TRANSPORT
ASSET MANAGEMENT PLAN

Version 0.2

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TRANSPORT
ASSET MANAGEMENT PLAN

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1. Executive Summary

The Shire of Mukinbudin maintains a range of assets to provide an integrated transport service. This includes infrastructure such as roads, paths, bridges, culverts, drainage, car parks, street furniture and an aerodrome.

This is the Shire's first Asset Management Plan (AMP) to be produced for the transport network. It seeks to outline the activities and programmes that the Shire will carry out over the next 10 years. It details the service levels the Shire will provide and the resources required to deliver them. While the document is comprehensive, it is also considered a "first cut" AMP. As such there are a number of actions that have been identified that will improve its accuracy over time. All readers of this AMP must understand its limitations and applied assumptions before acting on any information contained within it.

Overall, the AMP has determined that while the transport network is performing reasonably well, there is a strong need to improve a number of fundamental asset management practices. Issues currently of key focus which require action over the short term are to:

- **Develop accurate asset inventories for all transport assets**
- **Develop and implement cyclical asset safety, maintenance and condition inspection programmes**
- **Develop and implement condition based works programmes**
- **Develop accurate valuations of all transport assets**
- **Secure appropriate resources to further develop the Shire's asset management programme/activities**
- **Begin monitoring the network's performance against the service levels**
- **Monitor usage levels in order to determine whether asset rationalisation is required**
- **Monitor the effects of the potential closure of Tier 3 railways**
- **Develop a capital project evaluation procedure aligned to the Shire's Strategic Community Plan**

2. Background and Objectives

2.1. Purpose of this Asset Management Plan

This document is an Asset Management Plan (AMP) for the Shire of Mukinbudin's Transport Network. This AMP documents the management practices, processes and strategies that we (the Shire) apply to ensure that transport assets are fit for purpose and maintained to agreed service levels that are balanced against long term resource availability.

2.2. Focus of this Asset Management Plan

The AMP focuses on assets that support transport based services. The key assets that make up the network and their current replacement costs (where known) are detailed in Table 2-1.

Asset Type	Quantity	Current Replacement Cost
Roads (including road reserve)	910.28km	$43,290,852
Paths	8.62km	$461,959
Culverts	497 No.	Unknown
Stormwater Drainage	1,776.72km	Unknown
Car Parks	Unknown	Unknown
Street Furniture	Unknown	Unknown
Aerodromes	1 No.	Unknown
Total		**$43,752,811**

Table 2-1: Assets covered by Transport AMP

2.3. Corporate Document Relationships

This AMP integrates with many other key Shire documents. Furthermore, AMPs are also key informing documents of the Shire's integrated planning and reporting framework, as demonstrated in Figure 2-1. The principal documents that link to this AMP are:

- Strategic Community Plan
- Corporate Business Plan
- Long Term Financial Plan
- Capital Works Plan
- Annual Budget

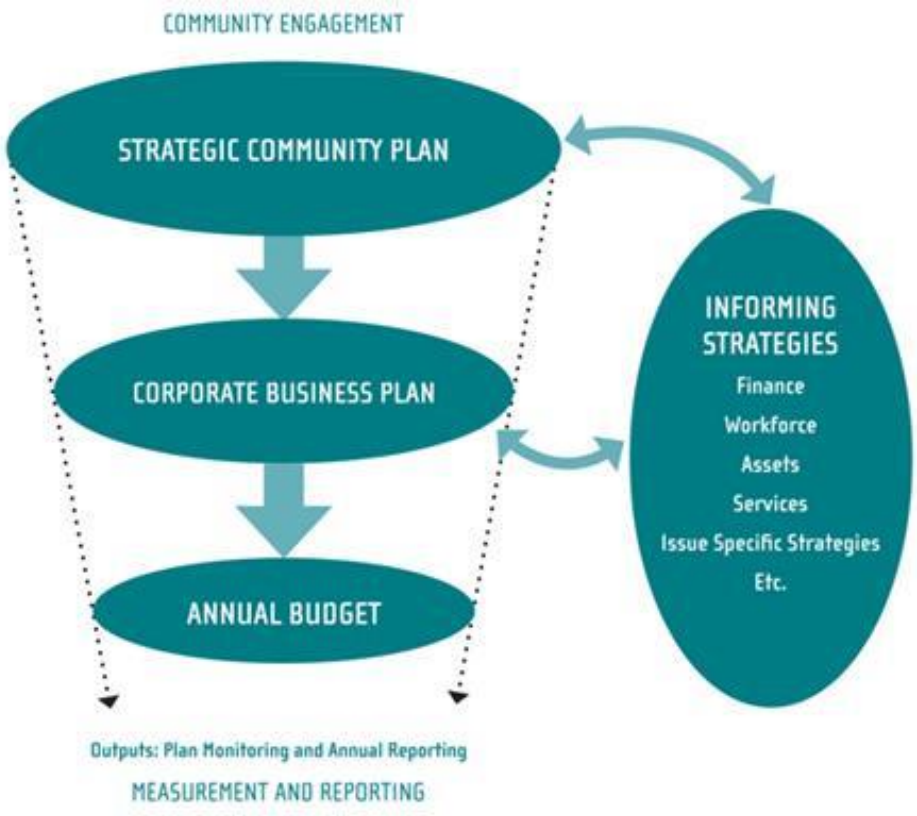


Figure 2-1: Integrated Planning and Reporting Framework

2.4. Who is the Audience of the AMP?

The principal audience of this AMP is the Shire of Mukinbudin Council and Chief Executive Officer, as well as regular users of the transport network.

2.5. Time Period of the AMP and Next Review Data

The AMP covers a 10 year period and will be next reviewed by 1st July 2015.

2.6. Asset Management Plan Stakeholders

The following people and organisations are key stakeholders in the development of the AMP and/or of the final AMP. The Service Levels detailed in Section 3 support the interests of these stakeholders. An analysis of possible stakeholders and service levels is attached as Appendix B, as well as the process used to select the final service levels. Only those which have been deemed the most important to the key stakeholders have been included in this AMP.

Stakeholder	Key in AMP development?	Key AMP audience?
Shire of Mukinbudin Council		✓
Shire of Mukinbudin Staff	✓	✓
Motorists		✓
Residents & Landowners		✓
Emergency Services		✓
Cyclists		✓
Pedestrians		✓
Main Roads WA		✓
Local Businesses		✓
Pilots		✓

Table 2-2: Stakeholder Relationships to AMP

3. Service Levels

3.1. Service Level Introduction

This section details the service levels that the Shire has set out to achieve and provide for its transport network. The service requirements of all major stakeholders were considered (Appendix B) and those which were the most frequently occurring, or were needed (as opposed to wanted), then formed the basis of the service levels. These levels are then used to monitor the performance of the service and identify areas of over or under delivery. The service level measures also allow the Shire to ensure that the network is fit for purpose and provided at an efficient cost.

3.2. Organisational Drivers and Objectives

3.2.1. Strategic Community Plan

The Shire's Strategic Community Plan (2013-2023) was considered in order to identify organisational drivers and objectives that may affect service levels. The Shire defines its overall Vision to be:

"To assist our community towards a prosperous future by providing a positive environment in which to work and live."

In order to achieve this Vision, The Strategic Community Plan contains a number of themes, strategies and actions. All identified actions must be considered and incorporated into this Plan. Those that align with the transport network are:

Theme	Strategy(s)	Action(s)
Social	3.1 – Integrated, accessible and safe transport networks 3.2 – Effectively plan, develop and management infrastructure and facilities	= Review Shire roads and determine their suitability yearly (maintenance, construction, preservation, road train access and parking, materials, safety) = Continue to access Black Spot Funding Program, Roads to Recovery and Regional Road Group funds and complete projects on time and on budget = Continue to provide access for commercial, recreational and medical organisations by air = Provide bicycle and pedestrian connections (including ramps) throughout the Mukinbudin town

		site
Economic	5.3 – Equitable services and utilities for business growth	= Build upon the accessibility and visual appearance of the main street of Mukinbudin to be colourful, attractive and enticing = Advocate, attract, partner and provide where necessary water, sewerage, storm water and innovative energy infrastructure and services to meet community and business needs now and into the future
	6.1 – Seek innovative ways to promote and develop tourism whilst strengthening partnerships	= Develop unique entry statements for the Shire and Mukinbudin town site and investigate promotion as a gateway to the Outback
Environment	7.1 – Identify, protect and enhance significant natural assets	= Protect roadside vegetation, whilst maintaining community safety
	8.2 – Plan for water conservation, reuse and efficiency, water catchment and storage	= Continue to recycle waste water and demonstrate best practice storm water management and water harvesting

Table 3-1: Strategic Community Plan Actions Aligned to the Transport Network

3.2.2. Asset Management Policy and Strategy

The Shire maintains both Asset Management Policy and Strategy documents. Broadly speaking, the Policy sets out the Shire's key asset management principles, whilst the strategy describes the long term approach. The Policy's principles include a number which must be considered by the service levels, they are:

- **Define agreed asset service levels, matched with the associated resources and assets required to enable their delivery**
- **Manage assets in a whole-of-life and economically, environmentally and socially sustainable manner**
- **Balance decisions with other key Shire policies and functions**
- **Give priority to the needs of existing assets and services before new ones**
- **Commit to continuous improvement**
- **Manage the risks associated with asset ownership and management**

3.3. Customer Research and Expectations

No historical consultation into stakeholder service level expectations has been undertaken. When future engagement occurs, the outcomes will be recorded here.

3.4. Legislation and Standards

The Shire has to meet many legislative requirements including Australian and State Legislation and State Regulations. Many of these requirements are drivers for minimum service levels in that they are the minimum which the Shire must meet. A list of relevant legislation can be found in Appendix A.

3.5. Transport Assets' Function

Further to meeting legislative requirements and standards as part of the Shire's business context, consideration must also be given to the overall function of the transport network in setting service levels. In order to develop a functional statement for the Shire's transport assets, the previously discussed corporate documents were considered. Considering all drivers, the following statement has been developed.

The Shire will seek to sustainably (environmentally, financially and socially) provide a safe and integrated transport network, of an agreed quality, that is accessible to users of all abilities and that enhances the Shire's aesthetic appeal.

Figure 3-1: Transport Network Functional Statement

3.6. Service Level Targets and Performance

Table 3-2 details the service level targets and performance which the Shire will provide.

Key Performance Indicator	Stakeholder	Level of Service	Asset Group	Performance Measure	Target	Current	Data Confidence
Accessibility	Shire, Motorists, Residents/Landowners, Emergency Services, Cyclists, Pedestrians, Local Businesses	Network accessible to all users	Roads	Properties within the Shire have access to a road reserve.	100%	TBC	
			Paths & Car Parks	Percentage of path segments and car parks that comply with Disability and Discrimination Act requirements.	100%	TBC	
Availability	Motorists, Emergency Services, Cyclists, Pedestrians, Local Businesses, Pilots	Network is available for use when required	Roads & Paths	Percentage of days per year that no road or path sections are closed for use, excluding planned renewal or upgrade works.	100%	TBC	
			Aerodrome	Percentage of days per year aerodrome is open for flights (excluding planned maintenance/closure periods).	98%+	TBC	
Compliance	Shire, Pedestrians, Main Roads WA, Pilots	Transport network is managed to at least meet statutory obligations.	All	Number of identified occurrences each year where any asset within the network, or its management, has been non-compliant.	0	TBC	
Financial Sustainability	Shire, Motorists, Cyclists, Pedestrians	Transport network is financially sustainable.	All	Percentage of AMP sustainability ratio KPIs within target.	100%	TBC	
Safety	Shire, Motorists, Residents/Landowners, Emergency Services, Cyclists, Pedestrians	Ensure effective management of risks to health in accordance with relevant legislation and community needs.	Roads & Paths	Percentage of sites investigated with 2 or more recorded crashes/accidents over the previous 5 years.	85%+	TBC	

Table 3-2: Service Level Targets and Performance

4. Demand

This section summarises likely factors which may affect the demand for transport services over the life of the AMP. Full details of potential demand factors are recorded in Appendix F.

4.1. Historic Demand

Whilst historical demand trends are not always an indication of what may happen in the future, they often help managers form a view of how likely they may influence future demand trends.

4.1.1. Road Demand

Analysis of the ABS census data from 2006 to 2011 shows that between these years, there has been a decrease in vehicle ownership from 229 to 206 households. This represents a decrease of -10.0%, or -2.0% per annum. Over the same timeframe, there was a decrease in the daily average number of people travelling to work from 214 to 185. This represents a decrease of -13.6%, or -2.7% per annum. Decline in travel to work modes has been greatest (by number) in walking (-22), truck (-8) and car as driver (-7). Slight increases have occurred in bus (+3), bicycle (+1), other (+2), motorbike/scooter (+3) and 2 methods (+3).

Analysis of ABS census data also shows that the number of recorded people in the Shire at census night has fallen from 659 (2001), to 575 (2006), to 490 (2011). This decrease of -25.6% between 2001 and 2011 would suggest that demand for some transport services (e.g. roads) has fallen. In addition, over this time the population's median age has also increased from 35 in 2001 to 45 in 2011. This may suggest that services used by older people may have actually increased (e.g. path network) as they become unable to drive.

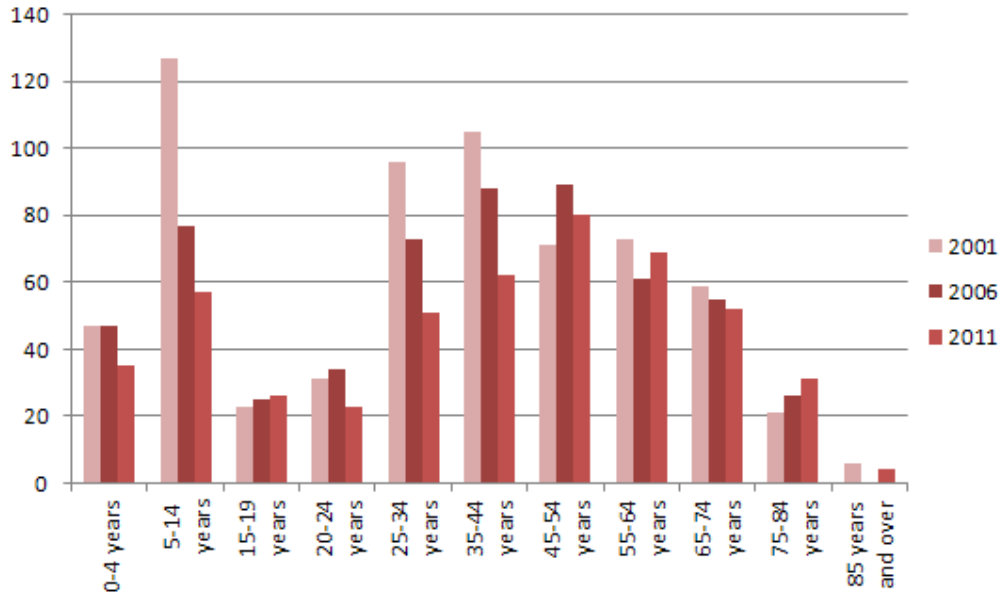


Figure 4-1: ABS Census Data - Mukinbudin Population and Demographic 2001-2011

Outside of immediate local demand change, growth may also have occurred due to increased tourism. Figures from Tourism WA (Figure 4-2) show that over the past 4 years, the estimated number of visitors to/within WA have risen from 18.7million in 2008/09 to 22.1million in 2011/12. Whilst figures show that only 7% of visitors go to the "golden outback" region of WA (within which the Shire lies), demand for roads, particularly to tourism sites, may have increased.

Figure 4-2: WA Visitors (Source: Tourism WA October 2013)

4.1.2. Path Demand

Generally, most local governments would not have a clear understanding of the usage levels of their path networks. This position has most likely occurred as industry generally accepts that virtually no paths within WA would be at their capacity. This position is also likely true of the Shire. ABS statistics suggest that historic demand for paths may decrease due to the falling population size, but have an increasing demand effect from and ageing population.

4.1.3. Car Park Demand

Car Park usage figures are not currently routinely collected. With a decreasing population, car park use is likely to have fallen in recent years. This may be offset in part by increasing numbers of tourists to the region at locations where they are likely to visit (e.g. town sites, local features etc.).

4.1.5. Culvert Demand

Historical data (Figure 4-3) shows that the Shire's average annual rainfall has remained fairly unchanged. As such, overall demand of culvert infrastructure has not been affected by rainfall. Therefore, the biggest influence on past culvert demand is through changes to the road network. That is, as roads have been built or removed, culverts have also been built or removed, in association with the roads.

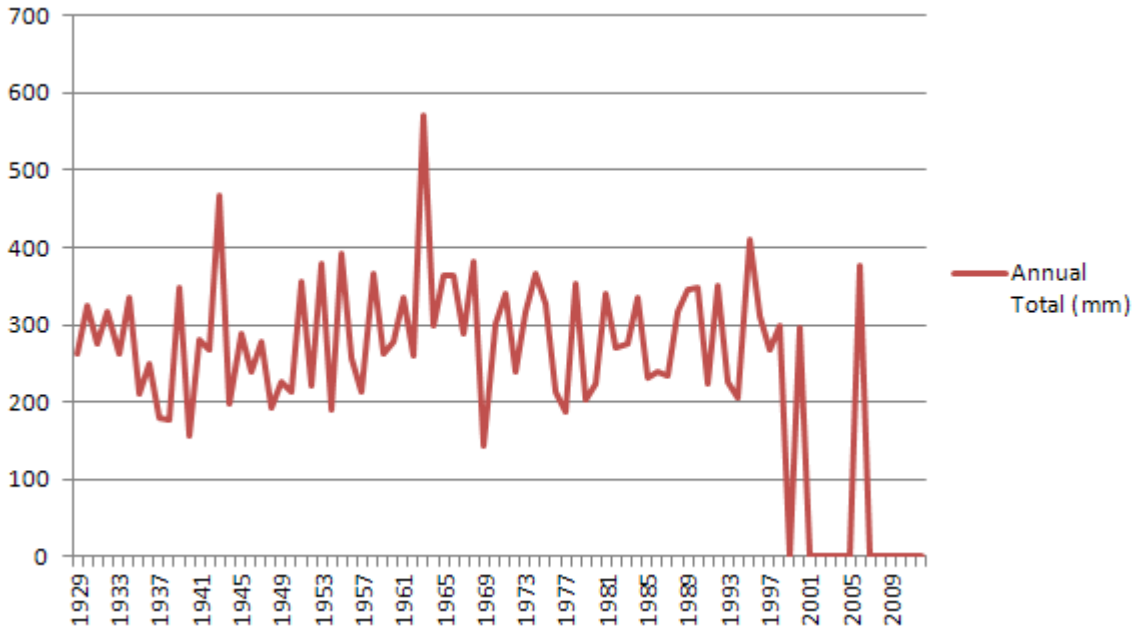


Figure 4-3: Bureau of Meteorology - Mukinbudin Historical Annual Total Rainfall

4.1.6. Stormwater Drainage Demand

With Figure 4-3 showing that historic rainfall levels have been fairly consistent, it is fair to also suggest that demand for stormwater drainage due to rain has also remained unchanged. Therefore, the prime historic demand factor for stormwater drainage has been due to changes in the road network. As roads have been built, upgraded or removed, corresponding changes to the stormwater drainage network have also occurred.

4.1.7. Street Furniture Historic Demand

No historical demand driver information is available for street furniture.

4.1.8. Street Lighting Historic Demand

No historical demand driver information is available for street lighting.

4.2. Future Demand Drivers (Factors)

Consideration was given to six possible future demand drivers (political, economic, social, technological, legal and environmental) that may influence demand on the provision of properties. Each of these drivers is discussed in Appendix F and summarised in Table 4-1.

Driver Type	Affect over life of AMP
Political	The Shire reviews its Town Planning Scheme every 5 to 7 years. Revisions to the Scheme have the potential to change land use and therefore affect demand on the transport network. Over the current life of this AMP, no significant change in demand is forecast due to Town Planning Scheme reviews. In 5 February 2009, the Minister for Local Government announced a suite of Local Government reforms. Future amalgamations are likely, although the scope and timing are unknown. However if they were to occur, there would likely be a period of increased resource need for local governments to align their asset management practices. Another feature of the reform that will demand additional resources is the need to improve the Shire's asset management practices and processes over the coming years. The effects of this may also include Council determining increased or decreased service levels for different assets. The closure of Tier 3 railway lines throughout the Wheatbelt region, at least in part, would result in a significant increase in heavy good vehicle movements on local government roads. This would likely increase the rate of damage to road pavements, causing them to fail more quickly. Ultimately this could significantly increase whole of life road costs. Change Effect: Likely higher demand over the short term (2-3 years) to increase the level of resources to improve and sustain the Shire's asset management practices. Longer term, there may be additional demand to increase infrastructure renewal spending, although this has not been ascertained. Likely significantly higher road whole of life costs if local Tier 3 railway lines are closed.
Economic	With fuel a critical element to vehicles and transport usage levels, prices have climbed approximately +6.5% per annum over the past two years. Although prices are likely to continue to increase over the lifetime of this Plan, given the Shire's geographical nature, it is unlikely that transport modes and usage will significantly change. Of greater influence will likely be rapidly increasing construction and maintenance costs. The BITRE road construction and maintenance price index (RCMPI) suggests that costs are likely to increase significantly above CPI levels. The net result of this is that transport is more expensive and that the lifecycle cost of transport assets takes a bigger proportion of the Shire's available resources. The long term sustainability of the Shire, as well as the broader economic outlook is currently unclear. Thus the ability to fund the transport service into the future is also not known.

	Change Effect: Rising fuel and material costs may affect transport choices, and asset whole of life costs. This may place pressure on the network, but also help to drive efficiencies.
Social	The Shire's population has fallen from 659 in 2001 to 490 in 2011. This trend is generally in line with the State Government's Band B forecast which suggests that the population will continue to fall to approximately 320 people by 2026. If correct, then service demand will significantly decrease. This will potentially drive the need for asset rationalisation and service level change in order to reduce long term costs. Historical census data shows that the Shire's median age changed from 35 in 2001 to 45 in 2011. With this expected to continue to increase into the foreseeable future, despite a decreasing population, demand for public transport and path networks may increase. Change Effect: Negative overall demand change if population decreases further. Potential increase in demand public transport and bigger path network.
Technological	Modern road maintenance and construction technologies, including the application of systems (e.g. ROMAN II) for more effective asset management, present opportunities to reduce lifecycle costs. Environmental challenges will also need to be met during the lifetime of this Plan, such as options to reduce the use of virgin materials and reuse/recycle waste materials. Change Effect: Opportunity exists to manage and maintain the transport network more efficiently and sustainably. No significant change in demand identified.
Legal	Evidence from the Shire's insurer shows that across WA, there is a frequent occurrence of claims relating to transport assets, although the majority invariably involve minor claim values. A large percentage of claims typically arise from incidents on the path network. The introduction of a proactive safety and maintenance inspection regime would provide higher levels of service to users of the transport network, while minimising exposure to risk of litigation. Change Effect: Slight increase in demand for a formalised safety inspection regime.
Environmental	It is likely that over the term of this AMP that infrastructure managers will have to ensure that assets are maintained at increasingly environmentally sustainable levels. Given the Shire's geographical location, expecting substantial change in travel modes is unlikely in the short term. However, moving towards a state where the transport network is increasingly environmentally sustainable is possible. Change Effect: Increased demand for clearer decision making around asset need. Increased demand for more environmentally sustainable construction and maintenance practices.

Table 4-1: Future Demand Drivers

4.3. Demand Summary

Whilst a range of historical and future demand factors have been investigated, the Shire does not have, nor has prepared, a long term forecast of future transport service demand in terms of key quantitative measures. While there is clear merit in collecting quantitative information (e.g. traffic counts), given the Shire's location, it is highly unlikely that any transport infrastructure will exceed its physical capacity within the life of the Plan. The analysis shows that the key demand areas are likely to be:

= An increased demand for skilled labour (internal or external) and financial resources to:

- meet the needs of legislation reform
- to improve asset management practices and systems (software)
- to meet potential amalgamation challenges
- to fund higher construction and maintenance costs
- to implement environmental sustainability initiatives
- to bridge any possible infrastructure renewal funding gap

= Changing demand for services and thus changing requirements due to:

- An aging population
- Potential closure of Tier 3 railways

= A decreased demand for transport assets due to:

- A decreasing population size

In order to quantify and meet the challenges that these major demand factors may pose, the following improvement actions have been listed:

= Investigate the options available to the Shire to secure appropriate asset management skills and resources to drive improved asset management practices
= Quantify and budget for the approximate annual cost for the additional asset management resources
= Monitor changes in traffic levels either side of potential Tier 3 railway line closures occurring
= Develop guidelines on asset material reuse and recycling
= Investigate technologies that can help to reduce long term costs
= Monitor transport asset usage levels and develop a framework within which asset rationalisation and/or service level downgrading can be considered

5. Risk Management

The Shire does not currently operate a risk management policy or corporate risk register. In lieu of these, a desktop risk analysis has been undertaken for the transport network and is included as Appendix I. Table 5-1 outlines the top identified risks. An improvement action for the Shire to develop a corporate risk management framework has been listed.

Risk Ref.	The Risk	Level of Risk	Further Action
4	Shire does not possess formal safety and maintenance inspection procedures for transport assets. This may result in the Shire being exposed to litigation and users to risk of harm.	VH	Develop and implement a transport asset safety and maintenance inspection procedure.
11	Tier 3 rail lines within the Shire may close, resulting in higher road traffic levels and higher lifecycle costs.	VH	Monitor pre and post closure traffic levels on adjoining roads. Adjust lifecycle cost model and review funding options.
13	Shire does not have a capital project evaluation procedure aligned to the Strategic Community Plan (SCP). As such, it is not currently possible to determine projects which closely align to, and support, the SCP's outcomes, making them potentially harder, and more costly to achieve.	VH	Develop a procedure and test.

Table 5-1: Major Transport Network Risks

Each of the top identified risks are recommended for further action (see Section 9).

6. Lifecycle Management Plan

The lifecycle management plan details how the Shire plans to manage and operate its transport network at the agreed service levels (Section 3). This section also specifically details the current condition of each asset group.

6.1. Background Data

6.1.1. Work Category Definitions

This AMP generally considers work within the following six areas of activity.

Activity	Definition
Operation	Continuously required expenditure which enables the asset to provide benefits to the community such as mowing, street sweeping, electricity costs etc.
Maintenance	Regular repair works to prevent deterioration of the assets' capability, such as minor repairs, servicing etc.
Renewal	Works to replace existing assets which are worn, poorly functioning or dated with assets of equivalent capacity or performance. For example, the renewal of an internal wall in a building, renewal of an engine in a grader, resurfacing a road (re-sheeting or resealing) or replacing girders on a bridge.
Upgrade	The significant upgrade of an asset to produce a higher service level, such as dualling or widening of a road, extension of a building, installation of reticulation to a dry park etc.
New Work	The creation of a new asset, in a location where that asset type has not existed before.
Asset Disposal	The process of removing and disposing of an asset upon the end of its useful life. For the purpose of this AMP this is only when an asset is not replaced.

Table 6-1: Activity Categories

6.1.2. Lifecycle Costing Basis

The financial projections within this section of the AMP have adopted life cycle costing (LCC) principles. LCC is the combination of all lifecycle costs associated with an asset, from conception and design through to eventual disposal. This concept is demonstrated by the Figure to the right. Lifecycle costing is important in order to understand the true costs of assets.

Figure 6-1: Asset Lifecycle

6.1.3. Transport Network Physical Parameters

The Shire's transport network is one of its largest asset groups in terms of value and community impact. The physical parameters and values of its components currently covered by this AMP are shown in Table 6-2 and the network's current replacement cost in Figure 6-2.

AMP Section	Component	Quantity	Unit	Current Replacement Cost	Depreciated Replacement Cost
6.2	Road seal	1,157,739	m^2	$43,290,852	$33,084,578
	Road pavement	4,235,698	m^2		
	Road formation	4,235,698	m^2		
	Kerbing	9,100	m	-	-
6.3	Paths	16,067	m^2	$461,959	$408,318
6.4	Bridges & Culverts	1	No.	-	-
6.5	Drainage	1,776,720	m	-	-
6.6	Car Parks	Unknown	m^2	-	-
6.7	Street Furniture	536 – Advisory Signs 260 – Street Signs	No.	-	-
6.8	Aerodromes/Airstrips	1	No.	-	-
TOTAL	**ALL**			**$43,752,811**	**$33,492,896**

Table 6-2: Transport Network Physical Parameters

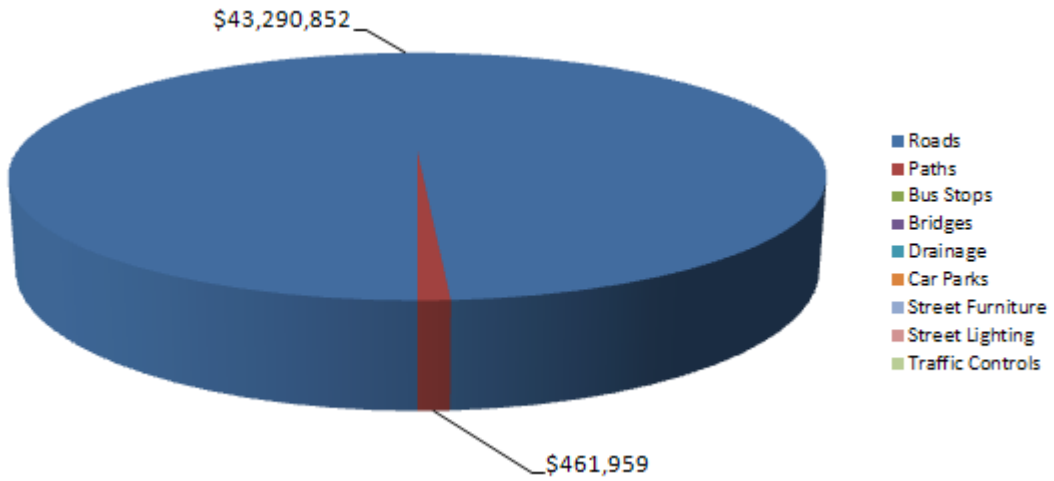


Figure 6-2: Transport Network Asset Current Replacement Cost

6.1.4. Transport Network Data Confidence and Reliability

To be able to effectively manage its assets, the Shire collects and maintains a range of data on its transport network. Understanding where gaps in this data exist is important to determine the confidence that we can put in the outcomes (e.g. valuations) that result. Table 6-4 details the reliability and confidence levels of the current asset data the Shire holds. In assessing the data, the Shire has applied the IIMM confidence framework as detailed in Table 6-3.

Confidence Grade	Description	Accuracy
1	Accurate	100%
2	Minor inaccuracies	± 5%
3	50% estimated	± 20%
4	Significant data estimated	± 30%
5	All data estimated	± 40%

Table 6-3: Data Confidence Measures

Asset Class	Inventory	Condition	Valuation
Road seal	3	4	4
Road pavement	3	4	4
Road formation	3	N/A	4
Kerbing	3	4	4
Paths	3	5	4
Culverts	3	5	5
Drainage	3	4	4
Car Parks	5	5	5
Street Furniture	4	5	5
Aerodromes/Airstrips	5	5	5

Table 6-4: Transport Network Data Confidence Levels

It is the Shire's intention to progress towards a position whereby data confidence levels for all areas are classified as either a 1 or 2. The tasks required to move each group to this level of confidence have been listed as improvement actions.

6.2. Asset Lifecycle Management - Roads

6.2.1. Asset Inventory

A breakdown of the Shire's road network by construction type and hierarchy is shown in Table 6-5. The data was extracted from the Shire's ROMAN II system in November 2013. Differences in total lengths and areas between tables are due to carriageway and treatment length differences in the Shire's ROMAN II database. The Shire's database also has a width error for unsealed roads.

Construction Type	Length (km)	Area (sqm)
Unbuilt	3.76	3,760
Unformed	14.39	66,200
Formed	126.13	903,924
Paved	578.85	3,067,032
Sealed with no kerbing	181.72	1,114,746
Sealed with kerbing one side	1.78	14,376
Sealed with kerbing both sides	3.66	39,544
TOTAL	**910.29**	**5,209,582**

Hierarchy	Length (km)	Area (sqm)
Regional Distributor	132.29	-
Local Distributor	73.03	-
Access Road	704.96	-
Unrecorded	0.00	-
TOTAL	**910.28**	**-**

Table 6-5: Road Network Length and Area

Table 6-6 details the length and area of the road network, where surfacing type is recorded.

Road Type	Length (km)	Area (sq. m)	Percentage (By Area)
Asphalt	0.00	0.00	0%
Brick Paving	0.00	0.00	0%
Cement Concrete	0.00	0.00	0%
Chip Seal	187.16	1,157,739	27%
Primer Seal	0.00	0.00	0%
Unsealed	723.12	3,067,032	73%
Total	**910.28**	**4,224,771**	**100%**

Table 6-6: Road Surface Quantities

6.2.3. Asset Condition

The road network last had a major visual condition rating in 2006. Since this time, two road sections have had their condition rating updated, likely to reflect the Shire's works. The currently recorded condition of the road network is shown in Figure 6-3. Typically, roads in a condition of 4 or 5 are nearing the end of their life and therefore should appear on a long term works programme. However, given the age of the last condition rating, the data is not reliable.

A total of 74.89km (8%) of road was recorded as being in either a poor (4) or very poor (5) condition. This represents a very significant quantity of potential renewal work.

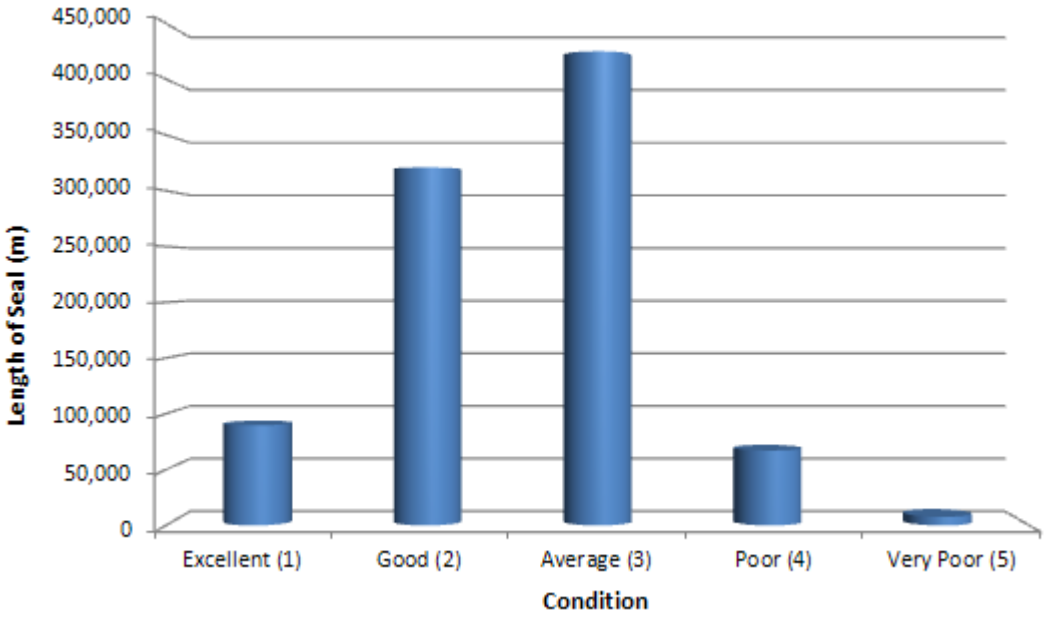


Figure 6-3: Current Road Condition Ratings

6.2.4. Asset Valuation

At the end of each financial year, the Shire should review the valuation of its infrastructure assets. Historical road valuation results for current and depreciated replacement costs are shown in Table 6-7 and Table 6-8. The values were extracted from the Shire's old ROMAN database. No formal approved valuation has been carried out within ROMAN II. The valuations show elsewhere within this Plan have been taken from the 2011/12 Annual Report.

Year	Formation	Pavement	Seal	Kerbing	Total
1997	$11,112,566	$19,476,405	$2,157,212	$91,500	$32,837,683
1993	$11,112,566	$19,476,405	$2,157,212	$91,500	$32,837,683

Table 6-7: Road Network Current Replacement Costs

Year	Formation	Pavement	Seal	Kerbing	Total
1997	$11,112,566	$16,414,009	$992,984	$35,050	$28,554,609
1993	$11,112,566	$16,650,861	$977,392	$40,902	$28,781,721

Table 6-8: Road Network Depreciated Replacement Costs

Description	Cost $/m^2	Depreciation Life (Years) Roman II	Depreciation Life (Years) Finance
Asphalt seal	-	-	25
Chip Seal	-	-	20
Gravel Sheet	-	-	12
Pavement	$- – Sealed $- – Unsealed $- – All others	- - -	50
Formation	$-	N/A (Infinite)	N/A (Infinite)
Kerbing	$- – Barrier $- – Semi-Barrier $- –Mountable $- – Semi-Mountable	- - - -	-

Table 6-9: Road Component Base Lives and Unit Rates

6.2.5. Operation and Maintenance Plan

Operation activities and costs are those which are required to run an asset (e.g. electrical charges for street lighting and costs for sweeping roads). 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 (e.g. filling potholes, patching localised pavement failures etc.). This section of the AMP details the Shire's current operation and maintenance activities and costs.

Historical Expenditure

The Shire's actual past expenditure on operation and maintenance activities is shown in Table 6-10. While current levels of expenditure are considered adequate to meet the required service levels, future versions of this AMP need to be able to link required expenditure with service levels. This task has been listed as an improvement action.

Year	Operation Expenditure	Maintenance Expenditure
2012/13	$15,073	$279,335
2011/12	$16,072	$254,537
2010/11	$24,007	$232,703

Table 6-10: Historical Road Operation and Maintenance Expenditure 2010/11 - 2012/13

Maintenance Response and Prioritisation

At present, the assessment and prioritisation of maintenance activities is undertaken by operational staff using experience and judgement. An improvement task has been listed for the Shire to develop a formal framework and process aligned to service levels.

Standards and Specifications

Operation and maintenance work is carried out in accordance with the relevant standards and specifications listed in Appendix A.

Future Operation and Maintenance Expenditure

With the transport network not expected to significantly increase or decrease in size over the life of this AMP, operation and maintenance costs are expected to generally change in line with inflation levels. The BITRE RCMPI (Figure 9-7) shows that historically, construction and maintenance costs have risen faster than normal CPI. As such, future projections will need to link to service levels and acknowledge cost increases that may be higher than that allowed for.

The following figures have generally been inflated annually by 4%, with the exception of street lighting charges. These have been inflated by 10% per annum in acknowledgement of likely higher than CPI future cost increases.

Operation and maintenance is funded from the operating budget and grants where available.

Year	Operation Expenditure	Maintenance Expenditure
2014/15	$18,238	$321,670
2015/16	$20,062	$334,537
2016/17	$22,068	$347,918
2017/18	$24,275	$361,835
2018/19	$26,703	$376,308
2019/20	$29,373	$391,361
2020/21	$32,310	$407,015
2021/22	$35,542	$423,296
2022/23	$39,096	$440,227
2023/24	$43,005	$457,837

Table 6-11: Projected Road Operation and Maintenance Expenditure

6.2.6. 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 or new work expenditure.

Historical Expenditure

The Shire's actual past expenditure on road renewal activities is shown in Table 6-12.

Year	Renewal Expenditure
2012/13	$855,547
2011/12	$818,421
2010/11	$758,066

Table 6-12: Historical Road Renewal Expenditure 2010/11 - 2012/13

Renewal Selection

Roads requiring renewal are currently identified either by customer request or through staff inspection. Staff then use their experience and judgement to prioritise works. There would be clear benefit in moving towards a condition based regime whereby each road is assessed and those found to be in a poor condition programmed for renewal. An improvement task to develop and implement a cyclical inspection programme has been listed.

Renewal is 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.

Renewal Standards

Renewal work is carried out in accordance with the relevant standards and specifications listed in Appendix A.

Summary of Projected Renewal Expenditure

A summary of the planned expenditure on road renewals is provided below. Further refinement of the inventory is required in order to improve the accuracy of annual depreciation projections. Further, work is also required to develop a condition based long term capital works plan. This has been listed as an improvement action.

Year	Renewal Expenditure
2014/15	$728,000
2015/16	$757,120
2016/17	$787,405
2017/18	$818,901
2018/19	$851,657
2019/20	$885,723
2020/21	$921,152
2021/22	$957,998
2022/23	$996,318
2023/24	$1,036,171

Table 6-13: Projected Road Renewal - 2014/15 to 2023/24

Renewals are to be funded from capital works programs and grants where available.

6.2.7. Acquisition/Upgrade Plan

New works (acquisition) 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.

Historical Expenditure

The Shire's actual past expenditure on road acquisition/upgrade activities is shown in Table 6-14.

Year	Upgrade Expenditure	New Expenditure
2012/13	$0	$0
2011/12	$0	$0
2010/11	$0	$0

Table 6-14: Historical Road Acquisition/Upgrade Expenditure 2010/11 - 2012/13

Selection Criteria

New assets and the 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 estimate. Proposals are then prioritised by Council based upon perceived need and available funds. The development of a process that quantifies project alignment with the Strategic Community Plan would have clear merit, but does not currently exist. The development of such a process that evaluates projects using weighted multi-criteria analysis has been listed as an improvement task.

Standards and Specifications

Upgrade and new work is carried out in accordance with the relevant standards and specifications listed in Appendix A.

Summary of projected upgrade/new asset expenditure.

A summary of planned upgrade and new works is detailed in Table 6-15.

Year	Project	Upgrade Expenditure	New Expenditure
2014/15	Various LTFP Upgrades and Expansion	$983,234	-
2015/16	Various LTFP Upgrades and Expansion	$1,002,722	-
2016/17	Various LTFP Upgrades and Expansion	$1,022,697	-
2017/18	Various LTFP Upgrades and Expansion	$1,043,171	-
2018/19	Various LTFP Upgrades and Expansion	$1,064,160	-

2019/20	Various LTFP Upgrades and Expansion	$1,085,672	-
2020/21	Various LTFP Upgrades and Expansion	$1,107,722	-
2021/22	Various LTFP Upgrades and Expansion	$1,130,321	-
2022/23	Various LTFP Upgrades and Expansion	$1,153,487	-
2023/24	Various LTFP Upgrades and Expansion	$1,176,275	-

Table 6-15: Planned Road Upgrade & Acquisition Expenditure - 2014/15 to 2023/24

New assets and services are to be funded from capital works program and grants where available.

6.2.8. 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 6-16, together with estimated annual savings from not having to fund operations, maintenance and renewal of the assets. 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.

Where cash flow projections from asset disposals are not available, these will be developed in future revisions of this AMP.

Asset	Reason for Disposal	Timing	Net Disposal Expenditure (Expend +ve, Revenue –ve)	Operations & Maintenance Annual Savings

Table 6-16: Roads identified for Disposal

6.3. Asset Lifecycle Management – Paths

6.3.1. Asset Inventory

A breakdown of the Shire's path network by material, as recorded in the ROMAN II database, is shown in Table 6-17.

Material Type	Length (m)	Area (sq. m)	Percentage (By Area)
Asphalt	711	1,923	12.0%
Brick Paving	270	519	3.2%
Concrete Insitu	1,090	4,875	30.3%
Concrete Slabs	270	888	5.5%
Gravel	3,500	7,584	47.3%
Unknown	2,780	278	1.7%
Total	**8,621**	**16,067**	**100%**

Table 6-17: Path Surface Quantities

6.3.2. Asset Condition

The path network was last formally inspected in 1997 to determine its condition or presence of maintenance defects. The development and implementation of a formal ongoing inspection programme has been listed as an improvement task.

6.3.3. Asset Valuation

At the end of each financial year, the Shire reviews the valuation of its assets. A formal valuation of the path network, using up to date unit costs and know quantities and condition has not been undertaken within the Shire's ROMAN II database. The preparation of new valuation has been listed as an improvement action. Valuation amounts previously referenced in this document have been sourced from the Shire's 2011/12 Annual Report

Year	Current Replacement Cost	Depreciated Replacement Cost
2013	-	-

Table 6-18: Path Network Current and Depreciated Replacement Values

Description	Cost $/m^2	Assumed Life (Years) Engineering	Assumed Life (Years) Finance
Asphalt	-	-	40
Brick Paved	-	-	40
Insitu Concrete	-	-	40
Concrete Slabs	-	-	40

Gravel	-	-	40
Unknown	-	-	40

Table 6-19: Path Component Base Lives and Unit Rates

6.3.4. Operation and Maintenance Plan

This section of the Plan details the Shire's current operation and maintenance plan activities and costs.

Historical Expenditure

The Shire's actual past expenditure on path operation and maintenance is show in Table 6-20.

Year	Operation Expenditure	Maintenance Expenditure
2012/13	$0	$3,346
2011/12	$0	$390
2010/11	$0	$5,947

Table 6-20: Path Operation and Maintenance Expenditure 2010/11 - 2012/13

Maintenance Response and Prioritisation

At present, the assessment and prioritisation of maintenance activities is undertaken by operational staff using experience and judgement. An improvement task has been listed for the Shire to develop a formal framework and process aligned to service levels.

Standards and Specifications

Operation and maintenance work is carried out in accordance with the relevant standards and specifications listed in Appendix A.

Future Operation and Maintenance Expenditure

The path network is expected to grow slightly as new paths are built within the Shire's town site. Through its long term works programme, additional budget amounts are allowed for additional operation and maintenance costs.

Operation and maintenance is funded from the operating budget and grants where available.

Year	Operation Expenditure	Maintenance Expenditure
2014/15	$0	$3,357
2015/16	$0	$3,491
2016/17	$0	$3,631
2017/18	$0	$3,776
2018/19	$0	$3,927
2019/20	$0	$4,084
2020/21	$0	$4,247
2021/22	$0	$4,417
2022/23	$0	$4,594
2023/24	$0	$4,778

Table 6-21: Projected Path Operation and Maintenance Expenditure

6.3.5. 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.

Historical Expenditure

The Shire's actual past expenditure on path renewal is shown in Table 6-22.

Year	Renewal Expenditure
2012/13	$0
2011/12	$0
2010/11	$0

Table 6-22: Path Renewal Expenditure 2010/11 - 2012/13

Renewal Selection

Paths requiring renewal are currently identified by staff local knowledge. An improvement task to begin undertaking condition inspections has been listed. The results from inspections will then enable the Shire to move towards selecting works based upon condition.

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.

Renewal Standards

Renewal work is carried out in accordance with the relevant standards and specifications listed in Appendix A.

Summary of Projected Renewal Expenditure

A summary of the planned expenditure on path renewals is provided. Further refinement of the inventory is required in order to improve the accuracy of annual depreciation projections. Further, work is also required to develop a condition based long term capital works plan. This has been listed as an improvement action.

Year	Renewal Expenditure
2014/15	$11,261
2015/16	$11,712
2016/17	$12,180
2017/18	$12,667
2018/19	$13,174
2019/20	$13,701

2020/21	$14,249
2021/22	$14,819
2022/23	$15,412
2023/24	$16,028

Table 6-23: Required Path Renewal - 2014/15 to 2023/24

6.3.6. 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.

Historical Expenditure

The Shire's actual past expenditure on path acquisition/upgrade activities is shown in Table 6-24.

Year	Upgrade Expenditure	New Expenditure
2012/13	$0	$0
2011/12	$0	$0
2010/11	$0	$0

Table 6-24: Path Acquisition/Upgrade Expenditure 2010/11 - 2012/13

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 estimate. Proposals are then prioritised by Council based upon perceived need and available funds. The development of a process that quantifies project alignment with the Strategic Community Plan would have clear merit, but does not currently exist. The development of such a process that evaluates projects using weighted multi-criteria has been listed as an improvement task.

Standards and Specifications

Upgrade and new work is carried out in accordance with the relevant standards and specifications listed in Appendix A.

Summary of Projected Upgrade/New Expenditure.

Planned expenditure on the acquisition/upgrade of paths is detailed in Table 6-25.

Year	Project	Upgrade Expenditure	New Expenditure
2014/15	LTFP listed new dual use paths	-	$30,000
2015/16	LTFP listed new dual use paths	-	$0
2016/17	LTFP listed new dual use paths	-	$30,000
2017/18	LTFP listed new dual use paths	-	$0
2018/19	LTFP listed new dual use paths	-	$30,000

2019/20	LTFP listed new dual use paths	-	$0
2020/21	LTFP listed new dual use paths	-	$30,000
2021/22	LTFP listed new dual use paths	-	$0
2022/23	LTFP listed new dual use paths	-	$0
2023/24	LTFP listed new dual use paths	-	$0

Table 6-25: Planned Path Acquisition/Upgrade Projects

Acquisition is to be funded from municipal funds and grants where available.

6.3.7. Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned or unrequired asset including sale, demolition or relocation. Assets identified for possible decommissioning and disposal are shown in Table 6-26, together with estimated annual savings from not having to fund operations and maintenance of the assets. 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.

Where cash flow projections from asset disposals are not available, these will be developed in future revisions of this AMP.

Asset	Reason for Disposal	Timing	Net Disposal Expenditure (Expend +ve, Revenue –ve)	Operations & Maintenance Annual Savings
-	-	-	-	-
-	-	-	-	-

Table 6-26: Paths Identified for Disposal

6.4. Asset Lifecycle Management – Bridges & Culverts

6.4.1. Asset Inventory

A breakdown of the Shire's bridge and culvert portfolio is shown in Table 6-27 and Table 6-28. The data was reported from the Shire's ROMAN II database in November 2013.

Bridge Name and Number	Length	Width	Material	Type
RF0211 – Comerford Road Overpass	1m	-	Unknown	Pedestrian

Table 6-27: Bridge Inventory (Source: ROMAN II November 2013)

Culvert Type and Diameter	Number of	Length of (m)
Box Shaped		
372	1	8.7
600	4	36.0
700	1	9.3
900	3	29.4
1000	1	8.6
1050	6	52.4
1200	18	189.2
Circular		
230	3	27.3
250	2	17.7
275	1	8.8
300	31	328.3
360	1	0.1
373	2	17.2
375	296	2,754.8
380	3	27.3
430	2	23.1
450	107	1,030.7
480	1	12.3
525	3	32.0
600	4	42.0
750	2	22.2
775	1	11.4
900	4	34.4
Total	**497**	**4,723.2**

Table 6-28: Culvert Inventory (Source: ROMAN II June 2013)

6.4.2. Asset Condition

The Shire's bridge and culvert network has not been formally inspected to determine its condition or presence of maintenance defects. The development and implementation of a formal ongoing inspection programme has been listed as an improvement task. It should be noted though that all road bridges within WA are inspected by Main Roads WA for structural defects on a cyclical basis. The results from previous inspections are available upon request.

6.4.3. Asset Valuation

At the end of each financial year, the Shire reviews the valuation of its infrastructure assets. No historical valuation of the bridge and culvert portfolio has been undertaken. This has been listed as an improvement task.

6.4.4. Operation and Maintenance Plan

This section of the Plan details the Shire's current operation and maintenance plan activities and costs.

Historical Expenditure

The recorded historical expenditure on bridge and culvert operation and maintenance is detailed in Table 6-29.

Year	Operation Expenditure	Maintenance Expenditure
2012/13	$0	$0
2011/12	$0	$0
2010/11	$0	$0

Table 6-29: Bridge and Culvert Operation and Maintenance Expenditure 2010/11 - 2012/13

Maintenance Response and Prioritisation

At present, the assessment and prioritisation of maintenance activities is undertaken by operational staff using experience and judgement and is purely reactive in nature. An improvement task has been listed for the Shire to develop a formal inspection and response process.

Standards and Specifications

Operation and maintenance work is carried out in accordance with the relevant standards and specifications listed in Appendix A.

Future Operation and Maintenance Expenditure

Future bridge and culvert operations and maintenance expenditure is forecast to trend in line with the value of the asset stock. However, with limited input data, producing an accurate forecast is difficult. Initial nominal amounts have been allowed for the commencement of a

cyclical inspection regime. The results from this will help drive improvements to the expenditure forecasts.

Operation and maintenance is funded from the operating budget and grants where available.

Year	Operation Expenditure	Maintenance Expenditure
2014/15	$0	$0
2015/16	$0	$0
2016/17	$0	$0
2017/18	$0	$0
2018/19	$0	$0
2019/20	$0	$0
2020/21	$0	$0
2021/22	$0	$0
2022/23	$0	$0
2023/24	$0	$0

Table 6-30: Required Bridge and Culvert Operation and Maintenance Expenditure 2014/15 – 2023/24

6.4.5. 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.

Historical Expenditure

The Shire's recorded historical expenditure on bridge and culvert renewal is shown in Table 6-31.

Year	Renewal Expenditure
2012/13	$0
2011/12	$0
2010/11	$0

Table 6-31: Bridge & Culvert Renewal Historical Expenditure 2010/11 - 2012/13

Renewal Selection

Major bridge renewal requirements are currently identified by Main Roads WA as a result of their structural inspections. Typically, these works are then scheduled, funded and managed by them on the Shire's behalf.

Culvert renewal selection is currently reactive, involving works once a structure has failed. An improvement task to begin undertaking condition inspections has been listed. The results from inspections will then enable the Shire to move towards selecting works based upon condition.

Culvert 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.

Renewal Standards

Renewal work is carried out in accordance with the relevant standards and specifications listed in Appendix A.

Summary of Projected Renewal Expenditure

It is assumed that all bridge renewal will be grant funded and therefore is excluded from the following forecast.

Future culvert renewal expenditure is forecast to trend in line with the value of the asset stock. However, with virtually no input data, it is not currently possible to produce a future expenditure projection. For this to occur, the Shire needs to undertake a valuation, and refine its inventory. Each has been listed as an improvement task.

Renewals are to be funded from capital works programs and grants where available.

Year	Renewal Expenditure
2014/15	$0
2015/16	$0
2016/17	$0
2017/18	$0
2018/19	$0
2019/20	$0
2020/21	$0
2021/22	$0
2022/23	$0
2023/24	$0

Table 6-32: Required Culvert Renewal - 2014/15 to 2023/24

6.4.6. 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.

Historical Expenditure

The Shire's actual past expenditure on bridge and culvert acquisition/upgrade activities is shown in Table 6-33.

Year	Upgrade Expenditure	New Expenditure
2012/13	$0	$0
2011/12	$0	$0
2010/11	$0	$0

Table 6-33: Bridge & Culvert Acquisition/Upgrade Expenditure 2010/11 - 2012/13

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 estimate. Proposals are then prioritised by Council based upon perceived need and available funds. The development of a process that quantifies project alignment with the Strategic Community Plan would have clear merit, but does not currently exist. The development of such a process that evaluates projects using weighted multi-criteria has been listed as an improvement task.

Standards and Specifications

Upgrade and new work is carried out in accordance with the relevant standards and specifications listed in Appendix A.

Summary of Projected Upgrade/New Expenditure.

Planned expenditure on the acquisition/upgrade of bridges and culverts is detailed in Table 6-34.

Year	Project	Upgrade Expenditure	New Expenditure
2014/15	-		-
2015/16	-		-
2016/17	-		-
2017/18	-		-

2018/19	-		-
2019/20	-		-
2020/21	-		-
2021/22	-		-
2022/23	-		-
2023/24	-		-

Table 6-34: Planned Bridge & Culvert Acquisition/Upgrade Projects 2014/15 – 2023/24

Acquisition is to be funded from municipal funds and grants where available.

6.4.7. Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned or unrequired asset including sale, demolition or relocation. Assets identified for possible decommissioning and disposal are shown in Table 6-35, together with estimated annual savings from not having to fund operations and maintenance of the assets. 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.

Where cash flow projections from asset disposals are not available, these will be developed in future revisions of this AMP.

Asset	Reason for Disposal	Timing	Net Disposal Expenditure (Expend +ve, Revenue –ve)	Operations & Maintenance Annual Savings
-	-	-	-	-
-	-	-	-	-

Table 6-35: Bridges & Culverts Identified for Disposal

6.5. Asset Lifecycle Management - Drainage

6.5.1. Asset Inventory

A breakdown of the Shire's drainage network by asset type is shown in Table 6-36. The data was reported from the Shire's ROMAN II database in November 2013.

Asset Type	Length (m)	Percentage (By Length)
Open Drain (Excavated)	745,030	41.9%
Table Drain (Shallow)	1,030,160	58.0%
Underground Pipe	1,530	0.1%
Total	**1,776,720**	**100%**

Table 6-36: Drainage Inventory (Source: ROMAN II November 2013)

6.5.2. Asset Condition

Condition ratings are held on the drainage network, however the majority of ratings are from 2006 and as such are not necessarily still accurate. As such, the development and implementation of a formal ongoing inspection programme has been listed as an improvement task.

The results recorded within the database show that 16.1% of drainage was rated as being in either a condition 4 (poor) or 5 (very poor). This represents a drainage length of 286km of drainage that may need some level of renewal. This could potentially represent a significant amount of work and require substantial resources.

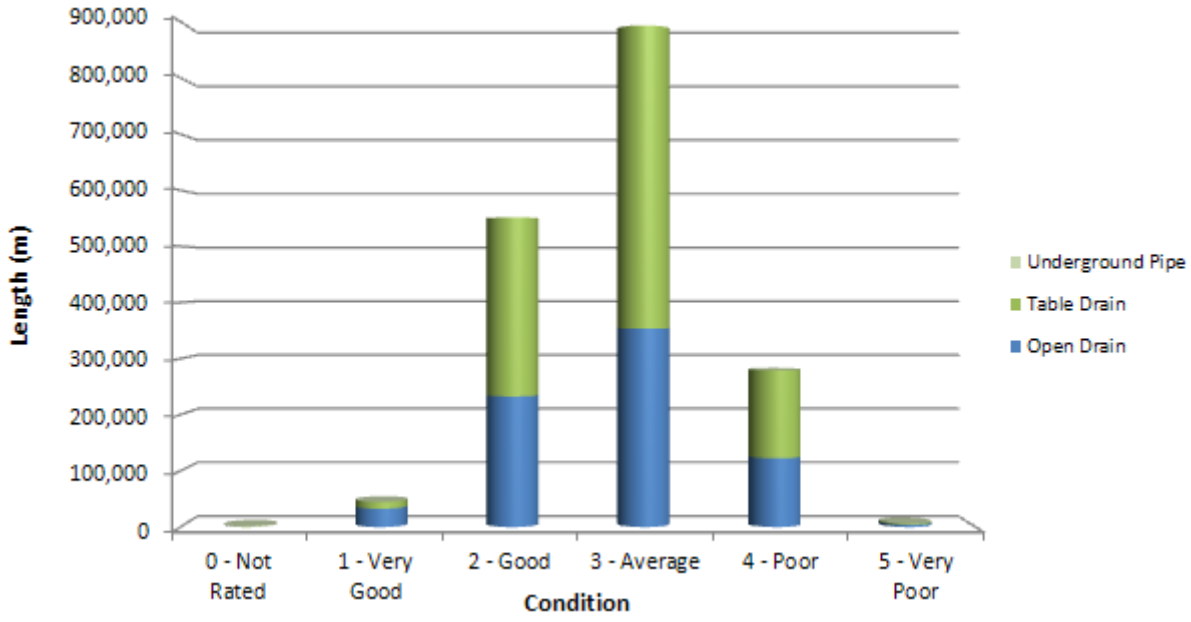


Table 6-37: Drainage Condition Profile (Source: ROMAN II June 2013)

6.5.4. Asset Valuation

At the end of each financial year, the Shire reviews the valuation of its infrastructure assets. However, the drainage network has not been historically valued. Carrying out a new valuation and developing standard unit rates and lives has been listed as an improvement task.

6.5.5. Operation and Maintenance Plan

This section of the Plan details the Shire's current operation and maintenance plan, activities and costs.

Historical Expenditure

The Shire's actual past expenditure on drainage operation and maintenance activities is shown in Table 6-38. While current levels of expenditure are considered adequate to meet the required service levels, future versions of this Plan need to be able to link required expenditure with service levels. This task has been listed as an improvement action.

Year	Operation Expenditure	Maintenance Expenditure
2012/13	$0	$1,381
2011/12	$0	$544
2010/11	$0	$2,129

Table 6-38: Drainage Operation and Maintenance Expenditure 2010/11 - 2012/13

Maintenance Response and Prioritisation

At present, the assessment and prioritisation of maintenance activities is undertaken by operational staff using experience and judgement. An improvement task has been listed for the Shire to develop a formal prioritisation framework and process aligned to service levels.

Standards and Specifications

Operation and maintenance work is carried out in accordance with the relevant standards and specifications listed in Appendix A.

Future Operation and Maintenance Expenditure

Future drainage operations and maintenance expenditure is forecast to trend in line with the value of the asset stock. In lieu of the Shire having planned maintenance programmes, future projections have been developed based upon historical expenditure levels and the application of a 4.0% annual inflation rate.

Operation and maintenance is funded from the operating budget and grants where available.

Year	Operation Expenditure	Maintenance Expenditure
2014/15	$0	$1,405
2015/16	$0	$1,461

2016/17	$0	$1,520
2017/18	$0	$1,581
2018/19	$0	$1,644
2019/20	$0	$1,710
2020/21	$0	$1,778
2021/22	$0	$1,849
2022/23	$0	$1,923
2023/24	$0	$2,000

Table 6-39: Required Drainage Operation and Maintenance Expenditure 2014/15 – 2023/24

6.5.6. 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.

Historical Expenditure

The Shire's recorded historical annual expenditure on drainage renewal is shown in Table 6-40.

Year	Renewal Expenditure
2012/13	$0
2011/12	$0
2010/11	$0

Table 6-40: Drainage Renewal Expenditure 2010/11 - 2012/13

Renewal Selection

Drainage assets requiring renewal are currently identified through staff local knowledge. An improvement task to begin undertaking condition inspections has been listed. The results from inspections will then enable the Shire to move towards selecting works based upon condition.

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.

Renewal Standards

Renewal work is carried out in accordance with the relevant standards and specifications listed in Appendix A.

Summary of Projected Renewal Expenditure

Future drainage renewal expenditure is forecast to trend in line with the value of the asset stock. In-lieu of either condition data or historical expenditure records, a forecast has been developed based upon annual depreciation from an interim valuation of the network using ROMAN II.

Renewals are to be funded from capital works programs and grants where available.

Year	Renewal Expenditure
2014/15	$0
2015/16	$0
2016/17	$0
2017/18	$0

2018/19	$0
2019/20	$0
2020/21	$0
2021/22	$0
2022/23	$0
2023/24	$0

Table 6-41: Required Drainage Renewal Expenditure 2014/15 to 2023/24

6.5.7. 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.

Historical Expenditure

Recorded historical expenditure on upgrade or new drainage works is detailed in Table 6-42.

Year	Upgrade Expenditure	New Expenditure
2012/13	$0	$0
2011/12	$0	$0
2010/11	$0	$0

Table 6-42: Drainage Acquisition/Upgrade Expenditure 2010/11 - 2012/13

Selection Criteria

New assets and the 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 estimate. Proposals are then prioritised by Council based upon perceived need and available funds. The development of process than quantifies project alignment with the Strategic Community Plan would have clear merit, but does not currently exist. The development of such a process that evaluates projects using weighted multi-criteria has been listed as an improvement task.

Standards and Specifications

Upgrade and new work is carried out in accordance with the relevant standards and specifications listed in Appendix A.

Summary of projected upgrade/new asset expenditure.

Planned drainage upgrade and acquisition (new) expenditure is detailed in Table 6-43. New assets and services are to be funded from capital works program and grants where available.

Year	Upgrade Expenditure	New Expenditure
2014/15	$0	$0
2015/16	$0	$0
2016/17	$0	$0
2017/18	$0	$0
2018/19	$0	$0

2019/20	$0	$0
2020/21	$0	$0
2021/22	$0	$0
2022/23	$0	$0
2023/24	$0	$0

Table 6-43: Required Drainage Acquisition/Upgrade Expenditure - 2014/15 to 2023/24

6.5.8. 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 6-44, together with estimated annual savings from not having to fund operations and maintenance of the assets. 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.

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

Asset	Reason for Disposal	Timing	Net Disposal Expenditure (Expend +ve, Revenue –ve)	Operations & Maintenance Annual Savings

Table 6-44: Drainage Identified for Disposal

6.6. Asset Lifecycle Management – Car Parks

6.6.1. Asset Inventory

The Shire does not currently hold an inventory of its car parks. The establishment of one has been listed as an improvement task.

6.6.2. Asset Condition

To be completed in a future revision of this Plan.

6.6.3. Asset Valuation

To be completed in a future revision of this Plan.

6.6.4. Operation and Routine Maintenance Plan

To be completed in a future revision of this Plan.

6.6.5. Renewal/Replacement Plan

To be completed in a future revision of this Plan.

6.6.6. Acquisition/Upgrade Plan

To be completed in a future revision of this Plan.

6.6.7. Disposal Plan

To be completed in a future revision of this Plan.

6.7. Asset Lifecycle Management – Street Furniture

6.7.1. Asset Inventory

The Shire does not have a complete street furniture inventory. Records are held on advisory signs with ROMAN II, and the number of road name signs has been estimated based on the assumption that there are two signs per road. A breakdown of the Shire's road sign portfolio by asset type is shown in Table 6-45. Data for advisory signs was reported from the Shire's ROMAN II system in June 2013.

Asset Type	Number
Advisory Signs	536
Street Name Signs	est. 260
Total	**796**

Table 6-45: Road Sign Inventory

6.7.2. Asset Condition

The condition of signs is not known. The development and implementation of a formal ongoing inspection programme for all street furniture has been listed as an improvement task.

6.7.3. Asset Valuation

At the end of each financial year, the Shire reviews the valuation of its infrastructure assets. However, street furniture has not been historically valued. Carrying out a new valuation and developing standard unit rates and lives has been listed as an improvement task.

6.7.4. Operation and Maintenance Plan

This section of the Plan details the Shire's current operation and maintenance plan activities and costs for street furniture.

Historical Expenditure

The Shire's actual past expenditure on street furniture operation and maintenance activities is shown in Table 6-46.

Year	Operation Expenditure	Maintenance Expenditure
2012/13	$0	$6,719
2011/12	$0	$19,633
2010/11	$0	$24,858

Table 6-46: Street Furniture Operation and Maintenance Expenditure 2010/11 - 2012/13

Maintenance Response and Prioritisation

At present, street furniture is maintained reactively as and when defects are noted. Assessment as part of a cyclical safety and maintenance inspection process would enable works to occur in a planned manner. The process should also incorporate response times in line with agreed levels of service. A process has been listed as an improvement task.

Standards and Specifications

Operation and maintenance work is carried out in accordance with the relevant standards and specifications listed in Appendix A.

Future Operation and Maintenance Expenditure

Future street furniture operation and maintenance expenditure is forecast to trend in line with the value of the asset stock. However, due to the Shire not having a planned maintenance programme, the forecast has been produced basis upon historical expenditure levels and an applied annual inflation rate of 4%. The development of a planned maintenance programme and condition inspections has been listed as an improvement task.

Operation and maintenance is funded from the operating budget and grants where available.

Year	Operation Expenditure	Maintenance Expenditure
2014/15	$0	$17,753
2015/16	$0	$18,463
2016/17	$0	$19,201
2017/18	$0	$19,969
2018/19	$0	$20,768

2019/20	$0	$21,599
2020/21	$0	$22,463
2021/22	$0	$23,361
2022/23	$0	$24,296
2023/24	$0	$25,268

Table 6-47: Required Street Furniture Operation and Maintenance Expenditure – 2014/15 to 2023/24

6.7.5. 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.

Historical Expenditure

The Shire's recorded historical expenditure on street furniture is recorded in Table 6-48.

Year	Renewal Expenditure
2012/13	$0
2011/12	$0
2010/11	$0

Table 6-48: Street Furniture Historical Renewal Expenditure 2010/11 - 2012/13

Renewal Selection

Street Furniture assets requiring renewal are currently identified by staff or through customer request. An improvement task to begin undertaking condition inspections has been listed. The results from inspections will then enable the Shire to move towards selecting works based upon condition.

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.

Renewal Standards

Renewal work is carried out in accordance with the relevant standards and specifications listed in Appendix A.

Summary of Projected Renewal Expenditure

Future street furniture renewal expenditure is forecast to trend in line with the value of the asset stock. However, due a lack of key information, it is not currently possible to produce a future expenditure projection. For this to occur, the Shire needs to collect condition information and develop maintenance programmes linked to levels of service. Each has been listed as an improvement task.

Renewals are to be funded from capital works programs and grants where available.

Year	Renewal Expenditure
2014/15	$0
2015/16	$0

2016/17	$0
2017/18	$0
2018/19	$0
2019/20	$0
2020/21	$0
2021/22	$0
2022/23	$0
2023/24	$0

Table 6-49: Required Street Furniture Renewal Expenditure - 2014/15 - 2023/24

6.7.6. 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.

Historical Expenditure

The Shire's recorded historical annual expenditure on street furniture is shown in Table 6-50.

Year	Upgrade Expenditure	New Expenditure
2012/13	$0	$0
2011/12	$0	$0
2010/11	$0	$0

Table 6-50: Street Furniture Acquisition/Upgrade Expenditure - 2010/11 to 2012/13

Selection Criteria

Due to the relatively low capital cost associated with street furniture, a formal selection criteria process is not required. The provision of street furniture usually occurs in order to meet a clear need or Standard requirement.

Standards and Specifications

Upgrade and new work is carried out in accordance with the relevant standards and specifications listed in Appendix A.

Summary of projected upgrade/new asset expenditure.

Due to a lack of informing data, it is not currently possible to produce a forecast of required upgrade and new expenditure on street furniture. The development of this forecast has been listed as an improvement action.

New assets and services are to be funded from the capital works program and grants where available.

Year	Upgrade Expenditure	New Expenditure
2014/15	$0	$0
2015/16	$0	$0
2016/17	$0	$0
2017/18	$0	$0
2018/19	$0	$0
2019/20	$0	$0
2020/21	$0	$0

2021/22	$0	$0
2022/23	$0	$0
2023/24	$0	$0

Table 6-51: Required Street Furniture Acquisition and Upgrade Expenditure - 2014/15 to 2023/24

6.7.7. Disposal Plan

Due to the low capital cost of street furniture, no formal disposal plan is required.

6.8. Asset Lifecycle Management – Aerodromes/Airstrips

6.8.1. Asset Inventory

The Shire does not currently hold an inventory of its aerodrome and associated infrastructure. The establishment of one has been listed as an improvement task.

6.8.2. Asset Condition

To be completed in a future revision of this Plan.

6.8.3. Asset Valuation

To be completed in a future revision of this Plan.

6.8.4. Operation and Routine Maintenance Plan

To be completed in a future revision of this Plan.

6.8.5. Renewal/Replacement Plan

To be completed in a future revision of this Plan.

6.8.6. Acquisition/Upgrade Plan

To be completed in a future revision of this Plan.

6.8.7. Disposal Plan

To be completed in a future revision of this Plan.

7. Financial

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

All future monetary figures in this section are expressed in terms of real dollars, with a 2014/15 base year and an applied annual inflation rate of 4%, with the exception of street light charges. These charges have been inflated using a 10% annual increase. Historic figures are expressed in their respective real values.

7.1. Projected Expenditure

Table 7-1 and Table 7-2 detail the projected expenditure required for the transport network over the next 10 years. As previously discussed, there are areas of data weakness and therefore the following projections are likely to change as the Shire's asset management practises improve.

Asset Type	Year 1	Year 2	Year 3	Year 4	Year 5
	2014/15	2015/16	2016/17	2017/18	2018/19
Roads	$2,051,142	$2,114,441	$2,180,088	$2,248,182	$2,318,828
Paths	$44,618	$15,203	$45,811	$16,443	$47,101
Bridges & Culverts	$0	$0	$0	$0	$0
Drainage	$1,405	$1,461	$1,520	$1,581	$1,644
Car Parks	$0	$0	$0	$0	$0
Street Furniture	$17,753	$18,463	$19,201	$19,969	$20,768
Aerodromes/Airstrips	$0	$0	$0	$0	$0
Required Funds	**$2,114,918**	**$2,149,568**	**$2,246,620**	**$2,286,175**	**$2,388,341**

Table 7-1: Required Transport Asset Expenditure - 2014/15 to 2018/19

Asset Type	Year 6	Year 7	Year 8	Year 9	Year 10
	2019/20	2020/21	2021/22	2022/23	2023/24
Roads	$2,392,129	$2,468,200	$2,547,157	$2,629,128	$2,713,288
Paths	$17,785	$48,496	$19,236	$20,006	$20,806
Bridges & Culverts	$0	$0	$0	$0	$0
Drainage	$1,710	$1,778	$1,849	$1,923	$2,000
Car Parks	$0	$0	$0	$0	$0
Street Furniture	$21,599	$22,463	$23,361	$24,296	$25,268

Aerodromes/Airstrips	$0	$0	$0	$0	$0
Required Funds	**$2,433,222**	**$2,540,937**	**$2,591,603**	**$2,675,353**	**$2,761,361**

Table 7-2: Required Transport Asset Expenditure - 2019/20 to 2023/24

7.2. Projected Revenue Sources

Table 7-3 and Table 7-4 detail the likely revenue sources for the transport network. It should be noted though that many of these funding sources are highly variable and not guaranteed. As such, caution should be applied when using these figures. A 4% annual inflation has been applied to these figures.

Funding Source	Year 1	Year 2	Year 3	Year 4	Year 5
	2014/15	2015/16	2016/17	2017/18	2018/19
Regional Road Group	$288,974	$300,533	$312,554	$325,056	$338,058
Roads to Recovery	$267,036	$277,717	$288,826	$300,379	$312,394
Direct Grant (MRWA)	$97,463	$101,361	$105,416	$109,633	$114,018
Financial Assistance Grant	$550,722	$572,750	$595,660	$619,487	$644,266
Blackspot	$46,523	$48,384	$50,319	$52,332	$54,425
Other	$2,855	$2,969	$3,088	$3,211	$3,340
Municipal Funds	**$864,041**	**$848,655**	**$893,671**	**$879,108**	**$924,991**

Table 7-3: Projected Transport Asset Revenue - 2014/15 to 2018/19

Funding Source	Year 6	Year 7	Year 8	Year 9	Year 10
	2019/20	2020/21	2021/22	2022/23	2023/24
Regional Road Group	$351,581	$365,644	$380,270	$395,480	$411,300
Roads to Recovery	$324,890	$337,885	$351,401	$365,457	$380,075
Direct Grant (MRWA)	$118,579	$123,322	$128,255	$133,385	$138,720
Financial Assistance Grant	$670,037	$696,839	$724,712	$753,701	$783,849
Blackspot	$56,602	$58,866	$61,221	$63,669	$66,216
Other	$3,473	$3,612	$3,757	$3,907	$4,063
Municipal Funds	**$911,339**	**$958,178**	**$945,534**	**$963,441**	**$980,973**

Table 7-4: Projected Transport Asset Revenue - 2019/20 to 2023/24

7.3. 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, asset values and depreciation expense. 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 that:

- Transport assets will remain in Council ownership throughout the period covered by this AMP, unless specifically detailed otherwise in Section 6.
- Standards, Acts and Regulations associated with transport asset will remain essentially the same over the AMP life.
- Expenditure projections allow for inflation at 4% per annum with the exception of street lighting charges which have been inflated by 10% per annum.
- Operation and maintenance costs are based on historical expenditure trends which are not necessarily a sound indicator of future need, nor are tied to actual activities.
- Renewal programmes have been based on either historical cost or annual depreciation rates. Future versions of this AMP will move to condition based works programming and resourcing methods.
- Inventory information used in calculations is the latest available at hand, but consideration of overall data confidence levels is critical when using this AMP.
- Unit costs and assumed asset lives are the Shire's but do not necessarily represent actual asset performance.
- Historical expenditure reports split by activity may contain expenditure which was actually expended on different activities.

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

- Reviewing and aligning unit costs and assumed lives for all assets.
- Improving the accuracy and data confidence of asset inventories where they are low.
- Ensuring that accurate valuations of all asset types are produced annually.
- Implementing condition based works programming with associated funding requirement projections.
- Ensuring that all future upgrade, new and disposal projects, with funding expenditure/revenue projections, are fully documented in Section 6.

7.4. Integrated Planning & Reporting KPIs

The Shire operates its business processes in-line with the WA Department of Local Government's Integrated Planning and Reporting Advisory Standard. Asset Management performance is measured by the application of three Key Performance Indicators (KPIs). The transport network's performance against each KPI is as follows.

KPI	Performance	Comment
Asset Consumption Ratio	77%	Target band is between 50% and 75%.
Asset Sustainability Ratio	116%	Target band is between 90% and 110%.
Asset Renewal Funding Ratio	37%	Target band is between 90% and 100%.

Table 7-5: Integrated Planning & Reporting KPIs

7.4.1. KPI Commentary

Asset Consumption Ratio - The ratio highlights the aged condition of the transport assets. It is essentially the "average proportion of 'as new condition' left in assets". The Shire's ratio is just over the target range. It should be noted though that further work is required to refine many of the transport asset inventories, collect condition information and produce accurate valuations. It is expected that this ratio will fall as the Shire's transport inventory is improved.

Asset Sustainability Ratio – The ratio is an indicator of the extent to which the transport assets are being renewed or replaced as they reach the end of their useful lives. The ratio shows that currently the Shire is funding renewal at a rate within the target range. However, it is thought that some of the historically recorded renewal expenditure may contain amounts on upgrade activities.

Asset Renewal Funding Ratio – This ratio indicates whether the Shire has the financial capacity to fund asset renewal at existing revenue and service levels. Using the LTFP a ratio of 37% is produced. However, the LTFP contains high levels of planned expenditure on upgrade and new projects. This money will need to be diverted to renewal projects.

8. Asset Management Practices

8.1. Accounting/Financial Systems

The current financial package used by the Shire for recording expenditure and revenue on Transport Assets is QuickBooks, although Synergysoft will replace this during 2014. The Shire's Deputy CEO is responsible for the systems maintenance and accuracy. In meeting its financial reporting obligations the Shire must comply with

- AAS 4 Depreciation
- AAS 5 Materiality
- AAS 6 Accounting Policies
- AAS 27 Financial Reporting by Local Governments
- AAS 29 Financial Reporting by Government Departments
- AAS 31 Financial Reporting for Governments
- AAS 38 Revaluation of Non-Current Assets
- AASB 1041 Revaluation of Non-Current Assets
- SAC 4 Definition And Recognition of The Elements of Financial Statements
- Local Government Act 1995 Part 6 – various financial management processes.

Any changes which have been identified as needing to occur to the accounting/financial system by this AMP are included in the improvement plan.

8.2. Asset Management Systems

The Shire currently relies on the ROMAN II pavement management system to hold inventory information for its Transport Assets. The system has the capability to manage all the Shire's transport assets and the different tasks which may need to be undertaken. Maintenance of the ROMAN II system resides with the Deputy CEO. Any changes which have been identified as needing to occur to the asset management system by this Plan are included in the improvement plan.

8.3. Information Flow Requirements and Processes

The key information flows *into* this AMP are:

- Council strategic and operational plans
- Asset inventories
- Valuation reports
- Current service levels, expenditures, service deficiencies and service risks
- Projections of various factors affecting future demand for services and assets owned by Council
- Future capital works programmes
- Financial asset values

The key information flows *from* this AMP are:

- The resulting budget and long term financial plan expenditure projections
- Financial sustainability indicators
- The asset management improvement programme

These will impact the Long Term Financial Plan, Corporate Business Plan and Annual Budget.

8.4. Legislation, Standards, Policies and Guidelines

Standards, guidelines and policy documents referenced in this AMP are listed in Appendix A.

9. Plan Improvement and Monitoring

This Section of the AMP outlines the degree to which it is an effective and integrated tool within the Shire's business processes as well detailing the future tasks required to improve its accuracy and robustness.

9.1. Performance Measures

The effectiveness of the AMP can be measured in the following ways:

- The degree to which the required cash flows identified in this AMP are incorporated into council's long term financial plan; and
- 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 AMP.

Suitable measures to continuously monitor the performance of this AMP will be developed after such a time when the Shire's corporate integrated planning reaches a suitable maturity and robustness.

9.2. Improvement Plan

The asset management improvement plan generated from this AMP is shown in Table 9-1.

Task No	Task	Responsibility	Resources Required	Timeline
1	Investigate the resources required to carry out the asset management programme and determine suitable/available source(s).	CEO	Consultant Fynds	6 months
2	Engage with stakeholders to determine their service needs.	CEO	Time	6 Months
3	Develop and implement a safety and maintenance defect inspection programme for all transport assets with associated intervention levels.	WS	Time	3 months
4	Develop operation and preventative maintenance programmes for all transport assets and link to service levels and budgets.	WS	Time	3 Months
5	Develop and implement a cyclical condition inspection programme, for all transport assets, with associated renewal triggers.	WS	Consultant Funds	12 Months

6	Develop a capital project evaluation procedure weighted against the Strategic Community Plan's goals.	DCEO	Time	12 months
7	Develop a corporate risk management policy and register.	DCEO	Consultant and Funds	12 months
8	Monitor changes in traffic levels either side of potential Tier 3 railway line closures occurring.	WS	Time	12 months
9	Develop guidelines on transport asset material reuse and recycling options.	WS	Time	24 months
10	Investigate and cost options for new technologies which may help to reduce long term costs (e.g. long life materials).	WS	Time	24 months
11	Update all transport asset inventories.	DCEO	Time	12 months
12	Develop and implement an annual transport asset valuation procedure.	DCEO	Time	12 months
13	Develop long term works programmes based upon asset condition and the capital project evaluation procedure.	DCEO	Time	6 months
14	Monitor the current levels of transport asset usage and develop a framework within which asset rationalisation and/or service level downgrading can be considered.	DCEO	Time	24 months
15	Amend the General Ledger structure so that all expenditure is recorded by asset and activity.	DCEO	Time	12 months

Table 9-1: Transport AMP Improvement Plan

9.3. Monitoring and Review Procedures

This AMP will be reviewed during annual budget preparation and amended to recognise any changes in levels of service and/or resources available to provide those services as a result of the budget decision process.

APPENDICES

Appendix A – Legislation Acts and Regulations

This section provides details on all legislation, standards, policies and guidelines which should be considered as part of the management practices of the Shire's transport assets.

Legislation / Standard / Organisation	Requirement / Document
Local Government Act 1995	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. The Act also provides guidance on the rules around local governments who derive revenue from operations such as non-core business. In this case, this would include charges from car parks.
Civil Liability Amendment Act 2003	In 2001, the High Court of Australia abolished the Common Law Rule exempting Highway Authorities from liability for the non-repair of roads (or non-feasance 'failure to perform an act'). A level of protection for road authorities from failure to carry out work was subsequently restored under Civil Liability Amendment Act 2003. Under subsection (2) of section 5Z of Part 1C of the Civil Liability Amendment Act 2003; "…a roads authority is not liable in proceedings to which this Part applies for harm arising from a failure of the authority to carry out work, unless at the time of failure the authority had actual knowledge of the particular risk that caused the harm."
Environmental Protection Act 1986	The Act's key objective is to simply protect the environment of the State and sets out a host of regulations and requirements to achieve its goal. Requires permit and flora survey prior to vegetation removal, relates to the prevention of pollution - either to land air or water. Defines two types of harm - material environmental harm or serious environmental harm.
Environment Protection Act (unauthorised discharges) Regulations 2004	States that pesticide cannot be discharged into the environment.
Aboriginal Heritage Act 1972	Regulations and requirements that the Shire must comply with relating to aboriginal heritage.
Aboriginal Heritage Regulations 1974	Preservation of the community places and objects used by traditional owners.

Native Title Act 1999	Regulations and requirements that the Shire must comply with in relation to the use of land.
Land Administration Act 1997	Parameters for control and vesting of road reserves.
Dangerous Goods Safety Act 2004	Relates to the safe storage, handling and transport of dangerous goods.
Poisons Act 1964	Regulates the possession and use of poisons.
Health Act 1911	Relates to the handling and disposal of hazardous materials.
Wildlife Conservation Act 1950	Provides for the conservation and protection of native flora and fauna.
Health (Pesticides) Regulations 1956	Regulates the possession and use of pesticides.
Road Traffic Act 1974	The Road Traffic Act 1974 covers several key areas relevant to Local Authorities. Section 81 gives Local Authorities the power to effect road closures, both temporary and permanent. Sections 84 and 85 empower LA's to recover costs for certain damages to road reserve assets from the owner of the vehicle found to cause the damage. Other sections also set out the regulations for unauthorised parking and vehicles types, requirements and uses on roads.
Main Roads Act 1930	The Main Roads Act 1930 set out the framework by which Main Roads and the Commissioner operate and the regulations and requirements that the Shire must comply with in relation to use of roads. The Act focuses heavily on the function of Main Roads but also links with several key areas of Local Government. The act sets out Main Roads right of delegation of power to Local Government, ability to proclaim roads highways and main roads and power to make relevant regulations. MRWA must also consult relevant LG bodies prior to the improvement of any roads. Local Government must also comply with information requests from MRWA.
Dividing Fences Act	Local government exempt from 50/50 contribution for dividing fences abutting public open space.
Occupational Health and Safety Act 1984	The Occupational Health and Safety Act is concerned with protecting the safety, health and welfare of people engaged in work or employment. Full consideration and application of the Act should be given in order to identify, manage and reduce or mitigate the risk of harm to the Shire's employees.

OSH Regulations 1996	The guidelines for employees and employers to undertake within the work environment
Disability Discrimination Act 1992	The Federal Disability Discrimination Act 1992 (D.D.A.) provides protection for everyone in Australia against discrimination based on disability. It encourages everyone to be involved in implementing the Act and to share in the overall benefits to the community and the economy that flow from participation by the widest range of people. Disability discrimination happens when people with a disability are treated less fairly than people without a disability. Disability discrimination also occurs when people are treated less fairly because they are relatives, friends, carers, co-workers or associates of a person with a disability.
Disability Services Act 1993	An Act for the establishment of the Disability Services Commission and the Ministerial Advisory Council on Disability, for the furtherance of principles applicable to people with disabilities, for the funding and provision of services to such people that meet certain objectives, for the resolution of complaints by such people, and for related purposes.
Disability Services Regulations 2004	Current amendments to Disability Services Act (1993)
Disability Standards for Accessible Public Transport 2002	The Disability Standards for Accessible Public Transport 2002 set out the minimum accessibility requirements that providers and operators of public transport must comply with, as well as ensuring that access to transport is consistently improved. The transport standards recognise that access to public transport enables people with disabilities, their families and their carers to fully participate in community life and also benefits many older Australians and parents with infants in prams.
AustRoads Guidelines	Guidelines include (but are not limited to): = Guide to Road Design – Part 4A: Unsignalised and signalised intersections = Guide to Road Safety – Part 8: Treatment of Crash Locations = Guide to Road Transport Planning = Guide to Traffic Management – Part 12: Traffic Impacts of Development = Guideline for Freight Routes in Urban and Rural Areas = Revision of Guide to Traffic Engineering Practice – Part 8: Traffic Control Devices

WA Department of Planning	= Liveable Neighbourhoods Edition 2 – Sustainable Cities Initiative
Institute of Public Works Engineering Australia	= Local Government Guidelines for Subdivisional Development - Edition 2 = Complete Streets – Guidelines for Urban Street Design (IPWEAQ)
Main Roads WA	= Traffic Management for Works on Roads – Code of Practice = Standard Contract Drawings = Guideline Drawings = Presentation Drawings = Geometric Design = Roundabouts = Temporary Alignments in Urban Areas = Driveways/Crossovers
Other Standards and Regulations	Other relevant documents include, but are not limited to: = AS/NZS 4360: 1995 Risk Management = All other relevant State and Federal Acts & Regulations = All Local Laws and relevant policies of the organisation
Shire of Mukinbudin	= 1.2.4 – Occupational Health and Safety = 1.2.7 – Drug and Alcohol Testing = 1.3.11 – Permit Vehicle Approvals = 1.5.1 – Provision of Crossovers = 1.5.6 – Gravel Supplies = 1.6.2 – Regional Price Preference Policy = 1.6.9 – Revaluation of Non-Current Assets = 1.6.10 – Purchasing and Tender Policy

Table 9-2: Legislative Requirements, Standards, Policies and Guidelines

Appendix B – AMP Stakeholders and Service Levels

AMP Stakeholders

Analysis of the Shire's transport network revealed that there are 9 key stakeholder groups. These stakeholders are identified below and while there may be other minor stakeholders, they have not been specifically considered by this AMP.

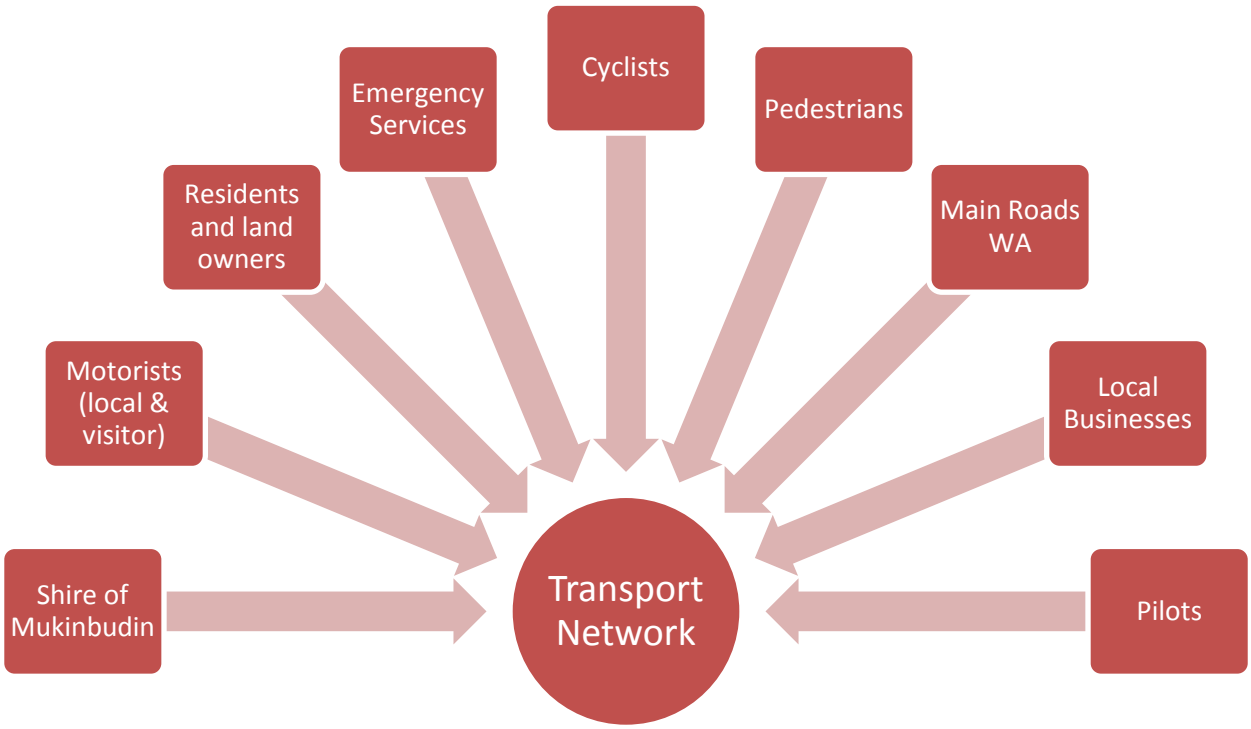


Figure 9-1: Transport Network Stakeholders

- Shire of Mukinbudin (Council and Staff)

  Council are the owner/maintainer of the transport network. Council are responsible for balancing service level provision against cost. The AMP contains relevant information around which the Council is able to make long term strategic decisions.

  The Shire's CEO and staff are responsible for the day to day and long term operation of the network, as well as being direct users and even residents. They use the AMP for a range of business activities such as financial, performance, risk and works management.

- Motorists

  Motorists consist of both business and private vehicles, but exclude emergency services. Motorists are prime end users of the transport network and feature both locals and visitors.

Motorists are unlikely to be interested in the AMP, but are heavily reliant on the transport service provided.

= Residents and Land Owners

While residents and land owners may be users of the Shire's transport network, they would also be interested in how it may affect local town aesthetics, services and even property values. Ratepayers may be interested in the financial and capital works aspects within the AMP. They would be primarily interested in the service levels that the Council provides and at what cost.

= Emergency Services

Emergency services (e.g. Police, St Johns Ambulance, DFES, RFDS etc.) would represent a small proportion of overall vehicle movements within the shire. They would typically only be interested in a narrow service outcome, which is that the network is accessible and available in order to travel to and from the points of base and emergency. They would not be interested in other features (e.g. transport asset aesthetics).

= Cyclists

Cyclists are a stakeholder who while unlikely to be interested in the AMP, would expect a certain basic service level from the transport network. Key features for them may well be accessibility and safety.

= Pedestrians

Pedestrians as a stakeholder are unlikely to be interested in the AMP, but are a key end user of the transport service. They would be particularly interested in the path network and would compose of a range of users of different physical and mental abilities. Carefully considering this fact will be important in developing appropriate service levels.

= Main Roads WA

A passive stakeholder, Main Roads WA are likely not interested in the AMP, but require the Shire to maintain and provide infrastructure to certain standards, maintain minimum data levels (e.g. accurate road asset inventory) and so on.

= Local Businesses

Many (but not all) local businesses would support, and rely on, both local and passing trade which travels on the transport network. They require this trade supply to be uninterrupted, and that sufficient parking is available. As such, local businesses would be interested in the majority of transport assets' function, as well as their overall aesthetic appeal.

- Pilots

The Shire operates an aerodrome in Mukinbudin which may be used by both private and commercial operators, as well as emergency services such as the Royal Flying Doctor Service (RFDS) and fire attack aircraft. Pilots and their organisations would not be interested in the AMP, but do expect basic minimum service levels around attributes such as accessibility, availability and safety.

Process for Developing Potential Service Levels

In developing the service levels for the Transport Network, the Shire has generally applied the framework as set out in the IIMM - 2011. The process broadly applies 5 steps, being:

- Identify service attributes important to customers;
- Define the customer service levels the Shire delivers;
- Develop performance measures;
- Consult with customers; and
- Make service level based decisions.

Identifying Service Attributes Important to Customers (Stakeholders)

For this AMP, stakeholders were identified and then segmented into groups, as detailed in Figure 9-1. Each stakeholder group has different interests and may seek different service outcomes.

The identification of these service outcomes and interests was undertaken internally, by taking on each group's position. In this instance no stakeholder consultation occurred, however in future revisions of this AMP, it would be advantageous to do so.

Define the Customer Service Levels the Shire Delivers

Using the values that were developed, key drivers/service levels were selected. These provided the basis from which the final service level table was produced. Typically, those service levels which were frequently occurring or were "needed" (as opposed to "wanted"), were selected.

Develop Performance Measures

Performance measures for each service level were developed and which used the "SMART" rule, being; **S**pecific, **M**easurable, **A**chievable, **R**elevant and **T**imebound. Where possible, ratios (percentages) were also used in the final measurement in order to accommodate possible changes in base data.

Consult With Customers

At this point in time, no consultation has occurred with key customers (stakeholders). It is envisaged that this will occur over the medium term. Before this occurs though, a suitable framework for consultation with stakeholders will need to be developed.

Make Service Level Based Decisions

Once the Shire has reached a future point whereby it has confidence in both customers' required service levels and transport network performance, it will be able to make informed strategic decisions.

Stakeholder Key Service Attributes

Each of the key stakeholders were considered as to what they value and expect from the transport network. These needs and wants were captured and have been presented in the table below. Those considered of high importance, that is are frequently reoccurring, and those which are needed, were then chosen to form the basis of the AMP's Service Levels.

Stakeholder	Specific Needs/Wants	Need or Want?	Service Attribute
Shire (Council & Staff)	Infrastructure managed to meet all applicable statutory regulations	Need	Compliance
	Infrastructure managed in a financially sustainable manner	Need	Financial Sustainability
	Infrastructure managed in an environmentally sustainable manner	Want	Environmental Sustainability
	Infrastructure maintained so as to minimise the Shire's and users' risk exposure	Want	Safety
	Infrastructure is accessible to all legal users	Want	Accessibility
	Infrastructure is provided in a financially efficient manner.	Want	Financial Efficiency
	Users are satisfied with the Transport Network	Want	Stakeholder Satisfaction
Motorists	Transport network is accessible (i.e. it goes where I want)	Want	Accessibility
	Transport network is available (i.e. it's open for use)	Want	Availability
	Transport network is of a good quality.	Want	Quality
	Transport network is provided at a low cost.	Want	Financial Efficiency
	Transport network is safe.	Want	Safety
	Infrastructure managed in a financially sustainable manner	Want	Financial Sustainability
	Infrastructure managed in an environmentally sustainable manner	Want	Environmental Sustainability
Residents and Landowners	Infrastructure adds to the aesthetic appeal of towns.	Want	Aesthetics
	Transport network is accessible (i.e. it goes to my property)	Want	Accessibility

	That consultation occurs on major transport infrastructure projects	Want	Consultation
	Infrastructure managed in a financially sustainable manner	Want	Financial Efficiency
	Infrastructure is well maintained and to a high standard	Want	Quality
	Infrastructure maintained in a safe condition so as to minimise the Shire's and users' risk exposure	Want	Safety
Emergency Services	Transport network is accessible (i.e. it goes where we need it to)	Need	Accessibility
	Transport network is available (i.e. its open for use)	Need	Availability
	Transport network is of a good quality (e.g. good condition so as not to hinder response times),	Want	Quality
	Transport network is safe.	Want	Safety
Cyclists	Transport network is accessible (i.e. it goes where I want)	Want	Accessibility
	Transport network is available (i.e. its open for use)	Want	Availability
	Transport network is of a good quality.	Want	Quality
	Transport network is provided at a low cost.	Want	Financial Efficiency
	Transport network is safe.	Want	Safety
	Infrastructure managed in a financially sustainable manner	Want	Financial Sustainability
	Infrastructure managed in an environmentally sustainable manner	Want	Environmental Sustainability
Pedestrians	Transport network is accessible (i.e. it goes where I want)	Want	Accessibility
	Transport network is available (i.e. its open for use)	Want	Availability
	Transport network is of a good quality.	Want	Quality
	Transport network is provided at a low cost.	Want	Financial Efficiency
	Transport network is safe.	Want	Safety

	Infrastructure managed in a financially sustainable manner	Want	Financial Sustainability
	Infrastructure managed in an environmentally sustainable manner	Want	Environmental Sustainability
	Infrastructure meets applicable standards and regulations for impaired users (e.g. tactile markings)	Need	Compliance
Main Roads WA	Infrastructure meets applicable standards, regulations, acts, reporting requirements etc.	Need	Compliance
Local Businesses	Transport network is accessible (including parking)	Want	Accessibility
	Transport network is available	Want	Availability
	Infrastructure is well maintained and to a high standard	Want	Quality
	Infrastructure adds to the aesthetic appeal of towns	Want	Aesthetics
	Transport Network is well signed	Want	Signage
Pilots	Aerodrome is open when required	Need	Availability
	Aircraft parking and hangar space is available	Want	Accessibility
	Aerodrome is maintained in a safe condition	Need	Safety
	Fuel supplies are available at aerodrome	Want	Fuel Availability
	Cost of using aerodrome is comparable to similar aerodromes	Want	Financial Efficiency
	Aerodrome meets CASA regulation requirements	Want	Compliance

Table 9-3: Stakeholder Service Levels

The following service attributes were selected for Service Levels:

- **Accessibility – Frequency: 8 and Needed**
- **Safety – Frequency: 7 and Needed**
- **Availability – Frequency: 6 and Needed**
- **Financial Sustainability – Frequency: 4 and Needed**

= **Compliance – Frequency: 4 and Needed**

The service attributes for financial efficiency (6) and quality (6) were also frequency occurring. These will be held as reserve service levels and considered for use in future versions of this AMP if the above service levels are being well monitored.

Appendix C – Functional Road Hierarchy Criteria

Criteria & Activity	District Distributor A	District Distributor B	Regional Distributor	Local Distributor	Access Road
Primary Criteria					
Location	Only built up area	Only built up area	Only non-built up area	All of WA	All of WA
Degree of Connectivity	High. Connects to Primary and/or other Distributor roads.	High. Connects to Primary and/or other Distributor roads.	High. Connects to Primary and/or other Distributor roads.	Medium. Minor network role, connects to Distributors and Access roads.	Low. Provides mainly for property access.
Predominant Purpose	High capacity traffic movements between industrial, commercial and residential areas.	Reduced capacity but high traffic volumes travelling between industrial, commercial and residential areas.	Roads linking significant destinations and designed for efficient movement of people and goods between and within regions.	Movement of traffic within local areas and connect access roads to higher order Distributors.	Provision of vehicle access to abutting properties.
Secondary Criteria					
Indicative Traffic Volume (AADT)	Above 8,000 vehicles per day (vpd).	Above 6,000 vpd.	Greater than 100 vpd	Built up area: Maximum desirable volume 6,000 vpd. Non built up area: up to 100 vpd.	Built up area: Maximum desirable volume 3,000 vpd. Non built up area: up to 75 vpd.
Recommended Operating Speed	60 – 80 km/h.	60 – 70 km/h.	50 – 110 km/h (depending on design characteristics).	Built up area: 50 – 60 km/h (desired speed). Non built up area: 60 – 110 km/h (depending on design characteristics).	Built up area: 50 km/h (desired speed). Non built up area: 50 – 110 km/h (depending on design characteristics).
Heavy Vehicles permitted	Yes	Yes	Yes	Yes, but preferably only to service properties.	Only to service properties.
Intersection Treatments	Controlled with appropriate measures e.g. traffic signals.	Controlled with appropriate Local Area Traffic Management.	Controlled with measures such as signing and line marking of intersections.	Controlled with minor Local Area Traffic Management or measures such as signing.	Self-controlling with minor measures.
Frontage Access	Prefer not to have residential access. Limited commercial access, generally via service roads.	Residential and commercial access due to its historic status. Prefer to limit when and where possible.	Prefer not to have property access. Limited commercial access, generally via lesser roads.	Yes, for property and commercial access due to its historic status. Prefer to limit whenever possible. Side entry is preferred.	Yes.

Pedestrians	With positive measures for control and safety e.g. pedestrian signals.	With appropriate measures for control and safety e.g. median/ islands refuges.	Measures for control and safety such as careful siting of school bus stops and rest areas.	With minor safety measures where necessary.	Yes.
Buses	Yes.	Yes.		Yes.	If necessary.
On-road Parking	Generally no. Clearways where necessary.	Not preferred. Clearways where necessary.	No – emergency parking on shoulders – encourage parking in off road rest areas where possible.	Built up area: yes, where sufficient width and sight distance allow safe passing.. Non built up area: no. Emergency parking on shoulders..	Yes, where sufficient width and sight distance allow safe passing.
Signs & Line Marking	Centrelines, speed signs, guide and service signs.	Centrelines, speed signs, guide and service signs.	Centrelines, speed signs and guide signs.	Speed and guide signs.	Urban areas – generally not applicable. Rural areas – Guide signs.
Rest Areas/Parking Bays	Not Applicable	Not Applicable	Parking Bays/Rest Areas. Desired at 60km spacing.	Not Applicable	Not Applicable.

Table 9-4: WA Functional Road Hierarchy

Appendix D – Safety & Maintenance Inspection Guidelines

Background

To be developed in future versions of this AMP.

Inspection Process

To be defined.

Appendix E – Condition Inspection Methodology

Portfolio Asset Condition Rating Scale

The Shire undertakes condition rating of many of its infrastructure assets in order to determine their remaining useful life and to prioritise future capital works. By undertaking regular inspections, the Shire is able to understand at what rate assets are deteriorating and then monitor the effectiveness of maintenance and renewal activities in extending the life of assets.

In assessing asset's condition, the Shire has adopted a 1 to 5 scale of rating which allows the overall condition of different asset classes to be compared. Table 9-5 details the scale applied and what each rating means.

Grade	Condition	Description
1	Very Good	A new or near new asset, or an asset recently rehabilitated back to new condition, with no visible signs of deterioration. The asset or component will have no drop in level of service.
2	Good	An asset in excellent overall condition. There would be only very slight condition decline but it would be obvious that the asset was no longer in new condition.
3	Average	An asset in fair overall condition deterioration in condition would be obvious and there would be some serviceability loss.
4	Poor	An asset in fair to poor overall condition. The condition deterioration would be quite obvious. Asset serviceability would now be affected and maintenance costs would be rising.
5	Very Poor	An asset in poor to unserviceable overall condition deterioration would be quite severe and would be starting to limit the serviceability of the asset. Maintenance cost would be high.

Table 9-5: Condition Rating Measures

The Shire aims to minimise the amount of assets that are rated as a 5 unless assets are in this state as part of a specific management program (i.e. part of an asset decommission plan).

Appendix F – Transport Demand

Background

Council's fundamental role is to provide services to its community and stakeholders. Amongst a range of services, the Shire supports transport through the provision of infrastructure such as roads, paths and car parks. Predicting future demand for services such as transport is an important element of any organisation's asset management practices. It enables practitioners to plan ahead and identify the best way of meeting future demand.

This section of the AMP looks at both historical and future levels of transport demand. Whilst future demand is arguably the more important focus, crucial evidence and trends can be learnt from examining what has happened, and what is happening. Readers should be aware though that as with any demand forecasting, prediction is rarely ever 100% correct. As this is the Shire's first Transport AMP, the Demand Section takes a broad view to possible demand influences and as an outcome, attempts to identify those most likely to have the greatest impact on demand over the life of the AMP.

Historic Transport Demand

Demand for services is generally measured by how many customers use the assets. However, aside from the road network, the Shire has not historically monitored individual asset usage levels. An improvement action to review the level of current transport asset usage monitoring has been listed. To ascertain historical influences on transport asset demand, a range of different demand sources have been considered. Each is discussed as follows.

Motor Vehicle Ownership

Analysis of the ABS census data from 2006 and 2011 shows that between these years, there has been a marginal decrease in vehicle ownership from 229 to 206 households (Figure 9-2). This represents a decrease of -10.0%, or -2.0% per annum. While it could be suggested that with less private motor vehicles within the Shire, demand of the transport network would have fallen, the change is not necessarily a significant one. Overall, vehicle ownership fell in three categories, but rose in 2.

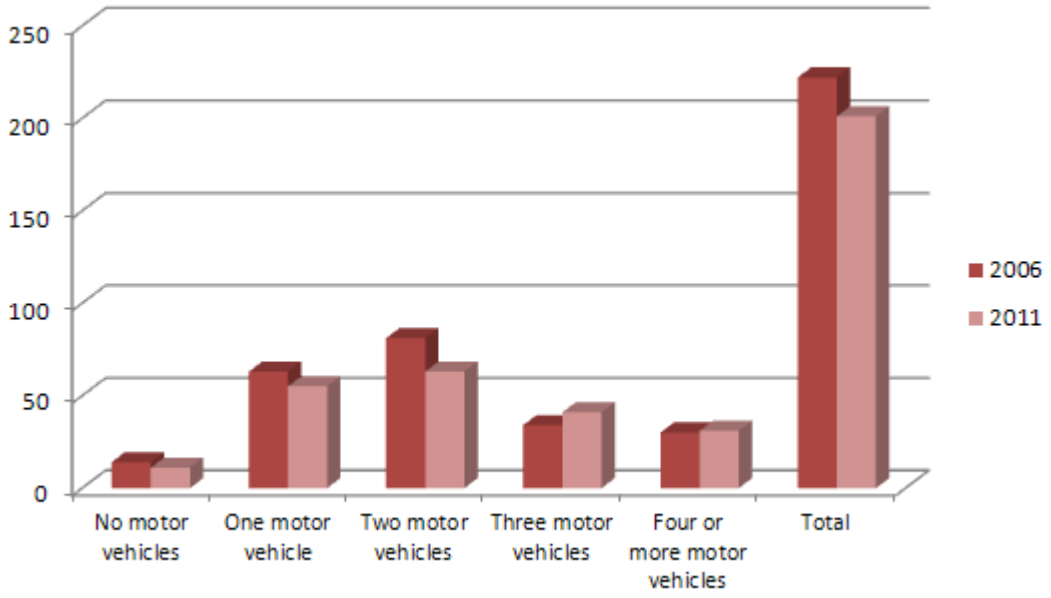


Figure 9-2: Dwellings With Registered Motor Vehicles (Source: ABS 2013)

Travel Modes to Work

While the Shire is not subject to peak congestion periods as that which would be experienced within the more urbanised areas, there is value in understanding which modes of transport people primarily favour. A good measure of this is the ABS census statistics for travel mode to work. Figure 9-3 shows that between 2006 and 2011, there was a decrease in the number of people travelling to work, from 214 to 185. This represents a decrease of -13.6%, or -2.7% per annum.

Overall, decreases have been observed in 4 categories and increases in 5. The most popular modes of travel to work (car as driver, walking, car as passenger) experienced the greatest decreases. The figures show that transport demand from people travelling to work has fallen.

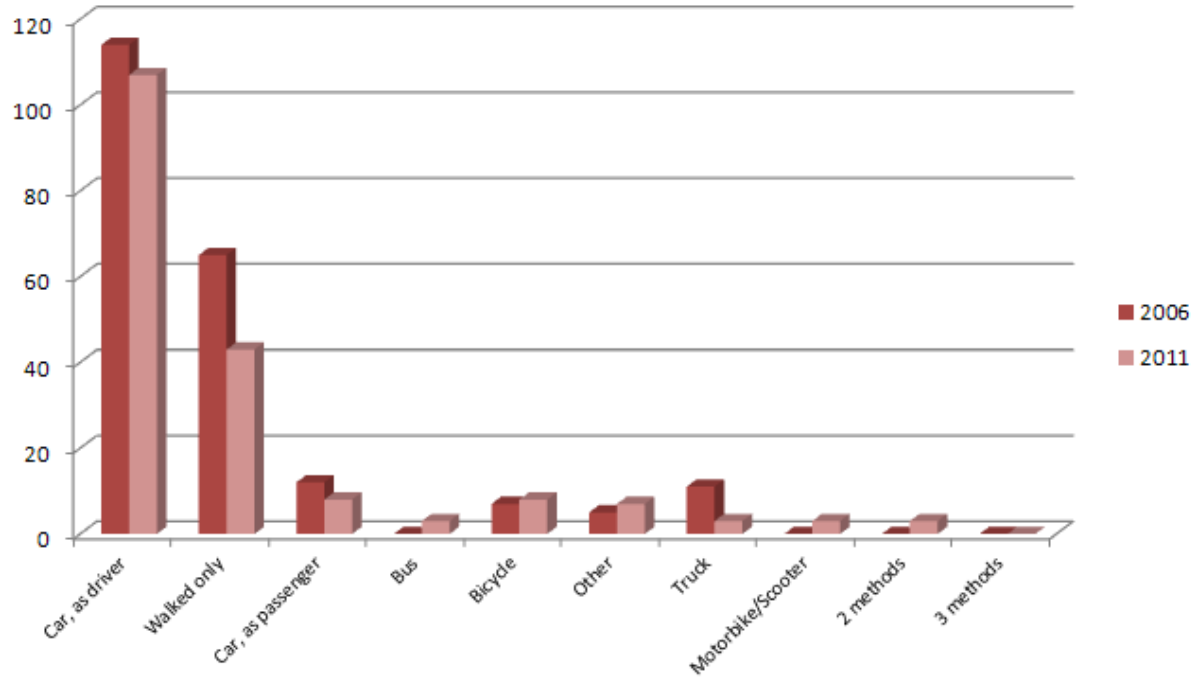


Figure 9-3: Travel Mode to Work (Source: ABS 2013)

Population Change

When the overall population change of the Shire (Figure 9-4) between 2001 and 2011 is considered, the number of recorded people at census night has fallen from 659 (2001), to 575 (2006), to 490 (2011). The decrease of -25.6% between 2001 and 2011 would suggest that demand for transport services may have reduced. As such, this position may not support any need to upgrade or construct transport assets. In fact, there may even be scope for rationalising assets where use is low, or even reducing the service levels provided.

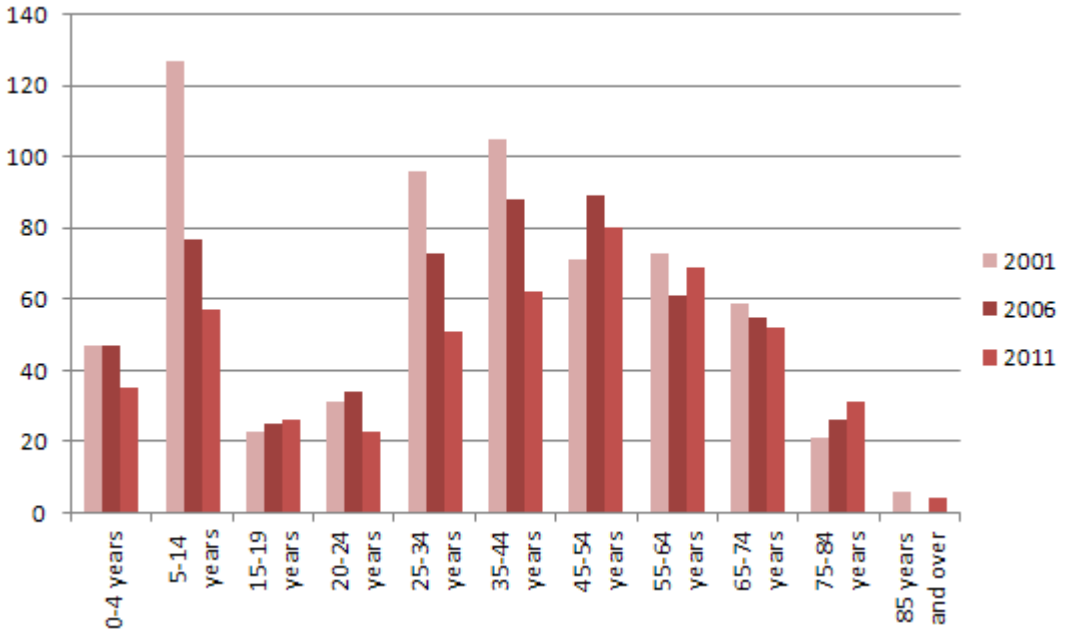


Figure 9-4: ABS Population & Demographic - Shire of Mukinbudin 2001-2011

Demographic Change

Figure 9-4 also shows that between 2001 and 2011 there has been a significant change in the Shire's demographic profile. While the Shire's median age has risen significantly from 35 (2001) to 45 (2011), representative of an ageing population, there are also some interesting trends that are apparent.

Further analysis of the nature of population decline shows that it is not occurring evenly. Figure 9-4 shows that population decline has occurred in the 0-4, 5-14, 20-24, 25-34, 35-44, 55-64, 65-74 and 85+ age groups. At the same time though, population growth has occurred in the 15-19, 45-54 and 75-84 age groups. As such, the demographics may suggest that the community's needs from the transport network have changed over the last 10 years. For example, as people age, they may become increasingly dependent on public transport and the path network. As a result, the quality and scope of these assets may need to be improved.

Tourist & Visitor Numbers Change

Outside of immediate local demand, there may be potential demand from visitors to the Shire, whether day trippers or tourists. Figures from Tourism WA (Figure 9-5) show that over the past 4 years, the estimated number of visitors to/within WA have risen from 18.7million in 2009 to 22.1million in 2013. Whilst figures show that only 7% of visitors go to the "golden outback" region (within which the Shire sits), there remains some potential future demand growth for transport assets within the Shire, particularly for roads, car parks and paths.

Figure 9-5: WA Visitors (Source: Tourism WA October 2013)

Rainfall/Climate Change

Consideration of historical annual rainfall may provide an indication of climate change and how frequently water may be flowing through transport assets such as culverts. Figure 9-6 shows the annual total rainfall at Mukinbudin from 1928 to 2012. While placing a reliable trend line on the graph is difficult due to data weaknesses in recent years, it can be seen that annual rainfall levels have remained fairly consistent. As such, demand on some assets due to rainfall is unlikely to have significantly changed. Therefore for now, rainfall change does not seem to be occurring within the Shire and has not been a major demand influence.

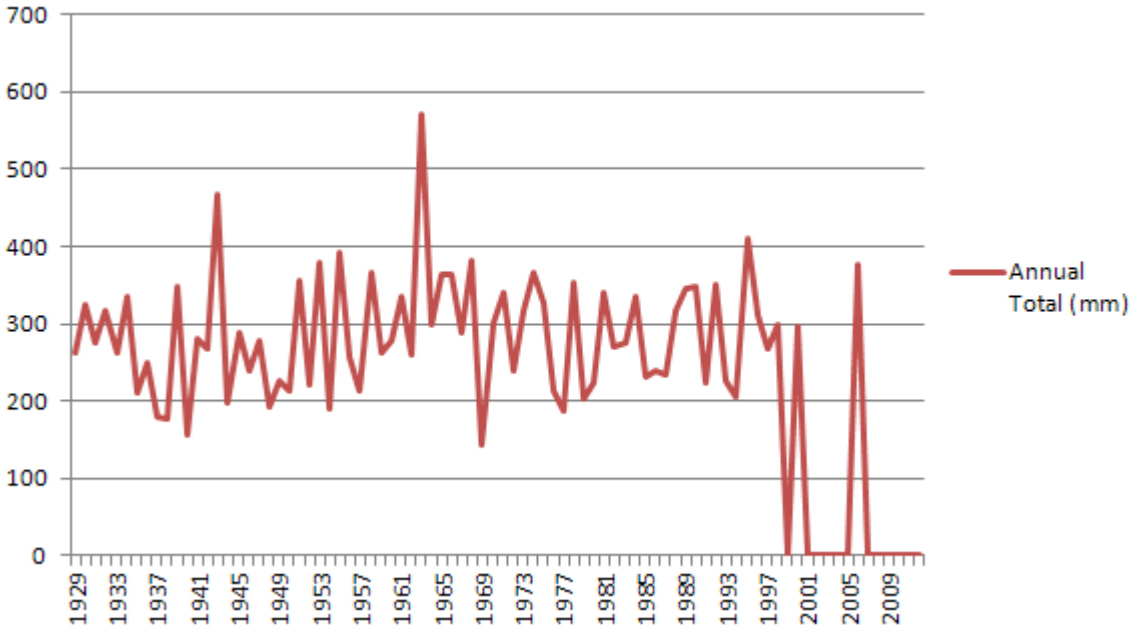


Figure 9-6: Mukinbudin Historical Annual Rainfall

Future Demand Drivers

In order to identify future demand pressures on the transport network (both positive and negative), six driver categories, being political, economic, social, technological, legal and environmental have been considered. Drivers such as these will not only influence actual usage levels, but also possibly require future resources in order to meet specific needs or goals. Each of these demand drivers are discussed below and their effect summarised. The exact effects of many of these drivers are difficult to quantify and may also require further study and research.

Political Demand

Town Planning Scheme review

The Shire reviews its Town Planning Scheme every 5 to 7 years. Revisions to the Scheme have the potential to change land use and therefore affect the demand of the transport network. At present, it is believed that only major changes in land use (e.g. development of expanded industrial, residential or commercial areas) would have an effect on demand. As and when such change may occur, consideration of the demand effects should be given. Over the current life of this AMP, no significant demand is forecasted from the Town Planning Scheme review.

Local Government Reform

In 5 February 2009, the Minister for Local Government announced a suite of Local Government reforms. The reforms announced by the Minister requested each Local Government to consider structural reform options with its neighbouring Councils and encouraged voluntary amalgamations or development of regional collaborative groups. While the Shire did not amalgamate with any other Local Governments, it is currently unclear whether compulsory amalgamations will occur in the future. If they were to do so, the following outcomes could be expected:

- There would be a 2-5 year period of increased demand for resources, as asset systems, practices, processes and resources are aligned
- That there would likely be no significant change in transport service economies of scale
- That transport service demand would remain the same, whether amalgamations occur or not

The only area of expected demand change as part of the reform process is in the development and implementation of more robust asset management practices. A clear limitation in Shire resource exists within this area and therefore consideration of how these duties will be fulfilled is required.

Council Policy

Whilst historic data suggests that there has probably been a decrease in transport demand as population levels within the Shire have fallen, Council policy changes can also influence demand. A good example of this is whereby the Council opts to provide different service levels (higher or lower) than that which is currently provided. The introduction of more formal asset and financial practices will in theory provide Council will greater ability to change service levels, while also providing the opportunity to ensure financial sustainability. However, it is likely that it will take the Shire a number of years to reach this informed position and as such, the exact effects of future Council Policy changes on asset demand cannot be currently determined.

Closure of Tier 3 Railway Lines

The railway lines within the Wheatbelt region of WA consist of both closed and operating lines. In 2009 the network was classified into different Tiers from 1 to 3. Subsequently the WA state government took a preferred position whereby Tier 3 railway line funding would be cut and that Brookfield Rail operate the Tier 3 lines privately without state assistance. However, Brookfield Rail signalled its intention to close a number of routes and pursue a strategy of moving grain freight by road to loading facilities. At the present time, the York-to-Quairading and Merredin-to-Trayning lines were due for closure on the 31 October 2013. While further closures seem likely, the outcome of the strategy could be a significant increase in road use and thus higher rates of road pavement damage and thus higher whole of life costs for the Shire.

Change Effect: Likely demand over the short term (2-3 years) to increase the level of resources to improve and sustain the Shire's asset management practices. Longer term, there may be additional demand to increase infrastructure renewal spending, with the most significant potential driver being the closure of Tier 3 Railway Lines.

Economic Demand

Energy Costs and Availability

The vehicles which use the Shire transport network are dependent on energy. Therefore a direct link between energy availability, cost and network use exists. Focusing on just fuel price and availability, Australian Institute of Petroleum data shows that in recent years Australian petrol prices have not been overly volatile. However general price increase trends of approximately +6.5% per annum have occurred over the past 2 years. While long term prices are not possible to predict, it is relatively safe to assume that due to the industrialisation of countries such as China and India, that over the life of this AMP, that fuel prices will continue to rise above the rate of CPI. This will effectively make transportation increasingly more expensive. While a net effect of this may be a reduction in vehicle use, given the Shire's geographical size, it is difficult to see this occurring as viable transport alternatives do not currently exist.

Material Costs and Availability

The Bureau of Infrastructure, Transport and Regional Economics (BITRE) provides economic analysis, research and statistics on infrastructure, transport and regional development issues. Amongst the range of publications it produces, BITRE releases a road construction and maintenance price index (RCMPI). Whilst the index doesn't measure the prices at which services and products are sold, it does measure price changes in the inputs in road construction and maintenance in Australia.

The 2012 update details the BITRE price index from 1992-93 to 2011-12, and includes a summary of the ABS road and bridges price index as well. The index results are detailed below in Figure 9-7 and show that since about 2000, that the rate of price index change has increased at a higher rate than the ABS Consumer Price Index. The update states that the Index increased by 2.4 per cent between 2010-11 and 2011-12. The largest contributor of this change was an increase in the price of labour, which was responsible for around one half of the overall increase in the index.

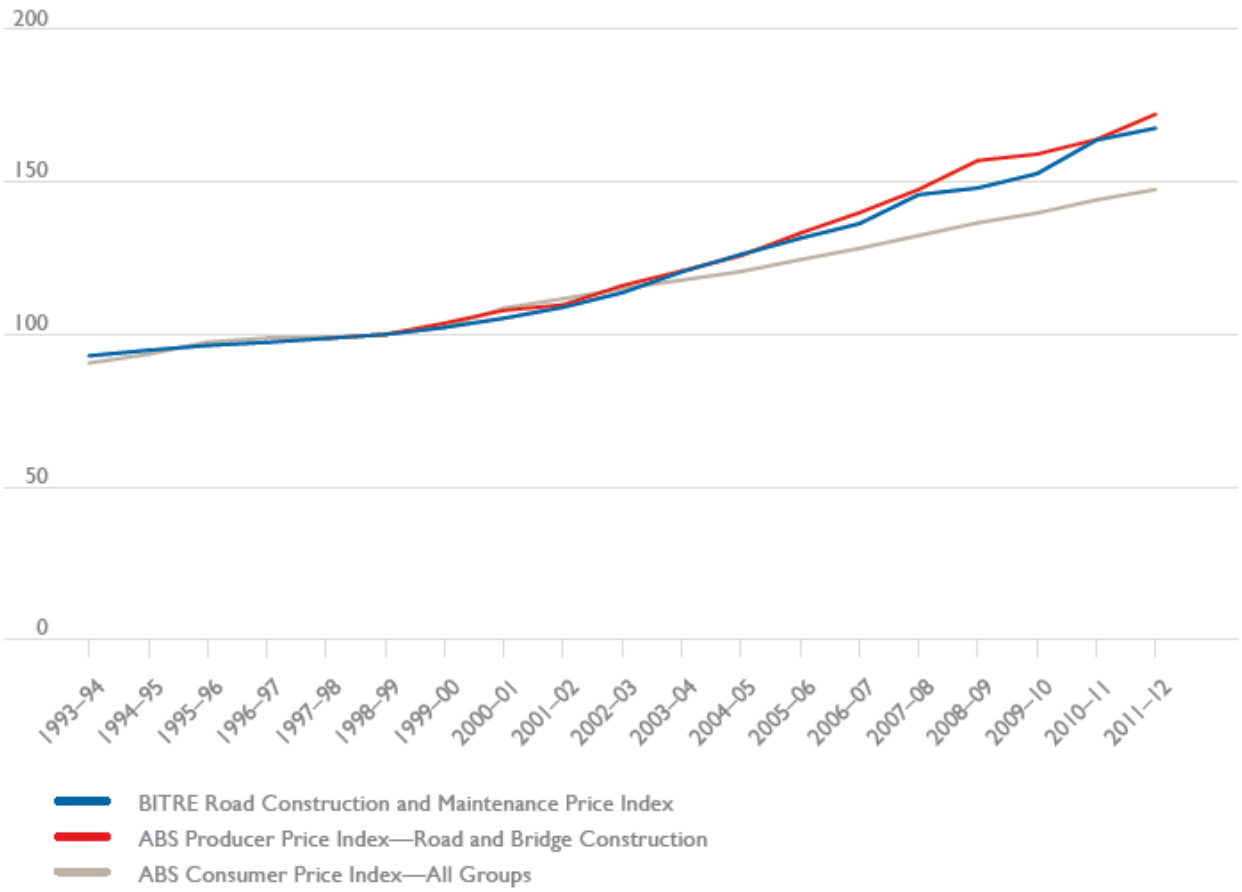


Figure 9-7: BITRE road construction and maintenance input price index and the ABS road and bridge construction index (1998-99 = 100. Source: BITRE)

The outcome of these costs is that overall, it can be anticipated that transport assets may demand an increasing portion of the Shire's overall budgetary resources.

Economic Position

The global economy has arguably operated in an uncertain and unstable environment since 2009. The International Monetary Fund's (IMF) July 2013 World Economic Outlook Update stated that "*Global growth is projected to remain subdued at slightly above 3 percent in 2013, the same as in 2012. This is less than forecast in the April 2013 World Economic Outlook (WEO), driven to a large extent by appreciably weaker domestic demand and slower growth in several key emerging market economies, as well as a more protracted recession in the euro area*." While the medium to long term outlook is not clear, no significant transport demand change is likely due to broader economic effects.

Council Financial Sustainability

In recent years there has been a moderate level of publicity and investigation into the long term sustainability of WA local governments. Recently the WA State Government has initiated a process of reform, as part of which Council investigated the potential to merge with neighbouring Councils. While no merger occurred, there remains a possibility that the Shire may be forcibly amalgamated by state government. Despite this, considering the Shire in its current state, its financial sustainability will be determined over the coming months as the various aspects of its asset management framework and outputs from the AMPs are meshed with its Long Term Financial Plan. Until this point, the Shire's long term sustainability position is not currently known.

Change Effect: Rising costs over the long term may ultimately make the provision and maintenance of transport infrastructure increasingly expensive. Rising costs may also affect people's transports habits, driving change to vehicles, transport modes and transport frequency. Long term financial sustainability position of the Shire is unclear.

Social Demand

Population

The Western Australian Department for Planning along with the Western Australian Planning Commission produce population forecasts for WA local government areas. The last forecast profile for the Shire (February 2012) contains a population forecast produced in 2006, spanning from 2006 until 2026. The forecast contains 5 bands of population forecast, with A being the most pessimistic and E the most optimistic. The results are shown in Table 9-6.

Year	Band A	Band B	Band C	Band D	Band E
2006	610	610	610	610	610
2007	570	590	600	610	630
2008	530	570	590	610	640

2009	490	540	570	600	650
2010	450	510	550	600	650
2011	410	490	540	590	660
2012	390	470	530	580	660
2013	370	450	510	570	660
2014	350	440	500	560	650
2015	340	430	490	550	640
2016	330	420	480	540	630
2017	320	410	470	530	620
2018	310	400	460	520	610
2019	300	390	450	510	600
2020	290	380	440	500	600
2021	280	360	430	490	590
2022	270	360	420	480	580
2023	260	350	410	480	570
2024	250	340	400	470	560
2025	250	330	390	460	560
2026	240	320	390	450	550

Table 9-6: Western Australian Planning Commission - Population Forecasts by Bands 2006 to 2026

When the census results are considered, it suggests that the Shire is currently tracking generally in line with the projection of Band B. The forecast suggests that the population of the Shire will continue to decline down to approximately 320 people by 2026. If this scenario were to occur, it could be expected that service demand due to population change would decrease significantly. As such, there would be a very strong case to rationalise significant parts of the transport network to align with demand and to reduce costs. However, the Shire will need to monitor actual population change to determine whether decline continues to occur.

Demographics

Historical census data showed that the Shire's median age changed from 35 in 2001 to 45 in 2011. With projections suggesting that the population will also decrease, it is likely that the median age will continue to increase over the life of this AMP. Therefore, a corresponding demand increase in transport assets used more heavily by older people, such as footpaths, may be likely. To meet this increasing demand, the Shire may need to ensure that townsites have robust path networks, and that effective defect identification and correction processes are in place to reduce users exposure to risk and harm (e.g. from path trip hazards).

Travel to Work

Historical travel to work mode data (Figure 9-3) showed that the number of people travelling to work has fallen between 2006 and 2011. However, with an overall population decrease forecasted in coming years, demand due to work travel is not considered to be a significant future influence.

Change Effect: Demand increase to meet the transport needs of an ageing population. Population change demand is expected to have a significant effect on overall demand.

Technological Demand

Road Construction Technology

Although road pavement and seal construction technology is constantly evolving and improving, given the comparatively long life of typical WA roads, it is not thought that significant demand trends exist from road construction technology over the life of this AMP.

Condition Monitoring and Pavement Management Systems

With the Shire's subscription to WALGA's ROMAN II products, there is now significant scope to improve the long term pavement management efficiency, through enhanced functions such as works programming. Furthermore, developments in condition monitoring technologies such as automated assessment, may also appear within the timeframe of this AMP. The main outcome of these technologies is that the Shire will be able to monitor its transport assets' performance and condition to a more accurate and timely degree, to ensure that consistent levels of service, at a more efficient cost, are provided. However, a clearer strategy on the Shire's application of these technologies is needed. This has been listed as an improvement action.

Material Recycling/Reuse

Technology currently exists whereby once at the end of their life, most road materials can be reused. While levels of waste material are thought to currently be low, there would be merit in developing a simple set of guidelines that would help staff to plan for material reuse or recycling of road materials. This has been listed as an improvement action.

Change Effect: Opportunity exists to manage and maintain the transport network more efficiently and sustainably. Opportunity also exists to plan for the future reuse or recycling of waste materials.

Legal Demand

Litigation

Evidence from the Shire's insurer shows that across WA, there is a frequent occurrence of claims related to transport assets, although the majority invariably involve minor claim values. A large percentage of claims typically arise from incidents on path networks. Regardless of the outcomes of these claims, the Shire has a duty of care to users of all transport assets and as such, is committed to progressing practices that not only limit its own liability, seek to remove the potential for accidents to occur and hence protect users. A key practice which could reduce this risk would be a programme of cyclical safety and maintenance inspections to proactively identify defects. The Shire does not operate such a programme and as such, this has been listed as an improvement action.

Change Effect: Slight increase in demand for formalised safety and maintenance inspection regime.

Environmental Demand

Environmental Awareness

In recent years, the community's awareness of environmental issues, including climate change, has resulted in some change to habits and broader government legislation (e.g. carbon tax). It is likely that over the term of this AMP that infrastructure managers will have to ensure that assets are maintained at increasingly environmentally sustainable levels. This will include:

- Questioning whether assets are required
- Ensuring that maximum life is obtained from assets
- That construction and maintenance techniques reduce and avoid the use of virgin materials wherever possible

Given the Shire's geographical location, expecting substantial change in travel modes is unlikely in the short term. However, moving towards a state where the transport network is increasingly environmentally sustainable is possible. Key initiatives will need to be identified, assessed and implemented over the life of this AMP to achieve this position.

Change Effect: Increased demand for clearer decision making around asset need. Increased demand for more environmentally sustainable construction and maintenance practices.

Appendix G – Capital Works Programme

A condition based capital works programme will be developed for the Transport Network in future versions of this AMP.

Appendix H – Funding Sources

There are several funding sources that are available to the Shire in order to operate, maintain, renew, upgrade and build the transport network. These sources are, but are not limited to, the following:

- Council's own resources.
- Regional Road Group (RRG) Grants
- Roads to Recovery
- Federal and State Road Grants
- Federal and State Blackspot Funding
- Developer/Private Contributions
- Developer Funded Infrastructure
- Country Local Government Fund
- Grain Freight Route

Appendix I – Risk Management Analysis

This appendix details the desktop risk analysis undertaken on the management of the Transport Network. The risk analysis has been undertaken to be compliant with AS 4360.

Risk Context

The risk analysis applies only to the management activities undertaken on the transport network. It does not seek to identify physical risks on the network. In-lieu of a corporate risk policy and objectives, the following statement defines what an 'acceptable' level of risk is with regards to transport infrastructure.

Through risk management, the Shire of Mukinbudin aims to:

- Protect the quality of the transport network;
- Protect users of transport assets;
- Protect the Shire's assets and public image;
- Reduce the Shire's exposure to risk; and
- Promote effective financial and asset management practices.

This will be achieved through:

- Identifying, decreasing the likelihood, and mitigating the consequences of risk, within the constraints of sensible commercial objectives and practices;
- Applying risk based practices to the management of transport assets and associated decision making;
- Maintaining safe and reliable plant, equipment and infrastructure;
- Preparing appropriate contingencies;
- Reviewing the risk profile of the transport network at appropriate intervals and when circumstances dictate; and
- Maintaining an up to date Transport AMP.

Risk Criteria

The following criteria have been applied as part of the risk analysis.

Likelihood Levels

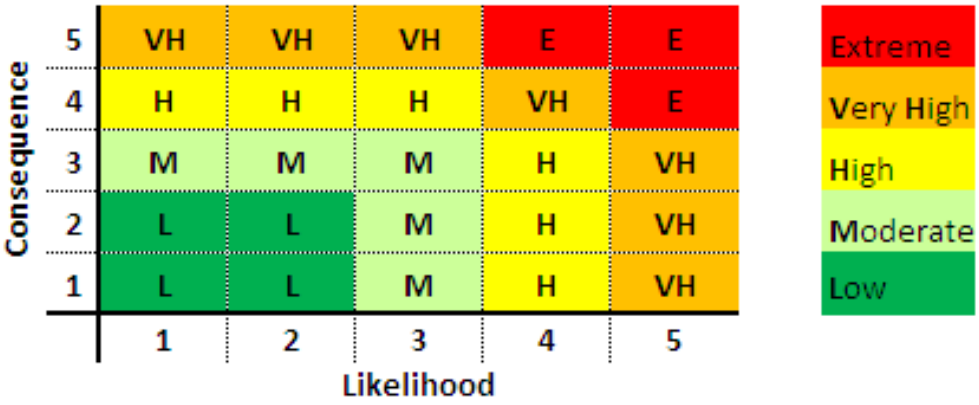
Level	Likelihood Scale	
	Descriptor	Indicative Frequency (expected to occur)
5	Almost certain	The event will likely occur once a year or more frequently.
4	Likely	The event will likely occur every three years.
3	Possible	The event will likely occur every ten years.
2	Unlikely	The event will likely occur every thirty years.
1	Rare	The event will likely occur every one hundred years.

Consequence Scale

Consequences Scale

Severity Level	Consequence Types					
	Political (P)	Economic (E)	Social (S)	Legal (L)	Environmental (E)	Health & Safety (HS)
5		Annual economic benefit or cost change of greater than +/- $1,000,001.		Significant prosecution and fines. Very srious litigation including class actions	Very serious, long term environmental impairment of ecosystem functions.	Multiple fatalities, or significant irreversible effects to >50 persons.
4	Serious public or media outcry (international coverage).	Annual economic benefit or cost change of between +/- $200,001 to $1,000,000.	On-going serious social issues. Significant damage to structures/items of cultural significance.	Major breach of regulation. Major litigation		Single fatality and/or severe irreversible disability (>30%) to one or more persons.
3	Significant adverse national media/ public/ NGO attention.	Annual economic benefit or cost change of between +/- $50,001 to $200,000.		Serious breach of regulation with investigation or report to authority with prosecution and/or moderate fine possible.	Serious medium term environmental effects.	Moderate irreversible disability or impairment (<30%) to one or more persons.
2	Attention from media and/or heightened concern by local community. Critism by NGOs.	Annual economic benefit or cost change of between +/- $10,001 to $50,000.	On-going social issues. Permanent damage to items of cultural significance.	Minor legal issues, non compliances and breaches or regulation.	Moderate, short term effects but not affecting ecosystem functions.	Objective but reversible disability requiring hospitalisation.
1	Minor, adverse local public or medical attention or complaints.	Annual economic benefit or cost change of upto +/- $10,000.	Minor medium term social impacts on local population. Mostly repairable.		Minor effects on biological of physical environment.	No medical treatment required.

Risk Matrix


Consequence
5 VH VH VH E E
4 H H H VH E
3 M M M H VH
2 L L M H VH
1 L L M H VH
1 2 3 4 5
Likelihood
Extreme
Very High
High
Moderate
Low

Risk Analysis

Asset: Transport Network				Compiled by:	Ben Symmons (Asset Infrastructure Management)					Date: 17-Jan-14		
Date of risk review:				Reviewed by:						Date:		
							Analysis (1 (Low) - 5 (High))					
Reference	The Risk	Event (what can happen)	Cause (how this can happen)	Consequence (What can happen)	Existing controls	Effectiveness of existing controls	Likelihood	Consequence	Level of risk	Risk priority	Treat Risk (Y/N)	Further Action
1	AMP service levels have not been adopted by Council	Funding required to meet service levels may not be allocated	Council allocate funding elsewhere	Asset(s) condition may deteriorate with time, exposing users to potential harm. (HS & E)	Production of AMP and LTFP	High.	2	3	M	11	N	
2	AMP is not supported by Council	Funding and management decisions made in isolation of AMP	AMP is not adopted, Council do not understand AM principals.	Assets incorrectly managed, resulting in potential for increased risk as well as sub-optimal whole of life costs. (E)	Production of AMP	Moderate, AMP not adopted.	2	3	M	11	N	
3	No formal condition rating procedure	Condition data held of poor quality. Unable to predict renewal needs.	No formal inspection procedure.	Assets become unsafe, and/or are replaced at sub-optimum times (HS & E).	Periodical Inspection	Moderate.	2	3	M	11	N	
4	No formal safety and maintenance inspection procedure exists.	Assets are inspected periodically or reactively or not at all.	No formal inspection procedure.	Assets become unsafe, maintenance issues allowed to get worse. (HS & E).	Ad-hoc Inspections	Low	4	4	VH	1	Y	Develop safety and maintenance inspection procedure.
5	Poor maintenance management	Maintenance items are corrected ad-hoc	No formal maintenance management strategy exists	Maintenance items are not corrected in a timely fashion, critical infrastructure not functional (HS).	Reactive maintenance regime.	Moderate	3	3	M	9	N	
6	Unplanned closures are not formally recorded and service level cannot be monitored.	Assets closed due to unplanned reasons are not documented.	Lack of procedure.	Service level not monitored. Performance not known (L).	None	N/A	4	2	H	8	Y	Monitor all service levels. Develop procedure for recording asset closures.
7	Shire unable to resource AM programme	Formalised AM programme may not be resourced by the Shire.	Lack of financial and/or staff resource.	Shire breaches legislation (L).	AMP and LTFP	Moderate	3	3	M	9	N	
8	No Corporate risk management framework or policy	Shire has no corporate risk management framework or policy	Lack of Policy	Risk failed to be identified and managed in a coordinated manner (L)	None	N/A	3	4	H	4	Y	Develop and apply corporate risk management framework and policy.
9	Asset inventories not accurate.	Asset inventories are inaccurate.	Lack of resource and expertise.	AMP inaccurate, risks not identified, asset mismanaged (E).	AMP and LTFP	Moderate	4	3	H	4	Y	Update all asset inventories.
10	Asset valuations are inaccurate	Asset valuations are inaccurate.	Lack of resource and expertise.	Valuations inaccurate, renewal needs not planned for, under insured (E).	AMP and LTFP	Moderate	3	4	H	4	Y	Update all asset valuations.
11	Tier 3 railways may close	Tier 3 rail lines within the Shire may close.	State Government policy	Increased road traffic causing increased road pavement damage and higher lifecycle costs (E).	AMP and LTFP	Moderate	4	4	VH	1	Y	Monitor pre and post closure traffic levels on adjoining roads. Adjust lifecycle cost model.
12	No long term works programme	Shire does not have a condition based long term works programme.	Lack of formal condition rating procedure.	Works programme is short term, potentially reactive and not cost efficient (E).	AMP and LTFP	Low	4	3	H	4	Y	Develop programmes after improvements made to inventory and condition rating data.
13	No capital project evaluation procedure	Shire does not have a capital project evaluation procedure aligned to the Community Strategic Plan	Lack of procedure.	Projects are not prioritised, hence do not optimally support SCP outcomes, making outcomes harder to achieve (E).	Nil	N/A	4	4	VH	1	Y	Develop procedure and test.

Table 9-7: Asset Management Plan Risk Analysis