenditure, which has benefits, expected to last for more than 12 months. Capital expenditure includes renewal, expansion and upgrade. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital funding
Funding to pay for capital expenditure.

Capital grants
Monies received generally tied to the specific projects for which they are granted, which are often upgrade and/or expansion or new investment proposals.

Capital investment expenditure
See capital expenditure definition

Capital new expenditure
Expenditure which creates a new asset providing a new service to the community that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operating and maintenance expenditure.

Capital renewal expenditure
Expenditure on an existing asset, which returns the service potential or the life of the asset up to that which it had originally. It is periodically required expenditure, relatively large (material) in value compared with the value of the components or sub-components of the asset being renewed. As it reinstates existing service potential, it has no impact on revenue, but may reduce future operating and maintenance expenditure if completed at the optimum time, eg. resurfacing or resheeting a material part of a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital upgrade expenditure
Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretional and often does not result in additional revenue unless direct user charges apply. It will increase operating and maintenance expenditure in the future because of the increase in the council's asset base, eg. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility. Where capital projects involve a combination of renewal, expansion

and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Carrying amount
The amount at which an asset is recognised after deducting any accumulated depreciation / amortisation and accumulated impairment losses thereon.

Class of assets
See asset class definition

Component
An individual part of an asset which contributes to the composition of the whole and can be separated from or attached to an asset or a system.

Cost of an asset
The amount of cash or cash equivalents paid or the fair value of the consideration given to acquire an asset at the time of its acquisition or construction, plus any costs necessary to place the asset into service. This includes one-off design and project management costs.

Current replacement cost (CRC)
The cost the entity would incur to acquire the asset on the reporting date. The cost is measured by reference to the lowest cost at which the gross future economic benefits could be obtained in the normal course of business or the minimum it would cost, to replace the existing asset with a technologically modern equivalent new asset (not a second hand one) with the same economic benefits (gross service potential) allowing for any differences in the quantity and quality of output and in operating costs.

Current replacement cost "As New" (CRC)
The current cost of replacing the original service potential of an existing asset, with a similar modern equivalent asset, i.e. the total cost of replacing an existing asset with an as NEW or similar asset expressed in current dollar values.

Cyclic Maintenance**
Replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, building roof replacement, cycle, replacement of air conditioning equipment, etc. This work generally falls below the capital/ maintenance threshold and needs to be identified in a specific maintenance budget allocation.

Depreciable amount
The cost of an asset, or other amount substituted for its cost, less its residual value (AASB 116.6)

Depreciated replacement cost (DRC)
The current replacement cost (CRC) of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset

Depreciation / amortisation
The systematic allocation of the depreciable amount (service potential) of an asset over its useful life.

Economic life
See useful life definition.

Expenditure
The spending of money on goods and services. Expenditure includes recurrent and capital.

Fair value
The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties, in an arms length transaction.

Greenfield asset values **
Asset (re)valuation values based on the cost to initially acquire the asset.

Heritage asset
An asset with historic, artistic, scientific, technological, geographical or environmental qualities that is held and maintained principally for its contribution to knowledge and culture and this purpose is central to the objectives of the entity holding it.

Impairment Loss
The amount by which the carrying amount of an asset exceeds its recoverable amount.

Infrastructure assets
Physical assets of the entity or of another entity that contribute to meeting the public's need for access to major economic and social facilities and services, eg. roads, drainage, footpaths and cycleways. These are typically large, interconnected networks or portfolios of composite assets The components of these assets may be separately maintained, renewed or replaced individually so that the required level and standard of service from the network of assets is continuously sustained. Generally the components and hence the assets have long lives. They are fixed in place and are often have no market value.

Investment property
Property held to earn rentals or for capital appreciation or both, rather than for:
(a) use in the production or supply of goods or services or for administrative purposes; or
(b) sale in the ordinary course of business (AASB 140.5)

Level of service
The defined service quality for a particular service against which service performance may be measured. Service levels usually relate to quality, quantity,

reliability, responsiveness, environmental, acceptability and cost).

Life Cycle Cost **
The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises annual maintenance and asset consumption expense, represented by depreciation expense. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.

Life Cycle Expenditure **
The Life Cycle Expenditure (LCE) is the actual or planned annual maintenance and capital renewal expenditure incurred in providing the service in a particular year. Life Cycle Expenditure may be compared to Life Cycle Cost to give an initial indicator of life cycle sustainability.

Loans / borrowings
Loans result in funds being received which are then repaid over a period of time with interest (an additional cost). Their primary benefit is in 'spreading the burden' of capital expenditure over time. Although loans enable works to be completed sooner, they are only ultimately cost effective where the capital works funded (generally renewals) result in operating and maintenance cost savings, which are greater than the cost of the loan (interest and charges).

Maintenance and renewal gap
Difference between estimated budgets and projected expenditures for maintenance and renewal of assets, totalled over a defined time (eg 5, 10 and 15 years).

Maintenance and renewal sustainability index
Ratio of estimated budget to projected expenditure for maintenance and renewal of assets over a defined time (eg 5, 10 and 15 years).

Maintenance expenditure
Recurrent expenditure, which is periodically or regularly required as part of the anticipated schedule of works required to ensure that the asset achieves its useful life and provides the required level of service. It is expenditure, which was anticipated in determining the asset's useful life.

Materiality
An item is material is its omission or misstatement could influence the economic decisions of users taken on the basis of the financial report. Materiality depends on the size and nature of the omission or misstatement judged in the surrounding circumstances.

Modern equivalent asset.
A structure similar to an existing structure and having the equivalent productive capacity, which could be built using modern materials, techniques and design. Replacement cost is the basis used to estimate the cost of constructing a modern equivalent asset.

Non-revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are not expected to generate any savings or revenue to the Council, eg. parks and playgrounds, footpaths, roads and bridges, libraries, etc.

Operating expenditure
Recurrent expenditure, which is continuously required excluding maintenance and depreciation, eg power, fuel, staff, plant equipment, on-costs and overheads.

Pavement management system
A systematic process for measuring and predicting the condition of road pavements and wearing surfaces over time and recommending corrective actions.

Planned Maintenance**
Repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown criteria/experience, prioritising scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

PMS Score
A measure of condition of a road segment determined from a Pavement Management System.

Rate of annual asset consumption*
A measure of average annual consumption of assets (AAAC) expressed as a percentage of the depreciable amount (AAAC/DA). Depreciation may be used for AAAC.

Rate of annual asset renewal*
A measure of the rate at which assets are being renewed per annum expressed as a percentage of depreciable amount (capital renewal expenditure/DA).

Rate of annual asset upgrade*
A measure of the rate at which assets are being upgraded and expanded per annum expressed as a percentage of depreciable amount (capital upgrade/expansion expenditure/DA).

Reactive maintenance
Unplanned repair work that carried out in response to service requests and management/supervisory directions.

Recoverable amount
The higher of an asset's fair value, less costs to sell and its value in use.

Recurrent expenditure
Relatively small (immaterial) expenditure or that which has benefits expected to last less than 12 months. Recurrent expenditure includes operating and maintenance expenditure.

Recurrent funding
Funding to pay for recurrent expenditure.

Rehabilitation
See capital renewal expenditure definition above.

Remaining life
The time remaining until an asset ceases to provide the required service level or economic usefulness. Age plus remaining life is economic life.

Renewal
See capital renewal expenditure definition above.

Residual value
The net amount which an entity expects to obtain for an asset at the end of its useful life after deducting the expected costs of disposal.

Revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are expected to generate some savings or revenue to offset operating costs, eg public halls and theatres, childcare centres, sporting and recreation facilities, tourist information centres, etc.

Risk management
The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.

Section or segment
A self-contained part or piece of an infrastructure asset.

Service potential
The capacity to provide goods and services in accordance with the entity's objectives, whether those objectives are the generation of net cash inflows or the provision of goods and services of a particular volume and quantity to the beneficiaries thereof.

Service potential remaining*
A measure of the remaining life of assets expressed as a percentage of economic life. It is also a measure of the percentage of the asset's potential to provide services that is still available for use in providing services (DRC/DA).

Strategic Management Plan (SA)**
Documents Council objectives for a specified period (3-5 yrs), the principle activities to achieve the objectives, the means by which that will be carried out, estimated income and expenditure, measures to assess performance and how rating policy relates to the Council's objectives and activities.

Sub-component
Smaller individual parts that make up a component part.

Useful life
Either:
(a) the period over which an asset is expected to be available for use by an entity, or
(b) the number of production or similar units expected to be obtained from the asset by the entity.

It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the future economic benefits embodied in a depreciable asset, are expected to be consumed by the council. It is the same as the economic life.

Value in Use
The present value of estimated future cash flows expected to arise from the continuing use of an asset and from its disposal at the end of its useful life. It is deemed to be depreciated replacement cost (DRC) for those assets whose future economic benefits are not primarily dependent on the asset's ability to generate new cash flows, where if deprived of the asset its future economic benefits would be replaced.

Source: DVC 2006, Glossary
Note: Items shown * modified to use DA instead of CRC

Additional glossary items shown **

REFERENCES

Upper Hunter Shire Council Delivery Program and Operational Plan 2012/13 - 2015 /16

Upper Hunter Shire Council Community Strategic Plan 2010+.

Upper Hunter Shire Council Resident Satisfaction Survey

IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australia,Sydney,www.ipwea.org.au