



TRANSPORT ASSET MANAGEMENT PLAN

PART 1 - SUMMARY

Version 1.5

December 2020

CONTENTS

Executive Summary	3
Background and Objectives	4
Purpose of this Asset Management Plan.....	4
Focus of this Asset Management Plan	4
Corporate Document Relationships	4
Time Period of the AMP and Review Process	4
Service Levels	5
Introduction	5
Service Level Performance.....	5
Service Demand	5
Historic Demand.....	5
Future Demand	6
Demand Management	7
Lifecycle Management Plan	7
Transport Network Physical Parameters.....	8
Transport Network Condition	8
Lifecycle Management Strategies.....	9
Financial	9
Projected Expenditure Requirements	9
Plan Improvement and Monitoring	10
Performance Measures	10
Improvement Plan.....	11

Author: Ben Symmons – AIM Consultants
 Date: 8 December 2020
 Contact: ben.symmons@assetim.com.au / 0402 006 300

Executive Summary

The Shire of Ravensthorpe maintains a range of assets to provide an integrated transport service. This includes infrastructure such as roads, paths, drainage, bridges, car parks, aerodromes and marine facilities.

This is the Shire's Asset Management Plan (AMP) for the transport network. It seeks to outline the activities and programmes that will be carried out over the next 15 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 evolving with the Shire's practice maturity. As such there are a number of actions that have been identified that will improve the AMP's accuracy over time. All readers of this AMP must understand its limitations and applied assumptions before acting on any information contained within it. All information within this AMP is fully detailed within a separate Part 2 document.

Overall, the Shire's network is worth at least \$168m, although a number of asset types have not been valued. While the condition of transport assets is generally good, formal condition data is not available for some asset types. Furthermore, data shows that at least \$11.8m of transport assets are either in a poor or very poor condition. As such, there are some concerns that the network is not necessarily financially sustainable.

At present, the Shire doesn't routinely determine and monitor the required service performance of its transport network. As such it is not possible to establish a clear link between the quality of service and associated cost. The establishment of clear performance metrics around service levels (both customer and technical), is listed as a key improvement action.

Looking forward, the Shire anticipates that there are a number changes that may occur to transport service demand. Some of the more significant possible changes are thought to be climate change, demographics, government policy, legislation and compliance, litigation, technology and visitor numbers.

The AMP has determined that there are a number of areas of improvement that could be made to the Shire's management practices and processes. Specific actions have been captured within this AMP's improvement plan.

Background and Objectives

Purpose of this Asset Management Plan

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

Focus of this Asset Management Plan

The AMP focuses on assets that support a transport service. The assets that make up the network and their values are detailed in Table 1.

Asset Type	Quantity	Current Replacement Cost
Roads	1,268km	\$138,265,666
Paths	24km	\$2,199,939
Structures		
<i>Road Bridges</i>	1	Unknown
<i>Culverts</i>	1,081	\$6,042,391
Drainage		
<i>Pits/Outlets</i>	230	\$985,800
<i>Pipes</i>	37km	\$11,179,674
<i>Open/Table Drains</i>	2,354km	\$8,207,254
Car Parks	Unknown	Unknown
Aerodromes	2	\$2,101,759
Marine	1	Unknown
TOTAL		\$168,982,483

Table 1: Assets covered by Transport AMP

Corporate Document Relationships

This AMP integrates with the following other key Shire documents:

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

Time Period of the AMP and Review Process

The Asset Management Plan covers a 15 year period. It will be reviewed during annual budget preparation and amended to be kept up to date.

Service Levels

Introduction

Service Levels describe the performance outputs that the Shire provides from its transport service. These have been developed through the consideration of strategic and customer inputs. The process through which the Shire's Service Levels were developed is found in Appendix B.

Service Level Performance

Table 2 details the service level performance that the Shire is currently achieving.

KPI	Performance	Tactic
Accessibility	Unknown	Monitoring performance
Affordability	Unknown	Monitoring performance
Availability	Unknown	Monitoring performance
Condition & Quality	Moderate	Improving performance accuracy and setting target.
Effective	Unknown	Monitoring performance
Fit for Purpose	Unknown	Monitoring performance
Safety	Unknown	Monitoring performance

Table 2: Service Level Performance

Service Demand

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

Historic Demand

A range of historical sources of service demand change have been considered. Their overall effect has been summarised as follows.

Driver Type	Effect	Demand Change
Vehicle Ownership	Dwellings with a registered motor vehicle up from 563 in 2001 to 616 in 2016, an increase of +0.6% per annum.	Increase

Travel to Work	Number of people travelling to work up from 469 (2001) to 582 (2016), an increase of 1.6% per annum. Car as driver is by far the most common mode.	Increase
Population	The Shire's population rose from 1,410 (2001) to 1,725 (2016), at a rate of approximately +1.5% per annum.	Increase
Demographics	The median age rose from 37 to 45 years of age (2001-2016). Population decreases occurred in all-but-one 0-39 year age bands. Increases occurred in all 40+ year age bands.	Changing
Recreation	Participation in recreational activities that utilise transport assets (e.g. walking in paths) remained virtually unchanged in recent years.	Neutral
Tourism	Visitor numbers in the 'Golden Outback' region grew from 2.2m (2015) to 2.5m (2019). This growth may have resulted in a moderate demand change within the Shire, particularly around key tourist areas.	Increase
Climate	Local annual rainfall levels have risen from 400mm to 480mm (1902-2019). This may have increased demand on assets such as drainage. Between 1962 and 2019, mean maximum temperatures have fallen slightly by 0.3°C.	Changing

Table 3: Historic Demand Drivers

Future Demand

Consideration was given to six possible future demand drivers (political, economic, social, technological, legal and environmental) that may influence demand on the provision of transport services.

Driver Type	Effect
Political	Moderate increase to improve asset management practices. Possible increased demand for additional municipal resources as a result of decreasing external grant funding.
Economic	The long-term outlook is for transport construction and maintenance costs to at least match inflation increases. The long-term financial sustainability of the transport network looks questionable, and requires further investigation.
Social	Decreasing and changing demand due to a likely falling population size as well as an ageing population (higher median age). There may also be possible increases in tourist numbers. This is likely to drive some change in the provision of transport services (e.g. path network for older people and parking for visitors).
Technological	Construction technology changes are unlikely to affect demand over the term of this AMP. Electric vehicle take up is relatively slow, though investigation of potential recharge points may be required. Decreasing

	demand (i.e. better management practices) likely to occur through the long term uptake of software integration and enhanced material technologies.
Legal	Benefits (e.g. stronger risk mitigation) may be realised though improving the Shire's formal defect identification and correction practices.
Environmental	Increased demand to monitor and reduce the environmental cost of the transport network. Increased demand to provide and maintain assets that are resilient to climate change (e.g. floods, fire, heat etc.).

Table 4: Future Demand Drivers

Demand Management

A review of past and future demand factors shows that transport service demand change has occurred, and will also likely occur into the future. Shire staff believe that at present, the largest likely drivers of change will be:

- Climate change
- Demographics
- Government policy, legislation & compliance
- Litigation
- Technology
- Visitor numbers

To mitigate/plan for these demand changes, the Shire has undertaken/will undertake the following initiatives:

- Continue to inspect and maintain drains to current best practice to limit the damage from peak storm events.
- Ensure that the designs for road works, drainage works and subdivisions accommodate anticipated climate change related events.
- Plan for community demographic change and changing infrastructure needs.
- Monitor and react to policy, legislation and compliance changes.
- Continue to ensure that infrastructure remains safe to use.
- Subject to resource and agriculture sector fluctuations, work with industry on infrastructure planning and funding (for both direct needs and community investment).
- Employ smarter road maintenance practices (e.g. compacting while road is wet in winter months and will therefore stand up to the demands of grain freight).
- Monitor visitor number changes, so that appropriate assets can be planned for.

Lifecycle Management Plan

The lifecycle management plan details how the Shire intends to manage and operate its transport network at the agreed service levels. Full details of the network can be found in Appendix D.

Transport Network Physical Parameters

Asset	Quantity	Replacement Cost	Fair Value	Annual Depreciation
Roads	1,268km	\$138,265,666	\$96,387,578	\$2,288,467
Paths	24km	\$2,199,939	\$1,187,982	\$63,287
Structures	1,081	\$6,042,391	\$4,613,966	\$74,476
<i>Road Bridges</i>	1	<i>Unknown</i>	<i>Unknown</i>	<i>Unknown</i>
<i>Culverts</i>	1,081	\$6,042,391	\$4,613,966	\$74,476
Drainage		\$20,372,728	\$12,227,493	\$424,295
<i>Pits/Outlets</i>	230	\$985,800	\$689,574	\$7,596
<i>Pipes</i>	37km	\$11,179,674	\$6,819,601	\$111,787
<i>Open/Table Drains</i>	2,354km	\$8,207,254	\$4,718,318	\$304,902
Car Parks	Unknown	Unknown	Unknown	Unknown
Aerodromes	2	\$2,101,759	Unknown	Unknown
Marine Facilities	1	Unknown	Unknown	Unknown
Total		\$168,982,483	\$114,417,019	\$2,850,526

Table 5: Transport Network Physical Parameters

Transport Network Condition

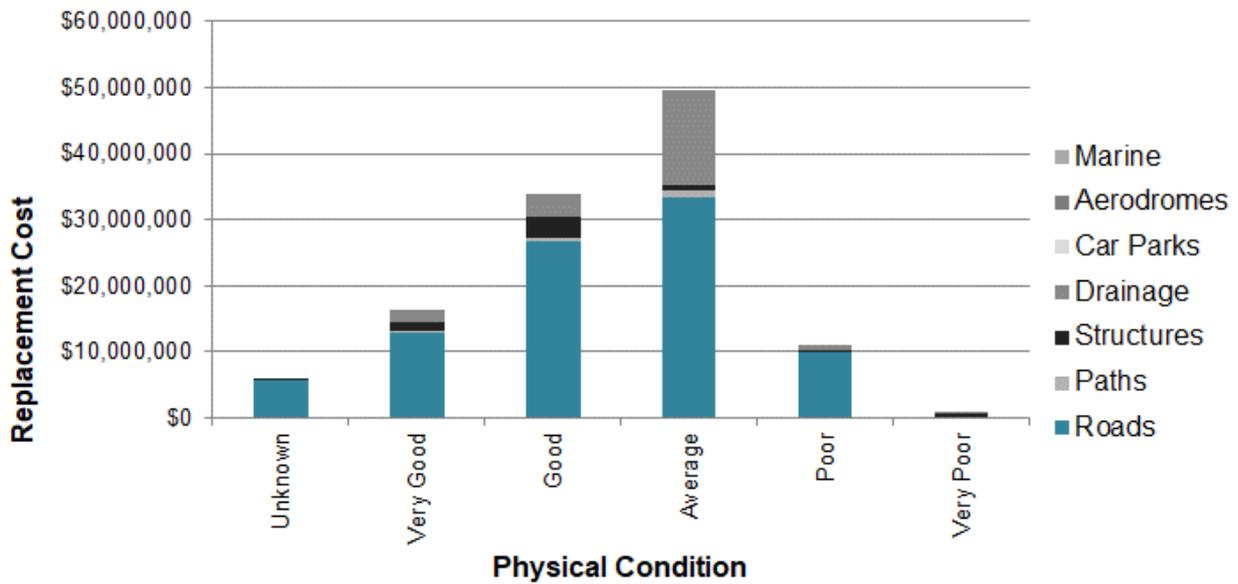


Figure 1: Transport Network Condition

Lifecycle Management Strategies

Operation & Maintenance Strategy

The Shire seeks to progress to a point whereby it employs preventative maintenance strategies wherever possible. This will help to maximise asset performance and minimise long terms costs. Each asset group's strategy will be specifically designed for its own requirements. Technical maintenance service levels will be documented, and reflected within this AMP. All planned maintenance activities will also be individually costed, and these then used to inform the long term budget requirements.

Renewal Strategy

Some transport assets are periodically inspected to determine their condition, on a 1 (new/very good) to 5 (very poor/failed) scale. The results are then modelled to predict assets' potential year of renewal. Shire staff then inspect these assets to determine the timing, scope and budget of any future renewal project. Projects are listed on the consolidated long term works program.

Upgrade/New Strategy

The need for new and/or upgraded assets (e.g. to meet a service deficiency) are identified from a number of potential sources. Each potential project is investigated by Shire staff and where valid, often prioritised against similar projects. Approved projects are then listed onto the consolidated long term works programme.

Disposal Strategy

The Shire does not frequently dispose of transport assets. Where a potential need is identified, then this is considered by staff and (in some cases) Council.

Financial

This section contains the financial requirements resulting from all the information presented in this AMP. All future monetary figures in this section are expressed in terms of real dollars, with a 2020/21 base year.

Projected Expenditure Requirements

Year	Operation & Maintenance	Renewal	Upgrade & New	Disposal	Total
2020/21	\$1,622,134	\$2,703,872	\$0	\$0	\$4,326,006
2021/22	\$1,595,954	\$2,752,912	\$0	\$0	\$4,348,866
2022/23	\$1,651,436	\$2,851,467	\$0	\$0	\$4,502,903

Year	Operation & Maintenance	Renewal	Upgrade & New	Disposal	Total
2023/24	\$1,683,933	\$2,851,467	\$0	\$0	\$4,535,400
2024/25	\$1,717,121	\$2,851,467	\$0	\$0	\$4,568,588
2025/26	\$1,751,021	\$3,101,467	\$0	\$0	\$4,852,488
2026/27	\$1,788,346	\$2,851,467	\$0	\$0	\$4,639,813
2027/28	\$1,826,507	\$2,851,467	\$0	\$0	\$4,677,974
2028/29	\$1,865,530	\$2,851,467	\$0	\$0	\$4,716,997
2029/30	\$1,905,430	\$2,851,467	\$0	\$0	\$4,756,897
2030/31	\$1,946,232	\$3,096,467	\$0	\$0	\$5,042,699
2031/32	\$1,987,956	\$2,851,467	\$0	\$0	\$4,839,423
2032/33	\$2,030,626	\$2,851,467	\$0	\$0	\$4,882,093
2033/34	\$2,074,259	\$2,851,467	\$0	\$0	\$4,925,726
2034/35	\$2,071,458	\$2,851,467	\$0	\$0	\$4,922,925

Table 6: Transport Asset Projected Expenditure Requirements

Plan Improvement and Monitoring

This Section of the AMP outlines the degree to which it is an effective and integrated tool within the Shire. It also details the future tasks required to improve its accuracy and robustness.

Performance Measures

The effectiveness of the AMP will be monitored by the performance of the three statutory ratios that the Shire reports on. Each ratio is described in Appendix G. The Shire's current performance is recorded in Table 7.

Year	Asset Consumption Ratio	Asset Sustainability Ratio	Asset Renewal Funding Ratio
2020	55% (in target)	52% (below target)	47% (below target)

Table 7: AMP Performance Measures

Improvement Plan

The asset management improvement plan generated from this AMP is shown in Table 8.

Task	Task	Timeline
1	Develop planned operation and maintenance schedules for all transport assets, with associated budgets.	Dec' 2021
2	Research peak storm events to understand the potential future effect on the transport network.	Dec' 2021
3	Investigate the potential need to install electric vehicle recharging infrastructure.	Dec' 2021
4	Develop and implement a cyclical asset inspection process.	Dec' 2021
5	Develop a long-term capital works programme.	Dec' 2021
6	Value all transport assets for current replacement cost, fair value and annual depreciation.	Dec' 2021
7	Collect inventory and condition data for marine assets (i.e. boat ramp), aerodromes and car parks.	Dec' 2021

Table 8: Transport AMP Improvement Plan



TRANSPORT ASSET MANAGEMENT PLAN

PART 2 - DETAILED

Version 1.5

December 2020

Appendices

Appendix A – Legislation, Acts, Regulations & Standards.....	3
Appendix B – AMP Stakeholders and Service Levels	5
Appendix C – Service Demand	9
Appendix D – Network Physical Parameters	17
Appendix E – Lifecycle Management Strategies	21
Appendix F – Financial Model.....	28
Appendix G – Asset Ratios	31

Author: Ben Symmons – AIM Consultants
Date: 8 December 2020
Contact: ben.symmons@assetim.com.au / 0402 006 300

Appendix A – Legislation, Acts, Regulations & Standards

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, Acts & Regulations

- Local Government Act 1995
- Civil Liability Amendment Act 2003
- Environmental Protection Act 1986
- Environment Protection Act (unauthorised discharges) Regulations 2004
- Aboriginal Heritage Act 1972
- Aboriginal Heritage Regulations 1974
- Native Title Act 1999
- Land Administration Act 1997
- Dangerous Goods Safety Act 2004
- Poisons Act 1964
- Health Act 1911
- Wildlife Conservation Act 1950
- Health (Pesticides) Regulations 1956
- Road Traffic Act 1974
- Main Roads Act 1930
- Dividing Fences Act
- Occupational Health and Safety Act 1984
- OSH Regulations 1996
- Disability Discrimination Act 1992
- Disability Services Act 1993
- Disability Services Regulations 2004

Standards

- Disability Standards for Accessible Public Transport 2002
- AustRoads Guidelines
- WA Department of Planning - Liveable Neighbourhoods Edition 2
- Institute of Public Works Engineering Australia - Local Government Guidelines for Subdivisional Development - Edition 2
- Main Roads WA – Codes of practice, standard drawings etc.
- AASB 5 Non-Current Assets Held for Sale and Discontinued Operations
- AASB 13 Fair Value Measurement
- AASB 116 Property, Plant and Equipment
- AASB 118 Revenue
- AASB 119 Employee Benefits
- AASB 136 Impairment of Assets
- AASB 138 Intangible Assets
- AASB 140 Investment Property
- AASB 1051 Land Under Roads
- AS/NZS 4360: 1995 Risk Management
- AS/NZS 4360: 2004 – Risk Management
- ISO 31000 – Risk Management
- ISO 55000 – Asset Management

Council Policies

- F2 – Purchasing
- WS3 – Road Facilities – Painting of Kerb Numbers
- WS2 – Construction/Upgrade of Crossovers
- WS4 – Traffic Management – Street Events
- WS5 – Protection of Council Infrastructure in Road Reserves
- WS6 – Road Improvements – Municipal Works in Street
- WS8 – Conservation of Flora & Fauna
- WS9 – Streetscape Management – Registration of Street Lawns & Gardens
- WS10 – Streetscape Management – Maintenance of Council Land and Road Verges
- WS14 – Street Trees
- WS11 – Street Verge Treatments
- WS11 – Asset Management Policy
- WS12 – Tree Management in Urban Areas & Public Reserves

Appendix B – AMP Stakeholders and Service Levels

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. The process broadly applies five steps, being:

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

Strategic Community Plan (SCP) Drivers

The Shire's SCP contains long term goals for the delivery of services to its community. The SCP was reviewed in order to identify any goals that may directly relate to the transport service. The following table outlines those that may influence this AMP's service levels.

Outcome	Shire Service Outcome
Economy: The population is growing, in tandem with a thriving, resilient and job rich local economy	Airport capable of servicing chartered flights for industry, commercial and recreational aircraft, and emergency services aircraft and related facilities.
Built Environment: The built environment is accessible, honours history and provides for the economic and social needs of residents, industry and visitors	Provide an effective road network through the construction, maintenance and renewal of sealed and unsealed local roads.
Built Environment: The built environment is accessible, honours history and provides for the economic and social needs of residents, industry and visitors	Provide an effective network of pathways to ensure safe movement and recreation through the construction, maintenance and renewals of footpaths, cycleways, trails and beach access points

Table 1: Strategic Community Plan Goals Aligned to the Transport Network

Consideration of the objectives listed above shows that the following transport service areas are of high importance to the SCP. These may then be considered by the final service levels within this AMP:

- Effective (built environment)
- Fit for purpose (economy)

AMP Stakeholders

Analysis of the Shire’s transport network revealed that there are a number of major stakeholder groups. These stakeholders are identified below and while there may be other minor stakeholders (e.g. Main Roads WA), they have not been specifically considered by this AMP.

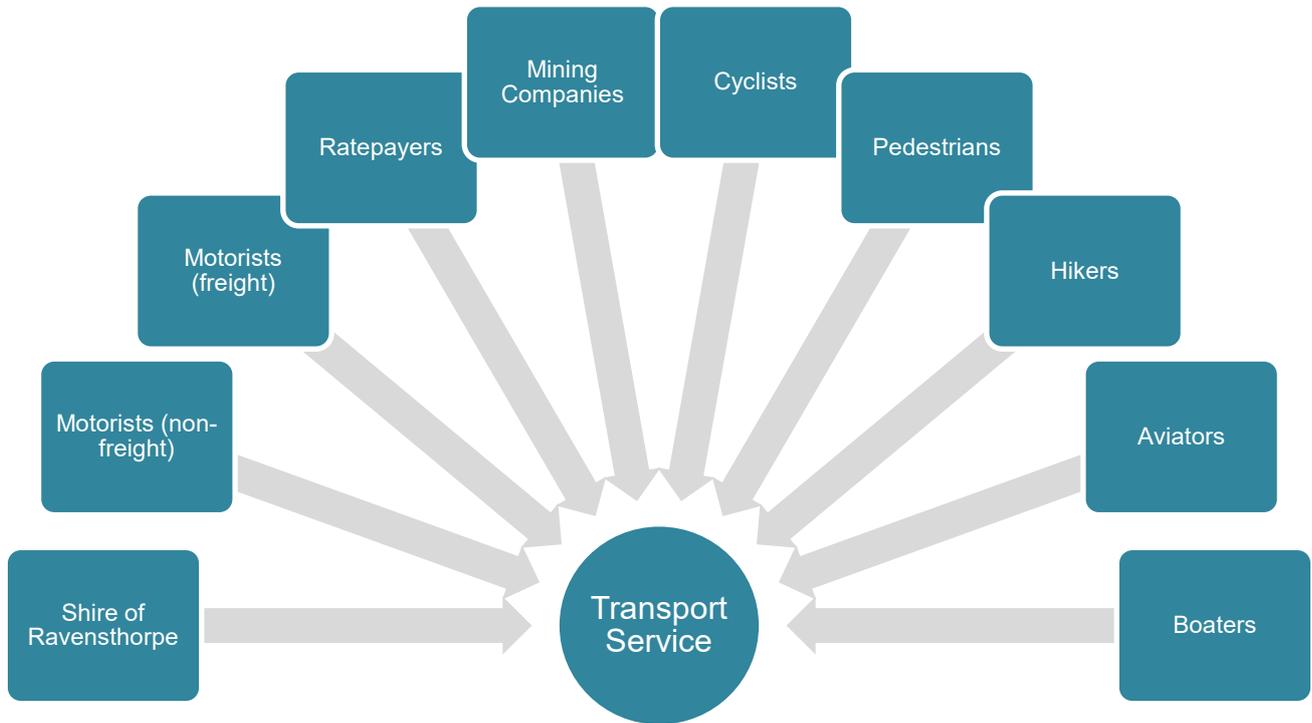


Figure 1: Transport Network Stakeholders

Service Attribute Workshop

During June 2020 Shire staff considered each stakeholder group to identify the service attributes that are most important to them. Those frequently occurring, when combined with the SCP drivers, form the basis of this AMP’s service levels. The results from the staff workshop are shown below. In the future, once the Shire is able to consistently monitor service level performance, as well as link this to cost, it intends to undertake stakeholder consultation.

Stakeholder	Top Three Transport Service Attributes		
Shire	Condition	Affordability	Accessibility, Availability, Compliant, Quality (tied)
Motorists (non freight)	Accessibility	Affordability	Condition & Safety (tied)

Motorists (freight)	Accessibility	Availability, Affordability, Safety (tied)	
Ratepayers	Availability	Affordability	Quality
Mining Companies	Availability	Compliance	Condition
Cyclists	Accessibility	Safety	Condition & Quality (tied)
Pedestrians	Safety	Accessibility, Availability, Condition, Affordability (tied)	
Hikers	Condition	Accessibility	Safety
Aviators	Availability	Safety	Condition
Boaters	Condition	Accessibility	Safety

Table 2: Important Stakeholder Transport Service Attributes

From the above analysis, the following service attributes have been selected for service levels.

- Accessibility (19 occurrences)
- Affordability (15 occurrences)
- Availability (22 occurrences)
- Condition (22 occurrences)
- Quality (8 occurrences)
- Safety (20 occurrences)

Service Level Targets and Performance

From the SCP and stakeholder analysis, the following KPIs are used to monitor service delivery performance.

KPI	Driver	Level of Service	Asset Group	Performance Measure	Target	Current	Data Confidence
Accessibility	Stakeholders	The path network is accessible to all users.	Paths	Percentage of path segments that meet disability access standards.	-	-	-
Affordability	Stakeholders	The cost of accessing the transport network is acceptable to users.	All	Number of complaints received per annum, regarding the affordability of the transport network.	-	-	-
Availability	Stakeholders	Availability of transport options	All	Percentage of users satisfied with the availability of travel options within the transport network.	-	-	-
Condition & Quality	Stakeholders	Transport network is maintained at, or above, an appropriate physical condition.	All	Percentage of transport assets above a condition rating of 4, on a 1 (excellent) to 5 (very poor) scale.	-	85%	Uncertain
Effective	SCP	Road network is effective.	Roads	Percentage of survey respondents that are at least satisfied with the effectiveness of the road network.	-	-	-
Fit for Purpose	SCP	Airport is fit for purpose.	Airport	Percentage of survey respondents that are at least satisfied with the airport facility.	-	-	-
Safety	Stakeholders	Risks are managed in accordance with relevant legislation and community needs.	All	Percentage of survey respondents that are at least satisfied with the safety of the transport network.	-	-	-

Table 3: Service Level Targets and Performance

Appendix C – Service Demand

Background

Council’s fundamental role is to provide services to its community and stakeholders. These services are often underpinned by assets. Predicting future demand for services (e.g. transport) is important to ensure that the appropriate assets are provided and maintained.

This section of the AMP looks broadly at both historical and future levels of transport demand. Readers should be aware though that as with any demand forecasting, prediction is rarely ever 100% correct.

Historic Transport Demand

To ascertain broad historical influences on transport asset demand, a range of different demand sources have been considered, as follows.

Motor Vehicle Ownership

Analysis of the ABS census data from 2001 and 2016 shows that between these years, there has been an increase in vehicle ownership from 563 to 616 households (Figure 2). This represents an increase of +0.6% per annum. While this may indicate an increasing amount of asset usage, the overall effect is thought to be negligible.

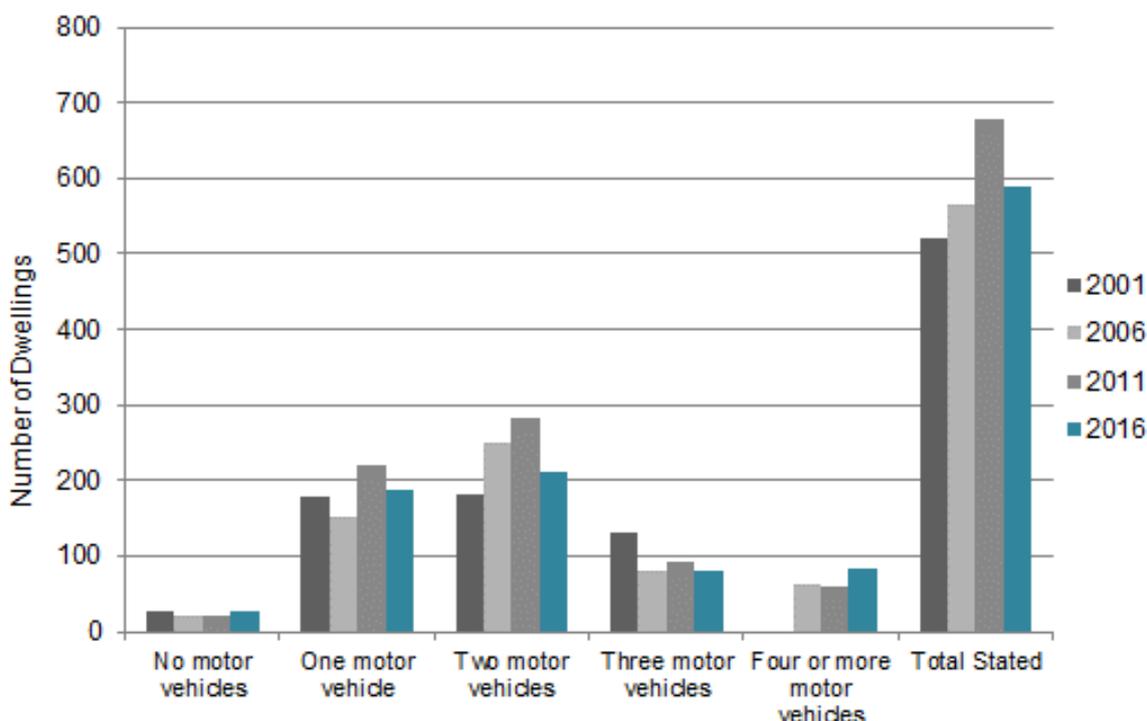


Figure 2: Dwellings with Registered Motor Vehicles (Source: ABS 2020)

Travel Modes to Work

Between 2001 and 2016, the total number of residents travelling to work increased by 113, or 24%. Of all modes of travel, using a car as driver was the most popular mode of transport. 61% of all methods to work were undertaken using this mode. Bus and walking were the second and third most popular modes.

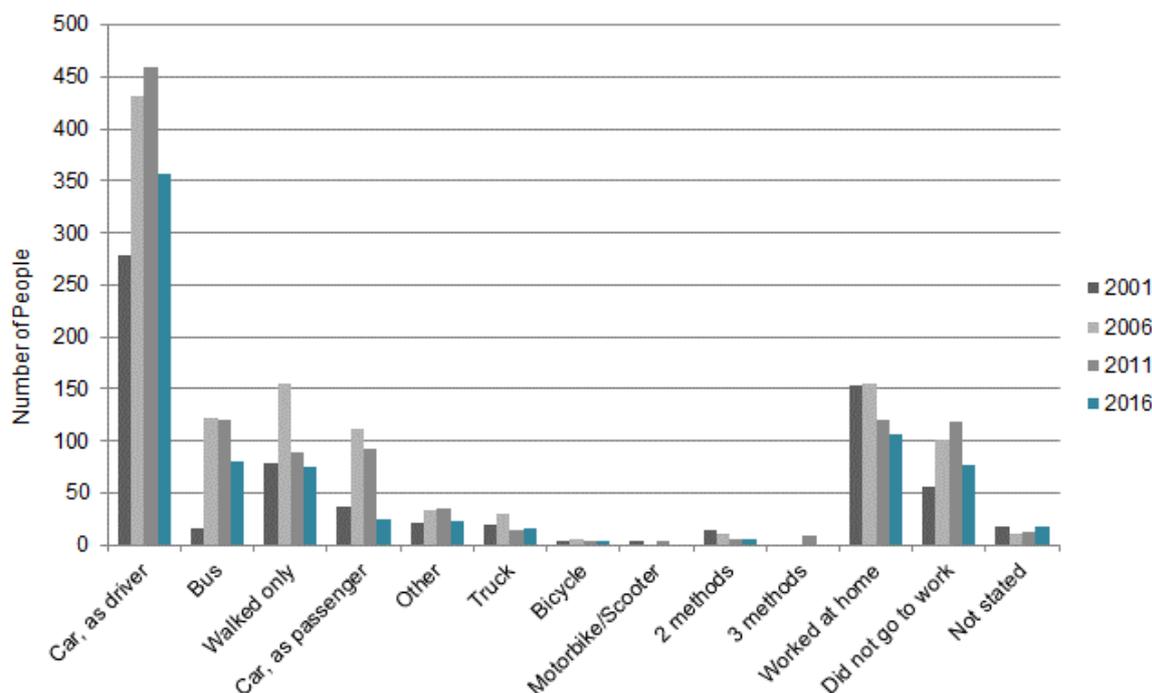


Figure 3: Travel Mode to Work (Source: ABS 2020)

Population & Demographic Change

The overall population of the Shire (Figure 4) between 2001 and 2016 has increased from 1,410 to 1,725. This increase of 315 people (+22%) suggests that demand for transport services may have also increased.

Over the same timeframe, the median age has increased from 37 to 45. Growth has predominately occurred in the older age bands, from years 40 plus. Population declines have been noted in the 0-9, 10-19 and 30-39 year bands.

With this changing demographic, demand for transport may have also changed. For example, with an ageing population, there may be a shifting demand change away from motor vehicles, to walking and the use of mobility devices. This may have increased the demand on assets such as paths.

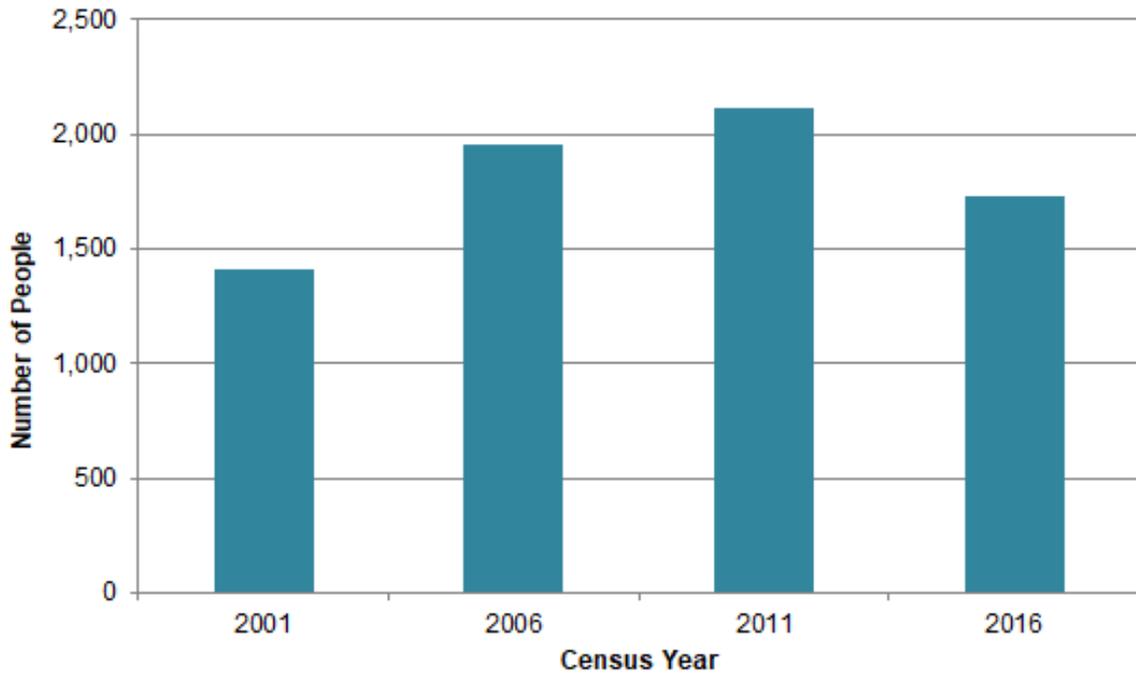


Figure 4: ABS Population – Shire of Ravensthorpe 2001-2016

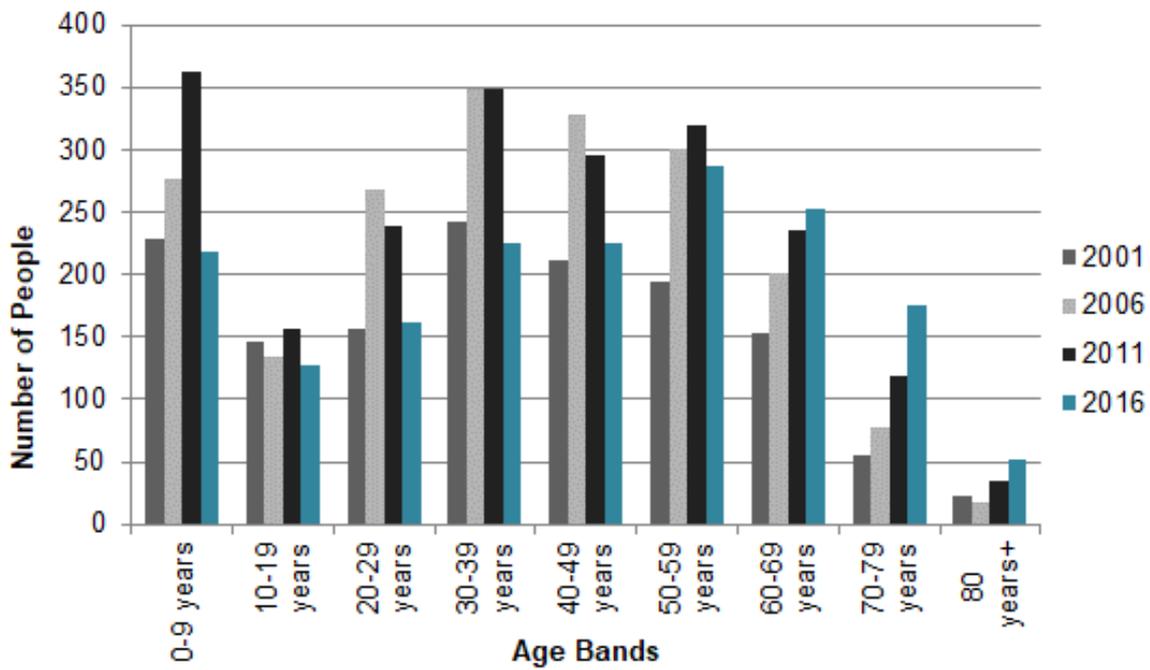


Figure 5: ABS Demographics – Shire of Ravensthorpe 2001-2016

Recreation Participation Change

The ABS Participation in Sport and Physical Recreation Survey was last conducted in 2013-14. Within Australia, walking for exercise remained the most popular activity over time with a participation rate of 19.2%. The second and third most popular activities were fitness/gym (17.4%) and jogging/running (7.4%) respectively. Ensuring that the Shire provides a quality path network upon which people can walk is therefore of a high importance.

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 show that over the past five years, the estimated number of visitors to/within WA have risen from 31.0million in 2015 to 36.3million in 2019. Figures show that 7% of these visitors go to the Golden Outback region, within which the Shire sits. As such, the historic growth in tourist numbers may have increased transport demand within the Shire.

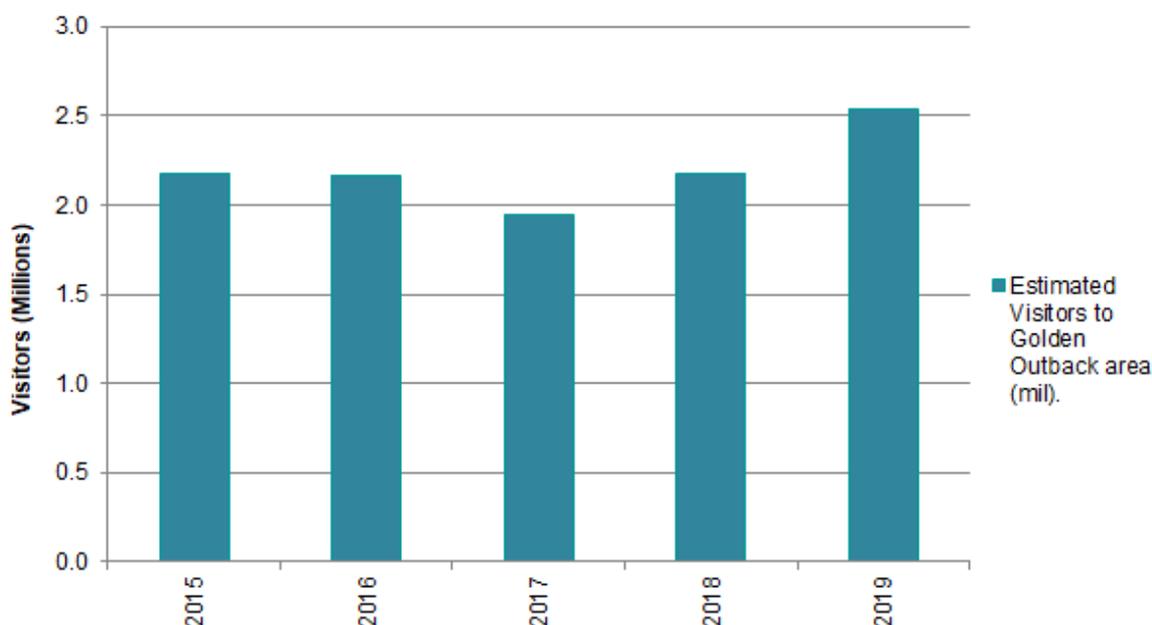


Figure 6: Estimated Golden Outback Visitors (Source: Tourism WA May 2020)

Rainfall Change

Consideration of historical annual rainfall may provide an indication of climate change. Figure 7 shows the annual total rainfall in Ravensthorpe from 1902 to 2019. It can be seen from the trend line that annual rainfall levels have steadily risen, from ~400mm to ~480mm. While this may have meant that some transport assets such as drainage have experienced more demand/use, peak storm events also require consideration. This has been listed as a potential improvement action.

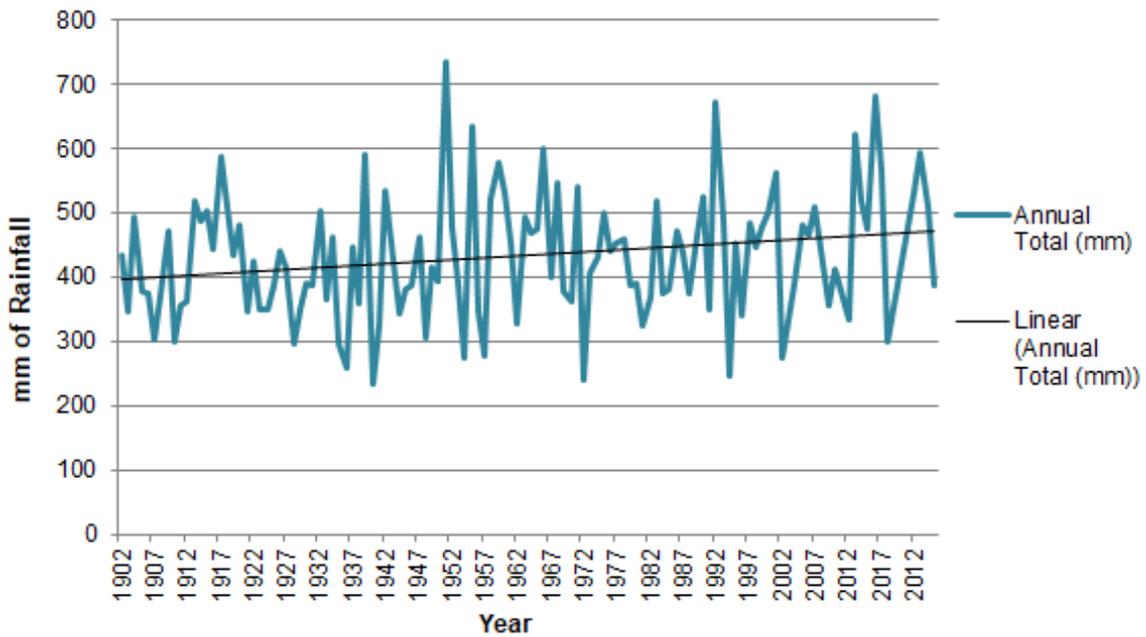


Figure 7: Ravensthorpe Weather Station Historical Annual Rainfall

Temperature Change

A review of the annual mean maximum temperatures shows that between 1962 and 2019, there has been a minor change in temperature, from ~29.7°C to ~29.4°C. This suggests that temperature change is not having a demand effect on transport assets.

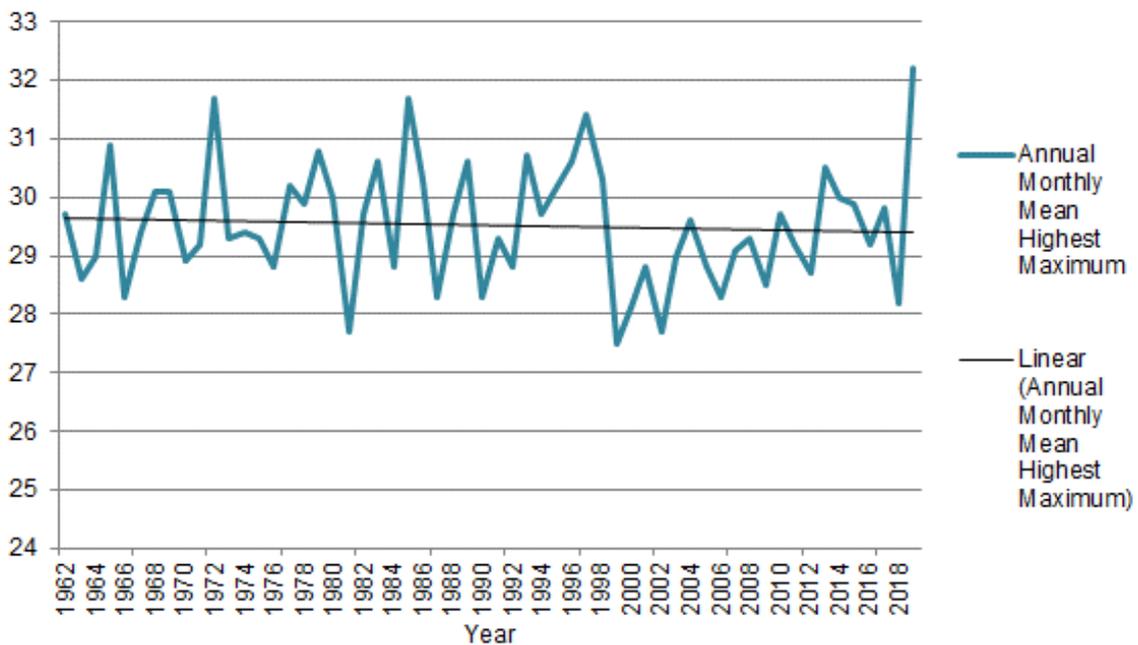


Figure 8: Ravensthorpe Weather Station Historical Annual Monthly Mean Maximum Temperature

Future Demand Drivers

In order to identify future demand pressures on the transport network (both positive and negative), six driver categories have been considered. These drivers may influence actual usage levels, as well as possibly requiring future resources to meet specific service 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

- ↑ IPRF - Integrated Planning and Reporting requirements continue to demand improvements to the Shire's asset management practices – Expected to continue to drive improved practices and hence require additional resources, over the medium term.
- ↔ Policy & Strategy - Council has the ability to change (up or down) the quality of service levels and hence effect costs – Considered unlikely to significantly change.
- ↑ External Funding - A significant portion of the Shire's annual transport budget is derived from state and federal grant scheme funding. With both federal and state budgets currently being under pressure, it is highly likely that non municipal income sources will at best be maintained and at worse decrease over the life of this AMP, resulting in proportionally more resources from municipal sources (e.g. rates).
- ↔ Reform - Local government reform continues to occur, with the next major initiatives scheduled being the Auditor General taking over responsibility for local government audits from 1 July 2018, as well as the review of the Local Government Act. For now, the effects on service demand are unclear.

Economic

- ↔ Fuel - Australian Institute of Petroleum data shows that in recent year's Australian petrol and diesel prices have remained fairly stable. They are also amongst the lowest in OECD countries. Looking forward, it is very difficult to predict future fuel prices. Industry commentary suggests that the mass introduction of electric vehicles may limit future petrol and diesel prices, but not until at least 2040. The retail and refining markets remain highly competitive, and with current over production, suggest that prices will be kept low. As a result, transportation cost changes may not be a significant influencer of service demand.
- ↔ Maintenance & Construction - The Bureau of Infrastructure, Transport and Regional Economics (BITRE) provides economic analysis, research and statistics on infrastructure, transport and regional development issues. The 2018 update shows that while there was a fall in the index from 2012-13 to 2015-16, the long term outlook is for a period of faster growth from 2017-18, followed by growth matching inflation in the 2020s. The net result of this is that road network costs will have to at least increase by inflation to ensure current service levels are maintained.
- ↑ Financial Sustainability - A review of the MyCouncil website shows that two of the three ratios have been consistently below their target bands. Furthermore, the asset consumption ratio appears to have been calculated incorrectly. Given the historical

poor performance, there would be concerns that the management of assets may not be financially sustainable.

Social

- ↓ Population - State forecasts suggest that the Shire's population is expected to decline in size until at least 2031. When historical populations are considered, Band A of the WA Tomorrow projections seems most likely. This predicts a decline of 940 people from 2016 levels. This results in a population size of just 845 people. If this were to occur, then the demand for transport services is likely to fall.
- ↑ Demographics – If the ageing population (higher median age) trend continues, then it is likely that service demand change will occur. An increase will be expected for better path (e.g. for elderly walkers) and public transport assets/services.
- ↔ Travel Modes - Historical data shows that the number of people travelling to work rose between 2001 and 2016. Despite this, the modes of travel have generally not changed, with car use (as driver) by far the primary mode. Looking forward, no significant changes to this service demand have been identified due to travel mode.
- ↑ Tourism - With past figures demonstrating an increase in visitor numbers to the Golden Outback region of WA, service demand change seems to have occurred. In addition, increasing tourism within WA seems to be a key commitment of the state government. As a result, while the direct change in service demand is likely to be small, there may be a need to further develop specific transport assets that will result in an enhanced experience for tourists (e.g. signage & information, parking areas etc.).

Technological

- ↔ 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.
- ↓ Robotics & Technology Integration – Uptake/implementation of robotics and software technology into management practices should increase the efficiency of maintenance practices, thus reducing lifecycle management costs.
- ↔ Electric Vehicles - Globally, the manufacture of electric vehicles has gained momentum in recent years, although still remains a long way off of conventional vehicle sales. Within Australia however, the uptake of the technology has been noticeably slower. Some of the constraints to sales includes pricing and access to recharge points. Looking forward over the life of this AMP, there may be future demand for the Shire to provide, or at least facilitate the creation of, electric recharge points for vehicles. Further investigation is required in order to scope the limits of such a project and it has been listed as an improvement action.

Legal

- ↔ Litigation Change – it is not anticipated that litigation levels will change from currently low levels. The Shire has some 'identify and fix' maintenance programmes, however generally there is room for improvement and greater formalisation.

Environmental

- ↑ Environmental Awareness – Pressure may occur for the Shire to demonstrate that the environmental cost of the transport network is progressively reduced.
- ↑ Climate Change – trends suggest that this is occurring and therefore extreme events and dryer weather are likely. Climatic change will demand improvements to management practices and potentially some assets (e.g. drainage). Protecting assets from events may become increasingly more important.

Future Demand Summary

During a workshop in June 2020, Shire staff considered each of the potential sources of service demand change. As a result, the following drivers were considered to be those likely to have the greatest change effect. Demand mitigation tactics (if required) have been identified and are recorded in Part 1.

- | | |
|---|-------------------|
| ■ Climate change | ■ Litigation |
| ■ Demographics | ■ Technology |
| ■ Government policy, legislation & compliance | ■ Visitor numbers |

Appendix D – Network Physical Parameters

Data Confidence

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 5 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 4.

Confidence Grade	Accuracy
Highly Reliable	± 2%
Reliable	± 10%
Uncertain	± 25%
Poor	± 40%
Very Poor	Nil

Table 4: Data Confidence Measures

Asset Class	Inventory	Condition	Valuation
Roads	Reliable	Reliable	Reliable
Paths	Reliable	Reliable	Reliable
Structures	Highly Reliable	Uncertain	Poor
Drainage	Uncertain	Uncertain	Uncertain
Car Parks	Very Poor	Very Poor	Very Poor
Aerodromes	Uncertain	Uncertain	Uncertain
Marine Facilities	Uncertain	Very Poor	Very Poor

Table 5: Transport Network Data Confidence Levels

Inventory

The following outlines the Shire's transport asset inventory as at 30 June 2019.

Roads

Road Materials

Asset/Component	Length (m)	Area (sq.m.)
Formation	1,268,143	13,805,231
Pavement	1,268,143	9,439,742
Sealed Surface	143,753	1,092,793
<i>Asphalt</i>	3,408	29,059
<i>Cement Concrete</i>	20	144
<i>Double Seal</i>	117,874	906,445
<i>Single Seal</i>	22,451	157,145
Kerbing	50,059	
<i>Barrier</i>	49,140	
<i>Flush</i>	80	
<i>Semi-Barrier</i>	779	
<i>Semi-Mountable</i>	60	

Table 6: Road & Kerb Quantity by Material

Road Hierarchy

Hierarchy	Length (m)	Area (sq.m.)
Regional Distributor	292,790	3,477,875
Local Distributor	343,610	4,147,718
Access Road	631,743	6,179,638
TOTAL	1,268,143	13,805,231

Table 7: Road Quantities by Hierarchy

Paths

Material	Length (m)	Area (sq.m.)
Asphalt	488	878
Brick Paving	1,764	4,334
Chip Seal	17,123	30,978
Gravel	5,477	10,659
TOTAL	24,852	46,849

Table 8: Path Quantities by Material

Structures

Item	Count	Length (m)
Culverts	1,081	10,591
Bridges	1	Unknown

Table 9: Structure Quantities by Type

Drainage

Item	Count	Length (m)
Pits	230	
Pipes	271	37,580
Table & Open Drains	6,525	2,354,232

Table 10: Drainage Quantities by Type

Car Parks

Item	Count	Area (sq.m.)
All Car Parks	Unknown	Unknown

Table 11: Car Park Quantities by Type

Aerodromes

Assets	Count
Aerodromes	2

Table 12: Aerodrome Facilities by Type

Marine Facilities

Assets	Count
Boat Ramps	1

Table 13: Marine Facilities by Type

Condition

The following table outlines the Shire's transport assets' condition as at 30 June 2019.

Asset Sub Type	Condition					
	Unknown	Very Good	Good	Average	Poor	Very Poor
Road Surface	0%	38%	23%	29%	9%	1%
Road Pavement	7%	12%	32%	37%	12%	0%
Kerbing	0%	1%	0%	99%	0%	0%
Path Surface	1%	13%	25%	53%	9%	0%
Structures	100%	0%	0%	0%	0%	0%
Culverts	5%	21%	51%	12%	5%	7%
Drainage Pits	0%	0%	99%	1%	0%	0%
Drainage Pipes	0%	0%	0%	100%	0%	0%
Car Parks	100%	0%	0%	0%	0%	0%
Aerodromes	50%	0%	50%	0%	0%	0%
Marine Facilities	100%	0%	0%	0%	0%	0%

Table 14: Asset Condition Profiles

Valuation

The following table records the current values of transport assets.

Asset Sub Type	Value			
	CRC	FV	ADE	Year
Road Surface	\$10,272,498	\$5,244,763	\$375,197	2019
Road Pavement	\$77,022,136	\$40,847,929	\$1,895,475	2019
Road Formation	\$49,387,666	\$49,387,666	\$0	2019
Road Kerbs	\$1,583,366	\$907,222	\$17,795	2019
Path Surface	\$2,199,939	\$1,187,982	\$63,287	2019
Bridges	-	-	-	-
Culverts	\$6,042,391	\$4,613,966	\$74,476	2019
Drainage	\$20,372,728	\$12,227,493	\$424,295	2019
Car Parks	-	-	-	-
Aerodromes	\$2,101,759	-	-	2019
Marine Facilities	-	-	-	-
Totals	\$168,982,483	\$114,417,019	\$2,850,526	

Table 15: Asset Valuations

Appendix E – Lifecycle Management Strategies

Background

Lifecycle management encompasses all strategies and practices that the Shire employs to manage all transport assets at the lowest lifecycle cost. This section details all the strategies and practices that are currently employed.

Principles & Definitions

In considering the Shire's Asset Lifecycle Management, the following key principles and definitions must be considered.

Work Category Definitions

The Shire considers the activities it undertakes across six categories as follows.

Activity	Definition
Operation	Continuously required expenditure which enables assets to provide benefits to the community such as utility charges, inspections, cleaning etc.
Maintenance	Regular works to maintain the assets' capability, such as minor repairs, servicing, mowing, painting, crack seals 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 16: Activity Categories

Lifecycle Cost Basis

All assets have a lifecycle. This is defined as the time interval that commences with the identification of the need for an asset and ends with the decommissioning of the asset (i.e. disposal but with no replacement). It covers five stages, being conception & design, acquisition/construction, operation & maintenance, renewal and disposal.

Operation & Maintenance Strategy

Often referred to as 'OPEX', operational & maintenance expenditure and works are required to ensure the longevity of assets' lives and the reliability of services. The Shire's approach to meeting OPEX needs is a combination of reactive and short term planned strategies. As described in the figure below, the Shire's strategy to OPEX is:

- Operational costs typically vary with usage. The Shire broadly works on an annual budget planning cycle (12 months), and seeks funding in-line with previous years' budgets, with an allowance for at least CPI.
- Reactive maintenance typically arises from either community requests and/or internal works orders. Works are then scheduled, actioned and completed. Budgeting is based on previous years' allocations, with an increase of at least CPI.
- Planned maintenance programmes exist for an annual budget planning cycle (for the future twelve-month period). Maintenance works are typically identified from either internal staff inspection or by legislative, policy or specification requirements. Budgets are developed based on the programmes and previous years' expenditure, with an increase of at least CPI. However, the planned maintenance programmes are generally not documented. An improvement action has been listed, to document planned maintenance schedules, with associated budgets, for transport assets.

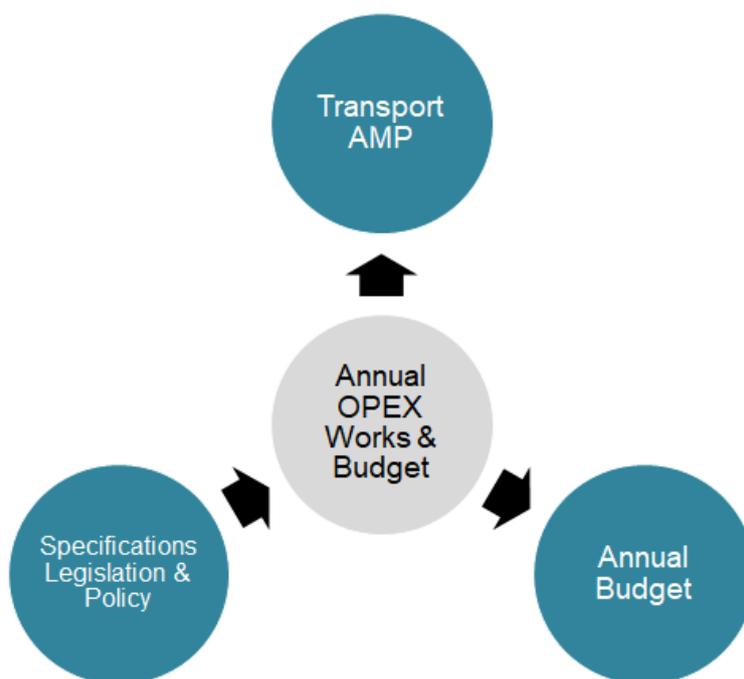


Figure 9: Transport Asset Maintenance Framework

Staff Resources

The overall management of the Shire’s transport network falls within the responsibility of the Chief Executive Officer. The Director of Corporate & Community Services is responsible for overall accounting control of transport assets, and the Director of Technical Services for engineering based works. The Shire is also assisted from time to time by external contractors.

Software Systems

The Shire currently employs the use of the following software systems to manage asset data.

Software System	Uses
RAMM	RAMM is able to centrally record inventory and condition data for all transport assets. At present through, it is only used for roads.
SynergySoft	Synergysoft is used to record all transport asset revenue and expenditure, as well as relevant records.
MetroCount	MetroCount is used to process and hold data from onsite road traffic counts.

Table 17: Asset Management Software Systems

Renewal Strategy

The Shire periodically inspects some transport assets to collect critical inventory and condition information. This information can then inform several key outputs (e.g. long-term renewal works programmes).

Renewal Management Model

Condition information can be used to develop models that predict assets' approximate year of renewal. The Shire then scopes and prioritises these renewal projects over the forthcoming period (e.g. 5 years). Further out (e.g. from years 6 onwards), results can help staff to understand the likely amount of renewal expenditure that will be required, even if the exact project details are not yet known. Ultimately, a robust long term (e.g. 15 years) renewal works programme can then be developed, that informs this AMP, and other documents such as the Long Term Financial Plan and Corporate Business Plan.

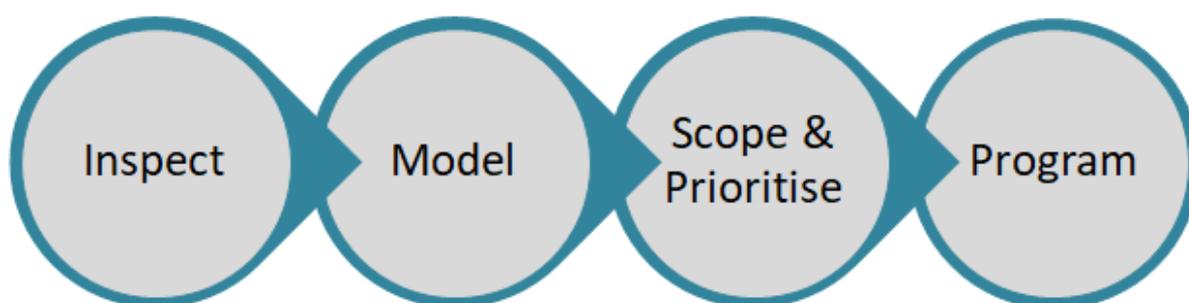


Figure 10: Example Transport Asset Renewal Planning Process

Inspections

Asset Condition Rating Scale

The Shire undertakes the condition rating of many of its infrastructure assets to determine their remaining useful life and fair values. In assessing assets' 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 18 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 18: Condition Rating Measures

Condition Inspection Frequencies

Transport assets are inspected in line with the relevant Manuals listed in Table 20 to the following frequencies.

Asset	Inspection Frequency
Roads	Sealed once every 3 years
Paths	Annual
Structures	Road Bridges – Every 5 years (Main Roads WA) Pedestrian Bridges – Every 3 years with paths
Drainage	Piped urban drainage - Every 5 years Open drainage & culverts – Every 3 years
Car Parks	Every 5 years
Aerodromes	Annually, as per CASA requirements.
Marine Facilities	Every 5 years

Table 19: Condition Inspection Frequencies

Inspection Manuals

The following manual are employed by the Shire when transport assets are being inspected.

Asset	Manual
Roads	Maintenance – Manual to be developed for road safety and maintenance inspections.
	Condition - WALGA Road & Path Visual Condition Assessment Manual – External document.
Paths	Maintenance – Manual to be developed for path safety and maintenance inspections.
	Condition - WALGA Road & Path Visual Condition Assessment Manual – External document.

Structures	Maintenance & Condition – Main Roads WA bridge inspection guides.
Drainage	Maintenance & Condition – Manual to be developed (urban & rural).
Car Parks	Maintenance & Condition – Manual to be developed.
Aerodromes	Maintenance & Condition – Shire Checklist.
Marine Facilities	Maintenance & Condition – Manual to be developed for boat ramps.

Table 20: Asset Inspection Manuals

Modelling

By understanding assets' physical condition (or any other performance feature), the Shire can then predict when assets, or their components, may require renewal. Typically, this is achieved by applying total useful lives to different assets or components, and then calculating how long it will take for them to reach a specific trigger.

Asset	Action	Triggers
Roads	Renewal	Condition rating of 4 (poor) or 5 (very poor).
Paths	Renewal	Condition rating of 4 (poor) or 5 (very poor).
Structures	Renewal	Condition rating of 4 (poor) or 5 (very poor).
Drainage	Renewal	Condition rating of 4 (poor) or 5 (very poor).
Car Parks	Renewal	Condition rating of 4 (poor) or 5 (very poor).
Aerodromes	Renewal	Condition rating of 4 (poor) or 5 (very poor).
Marine Facilities	Renewal	Condition rating of 4 (poor) or 5 (very poor).

Table 21: Asset Renewal Condition Triggers

Upgrade/New Strategy

The Shire occasionally constructs or acquires upgraded and/or new assets. Expenditure on these assets is often considered as discretionary, and ultimately results in either a new or improved service (e.g. road widening results in a safer and/or higher capacity road). The following section outlines the Shire's general approach to upgrade and new projects.

Project Prioritisation/Selection Criteria

The need for either upgraded or new assets is typically identified by Shire staff from a number of potential sources including customer and Council request, strategic plans, poor asset performance and so on. Assets' needs are then investigated by staff in order to determine their potential scope, benefit and costs. Where determined as being required, a formal report may be given to Council for their consideration and approval. Reports may consider different project aspects, such as costs, risk and strategic plan alignment.

Disposal Strategy

At the present time the Shire generally does not frequently dispose of transport assets. Where such a project is identified, then the need and scope is considered by Shire staff and (in some instances) Council.

Appendix F – Financial Model

Transport Works Programme Summary				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	
Asset Sub Type	Activity Type	Activity Description	Funding Type	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	
Aerodromes																			
All	Operation	COA12600 - Operating Costs - Airport	Municipal	\$24,024	\$23,454	\$24,658	\$25,360	\$26,083	\$26,832	\$27,651	\$28,497	\$29,371	\$30,274	\$31,206	\$32,170	\$33,164	\$34,191	\$35,253	
All	Maintenance	COA12604 - Airport Infrastructure Maintenance	Municipal	\$34,533	\$34,000	\$35,128	\$35,782	\$36,446	\$37,125	\$37,867	\$38,624	\$39,396	\$40,184	\$40,988	\$41,808	\$42,645	\$43,497	\$44,368	
Lighting	Renewal	Airport Lighting Upgrade	Municipal	\$8,050	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Lighting	Renewal	Airport Lighting Upgrade	Grants & Contributions	\$24,150	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
All	Renewal	Airport Renewal Project	Municipal	\$0	\$0	\$0	\$0	\$0	\$250,000	\$0	\$0	\$0	\$0	\$250,000	\$0	\$0	\$0	\$0	
AERODROMES TOTAL				\$90,757	\$57,454	\$59,786	\$61,142	\$62,529	\$313,957	\$65,518	\$67,121	\$68,767	\$70,458	\$322,194	\$73,978	\$75,809	\$77,688	\$79,621	
Boat Ramps & Jetties																			
BOAT RAMPS & JETTIES TOTAL				\$0	\$0														
Bridges																			
Bridge	Renewal	Renewal of failed road bridge and removal of temporary causeway in 2023	External																
BRIDGES TOTAL				\$0	\$0														
Car Parks																			
Car Parks	Renewal	RCP car park	Grants & Contributions	\$180,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
CAR PARKS TOTAL				\$180,900	\$0	\$0													
Drainage																			
Culverts	Renewal	Coxall Road 2X Culvert replacements at SLK 18.92 and 23.30	Local Roads & Community Infrastructure Grant	\$30,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Culverts	Renewal	General renewal allocation to match depreciation	Municipal	\$0	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	
Drainage	Renewal	General renewal allocation to match depreciation	Municipal		\$425,000	\$425,000	\$425,000	\$425,000	\$425,000	\$425,000	\$425,000	\$425,000	\$425,000	\$425,000	\$425,000	\$425,000	\$425,000	\$425,000	
DRAINAGE TOTAL				\$30,000	\$500,000	\$500,000													
Marine																			
Marine	Operation	COA12700 - Expenses Relating to Water Transport Facilities	Municipal	\$28,586	\$27,500	\$29,717	\$30,896	\$32,121	\$33,396	\$34,723	\$36,104	\$37,539	\$39,032	\$40,584	\$42,197	\$43,876	\$45,620	\$0	
MARINE TOTAL				\$28,586	\$27,500	\$29,717	\$30,896	\$32,121	\$33,396	\$34,723	\$36,104	\$37,539	\$39,032	\$40,584	\$42,197	\$43,876	\$45,620	\$0	\$0
Paths																			
Paths	Renewal	Hosking Street - Concrete Footpath Construction	Drought Community Programme	\$30,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Paths	Renewal	Cambewarra Drive Pavement Overlay	Municipal	\$33,250	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Paths	Renewal	To be confirmed	Municipal	\$0	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$10,000	\$15,000	\$15,000	\$15,000	\$15,000	
Paths	Renewal	General renewal allocation to match depreciation	Municipal		\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	
PATHS TOTAL				\$63,250	\$63,000	\$58,000	\$63,000	\$63,000	\$63,000	\$63,000									
Roads																			
Signs	Maintenance	COA12206 - Signs Maintenance	Municipal	\$5,056	\$5,000	\$5,129	\$5,217	\$5,307	\$5,398	\$5,506	\$5,616	\$5,729	\$5,843	\$5,960	\$6,079	\$6,201	\$6,324	\$6,452	
Roads	Maintenance	COA12200 - Expenses Relating to Streets, Roads, Bridges & Depot Maintenance	Municipal	\$1,471,695	\$1,450,000	\$1,496,234	\$1,523,686	\$1,551,652	\$1,580,137	\$1,611,741	\$1,643,974	\$1,676,855	\$1,710,392	\$1,744,600	\$1,779,493	\$1,815,082	\$1,851,383	\$1,888,411	
Roads	Renewal	General allocation - non project specific - to match LTFP	Municipal	\$469,820	\$341,801	\$344,454	\$347,147	\$349,880	\$352,655	\$355,470	\$358,328	\$361,229	\$364,174	\$367,162	\$370,196	\$376,275	\$382,445	\$388,707	
Roads	Renewal	General allocation - non project specific - to match LTFP	Roads to Recovery	\$487,335	\$487,335	\$487,335	\$487,335	\$487,335	\$499,518	\$499,518	\$499,518	\$499,518	\$499,518	\$512,006	\$512,006	\$512,006	\$512,006	\$512,006	
Roads	Renewal	General allocation - non project specific - to match LTFP	Regional Road Group	\$329,867	\$329,867	\$329,867	\$329,867	\$329,867	\$329,867	\$329,867	\$329,867	\$329,867	\$329,867	\$329,867	\$329,867	\$329,867	\$329,867	\$329,867	
Roads	Renewal	General allocation - non project specific - to match LTFP	Other	\$1,100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Pavement / Seal	Renewal	Unallocated renewal to match depreciation	Municipal	\$0	\$1,030,909	\$1,126,811	\$1,124,118	\$1,121,385	\$1,106,427	\$1,103,612	\$1,100,754	\$1,097,853	\$1,094,908	\$1,079,432	\$876,398	\$870,319	\$864,149	\$857,887	
ROADS TOTAL				\$3,863,773	\$3,644,912	\$3,789,830	\$3,817,370	\$3,845,426	\$3,874,002	\$3,905,714	\$3,938,057	\$3,971,051	\$4,004,702	\$4,039,027	\$4,074,039	\$4,109,750	\$4,146,174	\$4,183,330	

Transport Works Programme Summary

Asset Sub Type	Activity Type	Activity Description	Funding Type	Year 1 2020/21	Year 2 2021/22	Year 3 2022/23	Year 4 2023/24	Year 5 2024/25	Year 6 2025/26	Year 7 2026/27	Year 8 2027/28	Year 9 2028/29	Year 10 2029/30	Year 11 2030/31	Year 12 2031/32	Year 13 2032/33	Year 14 2033/34	Year 15 2034/35
Street Furniture																		
Street Furniture	Renewal	Hopetoun Street Furniture - Installation and renewal of street furniture	Drought Community Programme	\$10,500														
STREET FURNITURE TOTAL				\$10,500	\$0													
Street Lighting																		
Street Lighting	Operation	COA12202 - Power - Street Lighting	Municipal	\$58,240	\$56,000	\$60,570	\$62,992	\$65,512	\$68,133	\$70,858	\$73,692	\$76,640	\$79,705	\$82,894	\$86,209	\$89,658	\$93,244	\$96,974
STREET LIGHTING TOTAL				\$58,240	\$56,000	\$60,570	\$62,992	\$65,512	\$68,133	\$70,858	\$73,692	\$76,640	\$79,705	\$82,894	\$86,209	\$89,658	\$93,244	\$96,974
TOTAL TRANSPORT WORKS EXPENDITURE				\$4,326,006	\$4,348,866	\$4,502,903	\$4,535,400	\$4,568,588	\$4,852,488	\$4,639,813	\$4,677,974	\$4,716,997	\$4,756,897	\$5,042,699	\$4,839,423	\$4,882,093	\$4,925,726	\$4,922,925

Key Assumptions

A number of key assumptions are made in preparing forecasts of required transport network expenditure. They are that:

- Transport assets will remain in Council ownership throughout the period covered by this AMP, unless specifically detailed otherwise.
- Standards, Acts and Regulations associated with transport assets will remain essentially the same over the AMP life.
- Expenditure projections allow for no annual inflation.
- Operation and maintenance costs are based primarily on planned programmes where available. Where not available, cost projections 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 primarily on defined works programmes where available. Where not available, programmes are based on either modelling projections, historical cost and/or annual depreciation rates.
- Upgrade, acquisition/construction and disposal programmes are based on defined works programmes.
- 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 that was actually expended on different activities.

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

- Improving data confidence levels for transport asset inventory, condition and valuations to reliable or better.
- Developing activity based operation and planned maintenance schedules, with associated budgeting.
- Refining the long term capital works programme.

Appendix G – Asset Ratios

Background

On an annual basis, each WA local government reports seven key performance indicators (KPIs) (available within the Annual Report). Of these, three KPIs reflect the performance of the Shire's assets. These KPIs are useful in determining:

- the current physical state of the asset portfolio
- how sufficient past renewal expenditure was
- whether sufficient future renewal expenditure is being allowed for

Asset Consumption Ratio

The ratio is a measure of the condition of the Shire's physical assets, by comparing their condition based fair value (what they're currently worth) against their current replacement cost (what their replacement asset is currently worth as new). The ratio highlights the aged condition of the portfolio and has a target band of between 50%-75%. Non depreciating assets (e.g. road formation) should be excluded from the calculation.

Depreciated Replacement Cost (Fair Value) of Depreciable Transport Assets
Current Replacement Cost of Depreciable Transport Assets

Asset	Fair Value	CRC	ACR
Roads (ex formation)	\$46,999,913	\$88,878,001	53%
Paths	\$1,187,982	\$2,199,939	54%
Structures	\$4,613,966	\$6,042,391	76%
Drainage	\$12,227,493	\$20,372,728	60%
Car Parks	-	-	-
Aerodromes	-	-	-
Marine Facilities	-	-	-
Total	\$65,029,353	\$117,493,058	55%

Table 22: Transport Assets Consumption Ratios

Asset Sustainability Ratio

The ratio is a measure of the extent to which assets managed by the Shire are being replaced as they reach the end of their useful lives. The ratio is essentially past looking, and is based upon dividing the average annual depreciation expense of the transport asset portfolio by the average annual renewal expenditure, for a number of past years (e.g. 3). The ratio has a target band of between 90%-110%.

Transport Asset Renewal Expenditure

Transport Asset Depreciation

Asset	4 Year Average	ADE	ASR
Roads (ex formation)	\$1,422,914	\$2,288,467	62%
Paths	\$31,917	\$63,287	50%
Structures	\$0	\$74,476	0%
Drainage	\$11,150	\$424,295	3%
Car Parks	\$5,848	Unknown	Unknown
Aerodromes	\$3,670	Unknown	Unknown
Marine Facilities	\$0	Unknown	Unknown
Total	\$1,475,499	\$2,850,526	52%

Table 23: Transport Assets Sustainability Ratios

Asset Renewal Funding Ratio

The ratio is a measure as to whether the Shire has the financial capacity to fund asset renewal as and when it is required over the future 10 years' period. The ratio is calculated by dividing the net present value of planned renewal expenditure over the next 10 years in the LTFP, by the net present value of planned renewal expenditure over the next 10 years in the AMP. The same net present value discount must be applied in both calculations. The ratio has a target band of between 95%-105%.

NPV of LTFP Planned Renewal Expenditure over the next 10 years

NPV of AMP Required Renewal Expenditure over the next 10 years

Asset	LTFP	AMP	ARFR
All Transport Assets	\$12,093,829	\$25,596,109	47%
Total	\$12,093,829	\$25,596,109	47%

Table 24: Transport AMP Renewal Funding Ratio