

LIVERPOOL PLAINS SHIRE COUNCIL



BRIDGES

ASSET MANAGEMENT PLAN



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ABBREVIATIONS

AAAC	Average annual asset consumption
AMP	Asset management plan
ARI	Average recurrence interval
BOD	Biochemical (biological) oxygen demand
CRC	Current replacement cost
CWMS	Community wastewater management systems
DA	Depreciable amount
DoH	Department of Health
EF	Earthworks/formation
IRMP	Infrastructure risk management plan
LCC	Life Cycle cost
LCE	Life cycle expenditure
MMS	Maintenance management system
PCI	Pavement condition index
RV	Residual value
SS	Suspended solids
vph	Vehicles per hour

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 discretionary 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 discretionary 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 Expenditure 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 if 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 **

1. EXECUTIVE SUMMARY

What Council Provides

Council provides a Bridge network in partnership with RTA to enable free and safe passage to all road users throughout the shire

41 Regional Road Bridges and Culverts greater than 6m

40 Local Road Bridges and Culverts greater than 6m.

What does it Cost?

There are two key indicators of cost to provide the Bridge service.

- The life cycle 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 life cycle cost to provide the bridge service is estimated at \$730,471 per annum. Council's planned life cycle expenditure for year 1 of the asset management plan is \$543,700 which gives a life cycle sustainability index of 74%.

The total maintenance and capital renewal expenditure required to provide the bridge service in the next 10 years is estimated at \$2,164,200. This is an average of \$216,420 per annum.

Council's maintenance and capital renewal expenditure for year 1 of the asset management plan is \$215,000 giving a 10 year sustainability index of 99%.

Plans for the Future

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. This plan is intended to demonstrate how Council will support this objective by applying the principles of responsible asset management planning which is to meet a required level of service in the most cost-effective way through the creation, acquisition,

operation, maintenance, renewal and disposal of assets to provide for present and future customers

Measuring our Performance

Quality

Bridge assets will be maintained in a reasonably usable condition. Defects found or reported that are outside our service standard will be repaired. See our maintenance response service levels for details of defect prioritisation and response time.

Function

Our intent is that an appropriate bridge network is maintained in partnership with other levels of government and stakeholders to safe and acceptable level of service.

Bridge asset attributes will be maintained at a safe level and associated signage and equipment be provided as needed to ensure public safety. We need to ensure key functional objectives are met:

Safety

Council inspects all bridges regularly to prioritise and repair defects in accordance with our inspection schedule to ensure they are safe.

The Next Steps

The actions resulting from this asset management plan are:

- Maximising the service potential of existing assets by ensuring they are appropriately used and maintained
- Reducing the demand for new assets through demand management techniques and consideration of alternative service delivery options
- Achieving greater value for money through a rigorous project initiation and evaluation process which takes into account life cycle costing, value management techniques and private sector involvement
- Eliminating unnecessary acquisition and holding of assets by ensuring agencies are aware of, and required to pay for, the full costs of holding and using assets
- Focusing attention on results by clearly assigning responsibility, accountability and reporting requirements in relation to asset management.

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 needed to provide the required levels of service.

The asset management plan is to be read with the following associated planning documents:

Liverpool Plains Shire Management Plan 2011/2012

Liverpool Plains Shire Strategic Plan 2009/2010-2019/2020

Liverpool Plains Shire LEP and DCP's

This asset management plan covers the following infrastructure assets:

All councils owed and maintained Bridges.

Table 2.1. Assets covered by this Plan

Asset category	Dimension	Replacement Value (\$)
Concrete Bridges	17088.18 m ²	\$59,808,640
Timber Bridges	339.65m ²	\$849,125
Concrete culverts greater than 6m.	3848.71 m ²	\$9,394,268
TOTAL		\$70,052,033

Key stakeholders in the preparation and implementation of this asset management plan are:

Director of Works

Manager Works and Assets

Works Engineer

Assets Engineer

2.2 Goals and Objectives of Asset Management

The 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 key elements of infrastructure asset management are:

- Taking a life cycle approach,
- Developing cost-effective management strategies for the long term,
- Providing a defined level of service and monitoring performance,
- Understanding and meeting the demands of growth through demand management and infrastructure investment,
- Managing risks associated with asset failures,
- Sustainable use of physical resources,
- Continuous improvement in asset management practices.¹

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

Council's vision is:

That Liverpool Plains Shire area achieves higher levels of growth and generates improved quality of life through expanded opportunities for economical and social development being realised within an environmentally friendly and financially sustainable framework.

Council's mission is:

To achieve the Liverpool Plains Shire Council vision through a proactive community focus delivering best value and practice services that are recognised by the community and our peers for their quality and positive impact on development.

Relevant Council goals and objectives and how these are addressed in this asset management plan are:

Table 2.2. Council Goals and how these are addressed in this Plan

Focus Areas	Objective
Environment	To protect and enhance environmental values and provide for sustainable growth and development
Social	To facilitate access to a range of Services and facilities, recognising the importance of social well being and ensuring a safe, inclusive and equitable community
Economic	To facilitate economic growth through the provision of quality services, strategies and infrastructure for the betterment of the community
Governance	To provide leadership and effective decision making, sound financial and resource management, To undertake the role of advocacy and promote communication and consultation, To provide a safe working environment and value teamwork in all that we do

2.3 Plan Framework

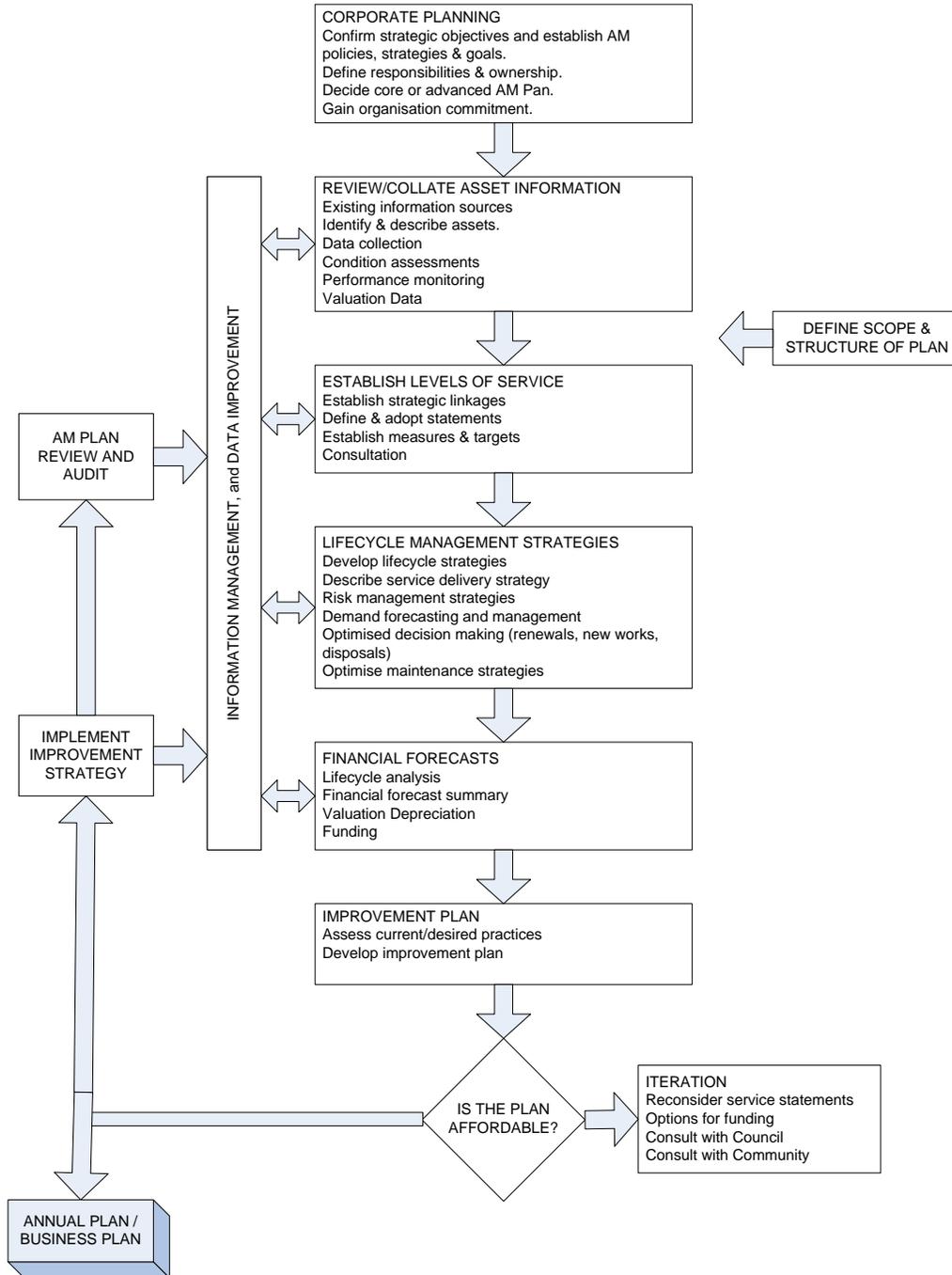
Key elements of the plan are

- 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.
- Life cycle 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

¹ IIMM 2006 Sec 1.1.3, p 1.3

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

3.1 Customer Research and Expectations

Council has not carried out any research on customer expectations. This will be investigated for future updates of the asset management plan.

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

3.2 Legislative Requirements

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

Table 3.2. Legislative Requirements

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.
Road Act 1993	
Work, Health and Safety Act 2012 & Regulations	Sets out roles and responsibilities to secure the health, safety and welfare of persons at work

3.3 Current Levels of Service

Council has defined service levels in two terms.

Community Levels of Service relate to how the community receives the service in terms of safety, quality, quantity, reliability, responsiveness, cost/efficiency and legislative compliance.

Supporting the community service levels are operational or technical measures of performance developed to ensure that the minimum community levels of service are met. These technical measures relate to service criteria such as:

<p>Service Criteria</p> <ul style="list-style-type: none"> Quality Quantity Availability Safety 	<p>Technical measures may relate to</p> <ul style="list-style-type: none"> Smoothness of Bridge Area of Bridges Distance from a dwelling to a sealed road Number of injury accidents
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Council's current service levels are detailed in Table 3.3.

Table 3.3. Current Service Levels

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
COMMUNITY LEVELS OF SERVICE				
Quality	Provide smooth Ride	Customer Action Requests	Less than 10 per annum	6
Function	Ensure Bridge meets requirements	Load testing of required bridges	Less than 2 pre annum	0
Safety	Provide safe suitable bridges free from hazards	Number of injury accidents	Less than 10 per annum	0
TECHNICAL LEVELS OF SERVICE				
Condition	Provide a smooth ride	Road Condition Surveys (3 yearly) Unsealed Roads		
		Road Condition Surveys (2 yearly) Sealed Roads		

3.4 Desired Levels of Service

At present, indications of desired levels of service are obtained from various sources including the 2010 Customer Satisfaction survey, residents' feedback to Councillors and staff, service requests and correspondence. Council has yet to quantify desired levels of service. This will be done in future revisions of this 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 Factors, Projections and Impact on Services

Demand factor	Present position	Projection	Impact on services
Population	7940 (2010)	10551 (2026)	Higher demand

4.2 Changes in Technology

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

The overall implications of continual demand for improvements in levels of service, a static population and increasing numbers of heavy vehicles on the bridge network are:

An increased demand for higher structural capacities,

- An increased rate of deterioration of bridges,
- An increasing focus on road user safety,
- The need for an increased level of expenditure on the assets to maintain the intended levels of service.

Demand forecasting aims to identify factors influencing the demand for an asset and the associated impact on the management and utilisation of the asset.

Travel, for people or goods moving either locally or regionally, dictates the demand for road infrastructure. Factors including the following affect utilisation of the road network include:

- Growth in residential, industrial and commercial areas,
- Changes in land use,
- Population growth,
- Travel patterns,
- Adverse changes in traffic composition, and
- Key stakeholder expectations

Changes in traffic composition involve heavier vehicle loads or greater volumes of traffic than those anticipated in the original design and provision of bridges. These factors in turn have an effect on planned renewal or upgrade of these assets.

Liverpool plains are the key Agricultural, commercial and service centre for the municipality and surrounding region with a population of approximately 7540.

Whilst forecasts indicate that population growth will be fairly static over the next 20 years, traffic counts consistently show continued growth in traffic volumes and use of roads by heavy vehicles.

High productivity vehicles, such as B-Doubles and vehicles at Higher Mass Limits are important to the efficiency of the freight task locally and regionally. The larger capacity of these vehicles reduces the number of vehicles required to transport a given amount of freight.

The extent of the potential benefit of these vehicles is related to the degree of access to the road network. Access to local roads within the Liverpool Plains Shire is allowed where these vehicles can operate safely with other traffic and where road infrastructure, including road pavements and bridges, is capable to carry legal load limits. The current legal loads were adopted in July 1999, and are detailed in Figure 3.0.

Vehicle Type	General Mass Limit (tonnes)	Higher Mass Limit (tonnes)
	15.0*	15.0*
	22.5*	23.0*
	39.0*	40.0**
	42.5*	45.5*
	55.5**	57.0**
	62.5**	68.0**

In line with these load ratings, a structural capacity assessment program has been established to determine the strength of those bridges on key transport links. It is proposed that this program be extended to other structures on the local road network on a priority basis.

Industry, in particular the timber and dairy sectors, are continually upgrading their transport fleets from semi-trailers operating at General Mass Limits to similar vehicles operating at Higher Mass Limits as a means to achieving operational efficiencies and reducing transport costs,. There is also increased demand for the use of 19-metre and 25-metre B-Double transports operating at Higher Mass Limits on the local road network.

Heavy vehicle use of the road network infrastructure impacts very significantly on its performance and its ability to be maintained. Council works in conjunction with these industries to allow the use of heavier vehicles on the road network where bridge capacities allow and where the safety of other road users is not compromised.

The bearing capacity of Council's road bridges have been assessed via either one of two methods. Theoretical strengths have been calculated in accordance with VicRoads Bridge Assessment Group Guidelines for assessing the load Capacity of Bridges (i.e. a desktop study). Behavioural or dynamic load testing has also been utilised on some bridges to enable the structural performance to be further understood (i.e. in field testing).

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.

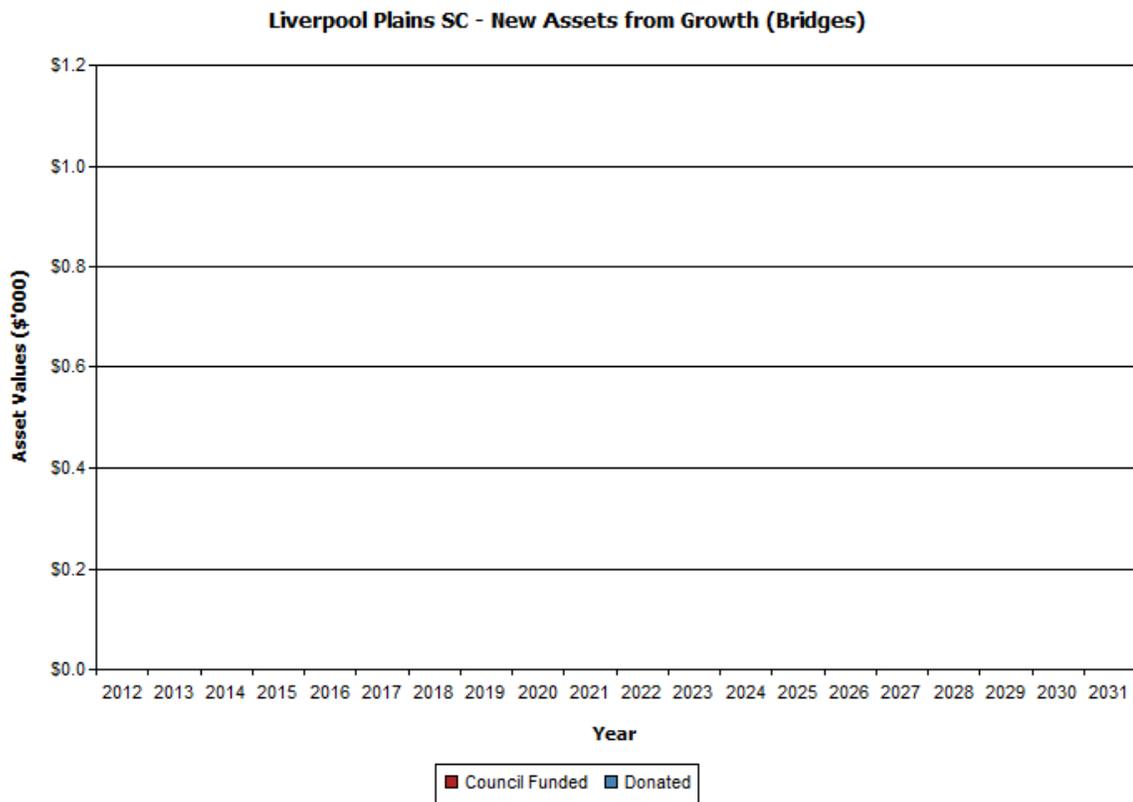
Table 4.3. Demand Management Plan Summary

Service Activity	Demand Management Plan
Transport	Load limits to be placed on bridges in poor condition, where reasonable alternate access is available

4.4 New Assets from Growth

The new assets required to meet growth will be acquired from land developments and constructed by Council. The new asset values are summarised in Fig 1.

Fig 1. New Assets from Growth



Acquiring these new assets will commit council to fund ongoing operations and maintenance costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operating and maintenance costs.

5. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how Council plans to manage and operate the assets at the agreed levels of service (defined in section 3) while optimising life cycle costs.

5.1 Background Data

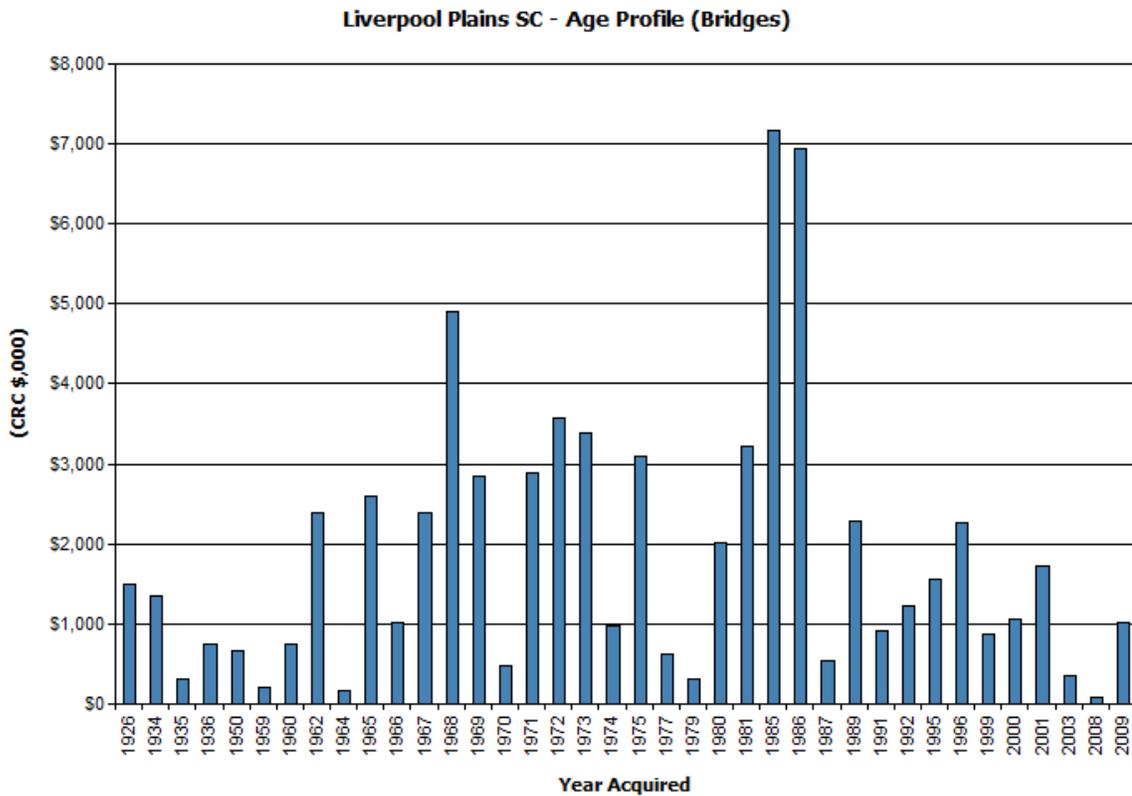
5.1.1 Physical parameters

The assets covered by this asset management plan are shown below.

Concrete Bridges	17088.18 m ²
Timber Bridges	339.65m ²
Concrete culverts	3848.71 m ²

The age profile of Council's assets is shown below.

Fig 2. Asset Age Profile



5.1.2 Asset capacity and performance

Council's services are generally provided to meet design standards where these are available.

Locations where deficiencies in service performance are known are detailed in Table 5.1.2.

Table 5.1.2. Known Service Performance Deficiencies

Location	Service Deficiency
Whittaker Street Bridge	Bridge deck is sub standard to carry required new truck loads
Gurton Street Bridge	Load Restriction needs to be assessed

The above service deficiencies were identified from 2008 LPSC Bridge inspections.

5.1.3 Asset condition

Condition is measured using a 1 – 5 rating system.²

Rating	Description of Condition
1	Excellent condition: Only planned maintenance required.
2	Very good: Minor maintenance required plus planned maintenance.
3	Good: Significant maintenance required.
4	Average: Significant renewal/upgrade required.
5	Poor: Unserviceable.

5.1.4 Asset valuations

The value of assets as at 10 Mar 2010 covered by this asset management plan is summarised below. Assets were last revalued at June 2010. Assets are valued at Greenfield rates.

Current Replacement Cost	\$70,201,236
Depreciable Amount	\$68,989,817
Depreciated Replacement Cost	\$68,630,591
Annual Depreciation Expense	\$500,247

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

Asset Consumption	0.72%
Asset renewal	0.20%
Annual Upgrade/expansion	0%

5.2 Risk Management Plan

An assessment of risks³ associated with service delivery from infrastructure assets has identified critical risks to Council. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

Critical risks, being those assessed as 'Very High' - requiring immediate corrective action and 'High' – requiring prioritised corrective action identified in the infrastructure risk management plan are summarised in Table 5.2.

² IIMM 2006, Appendix B, p B:1-3 ('cyclic' modified to 'planned')

³ Liverpool plains shire Infrastructure Risk Management Plan

Table 5.2. Critical Risks and Treatment Plans

Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan
Gurton Street Bridge	Collapse due to overload	H	Upgrade bridge
All bridges	Loss of approaches due to flood	H	Check scour protection monitor Headstocks

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 and management/supervisory directions.

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.

Cyclic maintenance is replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, building roof replacement, etc. This work generally falls below the capital/maintenance threshold.

Maintenance expenditure trends are shown in Table 5.3.1

Table 5.3.1. Maintenance Expenditure Trends

Year	Maintenance Expenditure		
	Reactive	Planned	Cyclic
2007/08	\$18,436	\$17,000	\$
2008/09	\$38,926	\$25,000	\$
2009/10	\$8,761	\$0	\$
2010/11	\$22,916	\$20,000	

Planned maintenance work is 63% of total maintenance expenditure.

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

Assessment and prioritisation of reactive maintenance is undertaken by Council staff using experience and judgement.

5.3.2 Standards and specifications

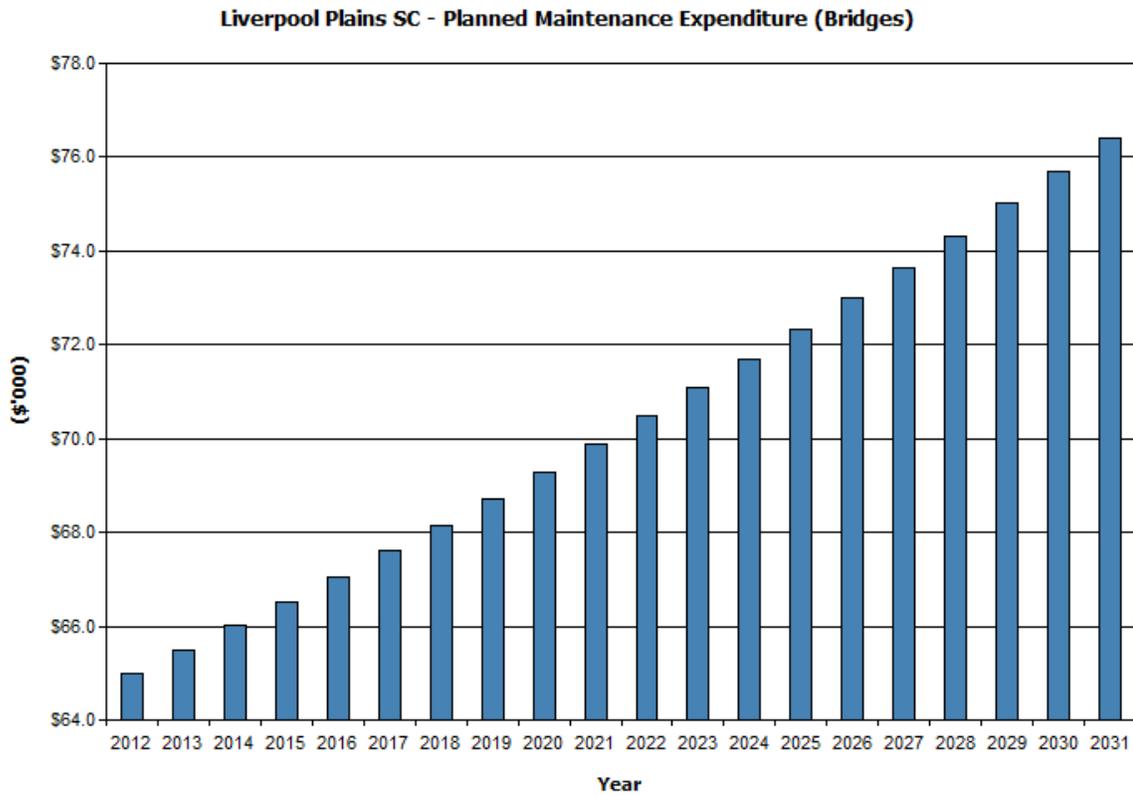
Maintenance work is carried out in accordance with the following Standards and Specifications.

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

5.3.3 Summary of future maintenance expenditures

Future maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Fig 4. Note that all costs are shown in current 2012 dollar values.

Fig 4. 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 in the infrastructure risk management plan.

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 on the '*Planned Expenditure template*'. Candidate 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 5.4.1.

Table 5.4.1 Renewal Priority Ranking Criteria

Criteria	Weighting
Load Capacity	40
Condition Bus Route	30
Bridge Material	20
Age	10
Total	100%

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 accordance with the following Standards and Specifications.

Austrroads Guide To Bridge Technology Set.

VicRoads Bridge Assessment Group Guidelines for assessing the load Capacity of Bridges

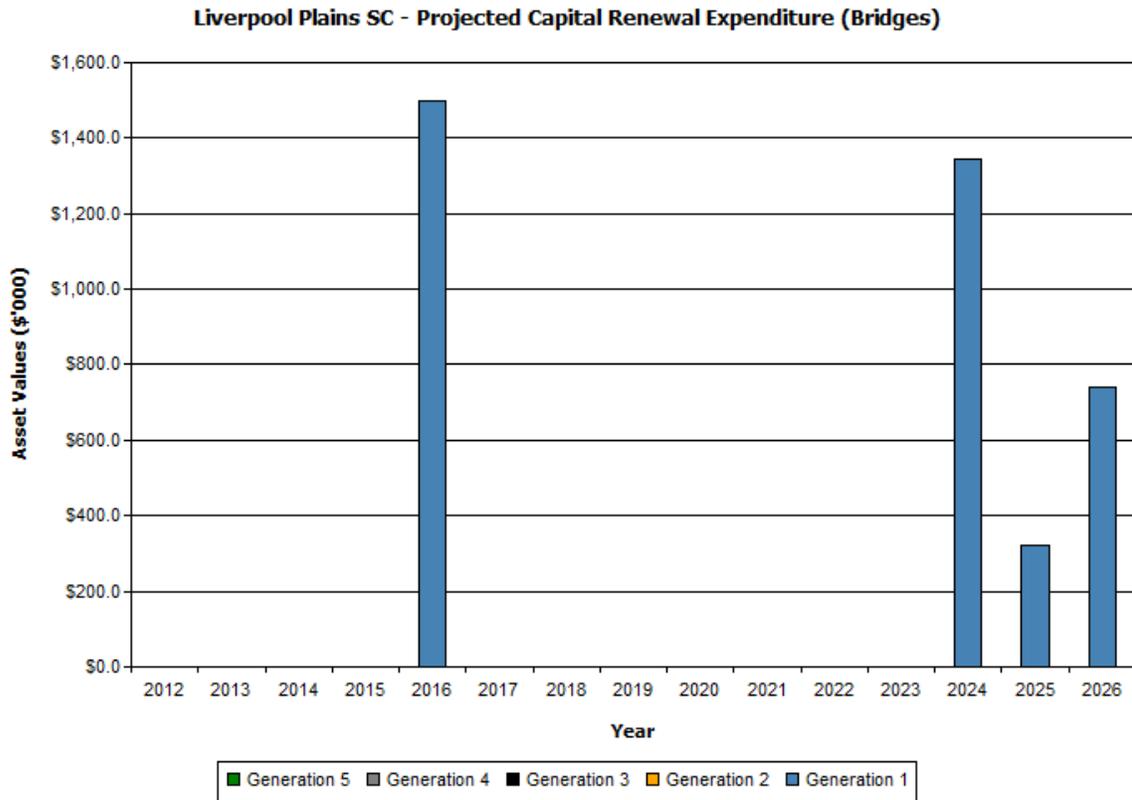
AS 5100 Set-2007: Bridge Design Set

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 5. Note that all costs are shown in current 2010 dollar values.

The projected capital renewal program is shown in Appendix B.

Fig 5. 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 detailed below.

Table 5.5.1 New Assets Priority Ranking Criteria

Criteria	Weighting
Condition	40
Bridge Material	30
Load Requirements	20
Traffic	10

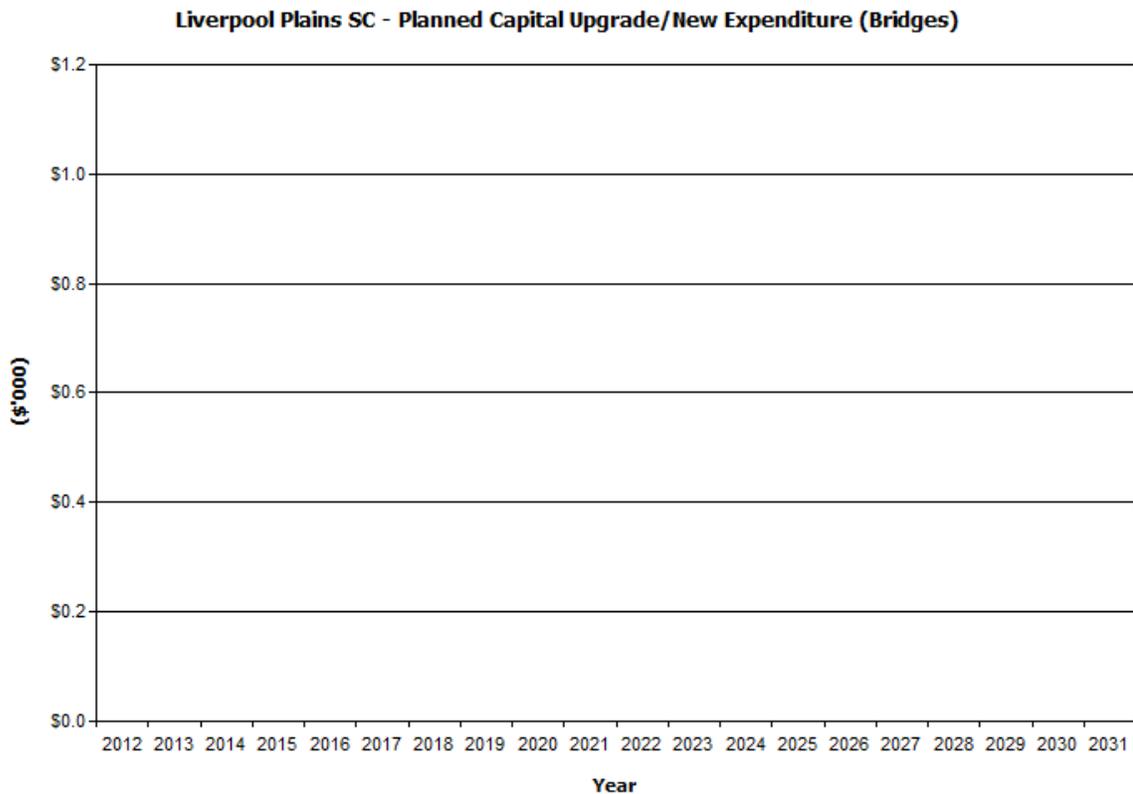
5.5.2 Standards and specifications

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 6. The planned upgrade/new capital works program is shown in Appendix C. All costs are shown in current 2010 dollar values.

Fig 6. 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. Assets identified for possible decommissioning and disposal are shown in Table 5.6. These assets will be further reinvestigated to determine the required levels of service and see what options are available for alternate service delivery, if any.

Table 5.6 Assets identified for Disposal

Asset	Reason for Disposal	Timing	Cashflow from disposal
Nil			

Where cashflow projections from asset disposals are not available, these will be developed in future revisions of this asset management plan.

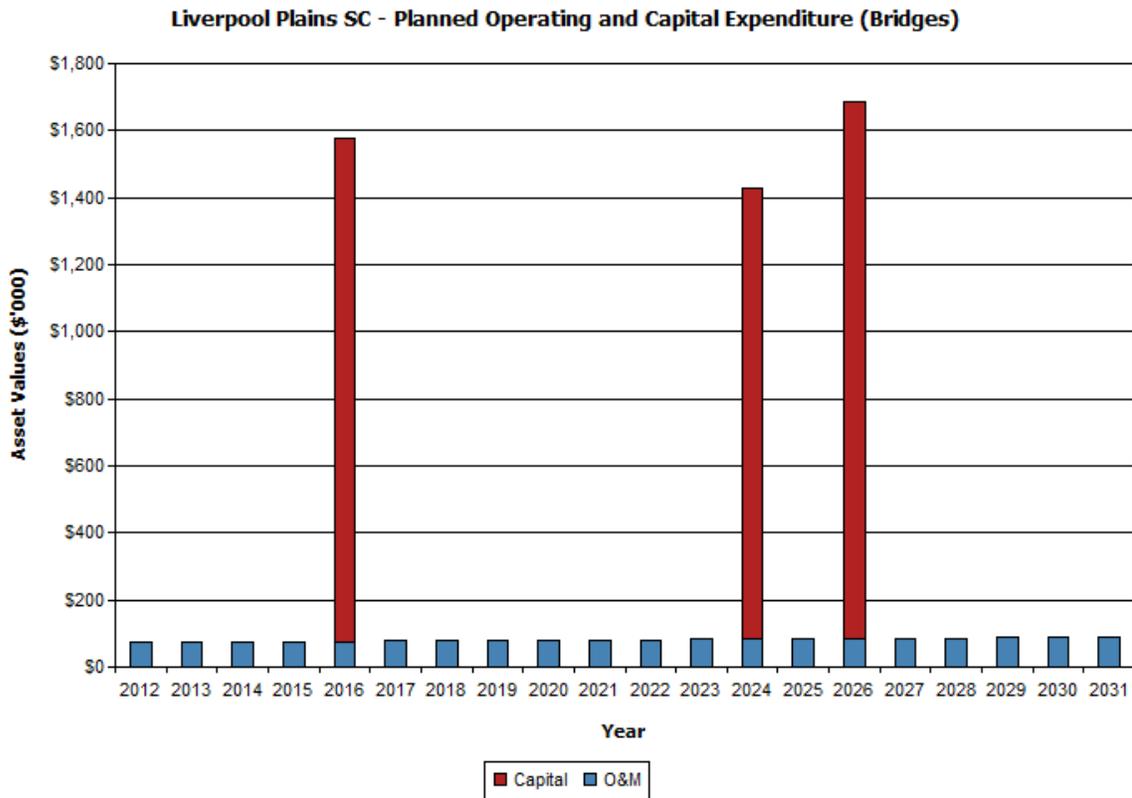
6. FINANCIAL SUMMARY

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 Fig 7 for planned operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion/new assets).

Fig 7. Planned Operating and Capital Expenditure



Note that all costs are shown in current 2012 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 \$730,431.

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 life cycle expenditure at the start of the plan is \$215,200.

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 for services covered by this asset management plan is \$515,231 per annum. The life cycle sustainability index is 30%.

This Figure shows that Council needs to allow a lot more funds for the maintenance and renewal of bridge assets to slow the consumption of assets.

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 20 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 20 year period to identify any gap. In a core asset management plan, a gap is generally due to increasing asset renewals.

Fig 8 shows the projected asset renewals in the 20 year planning period from the asset register. The projected asset renewals are compared to planned renewal expenditure in the capital works program and capital renewal expenditure in year 1 of the planning period as shown in Fig 8. Table 6.1.1 shows the annual and cumulative funding gap between projected and planned renewals.

Fig 8. Projected and Planned Renewals and Current Renewal Expenditure

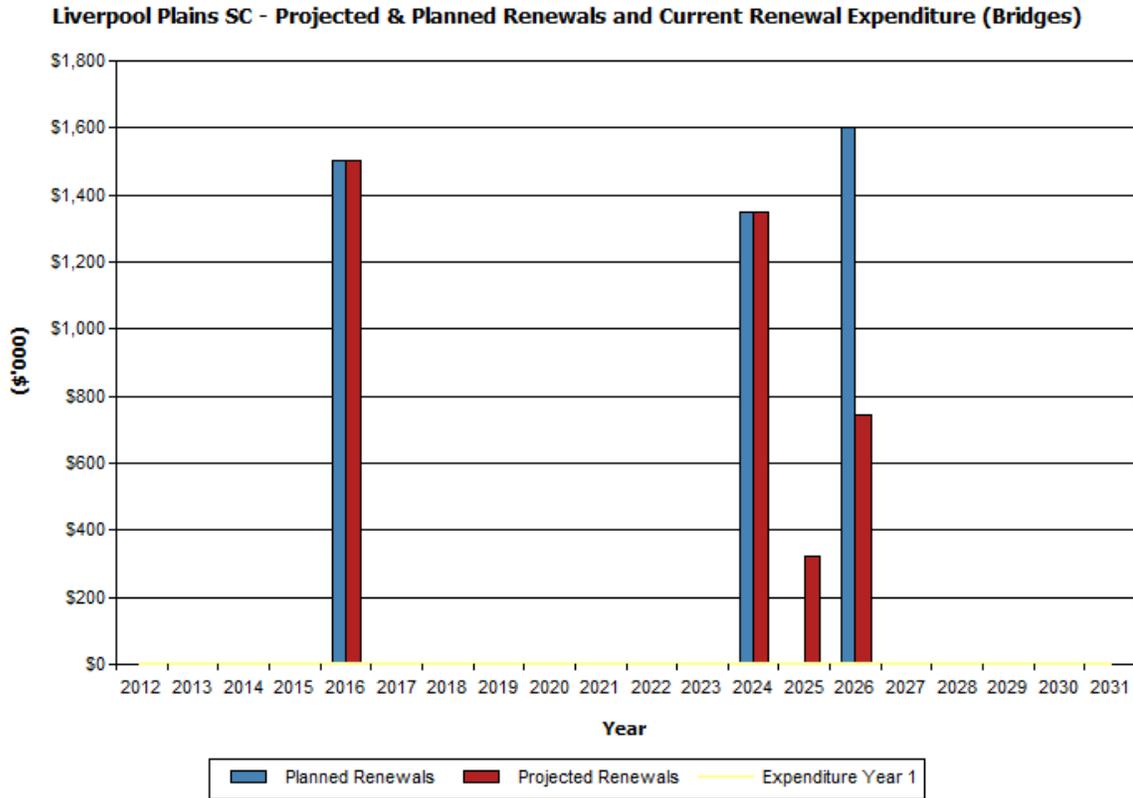


Table 6.1.1 shows the gap between projected and planned renewals.

Table 6.1.1 Projected and Planned Renewals and Expenditure Gap (\$'000)

Year	Projected Renewals	Planned Renewals	Renewal Funding Gap	Cumulative Gap
2012	\$0.00	\$0.00	\$0.00	\$0.00
2013	\$0.00	\$0.00	\$0.00	\$0.00
2014	\$0.00	\$0.00	\$0.00	\$0.00
2015	\$0.00	\$0.00	\$0.00	\$0.00
2016	\$1,500.00	\$1,500.00	\$0.00	\$0.00
2017	\$0.00	\$0.00	\$0.00	\$0.00
2018	\$0.00	\$0.00	\$0.00	\$0.00
2019	\$0.00	\$0.00	\$0.00	\$0.00

2020	\$0.00	\$0.00	\$0.00	\$0.00
2021	\$0.00	\$0.00	\$0.00	\$0.00
2022	\$0.00	\$0.00	\$0.00	\$0.00
2023	\$0.00	\$0.00	\$0.00	\$0.00
2024	\$1,346.50	\$1,347.00	-\$0.50	-\$0.50
2025	\$320.57	\$0.00	\$320.57	\$320.07
2026	\$741.77	\$1,600.00	-\$858.23	-\$538.17
2027	\$0.00	\$0.00	\$0.00	-\$538.17
2028	\$0.00	\$0.00	\$0.00	-\$538.17
2029	\$0.00	\$0.00	\$0.00	-\$538.17
2030	\$0.00	\$0.00	\$0.00	-\$538.17
2031	\$0.00	\$0.00	\$0.00	-\$538.17

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.

Council's long term financial plan covers the first 10 years of the 20 year planning period. The total maintenance and capital renewal expenditure required over the 10 years is \$1,656,500.

This is an average expenditure of \$165,650. Estimated maintenance and capital renewal expenditure in year 1 is \$141,200. The 10 year sustainability index is 0.85

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.

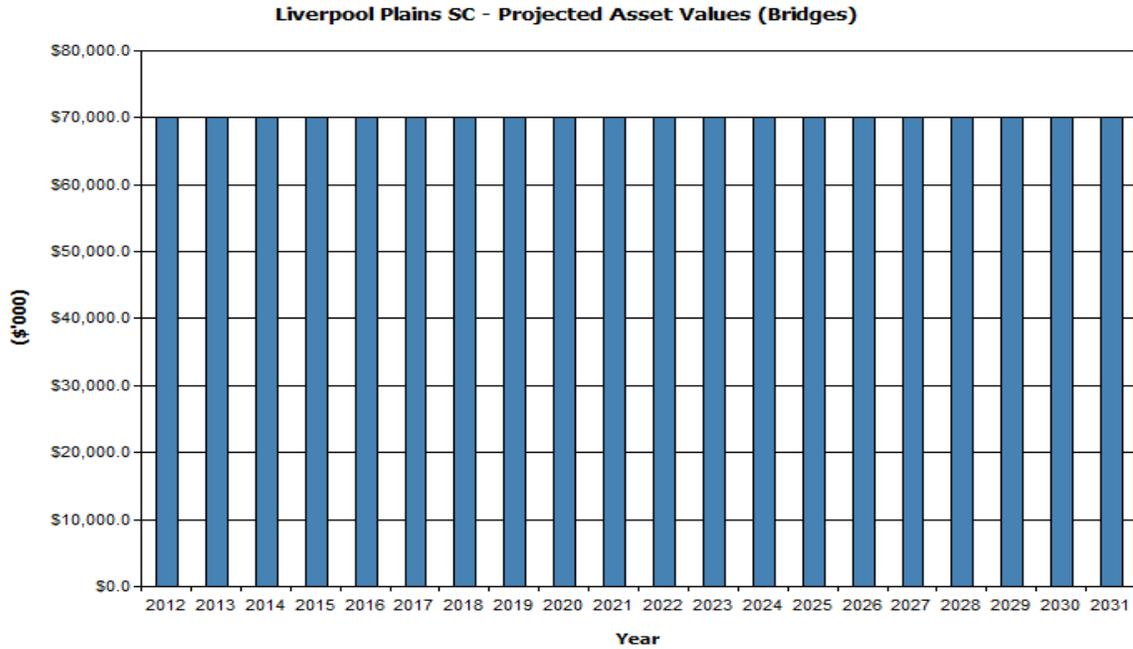
Achieving the financial strategy will require that we look at other options these may include

- Use of loans to fund renewal spikes
- Cost reductions from review of service levels
- Increasing revenue from rates and user charges
- Grants where applicable from state and federal governments or private companies

6.3 Valuation Forecasts

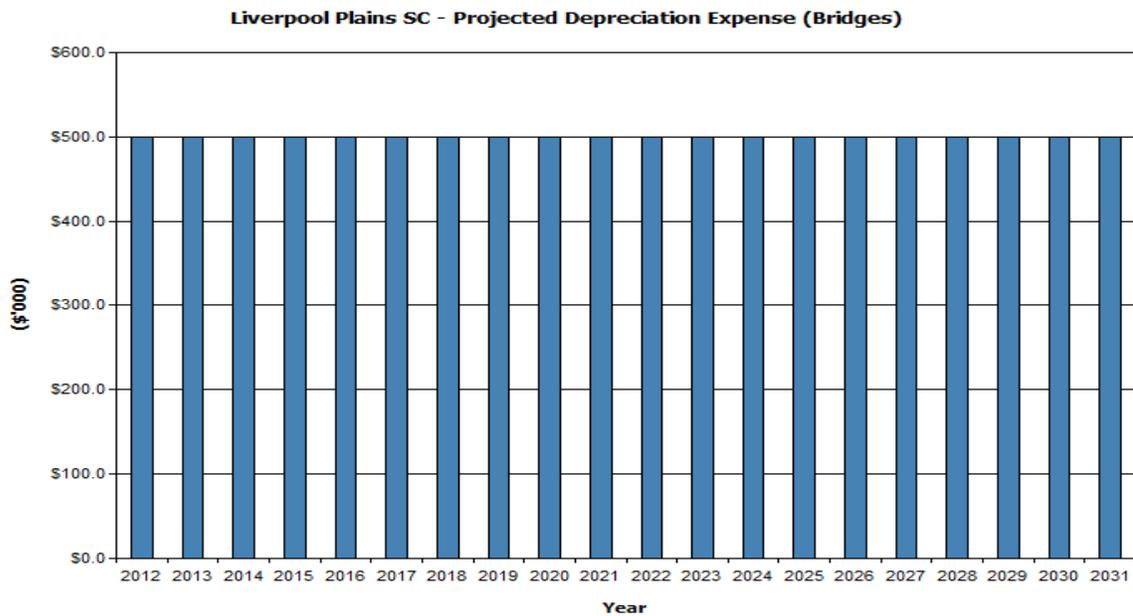
Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by Council and from assets constructed by land developers and others and donated to Council. Fig 9 shows the projected replacement cost asset values over the planning period in current 2010 dollar values.

Fig 9. Projected Asset Values



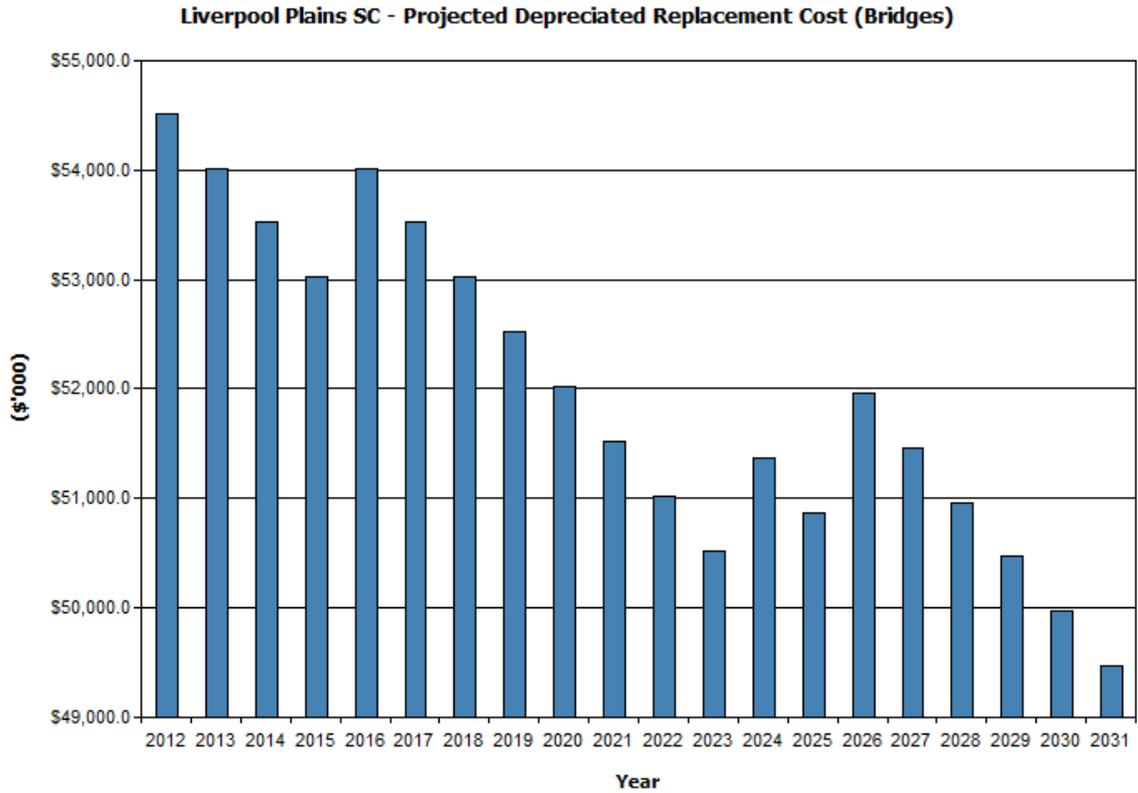
Depreciation expense values are forecast in line with asset values as shown in Fig 10.

Fig 10. 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 11.

Fig 11. 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:

- Capital Works expenditure is indexed by 3.5% pa,
- Wages and Contributions to Council are indexed at 3% pa,
- Zero Dividend return to Council, and
- Energy and other utility costs are indexed by 3.5% pa.

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

- Refining the required renewal expenditure based upon improved data within the asset register,
- Provision of modelling and reporting capabilities within the asset register,
- Trending actual planned and reactive maintenance expenditure, and
- Investigate asset renewal profile and depreciation calculations.

7. ASSET MANAGEMENT PRACTICES

7.1 Accounting/Financial Systems

As well as complying with Australian Accounting Standards, Liverpool Plains Shire Council must comply with The Local Government Act and various other issued guidance such as “Circulars to Councils” from the Department of Local Government. The Department of Local Government has an Asset Accounting Manual that Council complies with. In addition to this accounting standard AASB 116 – “Property, Plant and Equipment” is the significant regulatory requirement relevant to accounting for assets.

The Council uses Authority software provided by Civica and Assetic for all asset accounting purposes. In addition to acquisition, disposal, revaluation and depreciation transactions, the system also tracks expenditure on maintenance and capital renewal projects via a Work Order system. Where appropriate, these costs are then transferred by journal to the Assetic Asset Register. The Authority system is controlled by the Corporate & Business Services Division of Council, with the Director being Mike Urquhart and the Chief Financial Officer.

Accountabilities and responsibilities are divided between Corporate & Business Services and the asset owner (responsibility area) according to function. The asset owners provide information on the relevant assets and identify expenditure with the relevant Work Orders. Corporate & Business Services staff creates the records within the Asset Register and process expenditure to work orders or direct to the Asset Register where appropriate.

While Council has employed a \$5,000 capitalisation threshold for several years, the Water Supply Asset Management Policy had previously adopted lower thresholds to cater for individual items including water meters, which due to their significant numbers represent a large asset value.

ASB 116 revaluation requirements and asset management planning have identified shortcomings in this approach, which was revised during 2009/10. This will constitute one component of Asset Accounting Policy and Procedures which were developed during 2009/10.

7.2 Asset Management Systems

- Authority - customer billing, water meter register and customer water consumption information
- Assetic – Asset Register
- Predictor- Asset management system
- Tr@cer Weeds- Asset capture software
- Financial System - Authority

7.3 Information Flow Requirements and Processes

The key information 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 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.

7.4 Standards and Guidelines

Liverpool Plains Shire Council Asset Management Policy, 2.19

Austrroads Guide to Bridge Technology set

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 8.2.

Table 8.2 Improvement Plan

Task No	Task	Responsibility	Resources Required	Timeline
1.	Condition assessment of facility assets	WAM		
2.	Analyse available performance data	WAM		
3.	Document more detailed rating of facility assets.	WAM		
4.	Document risk analysis	WAM		
5.	Compile a more detailed 10 year renewals plan	WAM		
6.	Employ an Administration Officer to improve data capture and analysis efficiencies	WAM		

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.

REFERENCES

Liverpool Plains Shire Council, 'Strategic Management Plan 2010 – 2011',

Liverpool Plains Shire Council, 'Annual Plan and Budget'.

DVC, 2006, 'Asset Investment Guidelines', 'Glossary', Department for Victorian Communities, Local Government Victoria, Melbourne,
<http://www.dvc.vic.gov.au/web20/dvclgv.nsf/allDocs/RWP1C79EC4A7225CD2FCA257170003259F6?OpenDocument>

IPWEA, 2011, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australia, Sydney, www.ipwea.org.au

APPENDICES

Appendix A Bridge Assets List

Asset ID	Asset Name	Asset Type	Bridge Area	Total Replacement Value (\$)
1	Currububula Culvert No 2	Box Culvert	63.02	227550
10	Warrah Creek Bridge	Box Culvert	85.85	254625
11	Pryor Street Bridge	Concrete Bridge	278.4	976560
12	Young Street Bridge	Concrete Bridge	467.84	1800656
13	Warrah Creek Bridge	Concrete Bridge	884.7	3247980
14	Pine Ridge Bridge	Concrete Bridge	210	829000
15	Austin's Bridge	Concrete Bridge	429.76	1731184
16	Yarramanbah Creek Bridge	Concrete Bridge	265.68	1053312
17	Millers Creek Bridge BV	Concrete Bridge	126.5	575100
18	Phillips Creek Bridge BV	Concrete Bridge	465.26	1756884
19	Black Creek Bridge	Concrete Bridge	260.52	1157768
2	Scotts Culvert	Box Culvert	121.94	324850
20	Pump Station Creek Bridge	Concrete Bridge	242.88	890792
21	Yarramanbah Creek Bridge	Concrete Bridge	394.68	1411912
22	Windy Gully Bridge	Concrete Bridge	265.68	995312
23	McDonalds Creek Bridge	Concrete Bridge	155.4	658360
24	Spring Creek Bridge	Concrete Bridge	271.44	1137896
25	Phillips Creek Bridge CU	Concrete Bridge	374.4	1472960
26	Ryans Bridge	Concrete Bridge	429	1553600
27	Sheedys Bridge	Concrete Bridge	249.38	997892
28	Swains Bridge	Concrete Bridge	144	649600
29	Currabubula Bridge	Concrete Bridge	352.458	1293357.2
3	Sheedys Culvert	Box Culvert	54.4	201000
30	Borambil Creek	Concrete Bridge	80	537000
39	Presses Road Bridge	Timber Bridge	19.71	71130
4	Ekins Gully Culvert	Box Culvert	302.94	757350
59	Quipolly Bridge	Concrete Bridge	606.4	2170760
6	Hicks Culvert	Box Culvert	79.2	238000
60	Whittaker Street Bridge	Concrete Bridge	354.9	1376660
61	Henry Street1	Concrete Bridge	339.7	1325580

40	Bridges Bridge	Timber Bridge	75.2	261155
41	Chilcotts Creek Culvert	Box Culvert	20.064	80160
62	Henry Street2	Concrete Bridge	603.75	2257750
63	Hamiltons Bridge	Concrete Bridge	500.4	1948360
43	Wiles Gully Culvert	Box Culvert	297.5	823750
64	Flora Ponds Bridge	Concrete Bridge	302.4	1028160
65	Caroona Bridge	Concrete Bridge	1093.5	4017900
44	Culvert 1, Clift Doona	Box Culvert	70.52	226300
45	Yarraman Creek Culvert	Box Culvert	219	607500
46	Coomoo Coomoo Creek Culvert	Box Culvert	176.86	532150
47	Bundella Creek Culvert	Box Culvert	199.06	562650
48	Cox's Creek Culvert	Box Culvert	214.62	626550
49	Box Gully Overflow	Box Culvert	127.5	506750
5	Recreation Road Culvert	Box Culvert	110.25	320625
50	Glen Ayr Culvert	Box Culvert	110.22	370550
51	Rock Hill Culvert	Box Culvert	80.36	267900
52	Campbells Gully Culvert	Box Culvert	106.128	362320
53	Currabubula Culvert	Box Culvert	63.48	228700
54	The Gap Siding Culvert	Box Culvert	80.99	252475
55	Dirty Lagoon	Box Culvert	131.32	328300
56	Colly Creek Bridge	Concrete Bridge	165	668000
57	Brafield Overbridge	Concrete Bridge	151.06	643604
58	Dury Bridge	Concrete Bridge	333.6	1294240
66	Box Gully Bridge	Concrete Bridge	918	3358200
67	Quipolly Creek Bridge	Concrete Bridge	306	1265400
68	Overflow Channel	Concrete Bridge	1101.6	4040440
69	Black Gully Bridge	Concrete Bridge	183.6	844240
7	Duffs Gully Culvert	Box Culvert	279.708	699270
70	Werris Creek Bridge	Concrete Bridge	374.4	1392960
71	Anstey Bridge	Concrete Bridge	212.8	993120
72	Stangers Bridge	Concrete Bridge	91.59	486406
73	Hams Bridge	Concrete Bridge	445.9	1665060
74	Warrah Bridge	Concrete Bridge	494.13	1900042
75	Big Jacks Creek Bridge	Concrete Bridge	400.2	1635680
76	Little Jacks Creek Brigde	Concrete Bridge	240.12	916408
77	Millers Creek Bridge Warrah	Concrete Bridge	474.32	1702688
78	Dry Creek Bridge	Concrete Bridge	339.76	1155184

79	Culvert 2, Clift Doona	Pipe Culvert	66	240000
8	Dawsons Culvert	Box Culvert	79.2	213000
80	Culvert 3, Clift Doona	Pipe Culvert	80	240000
81	Dry Creek Culvert	Pipe Culvert	88.04	220100
82	Gap Road Bridge	Concrete Bridge	290.72	988448
9	McDougalls Culvert	Box Culvert	44.89	132225
31	Gaspard Bridge	Concrete Bridge	315.18	1173612
32	Werris Creek Silo Bridge	Concrete Bridge	101.175	368995
33	Oaklyn Road Causeway	Concrete Culvert	140	407000
34	Breeza Culvert No1	Concrete Culvert	115.34	333350
35	Breeza Culvert No2	Concrete Culvert	83.3	318250
36	Breeza Culvert No3	Concrete Culvert	83.3	263250
37	Gurton Street Bridge	Timber Bridge	73.79	231370
38	Old Highway Bridge	Timber Bridge	170.95	599850
cbc1	Currububula Culvert No 1	Box Culvert	73.71	254276

Appendix B Projected 20 year Capital Renewal Works Program

Liverpool Plains SC >> Renewal Program (Bridges)

UID	Asset ID	Sub Category	Asset Name	From	To	Rem	Planned	Renewal	Useful
						Life	Renewal	Cost	
						(Years)	Year	(\$)	(Years)
22603954	60	Concrete Bridge	Whittaker Street Bridge	0	1	4	2016	\$1,500,000.00	90
Subtotal								\$1,500,000.00	
22603926	1	Box Culvert	Currububula Culvert No 2	0	1	12	2024	\$157,550.00	90
22603955	61	Concrete Bridge	Henry Street1	0	1	12	2024	\$1,188,950.00	90
Subtotal								\$1,346,500.00	
22603986	72	Concrete Bridge	Stangers Bridge	0	1	13	2025	\$320,565.00	90
Subtotal								\$320,565.00	
22603972	52	Box Culvert	Campbells Gully Culvert	0	1	14	2026	\$265,320.00	90
22603970	50	Box Culvert	Glen Ayr Culvert	0	1	14	2026	\$275,550.00	90
22603971	51	Box Culvert	Rock Hill Culvert	0	1	14	2026	\$200,900.00	90
Subtotal								\$741,770.00	
Program Total								\$3,908,835.00	