



Goondiwindi Regional Council

Asset Management Plan – Transport Assets

June 2019





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DOCUMENT CONTROL

Document ID: Goondiwindi Regional Council Asset Management Plan - Roads

Rev No	Date	Revision Details	Typist	Author	Verifier	Approver
1	25 March 2019	Document for Council	Chris Egbars, Shepherd Services	Chris Egbars and Darren Shepherd, Shepherd Services	Darren Shepherd, Shepherd Services	Darren Shepherd, Shepherd Services
2	17.6.2019	Update	Darren Shepherd, Shepherd Services	Chris Egbars and Darren Shepherd, Shepherd Services	Darren Shepherd, Shepherd Services	Darren Shepherd, Shepherd Services
3	20.6.2019	Discussions onsite at GRC	Steven Forbes, Shepherd.	Chris Egbars and Darren Shepherd, Shepherd.	Darren Shepherd, Shepherd Services	Darren Shepherd, Shepherd Services
4	24.7.2019	Discussions onsite at GRC	Steven Forbes, Shepherd.	Chris Egbars and Darren Shepherd, Shepherd.	Stephen Hegedus, Shepherd Services	Darren Shepherd, Shepherd Services
5	21.10.2019	65% Gravel Coverage Requested and Improvement Plan update	Steven Forbes, Shepherd.	Chris Egbars and Darren Shepherd, Shepherd.	Stephen Hegedus, Shepherd Services	Stephen Hegedus, Shepherd Services

SHEPHERD SERVICES

Abbreviations

AMP	Asset Management Plan
ABS	Australian Bureau of Statistics
DTMR	Department of Transport and Main Roads
FWP	Forward Works Plan
LCC	Life Cycle Cost
LCE	Life Cycle Expenditure
LoS	Levels of Service
LRRS	Local Roads of Regional Significance
IRI	International Roughness Index
GRC	Goondiwindi Regional Council
QAO	Queensland Audit Office
PI	Performance Indicator
RACAS	Road Asset Condition Assessment System
R2R	Roads to Recovery
RUL	Remaining Useful Life
SL	Service Level
TIDS	Transport Infrastructure Development Scheme
VRACAS	Virtual RACAS

EXECUTIVE SUMMARY

BACKGROUND

This Asset Management Plan (AMP) for Goondiwindi Regional Council's roads, stormwater drainage, kerb, pathways, traffic management assets, aerodrome assets, excluding Department of Main Roads (DTMR) assets, was developed using data from the recent comprehensive valuation and Council's future works programs.

The purpose of this AMP is to assist Council in:

- Demonstrating responsible management.
- Clearly outlining the measurable service levels.
- Communicating and justify funding requirements for the future.
- Complying with regulatory requirements.

This 'core' plan documents asset management planning information for the Roads assets for the Goondiwindi Regional Council. This includes a review of strategic trends facing Council and potential impacts on the asset stock, asset condition and performance against key indicators, long-term financial forecasts for the 20-years 2019/20 to 2038/39, and an improvement plan for managing the assets. Financial implications for providing the required levels of service into the future are also provided based on the associated separate spreadsheet model for the AMP.

The potential benefits of this AMP are:

- Enables Council to satisfy community needs at the most cost-effective manner;
- Enables Council to know where to spend funds to get the most bang for their buck;
- Protects Council from industry regulators, QAO etc.;
- Protects Council against potential litigation;
- Documented asset management processes make it easier for existing and new staff;
- Enables Council to avoid waste - and the associated unfavourable publicity; and
- Financial Sustainability.

ASSETS

Infrastructure assets included in this plan comprise approximately 790 km of sealed roads including 687 km of gravel shoulders, 1,704 km of formed unsealed roads (1,406 with gravel), 1.3 km of sealed access roads and carparks, 32 km of pathways, 134 km of kerb, 37 bridges, 33 major and 1,190 minor culverts, 125 floodways, 4 aerodromes and traffic management devices (tree surrounds, watering systems and streetscape).

The assets at 31 March 2018 derived from a comprehensive revaluation have a current replacement cost of \$343.4 M, a fair value (written down value) of \$296.4 M and annual depreciation \$5 M.

LEVELS OF SERVICE FOR ROADS

Council have developed practical service level measures for their major road asset components to ensure that services are engaged to best fit customer expectations and to optimise expenditure. These are:

Sealed Roads

- *surface renewal* is programmed when the Age is greater than 10 years or the % of Surface Defects is greater than 15% by Area (stripping and cracking) and IRI less than 8 or % Pavement Defects area is less than 30% to avoid resurfacing a failing pavement.
- *pavement renewal* will be considered for programming when IRI is greater than or equal to 9 or % of Pavement Defects is greater than or equal to 70% (rutting and failure), or rideability issues are identified.

Unsealed Roads

- *surface maintenance* is engaged via grading works when the safe driving speed is less than 80-90 km/hr, which represents an international roughness index of 6-8.
- *pavement renewal* (wet weather access) is engaged when gravel coverage is less than 65% by length. This is by visual inspection of a segment to ensure a minimum of 65% gravel coverage by length.

Other Assets

- *Footpath and kerb*: maintenance and renewals are based on visual inspections to identify trip, defects, drainage effectiveness and overall condition.

- *Bridge* renewals are based on structural integrity, via a level 2 inspection every 5 years. *Drainage structures (all structure types)* are inspected and sampled during comprehensive revaluation.

ROAD RENEWALS

A detailed roads survey with condition monitoring was undertaken for all road assets. Condition data and associated renewals for sealed and unsealed road components are provided in the following charts.

The 20 years replacement profiles below were established from a combination of modelling of remaining lives using the RACAS condition data, analysis of historic expenditure, and target service levels:

- **sealed surfaces** the average for reseals is \$1,370,000 per year (approximately 56 km per year based on current unit rates).
- **sealed pavement** the average renewals is \$997,086 per year (approximately 6 km per year).
- **unsealed pavements** the average for resheeting is \$1,545,000 per year (approximately 70 km per year).
- **Unsealed shoulders** (on seal roads) the average for shoulder resheeting is \$150,000 per year (approximately 15 km per year).

LIFECYCLE EXPENDITURE

Operations and Maintenance (Opex)

The average of the previous five years Opex spend is approximately \$4.23 million adopted for future projections, plus increases in maintenance from new and upgrade works totalling on average approximately \$0.28 million per year over the next 20 years and this represents 1.2% of the gross replacement costs. A benchmark of 16 councils of similar km's is about 0.5% to 0.8% of gross replacement cost. GRC's maintenance costs over the last 5 years has increased \$65,000 per year.

Capital (Capex)

New and Upgrade Capital Works

Council budgeted (planned) new and upgrade works over the next 20 years taken from Council's forward works plan are estimated to total approximately \$10.5 million for new and \$23.7 million for upgrade that amounts to a total 10% increase on gross replacement costs.

A benchmark of 16 councils of similar km's, we found the average was 7.7% increase of gross replacement cost. These assets add continued liability to council with additional depreciation and maintenance annually.

Renewals

Total planned renewals (forward works program) spend is approximately \$136.5 million over the next 20, which is 40% of the gross replacement cost. The majority of these renewals are \$30.3 million for sealed surfaces, followed by \$54.0 million for sealed pavements, \$33.6 million for unsealed pavements, \$3.9 million for pathways, \$3.4 million for kerbs, \$3.0 million for Shoulder and \$7.5 million for stormwater.

A benchmark of 16 councils of similar km's, we found the average was 14% of gross replacement cost. Council is on the higher side of benchmark, which is excellent.

Comparing this to the Projected' long term renewals (service level projections) determined from the RACAS condition assessments and the 2018 asset valuations remaining life data. The estimate projected renewals totalled \$89.5 million over the next 20 years.

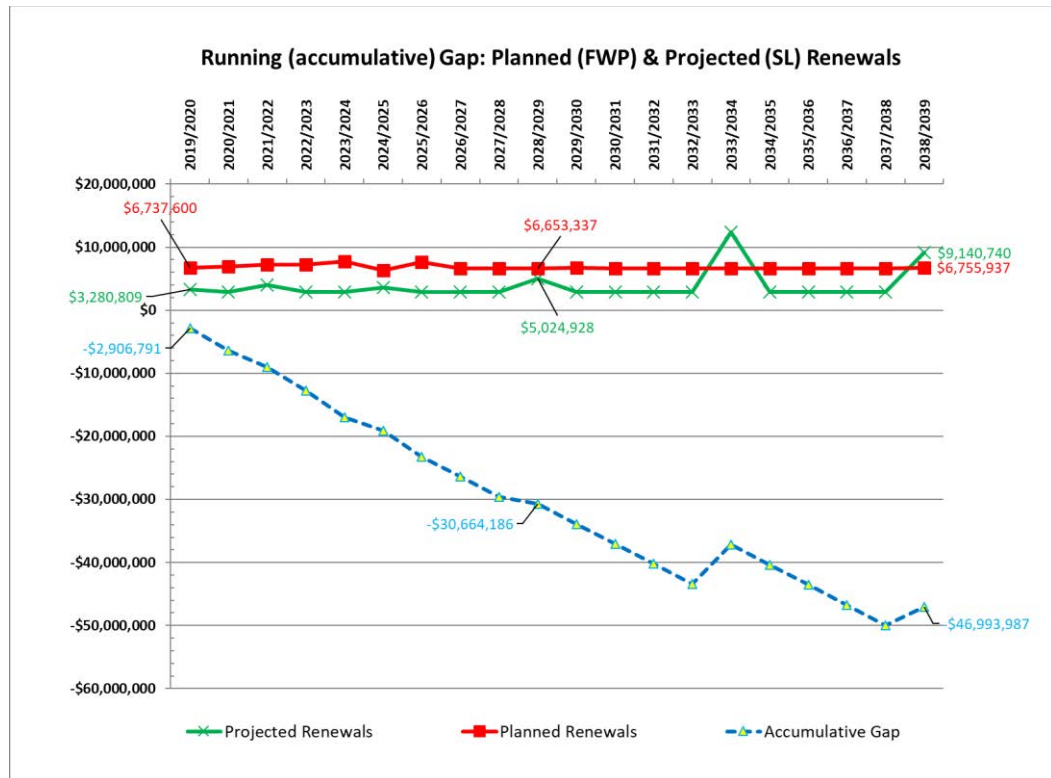
On average, the planned renewals (forward works) is approximately \$6.8 million per year and the average (service level) renewals is at approximately \$4.5 million per year. On this basis it can be concluded that Council will be adequately funding renewals.

It should be noted that Projected' long term renewals (service level projections) for Sealed Pavements, Stormwater and Aerodromes are largely based on engineering experience and further funding should be accumulated to match the annual depreciation reported for these asset classes. Sealed Pavement renewals projections beyond the 20 year profile are expected to increase as a large percentage of road segments come to end of life.

What is the Gap

The following chart shows the accumulative gap in renewal funding between what Council plans to spend and projections of required renewals over the next 20 years.

Council is more than adequately funding renewals as shown by the increasing negative gap. It should be noted that sealed pavement renewals projections beyond the 20 year profile are expected to increase as a large percentage of road segments come to end of life.



IMPROVEMENT PROGRAM AND PLAN MONITORING

A 3-year program is included in this AMP for implementing the improvement actions identified in preparing this initial plan. The key improvements include job costing at road level and measurement of assigned service levels:

Improvement Task	Timeframe
Undertake regular (3-year maximum interval) road condition assessments (using RACAS) and analyse using VRACAS.	2021/22
Review planned renewals and the forward works program to ensure planned (service level) works are included in future works. The first 5 years could be project specific against service level models.	January 2020
Complete asset verification process of minor drainage structures.	2021/22
Measure performance against assigned service levels. There are several items that can't be measured at this stage. See Service Level tables.	June 2020
Continue to improve and maintain a comprehensive register of all assets and required attributes for managing them in the GIS: <ul style="list-style-type: none"> Undertake audit of road components. Ensure all infrastructure is captured Physically measure the widths of the sealed roads to confirm the current mapping attributes. 	Prior to next Comprehensive valuation

Further develop collection forms for condition/defect data and work record information. For example, Surface Condition before a Road is graded. Works records for roads that have been graded. Recommend the use of the REFLECT tool as this provides ease of reporting.	June 2020
Undertake review of the road network's Hierarchy for changes	June 2020
During project identification stage include financial impacts of new work, i.e. asset depreciation impact and possible maintenance implications of doing the work (increase in maintenance expected or same?).	June 2020
Communicate the impacts on the 65% gravel coverage service levels for unsealed road gravel coverage to encourage greater expenditures into the future. Gravel coverage is likely to decrease from 80% to 65% over the next 10 years. Check that 65% gravel coverage will be achievable year on year.	June 2020
Carry-out a trial utilising a water truck for maintenance grading.	June 2020
Carry-out a trial utilising processed gravel.	June 2020
Determination of average gravel depths after resheeting to work out if road gangs are building deeper layers. If so the Useful life of unsealed road pavement may be extended.	January 2020
Soil testing of gravel resheet material using the ARRB unsealed roads specification.	January 2020
Workshopping of the defect logging of sealed surface renewals and the effect of this on the sealed surface renewals. Need a measure to combine with age. Determine intervention levels to align the defect areas (Strip and Crack)	2021/22
Workshopping of the defect logging of sealed pavement renewals and the effect of this on the sealed pavement renewals. Clarify the IRI intervention and determine intervention levels to align the defect areas (Rutting & Failure). Or determine another metric.	2021/22
Plan and program renewals for the Aerodrome runway, taxiway and access roads. This may require specialised surfacing renewals that need investigation and estimating for cost.	2021/22

This Asset Management Plan should be fully reviewed every three years (2021/2022 financial year) and the Improvement Program updated annually.

1.0 BACKGROUND

1.1 Purpose of the Plan

The purpose of this Asset Management Plan (AMP) is to assist Council in:

- Demonstrating responsible management;
- Clearly outlining the measurable service levels;
- Communicating and justify funding requirements for the future; and
- Complying with regulatory requirements.

The potential benefits are:

- Enables Council to satisfy more community needs;
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- Documented asset management processes make it easier for existing and new staff;
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1.2 Council's Goal

Under the Corporate Plan 2014-2019 with regard to 'Asset Infrastructure Management' Council *'is committed to supplying infrastructure in an efficient and coordinated manner that provides consistent, value for money services and the application of standards for infrastructure which consider the impacts on the natural environment, the amenity, and health and safety of the community. We will ensure a coordinated and integrated approach to infrastructure planning, implementation, maintenance and renewal.'*

The strategic goals in the Corporate Plan are :

2.3 'Council infrastructure and utilities that facilitate and enhance sustainable growth'

- 3.3 'The provision of quality infrastructure that meets the region's current and future need.'

The outcome for road assets is to '*maintain a quality and efficient road network*'.

The key elements to meet these Goal are:

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

1.3 Key Stakeholders

The key stakeholders in the preparation, implementation and future revisions of this asset management plan are:

- GRC Councillors
- GRC Staff
- Community
- Developers
- Department of Roads and Main Roads (DTMR)
- Agricultural Sector
- Contractors/Consultants

2.0 ASSET DESCRIPTION

The Council owns and maintains its local road network within the Goondiwindi Regional Council located in the Darling Downs region of Queensland, along the state's border with New South Wales. This Asset Management Plan (AMP) is for the roads, stormwater drainage, kerb, pathways, traffic management assets, aerodromes and excluding DTMR assets.

2.1 Physical Parameters

The assets included in this Asset Management Plan are shown in the following table, based on 2018 valuations data and mapping.

Table 2.1.a Extent of Major Assets

Subcategory	Length (m)
Sealed Roads	815,548
Kerb	132,709
Gravelled Roads	1,425,863
Formation Roads	245,883
Pathways	32,203.08
Bridges and Other Structures	
<i>Minor Culverts</i>	11,184
<i>Floodway</i>	6,792
<i>Bridge</i>	724
<i>Major Culverts</i>	193
<i>Aerodrome</i>	1,345

2.2 Asset Valuations

Roads, bridges, drainage and pathways as at 31 March 2018 derived from a comprehensive revaluation have a current replacement cost of approximately \$343.4 million, a fair value (written down value) of approximately \$296.4 million and annual depreciation \$5 million. There is a significant balance in Council's financial statements (both asset values and depreciation expense).


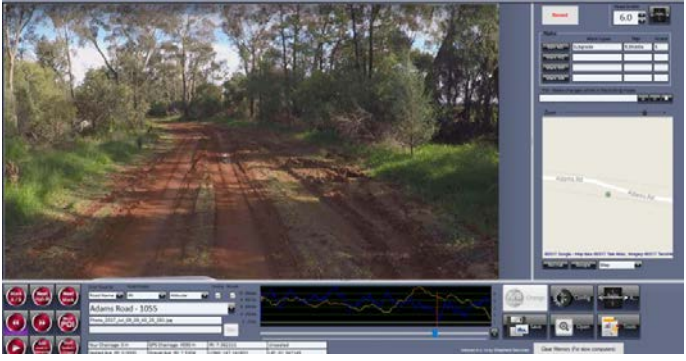
Details for the assets in Subcategories of the 'Roads Infrastructure' Category are provided in Table 2.2.a.

Table 2.2.a Asset Valuations as at 31 March 2018

Subcategory	Current Replacement Cost	Written Down Value (\$)	Annual Depreciation (\$)
Sealed Roads	\$182,559,760	\$157,821,305	\$2,924,317
<i>Sealed Surface</i>	<i>\$26,862,142</i>	<i>\$19,985,090</i>	<i>\$1,472,366</i>
<i>Sealed Pavements</i>	<i>\$101,304,201</i>	<i>\$83,543,563</i>	<i>\$1,442,970</i>
<i>Sealed Formation</i>	<i>\$53,738,638</i>	<i>\$53,738,638</i>	<i>\$0</i>
<i>Sealed Pavement (Shoulders)</i>	<i>\$654,780</i>	<i>\$554,014</i>	<i>\$8,981</i>
Unsealed Roads	\$93,352,898	\$92,796,543	\$1,188,564
Traffic Management Devices	\$1,747,843	\$1,578,816	\$23,113
Bridges	\$14,674,093	\$9,512,284	\$142,145
Stormwater Drainage	\$22,517,677	\$13,980,033	\$350,464
Access Roads and Carparks	\$1,232,441	\$1,031,114	\$17,874
Pathways	\$13,595,576	\$10,673,611	\$193,643
Kerb	\$13,461,133	\$8,697,384	\$158,368
Aerodrome	\$278,010	\$262,062	\$3,209
Grand Total	343,419,431	296,353,152	5,001,698

2.4 Asset Condition

As part of the comprehensive asset valuation process and as an input to asset management planning, electronic roads survey using www.RACAS.com.au with condition monitoring was undertaken of all Council's roads assets.

	
Road Asset Condition Assessment System (RACAS)	Example Unsealed Road in Queensland with Defects

For sealed roads the International Roughness Index (IRI), stripping, cracking and rutting and for unsealed roads IRI and subgrade was determined.

Council now has a full visual condition and inventory of data for sealed and unsealed roads, with defects assessed.

A portion of condition data was captured for a representative sample of the footpaths and major drainage structures.

The information obtained provides improved mapping of assets, triggers for maintenance and renewal treatments, reviewing and determining remaining useful life (RUL) and valuation.

Condition for other asset categories was determined in the 2018 valuations based on comparing age with standard economic lives.

2.4.1 Roads

Summary condition data for sealed surfaces and unsealed roads is provided in Tables 2.4.1.a and 2.4.1.b on the following pages.

Table 2.4.1.a Sealed Road Surfaces Condition (stripping and cracking)

Surface Defect Group	Length	% Of Network	Average 7 Councils
'0-10	793,743	94.9%	78%
'10-20	12,701	1.5%	5%
'20-30	8,308	1%	3%
'30-40	5,141	0.6%	3%
'40-50	4,104	0.5%	3%
'50-60	2,771	0.3%	1%
'60-70	1,500	0.2%	1%
'70-80	2,321	0.3%	1%
'80-90	2,200	0.3%	1%
'90-100	3,934	0.5%	3%

The network is one of the best we have surveyed, which is due to the councils resurfacing frequency of 12 years. This will ensure that pavement are well protected.

Table 2.4.1.b Sealed Roads Pavement Condition – Failures and Rutting

Pavement Defect Group	Length	% Of Network	Average 7 Councils
'0-10	741,194	88.6%	81%
'10-20	47,439	5.7%	5%
'20-30	16,536	2%	3%
'30-40	9,248	1.1%	2%
'40-50	4,306	0.5%	2%
'50-60	1,750	0.2%	1%
'60-70	1,000	0.1%	1%
'70-80	2,633	0.3%	1%
'80-90	4,000	0.5%	1%
'90-100	8,617	1.0%	3%

The network is one of the best we have surveyed. Council are maintaining good pavements with less than 4% that have greater than 30% defects.

Table 2.4.1.c Sealed Roads Pavement Condition – International Roughness Index

IRI	Actual Length	% Of Network	Average Councils
2	2,486	0.3%	2%
3	52,295	6.2%	17%
4	245,706	29.4%	29%
5	268,365	32.1%	25%
6	156,880	18.7%	14%
7	70,830	8.5%	7%
8	21,054	2.5%	3%
9	8,100	1.0%	2%
10	2,834	0.3%	1%
11	2,608	0.3%	0%
=>12	5,565	0.7%	0%

IRI is a measure of pavement undulation (not necessarily actual failures like rutting) and affects the ride characteristics of the road and the feel the user will experience (the higher the IRI the slower users can drive). It is considered based on research that pavements that are beyond IRI 7 and 8 affect the ride of the users. For the network, this amounts to 13.3% greater than or equal to IRI 7 and 4.8% greater than or equal to IRI 8. The other council's surveyed results are 6% of the network for IRI greater than or equal to 8.

Table 2.4.1.d Unsealed Roads Pavement Condition – % Gravel Coverage and Average Surface Roughness

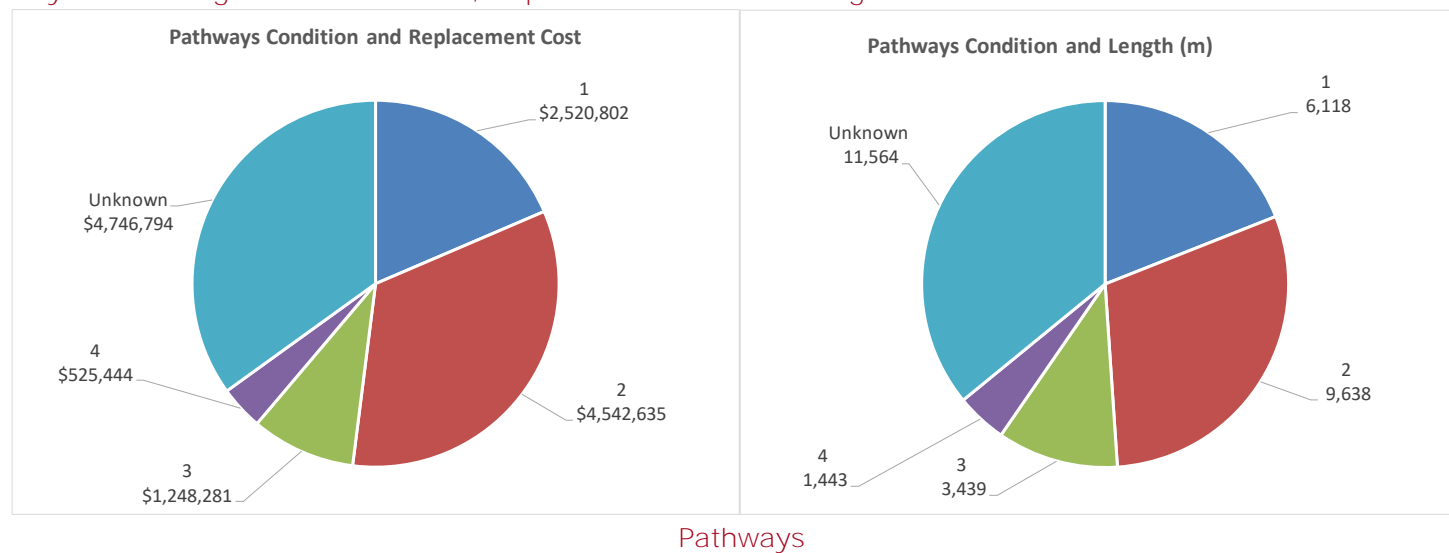
Road Class	Length	IRI	% Gravel Coverage by Length
4A	78,995	8	91
4B	385,832	8	90
4C	453,929	8	93
5A	142,972	8	81
5B	554,973	8	85
8A	1,697	8	90
9B	12,549	8	77
Average		8	87
Regional Average		7	47

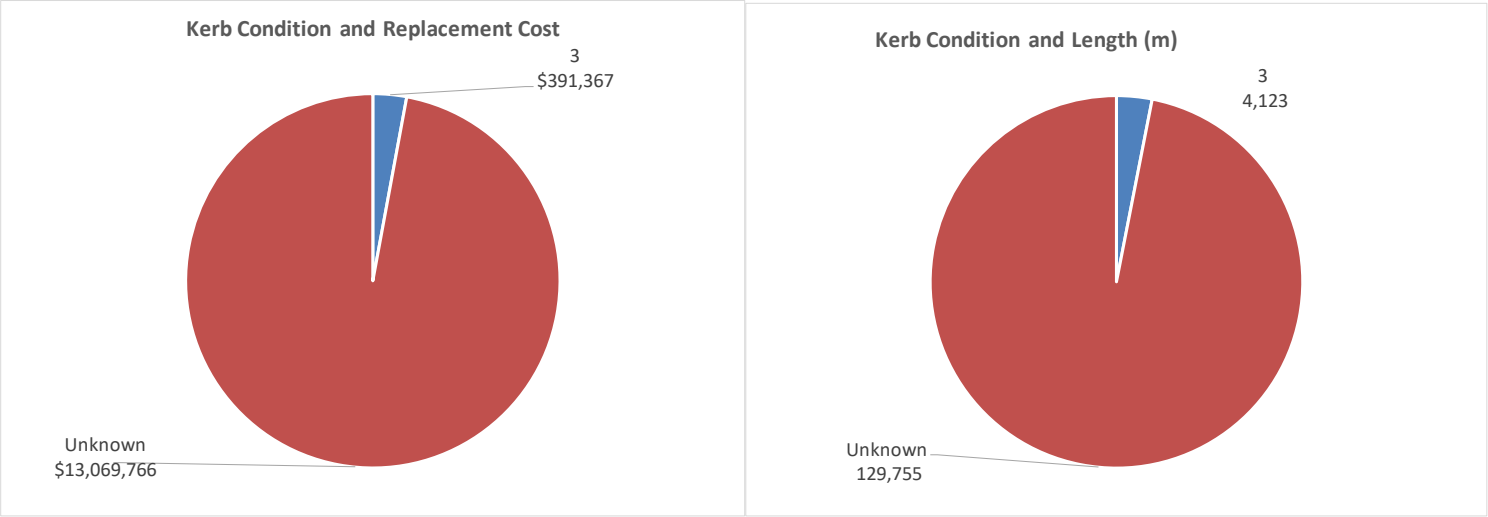
Council running surface condition are on the higher side, yet the gravel coverage is very good. Councils strategy to gravel a width of 4m is enabling council to achieve a lot more length each year than other councils surveyed. Both services are purely driven by the amount of funds council has to spent or external funding that is provided.

2.4.2 Other Assets

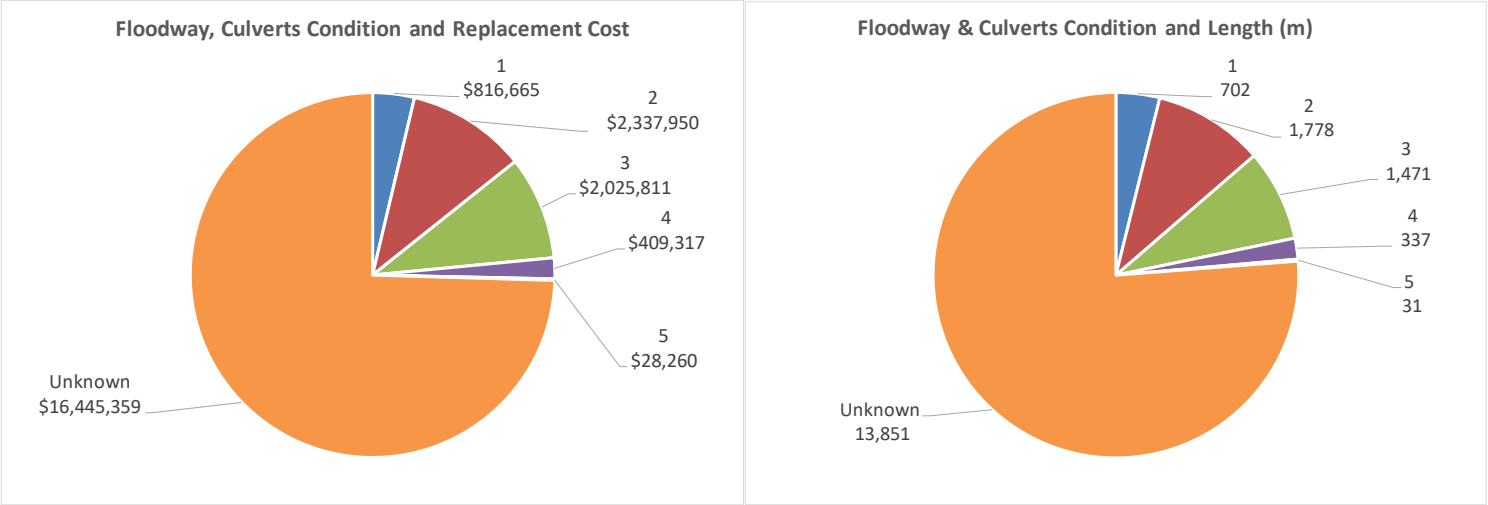
Summary condition data for other assets is provided in the following pie charts. Note: condition scales used are 1 (as new/excellent) to 5 (failed).

Figure 2.4.2.a Pathway Assets – Age Based Condition, Replacement Cost and Length





Kerb



Floodway and Culverts

2.5 Asset Useful Life and Relationship to Service

The valuation results assessment of useful life (UL) of assets are shown in Table 2.5.a.

Table 2.5.a Average Useful Life For Infrastructure Categories

Subcategory	Average Useful Life (Years)
Sealed Roads - surface	12-15
Sealed Roads - pavement	60-85
Sealed Roads - Formation	200
Unsealed Roads - pavement	17
Unsealed Roads - formation	200
Kerb	85
Pathways	15 Bit/60 Conc
Carparks - surface	12-15
Bridges	100
Culverts	60
Drainage Pits	60
Drainage Pipes	60

There is a relationship with useful life and some of the major service levels chosen by council, below is some background to help the organisation understand the linkage.

Service levels relate to the condition of the road and are measured differently for each asset type. For sealed surface it is the % of area of cracking and stripping.



From our experience with other organisations we have found that the % of defects and useful life relationship looks like the below table in general.

Useful Life	Surface Defects by % Area
10	'0-10
11	'10-20
12	'20-30
13	'30-40
14	'40-50
15	'50-60
16	'60-70
17	'70-80
18	'80-90
19	'90-100

Council has chosen % defects >15 with an associated useful life of 12 years. The average among councils in the region is about 15 years. With the best at 12 years the worst at 19 years.

For sealed pavement it is the % of area of rutting and failures.



From our experience with other organisations we have found that the % of defects and useful life relationship looks like the below table in general.

Useful Life	Pavement Defects by % Area
30	'0-10
35	'10-20
40	'20-30
45	'30-40
50	'40-50
55	'50-60
60	'60-70
65	'70-80
70	'80-90
75	'90-100

Council has chosen % >70 with an estimated life of 60 years. The average among councils is 60-70% with the best at 40-50% defects and the worst at 90-100% defects.

For unsealed pavement it is the % of area of subgrade (visually logged instances of subgrade appearing in the road).



Subgrade Breakout

From our experience with other organisations we have found that the % of defects and useful life relationship looks like the below table in general.

Useful Life	% Subgrade
7	0
8	10%
9	20%
10	30%
12	40%
14	50%
18	60%
23	70%
35	80%
70	90%

Council has chosen 65% of gravel coverage is acceptable (this is the service level) and therefore the useful life is between 12-18 years.

3.0 LEVELS OF SERVICE

3.1 Background

3.1.1 Road Classifications

Council's roads are classed as shown Table 3.1.1.a.

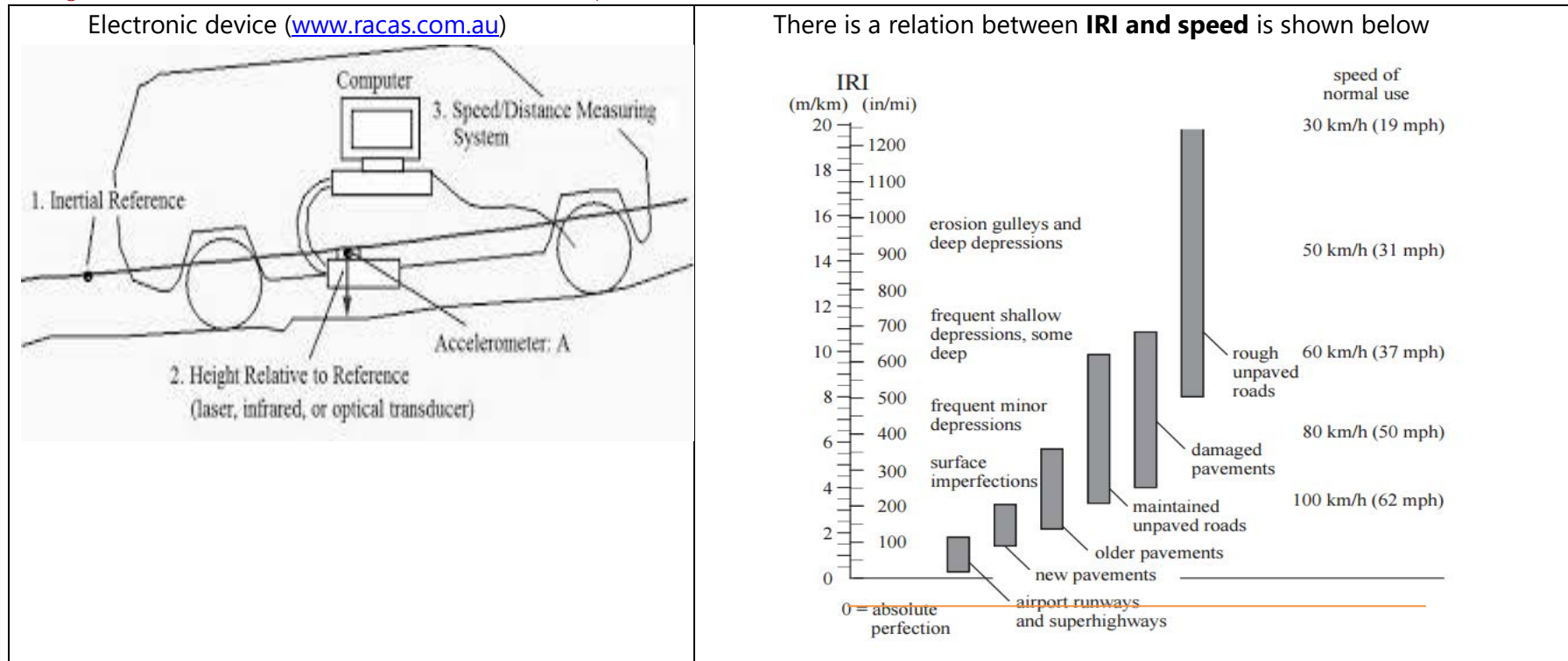
Table 3.1.1.a Road Classes

Class	Rural Sealed (km)	Urban Sealed (m)	Rural Unsealed (km)	Urban Unsealed (m)	Total (km)
3C	65				65
4A	375		43		418
4B	82		380		462
4C	81		481		561
5A	44		148		191
5B	23		603		626
7A		3			3
7B		7			7
8A		7			7
8B		16			16
9A		7		2	8
9B		107		13	119
Grand Total	669	146	1654	14	2483
	27%	6%	67%	1%	100%

3.1.2 Roughness Measurement

There are numerous methods of defining the smoothness (or roughness) of a running surface using either electronic or visual onsite assessments. All measurements have a direct relationship to driver speed and comfort. The smoother the road the faster and safer the user can travel over the road from one location to another. The industry standard value for measuring the roughness of a road is called the International Roughness Index (IRI). It is a measure of the axle movements along the road. For example, a new sealed road would normally rate an IRI value of 2. An unsealed road after grading would rate 3 to 4.

Figure 3.1.2.a IRI Measurement And Speed

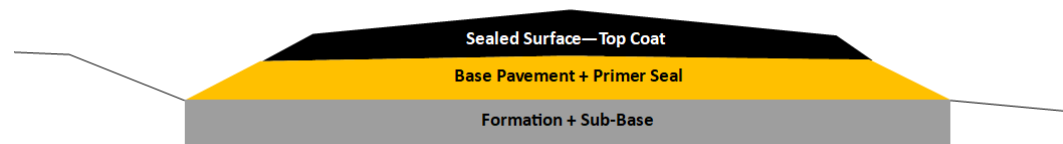


3.2 Service Levels - Sealed Road Surfaces

***Service Description:** Sealed surface condition maintained to protect the underlying pavement from water infiltration and damage, within funding restraints. Provide an aesthetically pleasing surface to suit the community expectations within funding restraints.*

How is it Defined and Measured?

Water infiltration through the sealed surface via defects causes early pavement failure. Therefore, surface defects are the major measurable items for the determination of this service level. A typical cross section of a sealed road and photo examples of common surface defects are shown below in Figure 3.2.a - Typical Cross Section of a Sealed Road and Surface Defects.



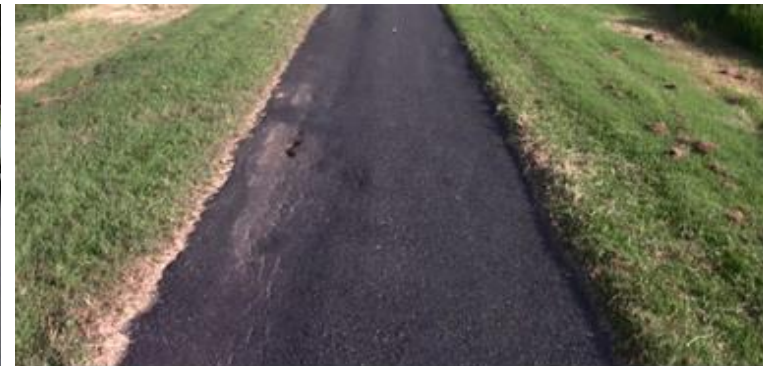
Sealed Road Profile



Stripping



Cracking



Rutting

Service levels for sealed road surfaces are provided in Table 3.2.a.

Table 3.2.a Service Levels - Sealed Road Surfaces

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance																						
COMMUNITY LEVELS OF SERVICE																										
Function	Enable the Movement of People and Goods in an Efficient Manner	Number of reported complaints	Non-Safety Matters: < 30 per month. Safety Matters: 0 per month.	No available data																						
Safety	Safe environment	Number of reported incidents/accidents	No Incidents per Accidents caused by facilities or processes	No available data																						
TECHNICAL LEVELS OF SERVICE																										
Maintain A Sound Running Surface Cost Effectively While Only Servicing Roads When Required.																										
Condition Measure	Sealed Surface Condition maintained to provide adequate running surface	<p>Age of the Surface is Greater than 10 years. The reseal history is kept current in the mapping attribute table for the road segment.</p> <p>Defect % by Area for the following defects.</p> <ul style="list-style-type: none">StrippingCracking	<p>Surface enrichment is based on intervention criteria:</p> <p><u>Criteria A:</u> Age of the surface >10 years and visually verified.</p> <p><u>Criteria B:</u> % area of Surface Defects >15% (stripping & cracking - fix before pavement is exposed). This is visually verified.</p> <p><u>Criteria C:</u> < 30% of rutting pavement failures present by area and/ or if available IRI <8 (avoid resurfacing a failing pavement)</p>	<div><p>Rural-</p><table><caption>Rural Surface Condition by Age (% Network)</caption><thead><tr><th>Age Segment</th><th>Percentage</th></tr></thead><tbody><tr><td>1</td><td>31%</td></tr><tr><td>2</td><td>6%</td></tr><tr><td>3</td><td>7%</td></tr><tr><td>4</td><td>5%</td></tr><tr><td>5</td><td>8%</td></tr><tr><td>6</td><td>10%</td></tr><tr><td>7</td><td>9%</td></tr><tr><td>8</td><td>6%</td></tr><tr><td>9</td><td>7%</td></tr><tr><td>10</td><td>11%</td></tr></tbody></table></div>	Age Segment	Percentage	1	31%	2	6%	3	7%	4	5%	5	8%	6	10%	7	9%	8	6%	9	7%	10	11%
Age Segment	Percentage																									
1	31%																									
2	6%																									
3	7%																									
4	5%																									
5	8%																									
6	10%																									
7	9%																									
8	6%																									
9	7%																									
10	11%																									

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance																						
				<div>Urban-</div> <div><p>Urban Surface Condition by Age (% Network)</p><table border="1"><thead><tr><th>Age Group</th><th>Percentage</th></tr></thead><tbody><tr><td>1</td><td>12%</td></tr><tr><td>2</td><td>8%</td></tr><tr><td>3</td><td>16%</td></tr><tr><td>4</td><td>4%</td></tr><tr><td>5</td><td>16%</td></tr><tr><td>6</td><td>24%</td></tr><tr><td>7</td><td>5%</td></tr><tr><td>8</td><td>8%</td></tr><tr><td>9</td><td>2%</td></tr><tr><td>10</td><td>5%</td></tr></tbody></table></div> <div><p>Criteria C is met visually so roads that are failed are not in the reseal program, however they are placed in the pavement renewal program.</p></div>	Age Group	Percentage	1	12%	2	8%	3	16%	4	4%	5	16%	6	24%	7	5%	8	8%	9	2%	10	5%
Age Group	Percentage																									
1	12%																									
2	8%																									
3	16%																									
4	4%																									
5	16%																									
6	24%																									
7	5%																									
8	8%																									
9	2%																									
10	5%																									
Delivery Measure		Cost/yr	Based on Criteria A the 10 yr average spend is \$1.4 M. this is inline with annual depreciation.	Current spend \$1.4 M and Service Level is being met based on current spends – no gap.																						
Safety	Remove hazards	Respond to complaints or rolling inspection program	High risk items repaired within given time frames. Risk Rating: Low - As resources permit Medium - <14 days High – make safe <24 hrs, Repair <3 days Very High - Make safe <4 hrs, Repair <24 hrs	No Available data																						

3.3 Service Levels - Sealed Road Pavements

Service Description: Maintain the structure integrity of the pavement to ensure the running surface condition is kept to standard.

How is it Defined and Measured?

The major structural defect in a sealed pavement is rutting and the extremes of this is an actual failure as observed in Figure 3.3.a. Also, International Roughness Index (IRI) is a measure of pavement movement and ultimately failure. Service levels for sealed road pavements are provided in Table 3.3.a.

Figure 3.3.a Example defects



Rutting defect– bulging and shoving



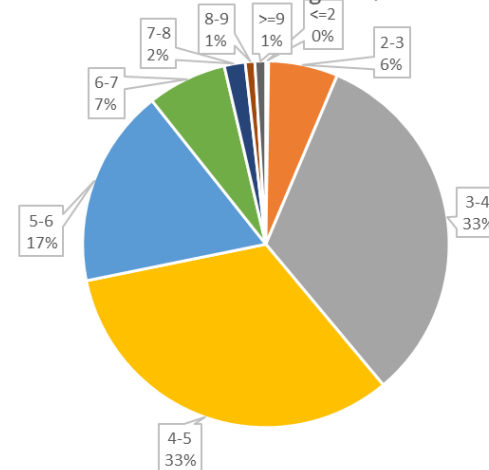
Failure – bitumen broken

Service levels for sealed road pavements are provided in Table 3.3.a.

Table 3.3.a Service Levels - Sealed Road Pavements

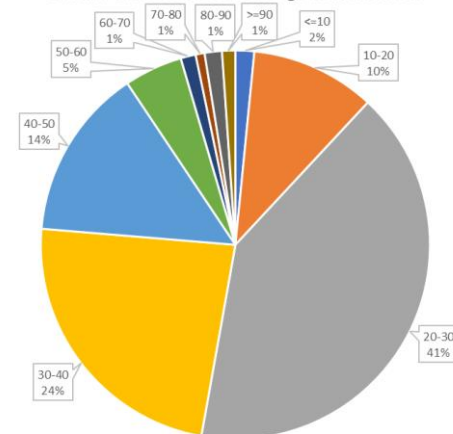
Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
COMMUNITY LEVELS OF SERVICE				
Function	Enable the Movement of People and Goods in an Efficient Manner	Number of reported complaints	Non-Safety Matters: <30 per month. Safety Matters: 0 per month.	No Available data
Safety	Safe environment	Number of reported incidents/accidents	No Incidents per Accidents caused by facilities or processes	No Available data
TECHNICAL LEVELS OF SERVICE				
Maintain A Structurally Sound Road Pavement Cost Effectively While Only Servicing Roads When Required.				
Condition Measure	Sealed Pavement Condition maintained to provide an adequate running surface	International Roughness Index ≥ 9 or Defect 70% by Area for the following defects. <ul style="list-style-type: none"> Rutting Failures 	Rural- IRI > 9 relates to risk on rural roads from speed – the rougher the road the higher the risk) Urban - Greater than 70% defects as rutting or failures (speed environment risk is based on defects)	Rural-

Rural Pavements IRI Range as % Network



Urban –

Urban Pavements Defect Range as % Network



Delivery Measure	Sealed Pavement Condition maintained to provide an adequate running surface	Annual Cost/Location	Required pavement renewals spend is approximately on average \$430k per year for next 10-years or \$997k per year for the next 20 years.	Forward Works Plan renewals: 2019/20 \$2.8 m 2020/21 budget \$3 m. Budget for next 10 years is \$2.8 m.
Safety	Remove hazards	Respond to complaints or rolling inspection program	High risk items repaired within given time frames Risk Rating: Low - As resources permit Medium - <14 days High – Make safe <24 hrs, Repair < 3 days Very High - Make safe <4 hrs, Repair <24 hrs	No Available data

3.4 Sealed Pavement (Shoulders)

Service Description: Maintain an adequate shoulder to ensure vehicles can pass safely on a narrow sealed roads.

Performance Target: Required pavement renewals spend is on average \$150,000 per year for next 10-years based on the service level of 15 km/year for the forward works plan.

Current Performance: \$150,000 adopted for 2018/19 budget for maintenance. Renewal needs to be considered in future budgets.

3.5 Service Levels - Unsealed Road Surfaces

Service Description: Unsealed roads provide a running surface that vehicle can transverse on from one location to another safely. Trip time is dependent on the smoothness of the road and geometric restraints.

Service Measures:

Criteria: Intervention for Roughness Condition between 6-8 IRI before engaging full maintenance, its placement on works program. Using electronic roughness device for measurement. The higher the class of road the more regularly grading is required.

Table 3.5.a Service levels - unsealed roads surface

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
COMMUNITY LEVELS OF SERVICE				
Function	Enable the Movement of People and Goods in an Efficient Manner	Number of reported complaints	Non-Safety Matters: < 30 per month. Safety Matters: 0 per month.	No Available data
Safety	Safe environment	Number of reported incidents/accidents	No Incidents per Accidents caused by facilities or processes	No Available data
TECHNICAL LEVELS OF SERVICE				
Maintain an Adequate Running Surface Condition Cost Effectively While Only Servicing Roads When Required.				
Condition Measure	Graded km per Road Class (based on Modelling tool and IRI intervention)	Measure in terms of International Roughness Index	Criteria: Intervention for Roughness Condition is between 6-8 IRI before engaging full maintenance. 80% of all roads at intervention before grading.	No available data. Future collection form to be used record information. Need condition data before grading works occurs.
Delivery Measure	Graded km (based on Modelling tool and IRI intervention)	Modelling Tool determines the estimate km that would be graded to meet Condition criteria.	4700km graded/yr for IRI average of 8. Based on model.	No available data. Future collection form to be used record information Need to implement a basic works order system to record this information.
Delivery Measure	Cost		Total \$1.4M to achieve an IRI of 8. Based on Model	Average spending for last 5 years is \$1.7M No gap in funding.

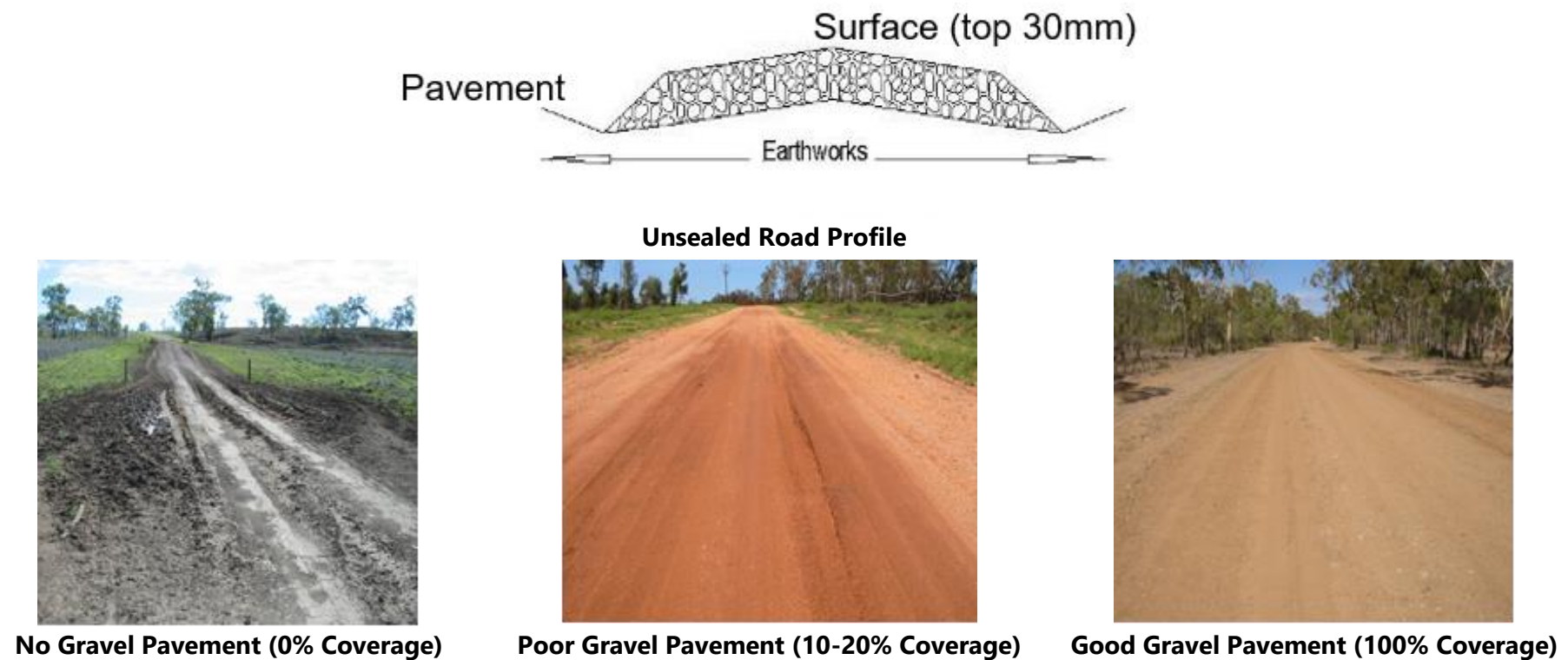
Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
				<p>Average spends have been \$2-2.7M/yr. It seems to include gravel cost of about \$700k. It is recommended that the gravel costs are transferred to capital and the pavement service level.</p> <p>This mean average spend is about \$2M, this is still over compared to the modelling. We need more history on works and condition to confirm if we are overserving or to determine if the model is not correct.</p>
Safety Measure	Remove hazards	Based on visual guideline and procedure for repair time frames	<p>High risk items repaired within given timeframes</p> <p>Risk Rating:</p> <p>Low - As resources permit</p> <p>Medium - < 14 days</p> <p>High – make safe <24 hrs, Repair > 3 days</p> <p>Very High - Make safe < 4 hrs, Repair < 24 hrs</p>	No available data.

3.6 Service Levels - Unsealed Road Pavements

How is it Defined and Measured?

Wet weather access is defined in terms to how much imported gravel or natural pavement is provided on top of the existing formation of an unsealed road. Unsealed roads with limited gravel pavement will be at risk, after rain, for a vehicle not to be able to transverse over the road safely.

Figure 3.6.a Typical Cross Section of an Unsealed Road and Gravel Pavements



Service Description: *Unsealed roads provide wet weather access via a gravel pavement so that vehicles can transverse from one location to another safely after a significant rain event within funding restraints. Trip time is depending on the gravel quality and thickness and geometric drainage restraints.*

Service levels for unsealed roads surface are provided in Table 3.6.a.

Table 3.6.a Service Levels - Unsealed Road Pavements

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
COMMUNITY LEVELS OF SERVICE				
Function	Provide sections of Gravel Pavement to assist with wet weather access when funds are available.	Number of reported complaints	Non-Safety Matters < 30 per month. Safety Matters 0 per month.	No Available data
Safety	Safe environment	Number of reported incidents/accidents	No Incidents per accidents caused by facilities or processes	No Available data
TECHNICAL LEVELS OF SERVICE				
Maintain A Gravel Pavement for Wet Weather Access Within Funding Restraints.				
Condition Measure (subgrade a measure of wet weather accessibility)	Adequate Wet weather access	Assessed as % of Gravel Material visually presented by Length	Council plan to fund 65% in this plan. Some of the improvements have come via the flood damage program.	Survey result of current Gravel Coverage by Length Class 4A=91% gravel coverage Class 4B=90% gravel coverage Class 4C=93% gravel coverage Class 5A=81% gravel coverage Class 5B=85% gravel coverage Class Others=77-90% gravel coverage Average is 87%

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
Delivery Measure	Cost	Cost per year (Measure of cost effectiveness)	<p>\$1.55M/year is estimated to obtain following Gravel Coverage;</p> <p>Class 4A=65% gravel coverage Class 4B=65% gravel coverage Class 4C =65% gravel coverage Class 5A=65% gravel coverage Class 5B=65% gravel coverage</p> <p>Obtained from Modelling Tool \$2.73M/yr is required to keep existing services coverage of 87%</p>	<p>Average spend for the last 5 years is \$1.36M/year.</p> <p>Council need to realise that the current levels of service on the network will reduce to 50% over time based on current spending</p>
Safety Measure	Remove hazards	Based on visual guideline and procedure for repair timeframes	<p>High risk items repaired within given timeframes</p> <p>Risk Rating: Low - As resources permit Medium - < 14 days High – make safe < 24hrs, Repair < 3 days Very High - Make safe < 4hrs, Repair < 24hrs</p>	No data available

3.7 Service Levels – Drainage Assets

Service Description: Maintain an adequate drainage network to support the road surface condition so vehicles can pass over the road under normal weather conditions.

Typical examples of drainage including kerb assets are shown in Figure 3.7.a below:

Figure 3.7.a Examples of Typical Drainage



Urban Drainage



Rural Drainage



Kerb

Table 3.7.b Service Levels - Drainage

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
COMMUNITY LEVELS OF SERVICE				
Function	Maintain an adequate drainage network to support the road network	Number of reported complaints	Non-Safety Matters: < 30 per month. Safety Matters: 0 per month.	No Available data
Safety	Safe environment	Number of reported incidents/accidents	No Incidents per accidents caused by facilities or processes	No Available data
TECHNICAL LEVELS OF SERVICE				
Condition Measure	Maintain an adequate drainage network to support the road surface condition so vehicles can pass over the road under normal weather conditions.	Structural integrity, via bi-annual visual inspections of the oldest asset stock, to produce forward works program.	Using a condition rating process as described in Table 3.7.c. Future works are for condition 4 and 5. OR On average 0-1.3% of network is likely to be renewed each year.	Limited data available Floodway were condition inspected in 2018. Others drainage assets to be planned over the next 2 years.
Delivery Measure	Maintain an adequate drainage network to support the road surface condition so vehicles can pass over the road under normal weather conditions.	Annual Costs	Based on experience it is expected to spend \$100k per year Note: \$492 k is the annual depreciation amount.	Budgets – 2019/20 = \$379 k 2020/21 = \$387 k 2022/22 = \$395 k Budget is closely matching the annual depreciation which is good
Safety	Remove hazards	Respond to complaints or rolling inspection program	High risk items repaired within given timeframes. Risk Rating: Low - As resources permit, Medium - <14 days, High – make safe < 24hrs, Repair < 3 days, Very High - Make safe < 4hrs, Repair < 24hrs	No Available data

			OR Inspections with planned repaired	
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Table 3.7.c Condition Ratings Based On Remaining Useful Life

Rating	Description	% Remaining Useful
0	Brand New	100%
1	Excellent (only normal maintenance required)	95%
2	Good (minor defects only/minor maintenance required up to 25%)	75%
3	Average (significant maintenance required 50%)	50%
4	Poor (requires replacement within next 1-5 years)	20%
5	Asset Failure (requires immediate replacement)	5%

3.8 Service Levels - Bridges and Major Culverts

Service Description: Maintain an adequate Bridge or major drainage structure to support the road surface condition so vehicles can pass over the road under normal wet weather conditions. An example of a typical bridge is shown in Figure 3.8.a below:

Figure 3.8.a Example of Typical Bridge



Table 3.8.a Service Levels – Bridges And Major Culverts

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
COMMUNITY LEVELS OF SERVICE				
Function	Maintain an adequate bridge condition to support the road network	Number of reported complaints	Non-Safety Matters: < 30 per month. Safety Matters: 0 per month.	No Available data
Safety	Safe environment	Number of reported incidents/accidents	No Incidents per accidents caused by facilities or processes	No Available data
TECHNICAL LEVELS OF SERVICE				

Condition Measure	Maintain an adequate bridge structure to support the road surface condition so vehicles can pass over the road under normal weather conditions.	Structural integrity, via visual inspections to produce forward works program. Classification (TDMR): 'major' culverts meets the following criteria: – metal culverts (steel and aluminium): at least one barrel (cell) with span, height or diameter ≥ 1.2 m, or all other culverts: pipes with at least one barrel (cell) with diameter ≥ 1.8 m, or rectangular/oval/arch culverts at least one barrel (cell) with span > 1.8 and height > 1.5 m	Future works are condition 9 and 10 based on the Maloney condition scale.	Peter Maloney Inspected all Bridges and major drainage structures. Structrues were identified to be in very good condition overall. There was no condition 9 and 10 identified. See report for further details
Delivery Measure	Maintain an adequate drainage network to support the road surface condition so vehicles can pass over the road under normal weather conditions.	Annual Costs	Based on Moloney nothing is required. Or Annual Depreciation is \$195k/yr (Bridges \$142K and Major Culverts 53K/yr)	\$0
Safety	Remove hazards	Respond to complaints or rolling inspection program	High risk items repaired within given timeframes Risk Rating Low - As resources permit Medium - < 14 days High – make safe < 24 hrs, Repair < 3 days Very High - Make safe < 4 hrs, Repair < 24 hrs	No Available data

3.9 Service Levels – Footpaths (pathways)

Service Description: Council to provide accessible and safe pedestrian facilities.

A typical concrete footpath example is shown in Figure 3.9.a below:

Figure 3.9.a

Typical Footpath



Table 3.9.b Service Levels – Footpaths (Pathways)

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
COMMUNITY LEVELS OF SERVICE				
Function	Footpath enables a resident to get from one point to another in a continuous and uninterrupted path of travel	Number of reported complaints	Non-Safety Matters: < 30 per month. Safety Matters: 0 per month.	No Available data OR N/A
Safety	Safe environment	Number of reported incidents/accidents	No Incidents per accidents caused by facilities or processes	No Available data Or N/A
TECHNICAL LEVELS OF SERVICE				
Condition Measure	Council to provide accessible and safe pedestrian facilities	Footpath assessments are completed on an annual rolling inspection program focussing on the development of a prioritised works program. Condition and Costs	Condition 4 and 5 footpaths placed on renewal program 12 section were identified as condition 4. Total length of 1440m or 3380m2 Value of replacement costs \$525k Based on experience it is expected that \$150k per year will be spent on the path renewals.	Budget 19/20 -492k 20/21 -502k 21/22 -512k
Safety	Remove hazards	Respond to complaints or rolling inspection program	High risk items repaired within given timeframes Risk Rating (IPWEA page 43): Low - As resources permit Medium - < 14 days High – make safe < 24 hrs, Repair < 3 days Very High - Make safe < 4 hrs, Repair < 24 hrs OR Inspections with planned repaired	No Available data

3.10 Service Levels – Aerodromes

Service Description: As per Sealed Surfaces and Sealed Pavements

Performance Target: Nil required renewals spend for next 10-years.

Current Performance: \$150,000 for renewals in 2017/18 with nil budgeted in forward works plan and annual maintenance spend averages approximately \$30,000 - no funding gap.

4.0 FUTURE DEMAND

Capital works proposed to address future needs and issues have been included in the forward works program, although will these will require verification and confirmation in view of AMP outcomes.

At this time, demand is not viewed as influencing the classes of assets covered by this AMP over the next 20 years.

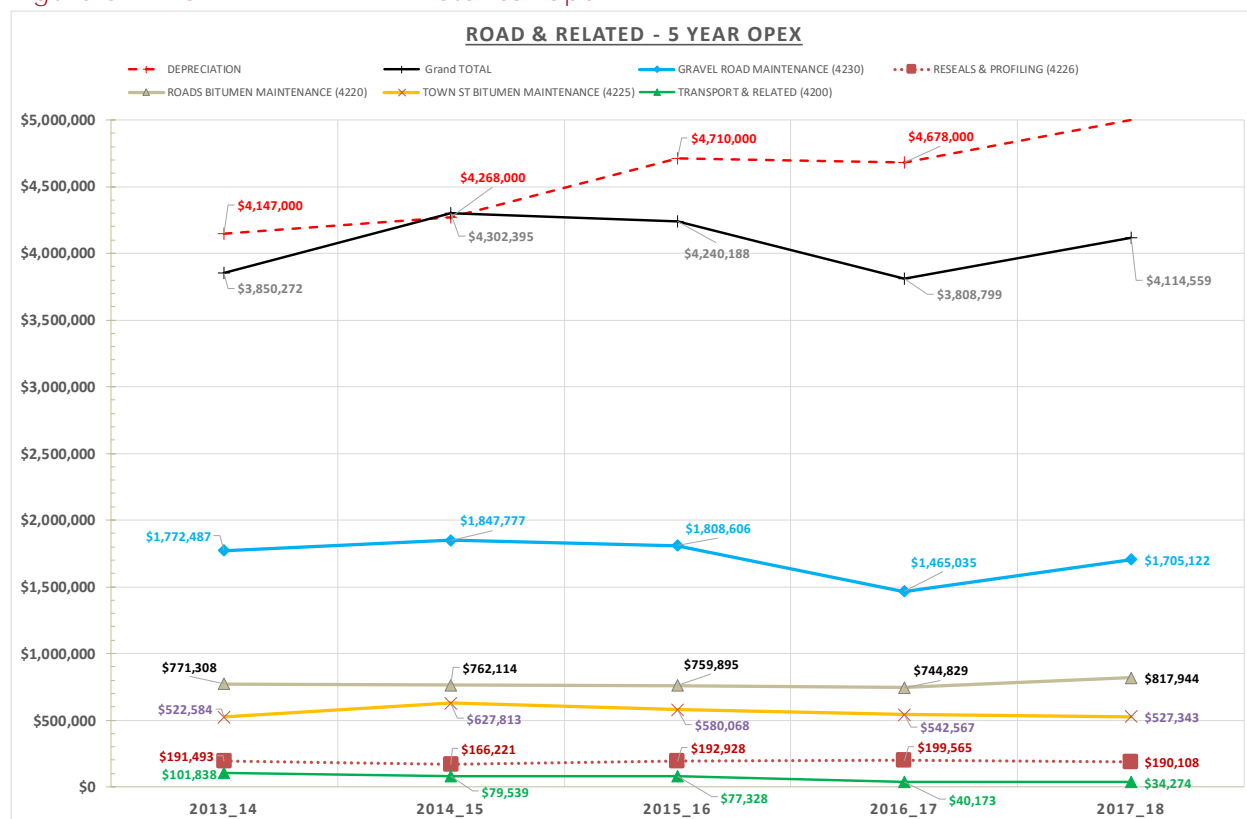
5.0 LIFECYCLE MANAGEMENT PLAN

5.1 Operations and Maintenance Expenditure (Opex)

5.1.1 Historical

The historical expenditure for the last five years (2013/14 to 2017/18) from the operations and maintenance job costing is summarised in Figure 5.1.1.a against depreciation and detailed in the Appendix.

Figure 5.1.1.a Historical Opex



The 5 year historical averages are:

GL 4200	\$66,630
GL 4220	\$771,218
GL 4225	\$560,075
GL 4226	\$188,063
GL 4230	\$1,719,805
GL 4250*	<u>\$757,451</u>
	\$4,063,243

*This item may include Public Toilet Cleaning

In addition, relevant aerodrome maintenance obtained from GL 4350 and 5200 is \$28,715.

The average annual Opex total is approximately \$4.23 million. The amounts for asset components are shown in Table 5.1.1.b.

Table 5.1.1.b Average Historical Opex by Asset Component

Asset Component	5 Years Average Annual Expenditure (\$)	% of Total Opex	Average Annual (\$/unit)	% of Replacement Costs
Sealed Surface	\$681,891	16.12%	\$863 per km	2.36%
Sealed Pavements	\$676,720	16.00%	\$717 per km	0.67%
Unsealed Pavements	\$1,719,805	40.65%	\$12,278 per km	1.84%
Stormwater	\$79,800	1.89%	-	0.35%
Kerb	\$13,126	0.31%	\$98 per km	0.10%
Pathways	\$34,154	0.81%	\$1,067 per km	0.25%
Access Roads and Carparks	\$4,616	0.11%	\$144 per km	0.37%
Traffic Facilities Management Devices	\$841,624	19.89%	-	48.15%
Bridge	\$-		-	
Aerodrome	\$28,715	0.68%	\$31,906 km	10.33%
Sealed Pavement (Shoulders)	\$150,000 (based on 18/19 budget)	3.55%	\$16,002 km	
Total	\$4,230,452	100.00%		

5.1.2 Future

The future annual Opex is based on adopted historical annual average of \$4.2 million and the increase in maintenance from new and upgrade works.

5.2 Capital Expenditure

5.2.1 New and Upgrade Works

5.2.1.1 Historical

The amounts in the for the last two years for new and upgrade works taken from Council's forward works plan are :

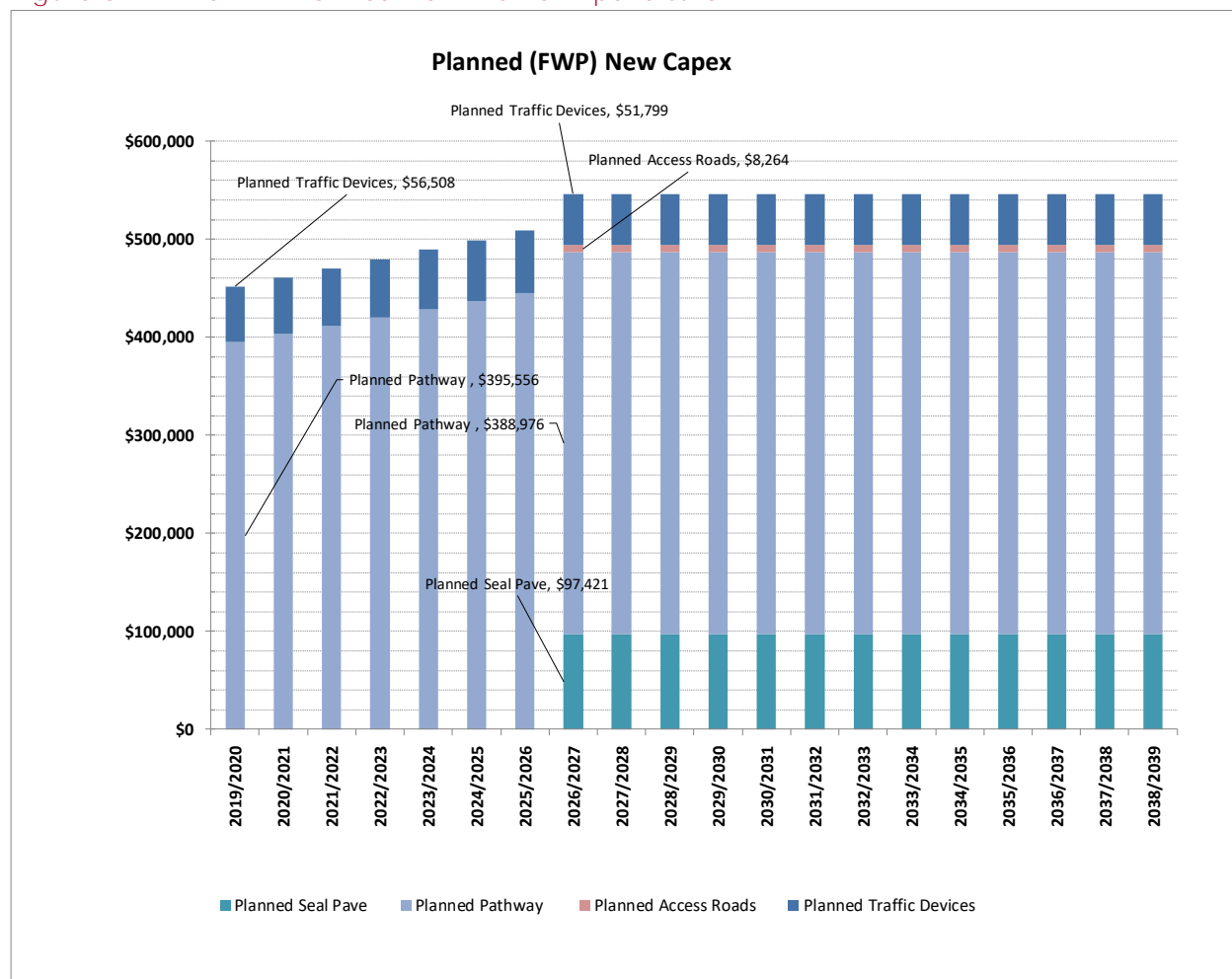
- approximately \$3.5 million for 2016/17 (43% new and 57% upgrade)
- approximately \$2.2 million for 2017/18 (14% new and 86% upgrade).

The budgeted amount for 2018/19 is approximately \$1.5 million (30% new and 70% upgrade).

5.2.1.2 Future - New works

Planned (budgeted) new works over the next 20 years 2019/20 to 2038/39 total approximately \$10.5 million (annual average \$0.52 million) taken from Council's forward works plan are shown in Figure 5.2.1.2.a.

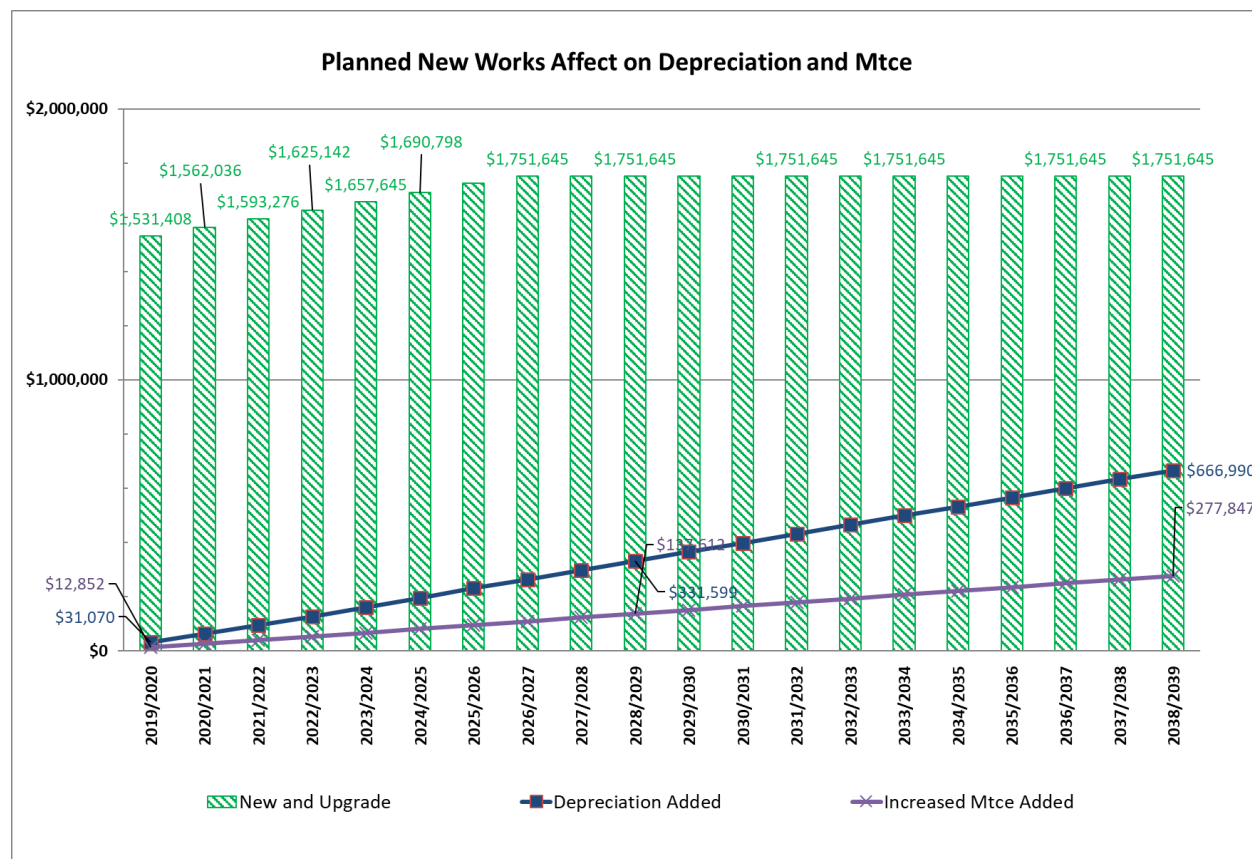
Figure 5.2.1.2.a Planned New Works Expenditure



The effect of the total of new asset growth expenditure on depreciation requirements and maintenance spend over 20 years is shown in Figure 5.2.1.2.b. Annual maintenance will

gradually increase, by approximately \$0.79 million in year 20 (average \$0.42 million per year) and depreciation by approximately \$0.67 million in year 20 (average \$0.35 million per year).

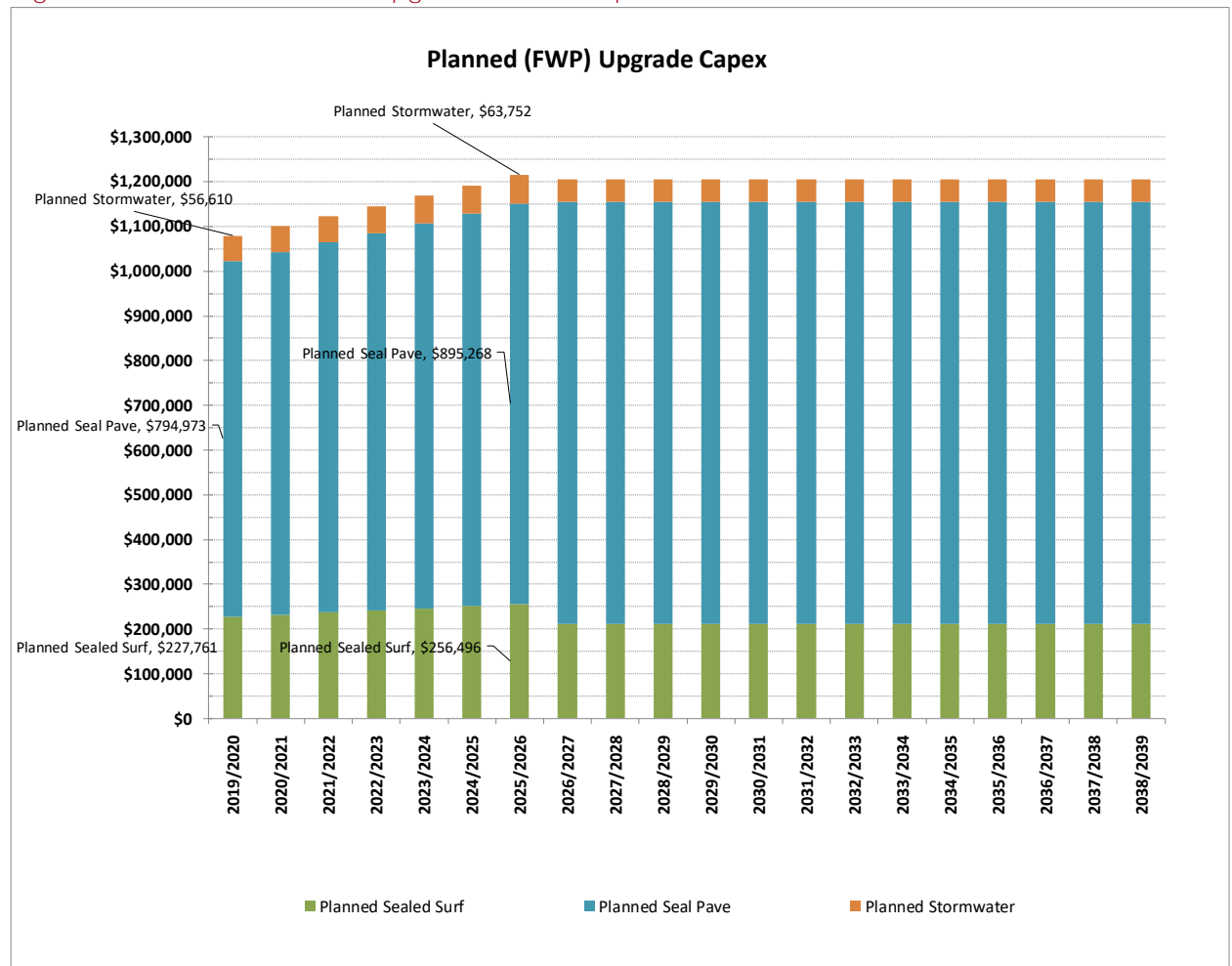
Figure 5.2.1.2.b Impact of Capital Expenditure on Depreciation and Maintenance



5.2.1.3 Future - Upgrade works

Planned (budgeted) upgrade works over the next 20 years 2019/20 to 2038/39 total approximately \$23.7 million (annual average \$1.18 million) taken from Council's forward works plan are shown in Figure 5.2.1.3.a.

Figure 5.2.1.3.a Planned Upgrade Works Expenditure



5.2.2 Renewals

5.2.2.1 Historical

The amounts for renewals for the last two years taken from Council's forward works plan are :

- approximately \$5.9 million for 2016/17
- approximately \$5.3 million for 2017/18.

The budgeted amount for 2018/19 is approximately \$5.6 million.

5.2.2.2 Future

Figure 5.2.2.2.a shows **'Planned' long-term renewals** expenditure taken from Council's forward works plan that is based on factors such as available funding, community expectations and the like.

Total planned renewals (forward works program) spend is approximately \$136.5 million over the next 20, which is 40% of the gross replacement cost. The majority of these renewals are \$30.3 million for sealed surfaces, followed by \$54.0 million for sealed pavements, \$33.6 million for unsealed pavements, \$3.9 million for pathways, \$3m for Shoulder and \$7.5 million for stormwater.

Figure 5.2.2.2.b shows **'Projected' long-term renewals** based on the desired services and determined from the recent condition assessments. Projected renewals total approximately \$89.5 million over 20 years (average \$4.47 million year). The amount for 2021/22 (year 3) is approximately \$4.57 million (\$1.4 million for surface reseals, \$1.1 million for sealed pavements, \$1.54 million for unsealed pavements, \$0.15 million for Sealed Pavement (Shoulders), Path, Kerb and \$0.1 million for Stormwater).

The majority projected expenditure over the next 10 years comprises approximately:

- \$13.7 million for sealed surfaces (388 km)
- \$4.3 million for sealed pavements (40 km)
- \$1.5 million for sealed pavement (shoulders) (150 km)
- \$15.45 million for unsealed pavements (for 50% gravel coverage)
- \$1.0 million for stormwater drainage.

Figure 5.2.2.2.a Planned Long-Term Renewals

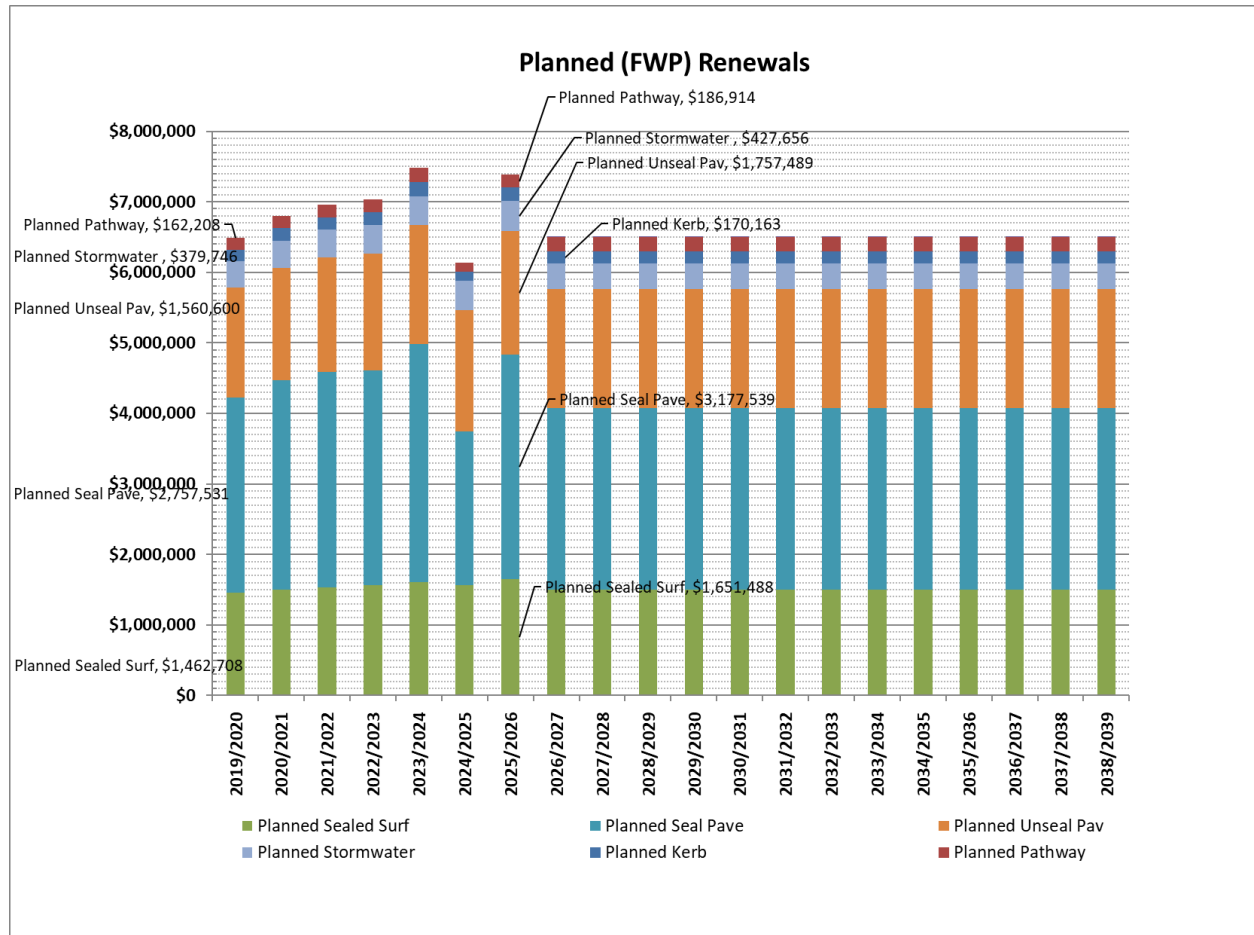


Figure 5.2.2.2.b Projected Long Term Renewals

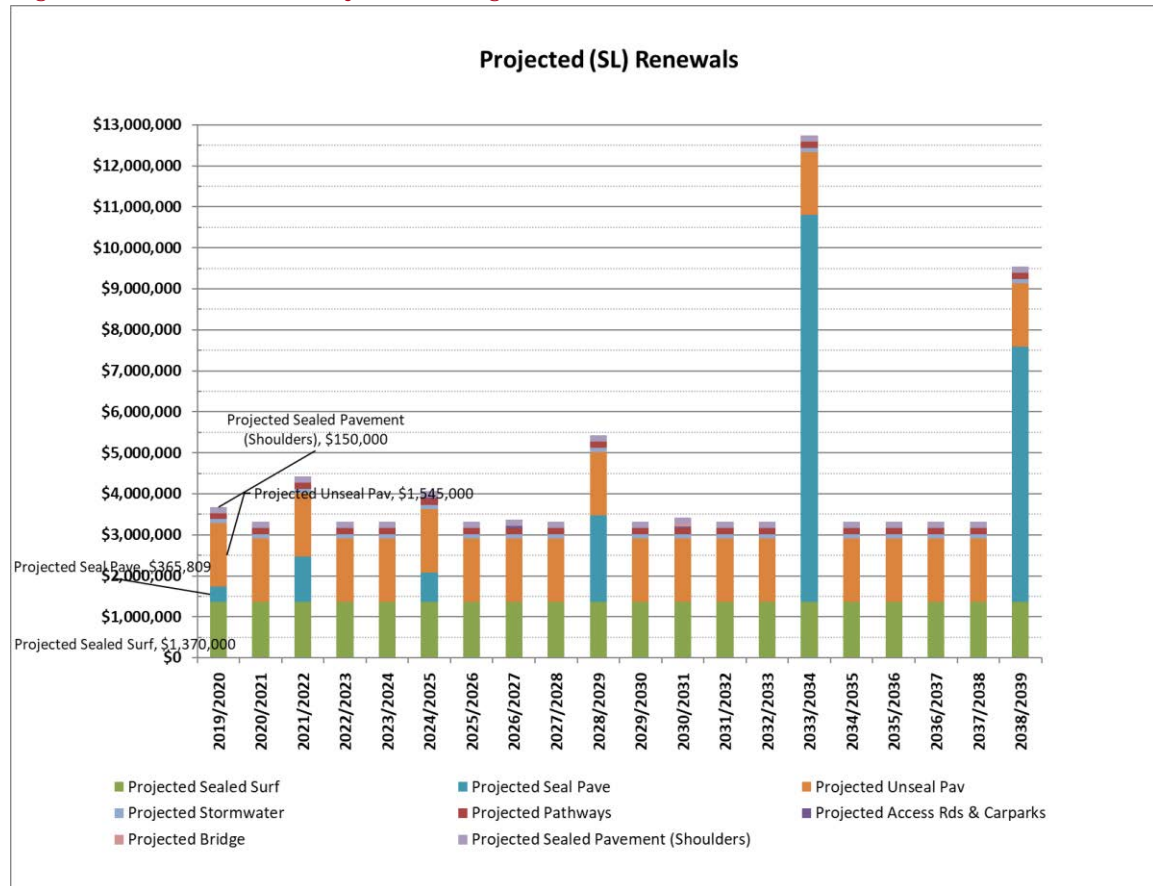
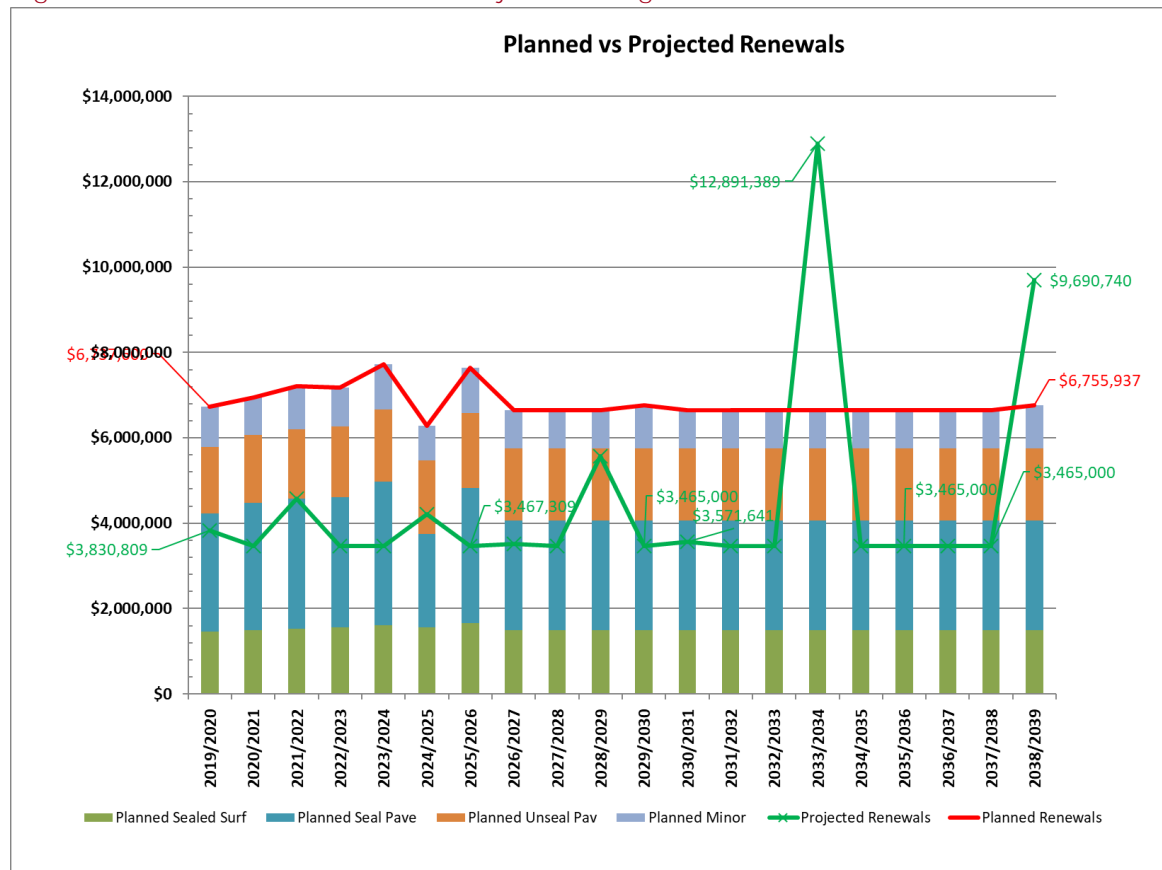


Figure 5.2.2.2.c compares total 'Planned' and 'Projected' long term renewals expenditure over the long term.

Figure 5.2.2.2.c Planned versus Projected Long-Term Renewals



The renewal averages for the next 20-years 2019/20 to 2039/40 are displayed in Figure 5.2.2.2.d. This chart shows the average annualised amounts for renewals both in forward planned works and from the comprehensive valuation and condition assessments. Accumulation of depreciation is also shown, although not a true reflection of the required long-term funding, it indicates the consumption of assets.

On average the planned renewals (Council's budget) is approximately \$6.8 million per year and the average projected renewals approximately \$4.47 million per year (from valuation condition renewals). On this basis it can be concluded overall that Council will be adequately funding renewals.

Figure 5.2.2.2.d Average Planned and Projected Long-Term Renewals and Depreciation

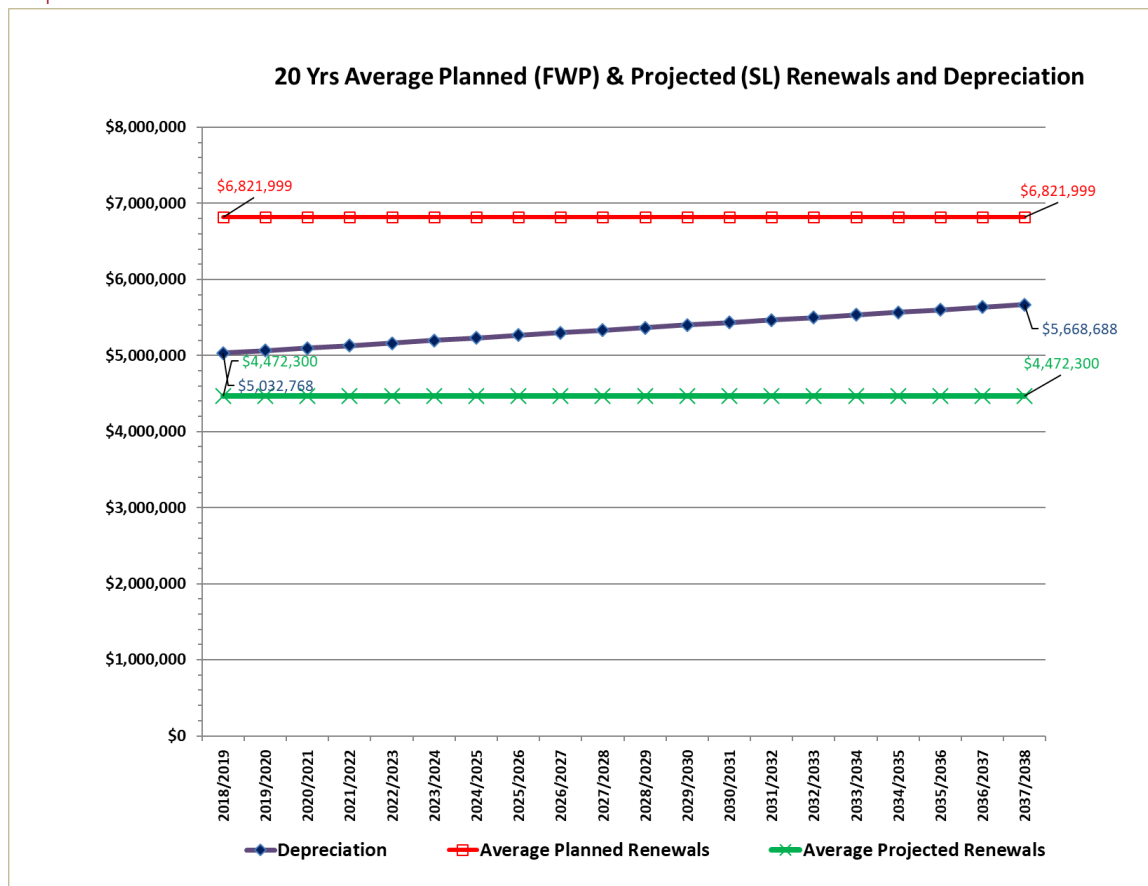


Figure 5.2.2.2.e indicates the accumulative gap in renewal funding between what Council plans to spend (FWP) and projections of required renewals (SL) over the next 20-years 2019/20 to 2039/40. The increasing negative gap to minus approximately \$47 million indicates a trend of overspending on renewals.

The comparison of Planned and Projected total renewals spend by asset components is shown in Table 5.1.1.b.

It is concluded, to manage the over allocations, Council needs to examine forward budgets for renewals for all asset classes in view of modelling outcomes.

Figure 5.2.2.2.e Accumulative Gap Between Planned and Projected Renewals

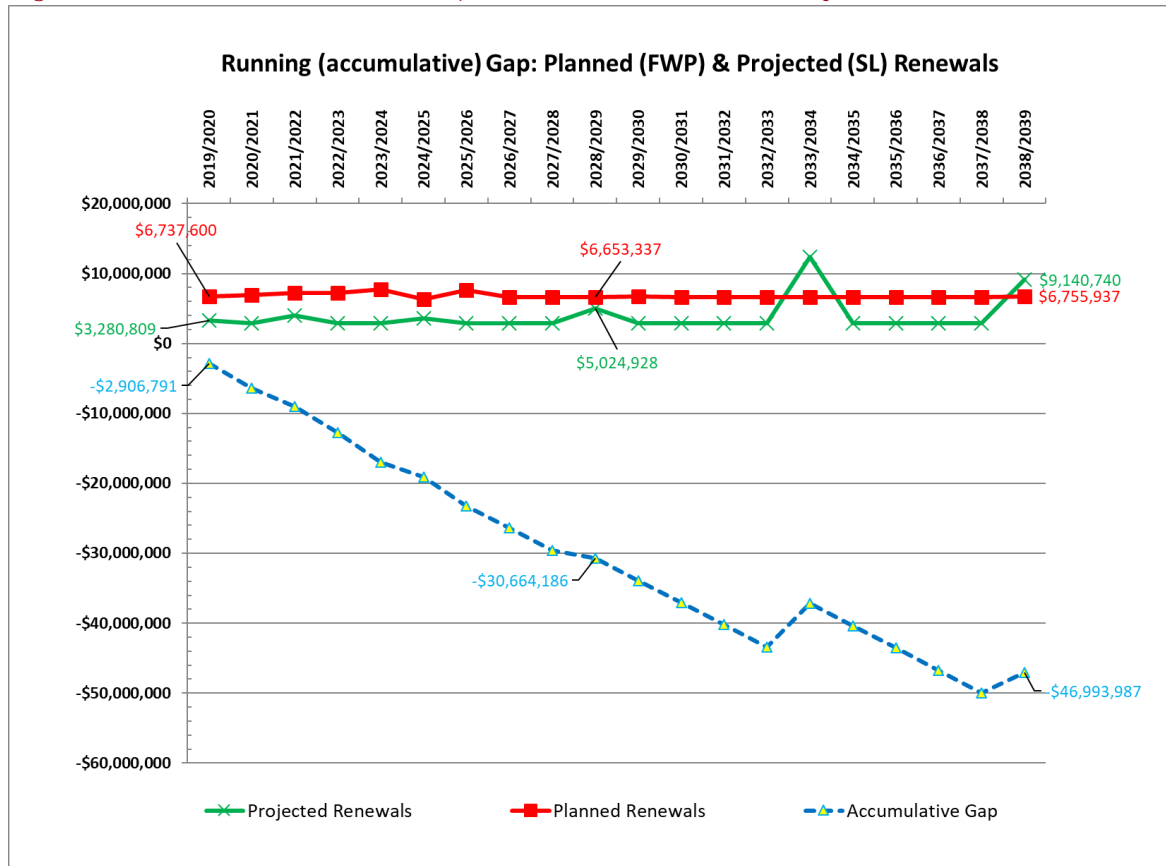


Table 5.2.2.2.a Comparison of 20 years Planned and Projected Renewals by Asset Component

Asset Component	Planned (FWP) Expenditure (\$m)	Projected (SL) Expenditure (\$m)	SL - FWP Difference (\$m)
Sealed Surface	\$30.3 m	\$27.4 m	-\$2.9 m
Sealed Pavements	\$54.0 m	\$19.9 m	-\$34.1 m
Unsealed Pavements	\$33.6 m	\$31.0 m	-\$2.6 m
Stormwater	\$7.5 m	\$2.0 m	-\$5.6 m
Kerb	\$3.4 m	\$3.0 m	-\$0.4 m
Pathways	\$3.9 m	\$3.0 m	-\$0.9 m
Access Roads and Carparks	\$0.096 m	\$ 0.132 m	+\$0.036 m
Bridge	\$0 m	\$0.072 m	+\$0.072 m
Sealed Pavement (Shoulders)	\$3.0 m [#]	\$3.0 m	+\$0.00 m
Aerodromes	0.615M	\$0 m	-0.615m
Total	\$136.4 m	\$89.50 m	-\$47 m

[#] - proposed spend for 'Sealed Pavement (Shoulders)' is not itemised, included in budgets for other asset classes

5.3 Asset Sustainability

5.3.1 Life Cycle Cost versus Expenditure

The Life Cycle Cost (LCC) estimated at approximately an average \$8.85 million per annum over the next 20-years from valuation data projections is the average cost required to operate and maintain the assets over their life including renewal. The Life Cycle Expenditure (LCE) is Council's budgeted cost for this and is estimated at approximately an average approximately \$11.2 million per annum for the next 20 years.

This gives a life cycle sustainability index (ratio) of 1.27, Council's budgeted versus projected (LCE: LCC), which is greater than a target index of 0.90 to maintain service levels. Over the shorter term 10-years the index is higher at 1.37.

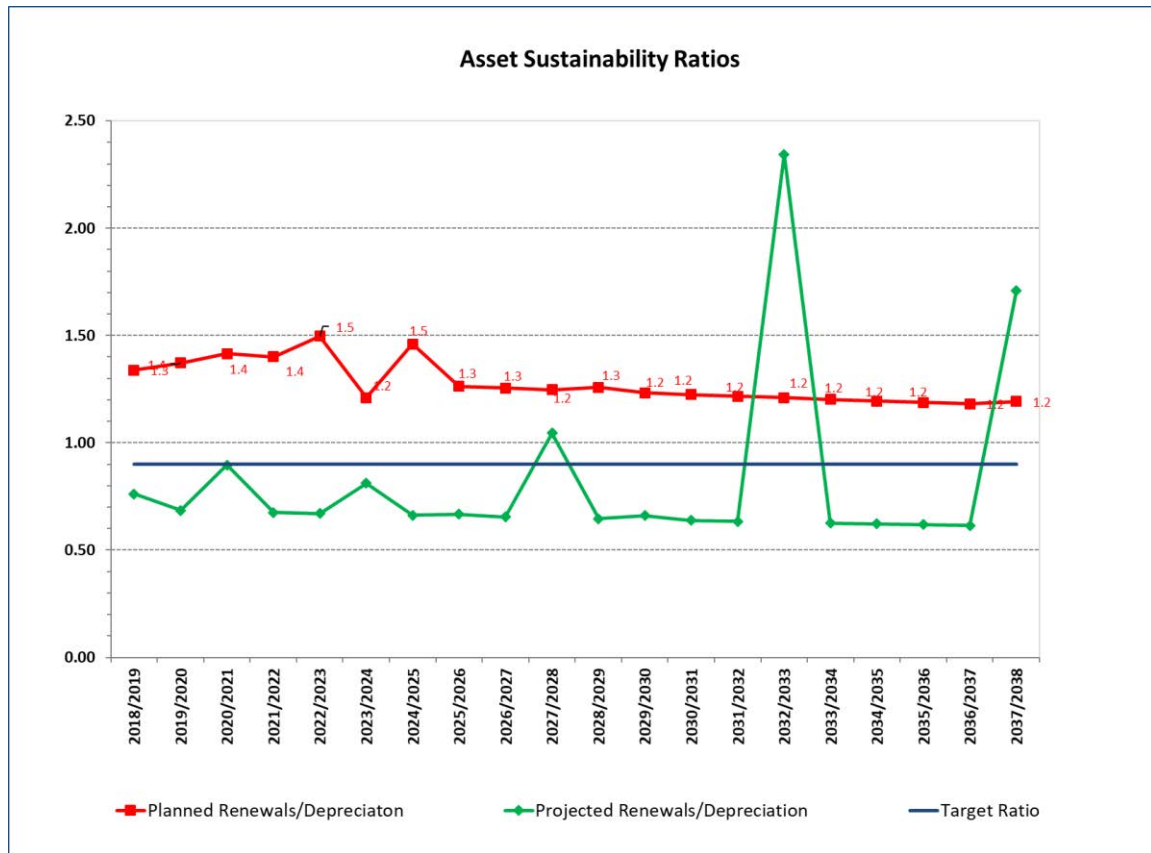
Based on the life cycle sustainability index, Council is adequately funding the required projections over the next 20 years for the defined services levels.

5.3.2 Asset Sustainability Ratio

A financial measure of satisfactory levels of expenditure on asset replacements is the Asset Sustainability Ratio - the net capital expenditure on replacements as a percentage of the depreciation. It indicates whether the amount of replacement exceeds or is less than the amount of depreciation, that is, whether assets are being replaced at the rate they are wearing out.

An index of less than 1.0 on an ongoing basis indicates that capital expenditure levels are not being optimised so as to minimise whole of life cycle costs of assets, or that assets may be deteriorating at a greater rate than spending on their renewal. Predictions for planned and projected renewals over the next 20 years are illustrated in Figure 5.3.2.a against a proposed conservative target of equal to or greater than 0.90. The index is above the target line for planned renewals indicating asset sustainability over time will likely result in meeting service levels.

Figure 5.3.2.a Asset Sustainability Ratios- Planned and Projected Renewals



6.0 FINANCIAL SUMMARY

6.1 Summary Financial Projections

Projected Opex and Capex is shown in Figure 6.1.a. For comparison, the planned (budgeted) Opex and Capex for the next 20 years is shown in Figure 6.1.b.

Figure 6.1.a Summary Projected Opex and Capex

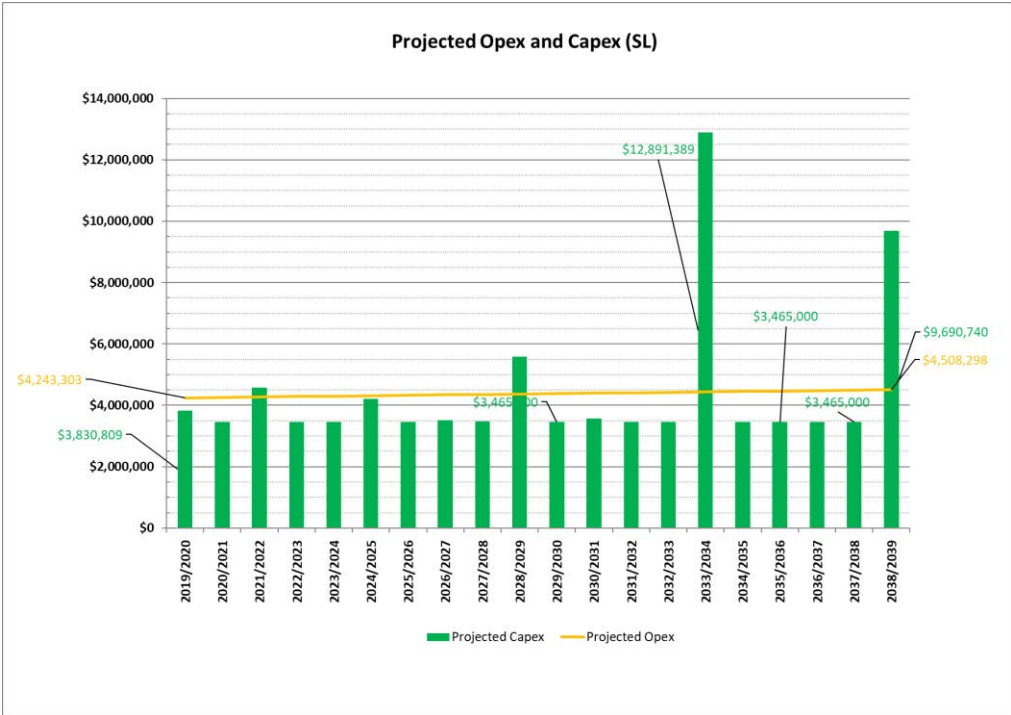
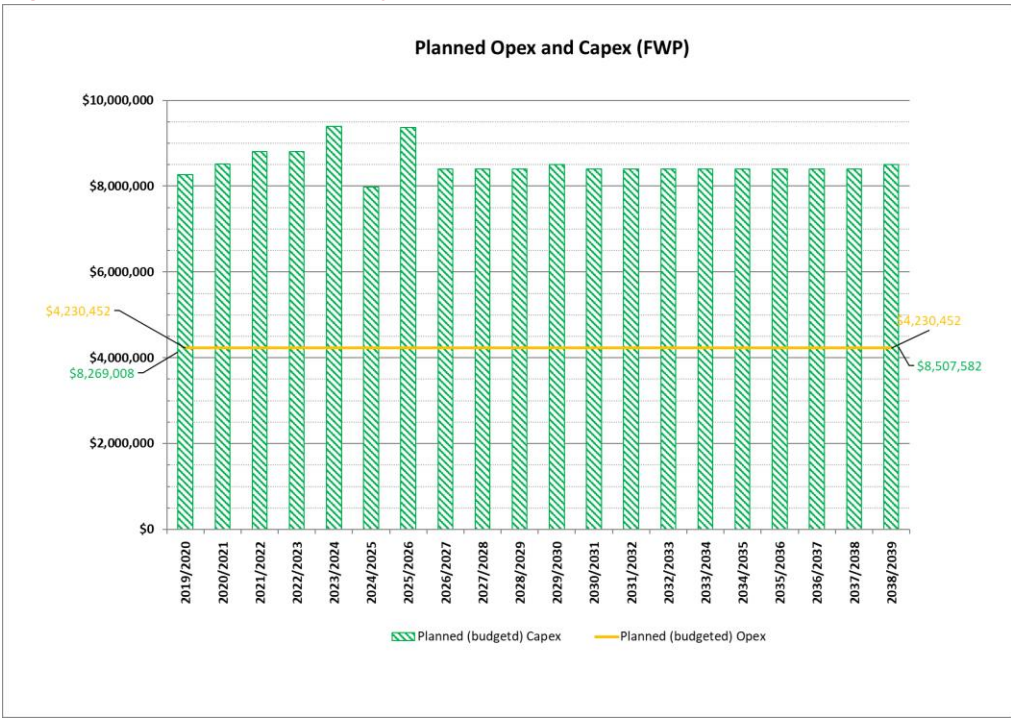


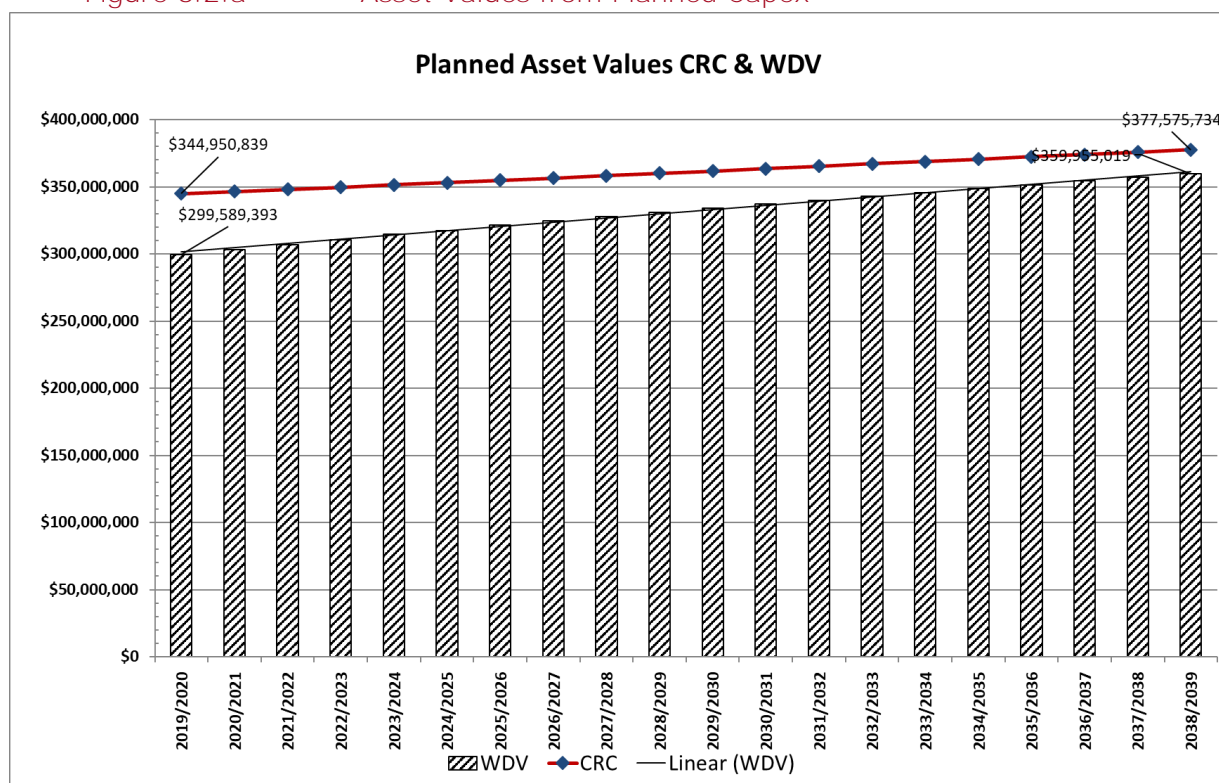
Figure 6.1.b Summary Planned Opex and Capex



6.2 Future Valuations

Over the next 20-years Council adding approximately \$34.2 million of asset value will increase the current replacement cost to approximately \$377.6 million (9.9% increase on March 2018) as shown in Figure 6.2.a. The written down value is forecast to increase by approximately \$44 million compared to current (15.9% increase).

Figure 6.2.a Asset Values from Planned Capex



7.0 ASSET MANAGEMENT PRACTICES

This section outlines the nature of current practices for Asset Management decision making and details an improvement program to enhance them to provide ongoing improvement to management of the region's assets.

7.1 Background

Several areas that are vital to managing the Assets include:

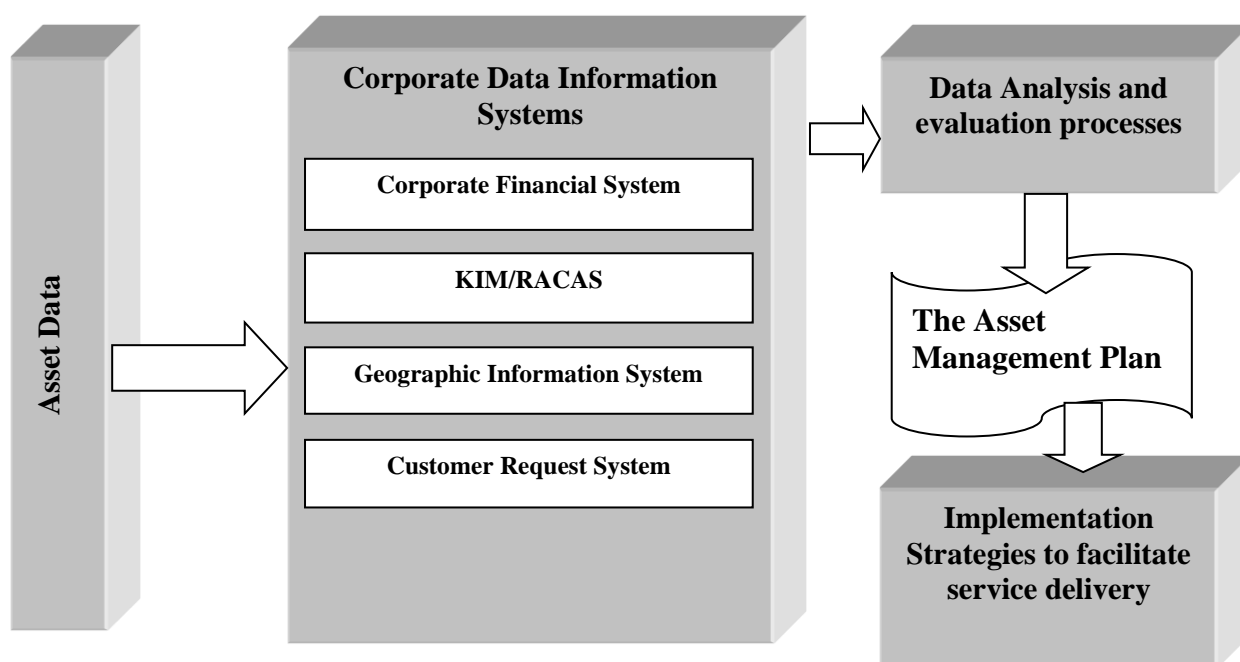
Asset Data: Information on the actual physical details of the assets including quantity, dimensions, age, condition, cost to provide, replacement cost, useful life span, etc. The asset must be appropriate for the required purpose, reliable and accessible.

Information Systems: This includes all the data information systems necessary to competently manage the asset. Key systems include the corporate accounting system, asset information system, geographic information system and customer request system. Ideally, data should be input once only into one of these systems and be accessible through other systems through interfacing.

Processes: This involves the various processes to analyse and evaluate the data from the above systems to produce relevant management reports and works programs.

Strategies: Implementation strategies for organisational management, including contractual, people and resource issues, are essential to ensure that the asset management process overall is conducted in an affordable and competent manner.

The following chart illustrates the relationship:



7.2 DATA INFORMATION SYSTEMS

7.2.1 CORPORATE ACCOUNTING SYSTEM

Council uses a corporate Financial Management system known as Civica Practical Plus. Practical records and stores and reports on all financial and business operations. Practical is used for the entire spectrum of financial activity. Data is either entered or collected into the system from source documentation, for example staff timesheets for payroll transactions or official orders for goods and services.

Practical also generates all financial reports that are available to all levels of staff and to elected representatives.

Practical is integrated to the Assetic Asset Register that links to the financial reports generated as part of Council's Annual Financial Statements. The Asset Register module is used and kept updated with details of the assets of council each quarter.

7.2.2 GEOGRAPHIC INFORMATION SYSTEM (GIS)

MapInfo is the corporate Geographical Information System used by Council.

The GIS is predominantly used to show information such as cadastral, topographic and aerial information. It is a computer mapping system that graphically represents the geographic component of data that can be sourced from various datasets such as Excel, access and other GIS applications (such as mobile mapping applications).

7.3 SYSTEMS FUNCTIONALITY

The main functional requirements of these data management systems are summarised as follows:

- Record and store attributes to identify individual asset clearly;
- Define relationship (components) within and between assets;
- Enable customisation including description fields;
- Capital, maintenance and condition-based reports (either customised or delivered by manipulating the database);
- Export selected data; and
- Allows for a range of accounting treatments.

This will assist in determining asset information for long-term capital and maintenance funding requirements to ensure that assets do not fall below their nominated minimum asset condition rating.

7.4 DATA MANAGEMENT

Electronically stored data is vital to sound management of assets. It is used for several purposes and for development of rolling works programs based on priority of needs. These programs are then used for strategic financial modelling for the organisation.

7.4.1 DATA COLLECTION

A key issue with collecting and storing this information is the recognition that it must be kept up-to date. Obsolete data can produce meaningless information when efforts are made to use it for works programming and financial modelling.

As there is a prohibitive cost to data collection it is essential that consideration be given to collecting and storing only that data which will be useful to management needs.

A vast array of asset data is contained within various data systems. The minimum requirements have been to ensure sufficient detail is collected for each asset to quantify and value the asset base.

The manager of the asset will determine the extent of additional information required in order to manage, maintain and report on infrastructure assets to ensure optimal asset function and asset lifecycle as well as management.

7.4.2 DATA MAINTENANCE

Currently consultant officers are responsible for ensuring the updating and maintaining of the asset data to meet the organisational operational and financial requirements in delivering efficient and effective asset management.

This means ensuring that inspection data and information from Works departments, is entered into the systems when appropriate. This is a joint effort between the engineering and finance departments of council.

7.5 FINANCIAL MANAGEMENT REQUIREMENTS

7.5.1 ASSET VALUATIONS

In accordance with Accounting Standard AASB1041, Council is required to account for all of its Assets, including the value of current and non-current assets in financial reports thereby identifying to the community the level of investment in assets. These assets are then depreciated on an annual basis with the aim of reflecting the community usage of its infrastructure assets.

Council does not have an Asset Valuation Procedure to generate and provide council with an independent valuation of the assets of council.

Council splits its Assets into classes for valuation purposes. Council asset classes include the categories of Land, Buildings, Plant & Equipment, Roads, Drainage & Bridges, Water, Sewerage and Other Infrastructure. Each class is valued in its entirety to reflect its fair value. Council uses independent external valuers to undertake the valuation process. Verification of the completeness of Councils Asset Register will be undertaken as part of the development of the Individual Asset Plans.

7.5.2 ASSET DEPRECIATION

Council's infrastructure assets are non-current assets and their depreciation will be treated as follows:

Buildings, plant and equipment, infrastructure, and other assets which have limited useful lives are systematically depreciated over their useful lives to the Council in a manner which reflects consumption of the service potential embodied in those assets. Estimates of remaining useful lives and residual values are made on a regular basis. Depreciation rates and methods are reviewed annually.

Where infrastructure assets have separate identifiable components that are subject to regular replacement, these components are assigned distinct useful lives and residual values and a separate depreciation rate is determined for each component. Road earthworks (formation) are not depreciated.

7.5.3 CAPITALISATION OF ASSETS

Council does not capitalise street trees and street furniture as individually they are low-value items which fall well below Council's capitalisation threshold for infrastructure assets.

8.0 IMPROVEMENT PROGRAM AND PLAN MONITORING

8.1 Improvement Program

A 3-year program is included in Table 8.1.a for implementing the improvement actions identified in preparing this initial plan.

Table 8.1.a Improvement Program

Improvement Task	Timeframe
Undertake regular (3-year maximum interval) road condition assessments (using RACAS) and analyse using VRACAS.	2021/22
Review planned renewals and the forward works program to ensure planned (service level) works are included in future works. The first 5 years could be project specific against service level models.	January 2020
Complete asset verification process of minor drainage structures.	2021/22
Measure performance against assigned service levels. There are several items that can't be measured at this stage. See Service Level tables.	June 2020
Continue to improve and maintain a comprehensive register of all assets and required attributes for managing them in the GIS: <ul style="list-style-type: none"> Undertake audit of road components. Ensure all infrastructure is captured Physically measure the widths of the sealed roads to confirm the current mapping attributes. 	Prior to next Comprehensive valuation
Further develop collection forms for condition/defect data and work record information. For example, Surface Condition before a Road is graded. Works records for roads that have been graded. Recommend the use of the REFLECT tool as this provides ease of reporting.	June 2020
Undertake review of the road network's Hierarchy for changes	June 2020
During project identification stage include financial impacts of new work, i.e. asset depreciation impact and possible maintenance implications of doing the work (increase in maintenance expected or same?).	June 2020
Communicate the impacts on the 65% gravel coverage service levels for unsealed road gravel coverage to encourage greater expenditures into the future. Gravel coverage is likely to decrease from 80% to 65% over the next 10 years. Check that 65% gravel coverage will be achievable year on year.	June 2020

Carry-out a trial utilising a water truck for maintenance grading.	June 2020
Carry-out a trial utilising processed gravel.	June 2020
Determination of average gravel depths after resheeting to work out if road gangs are building deeper layers. If so the Useful file of unseal road pavement may be extended.	January 2020
Soil testing of gravel resheet material using the ARRB unsealed roads specification.	January 2020
Workshopping of the defect logging of sealed surface renewals and the effect of this on the sealed surface renewals. Need a measure to combine with age. Determine intervention levels to align the defect areas (Strip and Crack)	2021/22
Workshopping of the defect logging of sealed pavement renewals and the effect of this on the sealed pavement renewals. Clarify the IRI intervention and determine intervention levels to align the defect areas (Rutting & Failure). Or determine another metric.	2021/22
Plan and program renewals for the Aerodrome runway, taxiway and access roads. This may require specialised surfacing renewals that need investigation and estimating for cost.	2021/22

8.2 Plan Monitoring and Review

This Asset Management Plan should be fully reviewed every 3-years (2021/2022 financial year) and the Improvement Program updated annually.

Appendix A – Definitions

Definitions

Asset Condition Assessment	The process of continuous or periodic inspection, assessment, measurement and interpretation of the resultant data to indicate the condition of a specific asset so as to determine the need for some preventative or remedial action.
Asset Management	The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost effective manner.
Asset Management Plan	A plan developed for the management of one or more infrastructure assets that combines multi-disciplinary management techniques (including technical and financial) over the lifecycle of the asset in the most cost effective manner to provide specified level of service. A significant component of the plan is a long term cash flow projection for the activities.
Asset Renewal	Replacement or rehabilitation to original size and capacity of a road or drainage asset or the component of the asset. Renewals are "capitalised", so that the cost can be depreciated over the future life of the asset.
Core Asset Management	Asset management which relies primarily on the use of an asset register, maintenance management systems, job/resource management, condition assessment and defined levels of service, in order to establish alternate treatment options and long term cash flow predictions. Priorities are usually established on the basis of financial return gained by carrying out the work (rather than risk analysis and optimised renewal decision making).
Infrastructure Assets	Physical assets of the entity or of another entity that contribute to meeting the public's need for access to major economic and social facilities and services, e.g. roads, drainage, footpaths and cycle ways. These are typically large, interconnected networks or portfolios of composite assets. The components of these assets may be separately maintained, renewed or replaced individually so that the required level and standard of service from the network of assets is continuously sustained. Generally, the components and hence the assets have long lives. They are fixed in place and are often have no market value.
Level of Service	The defined service quality for a particular service against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental, acceptability and cost).

Life Cycle Cost	The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises annual maintenance and asset consumption expense, represented by depreciation expense. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.
Life Cycle Expenditure	The Life Cycle Expenditure (LCE) is the actual or planned annual maintenance and capital renewal expenditure incurred in providing the service in a particular year. Life Cycle Expenditure may be compared to Life Cycle Cost to give an initial indicator of life cycle sustainability.
Maintenance and Renewal Sustainability Index	Ratio of estimated budget to projected expenditure for maintenance and renewal of assets over a defined time (e.g. 5, 10 and 15-years).
Performance Measure	A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.
Reactive Maintenance	Unplanned repair work carried out in response to service requests and management/supervisory directions.
Scheduled Maintenance	Maintenance carried out in accordance with a routine maintenance schedule e.g. scheduled maintenance grading.
Planned Maintenance	Repair work that is identified and managed through the customer requests system (Dataworks). These activities include inspections, assessing the condition against failure/breakdown experience, prioritising, scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.
Rate of Annual Asset Renewal	A measure of the rate at which assets are being renewed per annum expressed as a percentage of depreciable amount (capital renewal expenditure/ depreciable amount).
Reactive Maintenance	Unplanned repair work carried out in response to service requests & management / supervisory directions.
Recurrent Expenditure	Relatively small (immaterial) expenditure or that which has benefits expected to last less than 12 months. Recurrent expenditure includes operating and maintenance expenditure.
Remaining Life	The time remaining until an asset ceases to provide the required service level or economic usefulness. Age plus remaining life is economic life (also useful life).
Renewal Expenditure	Major works which do not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential.
Upgrade/Expansion Expenditure	Work over and above restoring an asset to original service potential.

Useful Life (also economic life)	<p>Either:(a) the period over which an asset is expected to be available for use by an entity, or (b) the number of production or similar units expected to be obtained from the asset by the entity.</p> <p>It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the future economic benefits embodied in a depreciable asset, are expected to be consumed by the Council.</p>
New Assets	<p>Activities that create a road or drainage asset that did not exist previously or extend an asset beyond its original size or capacity. New assets are also "capitalised", but they increase the asset base rather than restore its capacity to perform.</p>

Appendix B – Summary of Forecast Lifecycle Costings for 10-Years

Summary of Forecast Lifecycle Costings for 10-Years

	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Renewal Capex (FWP) Existing assets only	\$6,737,600	\$6,948,000	\$7,212,600	\$7,182,000	\$7,729,600	\$6,291,000	\$7,640,600	\$6,653,337	\$6,653,337	\$6,653,337
Renewal Capex (SL)	\$3,830,809	\$3,465,000	\$4,568,881	\$3,465,000	\$3,465,000	\$4,217,101	\$3,467,309	\$3,514,958	\$3,468,240	\$5,574,928
Accumulative Gap (FWP-SL) Positive is a short fall in funding. Negative is overspend (before condition or service requires).	-\$2,906,791	-\$6,389,791	-\$9,033,510	\$12,750,510	\$17,015,110	\$19,089,009	\$23,262,301	\$26,400,680	\$29,585,777	\$30,664,186
Maintenance (FWP)	\$4,230,452	\$4,230,452	\$4,230,452	\$4,230,452	\$4,230,452	\$4,230,452	\$4,230,452	\$4,230,452	\$4,230,452	\$4,230,452
Maintenance (SL)	\$4,243,303	\$4,256,412	\$4,269,782	\$4,283,421	\$4,297,331	\$4,311,521	\$4,325,994	\$4,340,017	\$4,354,040	\$4,368,064
New Capex (FWP)	\$452,064	\$461,105	\$470,327	\$479,734	\$489,329	\$499,115	\$509,097	\$546,460	\$546,460	\$546,460
Upgrade Capex (FWP)	\$1,079,344	\$1,100,930	\$1,122,949	\$1,145,408	\$1,168,316	\$1,191,683	\$1,215,516	\$1,205,185	\$1,205,185	\$1,205,185
Maintenance (New Capex)	\$12,852	\$13,109	\$13,371	\$13,638	\$13,911	\$14,189	\$14,473	\$14,023	\$14,023	\$14,023

Appendix C – Historical Expenditure

Row Labels		2013_14	2014_15	2015_16	2016_17	2017_18	Grand Total	5 Yr Average
4200		101,838	79,539	77,328	40,173	34,274	333,151	66,630
50% Pathways 50% Kerb	Misc footpath, K&C - Gdi	37,463	2,900	47,656	9,378	4,320	101,719	20,344
Stormwater	Flood gate and control maint	3,562	10,020	3,770	6,903	3,149	27,404	5,481
50% Pathways 50% Kerb	Misc footpath, K&C - Ing	9,836	495		4,944		15,275	5,092
Stormwater	Drainage Maintenance	36,247	66,123	25,286	10,651	26,805	165,112	33,022
50% Pathways 50% Kerb	Misc footpath, K&C - Texas	14,269					14,269	14,269
Stormwater	Install & operate flood pumps	460		615	8,296		9,372	3,124
4220		771,308	762,114	759,895	744,829	817,944	3,856,089	771,218
Traffic Management Devices	Misc Signs	208			9,691	4,698	14,597	4,866
100% Sealed Pavement Operational	Pavement and Seal	413,551	393,296	421,653	294,091	443,990	1,966,581	393,316
Sealed Surface Mtce	Vegetation Control	153,316	104,182	151,961	186,218	182,295	777,972	155,594
Sealed Surface Mtce	Other Maintenance	204,233	254,970	186,281	254,828	186,961	1,087,273	217,455
Sealed Surface Mtce	Grid Removal		9,666				9,666	9,666
4225		522,584	627,813	580,068	542,567	527,343	2,800,374	560,075
100% Sealed Pavement Operational	Pavement and Seal	274,630	360,357	288,979	261,181	231,874	1,417,020	283,404
Stormwater	Drains	21,134	36,488	21,358	23,470	10,901	113,351	22,670
Stormwater	Pipes/Culverts	25,725	29,507	8,860	8,065	11,603	83,761	16,752
Traffic Management Devices	Road Furniture	61,310	52,097	40,313	44,243	45,170	243,133	48,627
Pathways	Footpaths	24,720	16,623	19,943	17,435	26,417	105,139	21,028
Traffic Management Devices	Linemarking	43,637	33,776	32,634	28,239	24,847	163,132	32,626
Sealed Surface Mtce	Other	67,196	96,150	165,399	153,192	169,823	651,760	130,352
Access Roads and Carparks	Maint - Off Street Car Parks	4,231	2,815	2,583	2,873	4,461	16,963	3,393
Access Roads and Carparks	Upgrade Coach Stop McLean St				3,868	2,248	6,117	3,058
4226		191,493	166,221	192,928	199,565	190,108	940,315	188,063
Sealed Surface Mtce	Goondiwindi Area	116,696	68,746	36,234	108,276	141,599	471,550	94,310
Sealed Surface Mtce	Inglewood / Texas Area	74,797	97,475	156,694	91,289	48,509	468,764	93,753
4230		1,772,487	1,847,777	1,808,606	1,465,035	1,705,122	8,599,027	1,719,805
Unsealed Roads Pavement Mtce	ARRB Deterioration Model		652	705		361	1,718	573
Unsealed Roads Pavement Mtce	Pavement Maintenance	1,368,660	1,434,825	1,451,711	1,172,139	1,333,173	6,760,509	1,352,102
Unsealed Pavements	Grid Inspections & Register	1,448	13,812	12,241	1,983	1,638	31,122	6,224
Unsealed Roads Pavement Mtce	Vegetation Control	27,513	24,645	10,763	18,205	9,037	90,163	18,033
Unsealed Roads Pavement Mtce	Maintenance Supervision	121,651	169,950	173,776	160,118	168,237	793,733	158,747
Unsealed Pavements	Other Maintenance	234,716	178,455	137,961	92,156	178,986	822,274	164,455
Unsealed Pavements	Grid Removal		8,986	2,418			11,404	5,702
Unsealed Pavements	Pavement Investigation	13,455	16,249	11,378	18,854	11,648	71,584	14,317
Unsealed Pavements	Removal of Grids			4,964			4,964	4,964
Unsealed Roads Pavement Mtce	Gravel Pit Env Mgt.	3,662		2,690	971	2,041	9,363	2,341
Unsealed Roads Pavement Mtce	Gravel Pit Investigation	1,382	203		608		2,192	731
4250		490,563	818,931	821,363	816,631	839,768	3,787,257	757,451
Traffic Management Devices	Streets cleaning & watering	275,982	414,963	412,325	409,636	403,752	1,916,658	383,332
Traffic Management Devices	Street lighting	135,724	228,548	201,760	210,432	227,924	1,004,389	200,878
Traffic Management Devices	Public Conveniences	70,909	166,867	193,289	186,849	197,198	815,112	163,022
Traffic Management Devices	Banner Removal/Erection	7,947	8,553	13,159	9,714	4,788	44,161	8,832
Traffic Management Devices	Rural Town Beaut-Talwood Irrig			831			831	831
Traffic Management Devices	Grassed Median Rehab - Texas					6,107	6,107	6,107
Grand Total		3,850,272	4,302,395	4,240,188	3,808,799	4,114,559	20,316,213	4,063,243

Sum of Total		Column Labels					
Row Labels		2013/14	2014/15	2015/16	2016/17	2017/18	Grand Total
4350					\$381,853	\$316,185	\$698,037
0					\$195,424	\$161,725	\$357,149
Operating Exp - Gdi Aerodrome					\$138,719	\$115,954	\$254,673
Operating Exp-Other Aerodromes					\$47,709	\$38,506	\$86,215
Salaries - Aerodromes					\$8,674	\$7,006	\$15,680
Vehicle Expenses - Aerodromes					\$323	\$259	\$581
1					\$49,004	\$43,175	\$92,179
Inspections					\$19,468	\$15,849	\$35,317
Op Expenses-Inglewood Aerodrom					\$29,536	\$27,327	\$56,863
2					\$87,143	\$89,871	\$177,014
Op Expenses - Texas Aerodrome					\$18,099	\$10,335	\$28,434
Operations & Maintenance					\$69,044	\$79,536	\$148,580
3					\$50,281	\$21,414	\$71,695
Mowing					\$50,207	\$20,570	\$70,777
Op Expenses - Talwood Aerodrom					\$74	\$844	\$918
5200		\$338,444	\$417,551	\$405,860			\$1,161,855
0		\$208,944	\$230,865	\$203,042			\$642,852
Operating Exp - Gdi Aerodrome		\$95,159	\$125,330	\$150,427			\$370,916
Operating Exp-Other Aerodromes		\$34,341	\$55,760	\$52,391			\$142,492
Salaries - Aerodromes		\$71,396	\$39,409	\$224			\$111,030
Special Maintenance-Aerodromes			\$5,596				\$5,596
Vehicle Expenses - Aerodromes		\$8,048	\$4,770				\$12,818
1		\$30,418	\$34,334	\$47,516			\$112,268
Inspections		\$8,225	\$7,430	\$12,539			\$28,194
Op Expenses-Inglewood Aerodrom		\$22,193	\$26,904	\$34,977			\$84,074
2		\$79,603	\$123,784	\$122,434			\$325,822
Op Expenses - Texas Aerodrome		\$12,148	\$27,293	\$16,459			\$55,899
Operations & Maintenance		\$67,456	\$96,492	\$105,976			\$269,923
3		\$19,478	\$28,567	\$32,868			\$80,913
Mowing		\$19,478	\$21,408	\$31,913			\$72,799
Op Expenses - Talwood Aerodrom			\$1,564	\$955			\$2,519
Texas - Tree Removal/Trimming			\$5,596				\$5,596
Grand Total		\$338,444	\$417,551	\$405,860	\$381,853	\$316,185	\$1,859,892



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