

A photograph of a man and a woman sitting at a wooden table, laughing and eating. The man is on the left, wearing a white shirt, and is cutting a sandwich. The woman is on the right, wearing a yellow floral top and a blue headband, and is also laughing. There are plates of food, a bottle of lemonade, and a small potted plant on the table. A large blue triangle is overlaid on the left side of the image, containing the text.

Strong Economies

Transportation Levels of Service

Proposed levels of service and recommended management strategies to be incorporated into the Transportation Asset Management Plan



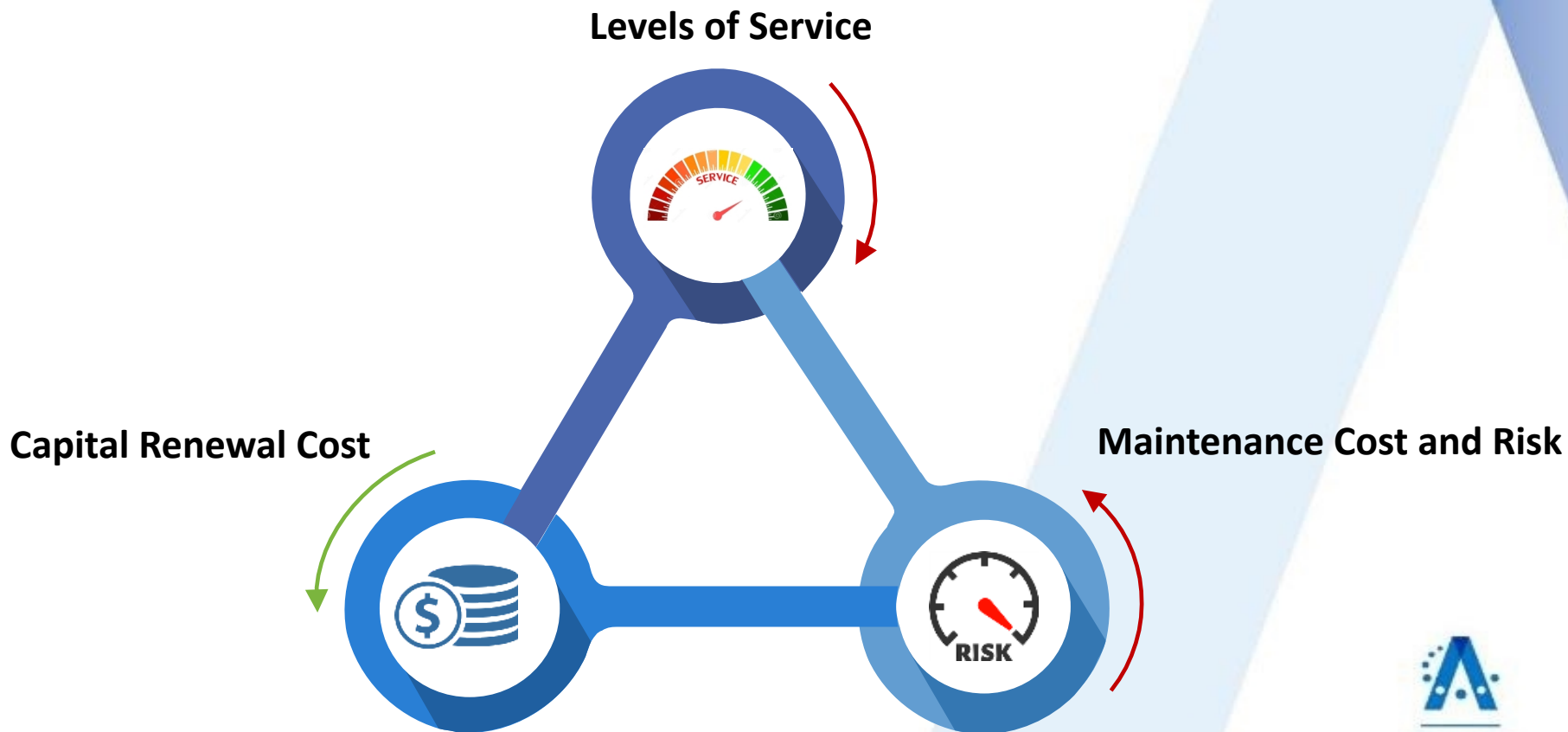
CITY OF
ADELAIDE

Recap of Previous Levels of Service Workshop

- We are currently reviewing our Asset Management Plans for Transportation, which is legislated in the Local Government Act 1999. A level of service review is one of the first steps in this process.
- AMP timelines and proposed approach for community engagement on Levels of Service through a Committee Workshop on [19 October 2021](#).
- Background to concepts of 'Levels of Service' presented to Committee through the Business Plan and Budget Workshop on [22 February 2022](#).

Asset Management Principles

The primary objective of asset renewal, is to intervene at the optimal time to minimise whole of life asset cost (increased capital costs, growing maintenance costs) and asset risk, to ensure services continue to be provided in-line with our community's expectation



City of Adelaide Strategic Infrastructure Planning Framework



This presentation focuses on levels of service for existing assets, which will be integrated into the Asset Management Plans. New and upgraded infrastructure is driven by Council endorsed corporate strategies and incorporated into the service delivery plan, which are endorsed annually.

Transportation - Asset Portfolio

Roads and Kerbing



\$405 million

Bridges



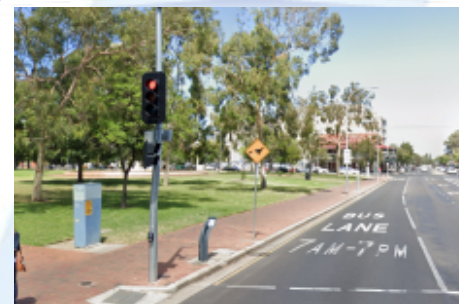
\$179 million

Footpaths

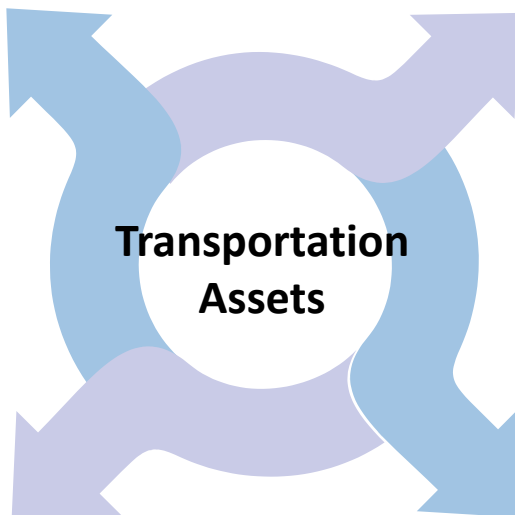


\$283 million

Traffic Signals

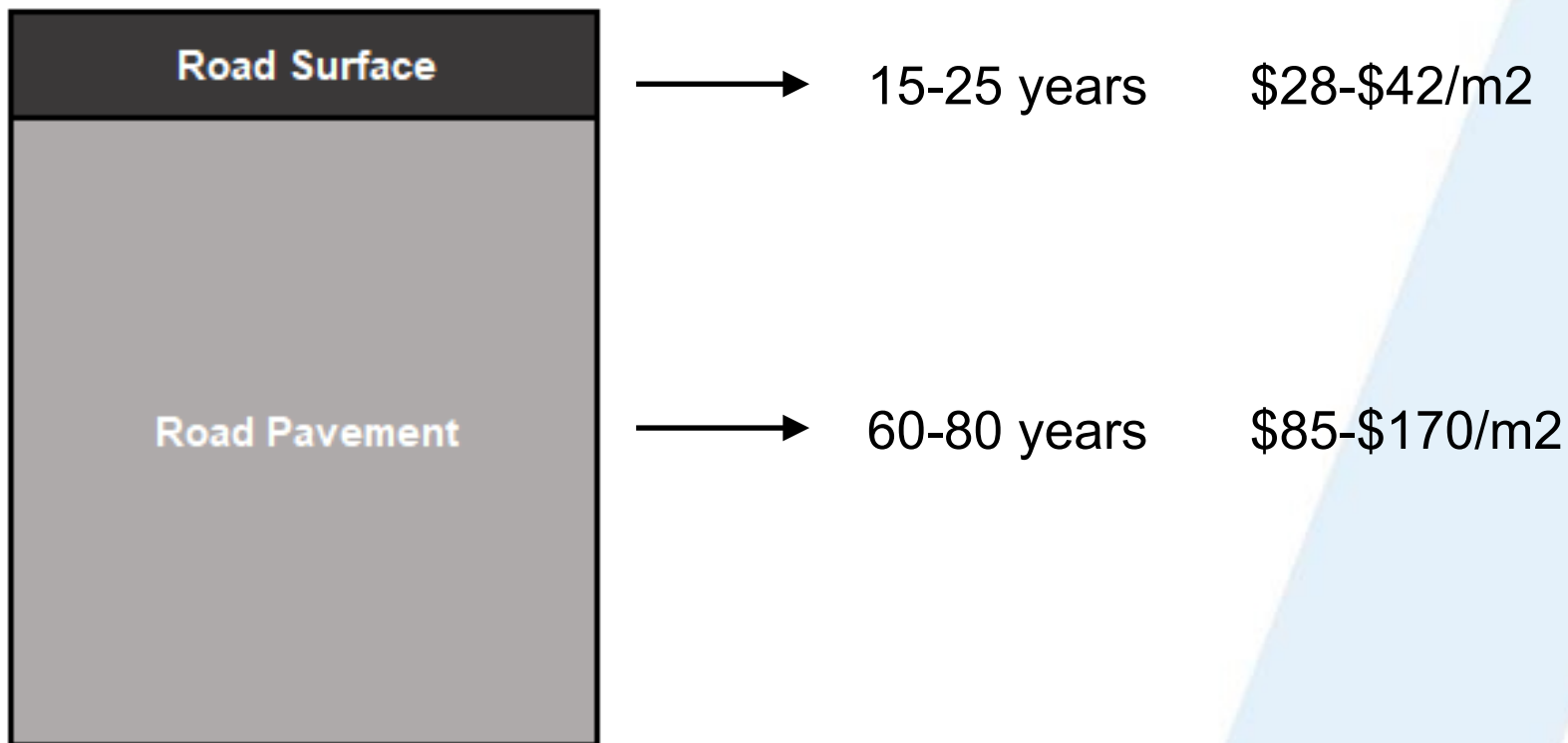


\$60 million

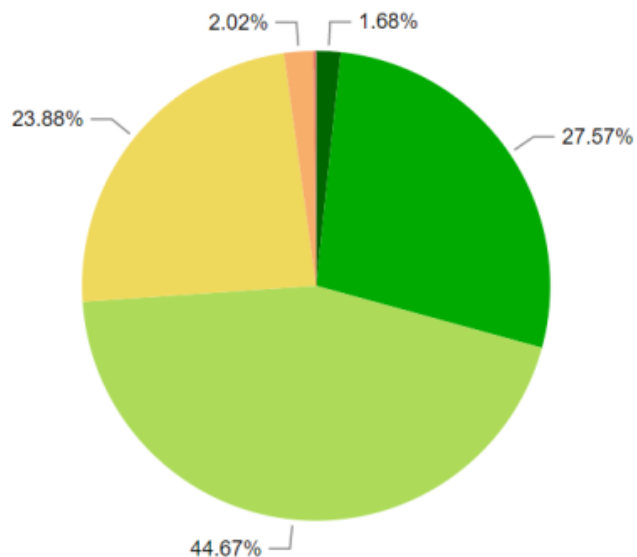


Road Network

Road Network – Road Management Principles



Road Network – Current Condition



Pie chart represents predicted network condition in 2022
Last condition audit was undertaken in 2019
Road network is condition audited every 4 years

Overall condition represents surface condition (30%) and pavement condition (70%)

Majority of the road network is in a good to fair condition.

Ongoing investment is required to resurface and rehabilitate road assets and ensure whole-of-life costs are minimised (ie prevent increased maintenance and renewal costs)

Condition 1

Very Good: asset is free of defects with no or minimal maintenance required



Condition 2

Good: minor defects, increasing maintenance required such as crack sealing and asphalt patching



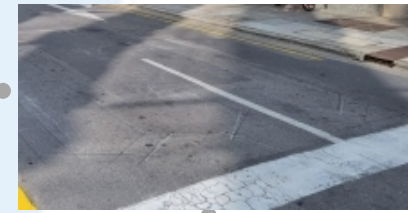
Condition 3

Fair: asset requires preventative road resurfacing or has defects requiring significant maintenance intervention



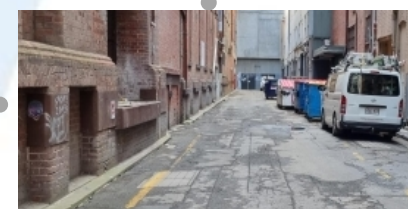
Condition 4 – Poor

Poor: significant defects, higher order cost intervention for pavement rehabilitation



Condition 5

Very Poor: physically unsound and/or beyond rehabilitation, full reconstruction may be required



Road Network – Consultation Feedback

User Group	Consultation Question	Satisfaction Index
Motorists	Roads are safe	81%
	Roads meet my needs	89%
	Roads are accessible and easy to navigate	85%
	Roads are kept clean	89%
	Roads are well maintained	93%
Cyclists	Cycle lanes are safe	31%
	Cycle lanes meet my needs	37%
	Cycle lanes are accessible and easy to navigate	49%
	Cycle lanes are clean	76%
	Cycle lanes are well maintained	67%

Note: Satisfaction index is the % of survey respondent that responded as Agree or Strongly Agree, Neutral responses were omitted from the assessment

Consultation occurred in November 2021, with responses from 113 people.

- Motorists were generally satisfied with City roads
- Each of the 5 performance measures exceeded corporate target of 70%
- This indicates that motorists are generally satisfied with existing levels of service provided
- This is to be expected, noting that currently only 2% of the road network is rated in condition 4 and 5
- Cyclists were generally not satisfied with the performance/ provision of cycling infrastructure in the City
- Several of the performance measures scored well under the corporate target of 70%
- This indicates a significant gap in the current levels of service for the cyclist user group and that cycling infrastructure needs to be more accessible, easier to navigate and safer to meet community needs
- Moving forward, the development of the City Access Strategy and the Cycling Infrastructure Strategic Action Plan, will identify priority upgrade/new projects that are anticipated to contribute to improving user satisfaction
- All road resurfacing renewal projects will explore opportunity's to optimise existing linemarking and improve cycling infrastructure

Road Network – Renewal Intervention Criteria

Road renewal intervention levels have been established considering:

- Feedback provided through community consultation
- Risk management principles
- Objective to minimise road network whole of life costs

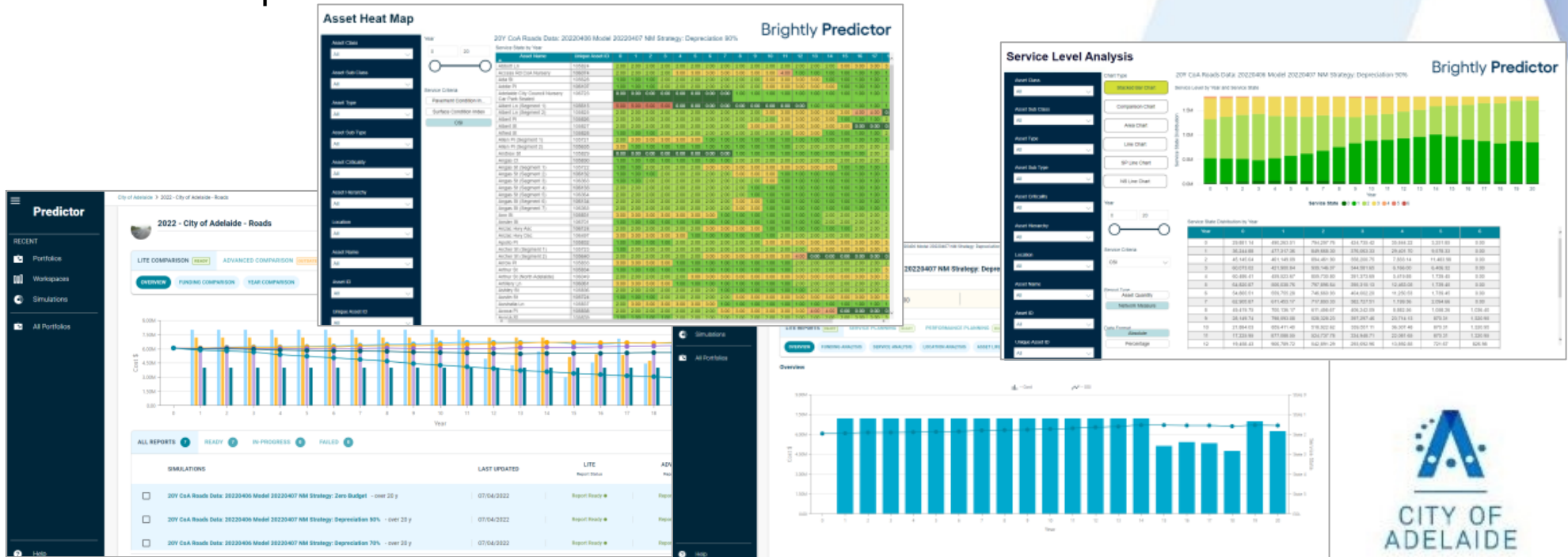
Community consultation feedback identified that road users were currently satisfied with the existing levels of service (~2% of assets in condition 4 and 5). The recommended renewal intervention levels aim to minimise the number of assets that deteriorate into condition state 4 and 5.

Due to the relationship between traffic volumes and road deterioration, renewal intervention levels consider asset condition, asset risk and the cost effectiveness of maintenance. This results in higher volume roads being subject to renewal treatments more frequently than lower volume roads.

Road Network - Predictive Modelling Overview

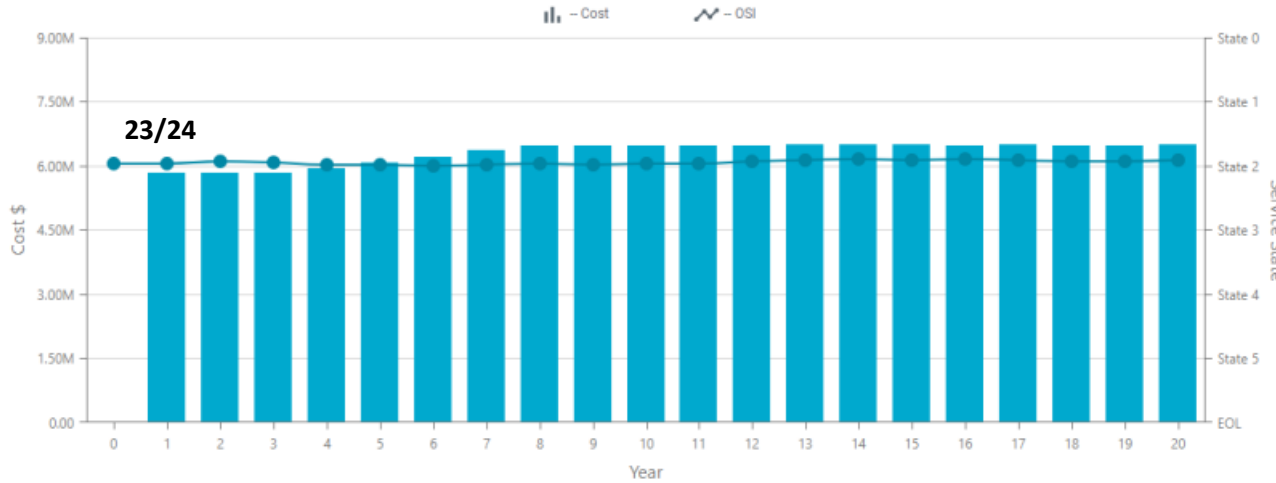
Asset Management Predictive Modelling Software been utilised, which enables us to:

- Predict the deterioration of our assets over short, medium and long term
- Model scenarios to evaluate and assess asset renewal costs, levels of service and asset risk
- Enable evidence based decision making to optimise service level outcomes and capital renewal expenditure



Levels of Service

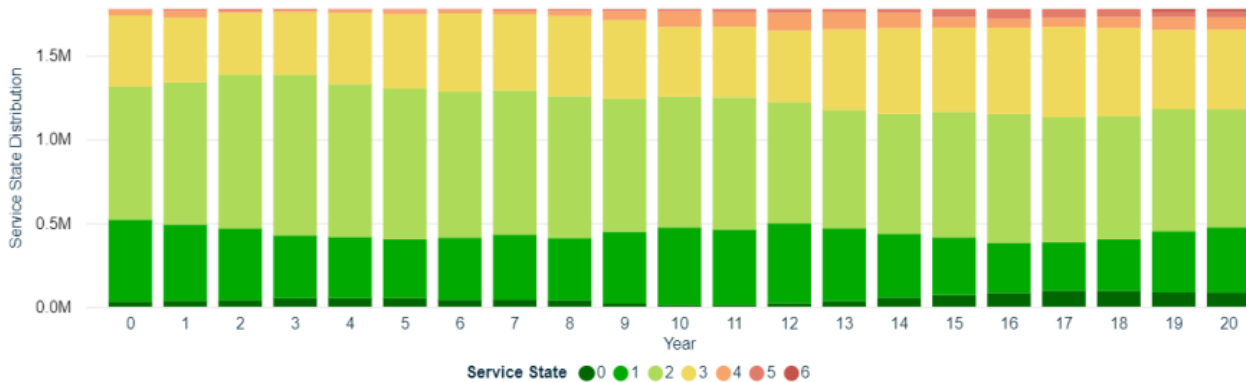
Road Network – Current LTFP



Current LTFP - \$6.0-\$6.5M/yr

Overall service state of the network is maintained around condition state 2

Increasing amount of condition 4 and 5 asset, due to insufficient long term funding resulting in road network deteriorating (6% at year 10, 7% year 20)

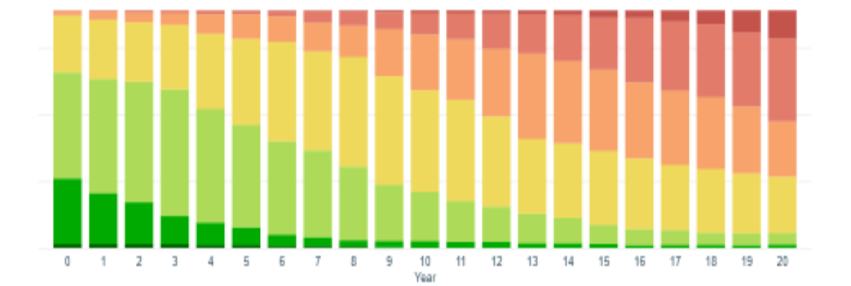
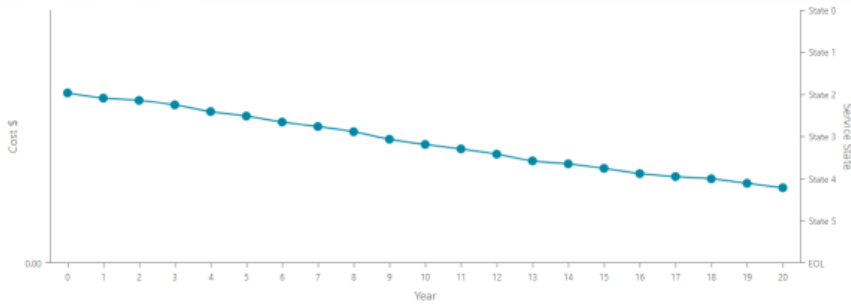


Preventative resurfacing works cannot all be funded which will result in the asset further deteriorating, requiring more expensive rehabilitation treatments, increased whole of life costs, increased asset risk and reduced customer satisfaction

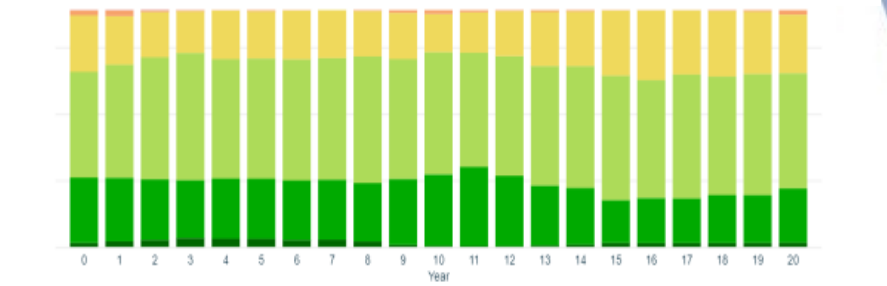
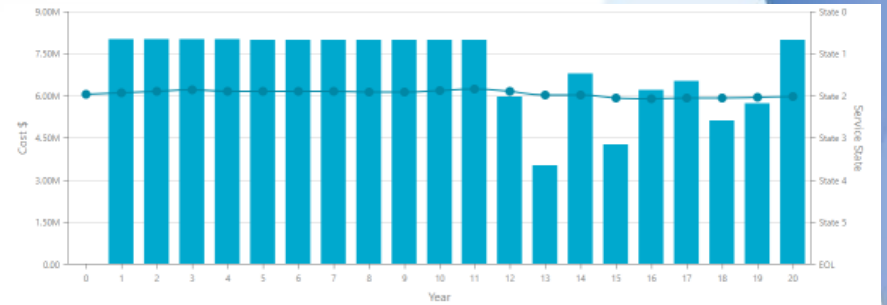
Conclusion – recommend moderate increase to funding



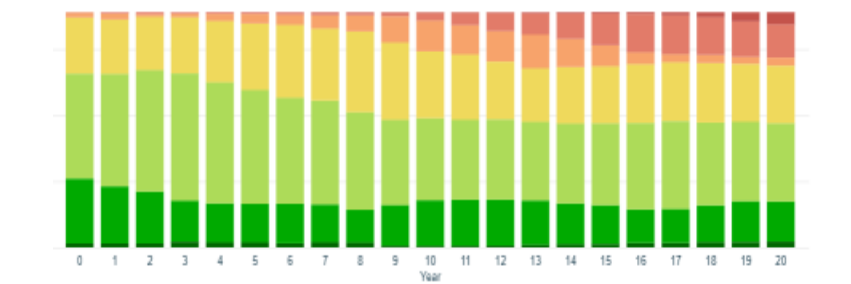
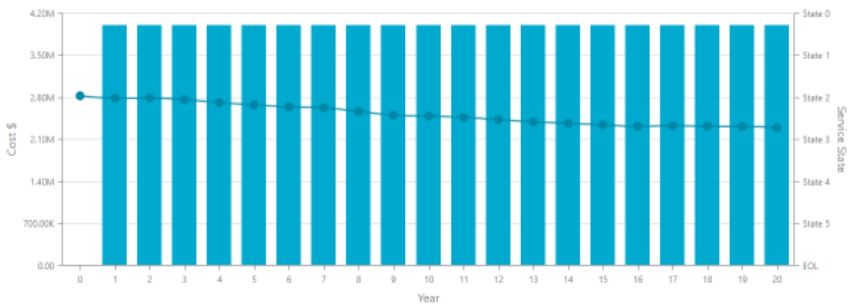
Levels of Service Road Network – Scenario Modelling



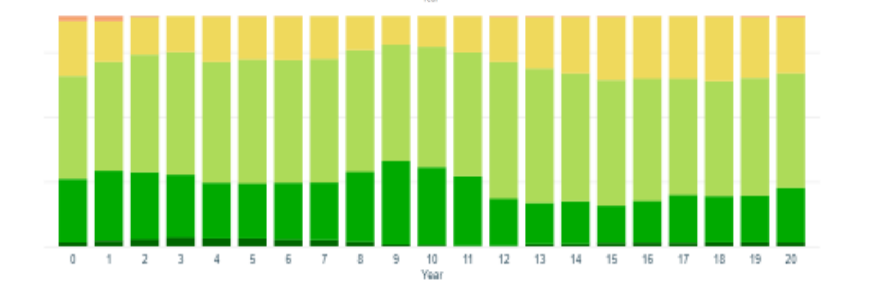
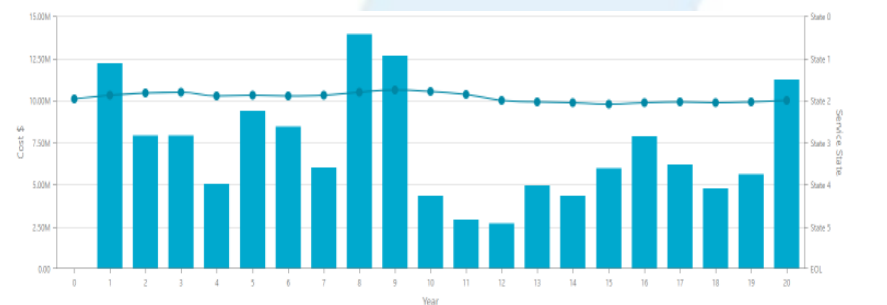
No Investment – \$0m/yr



Annual Depreciation – \$8.0 m/yr

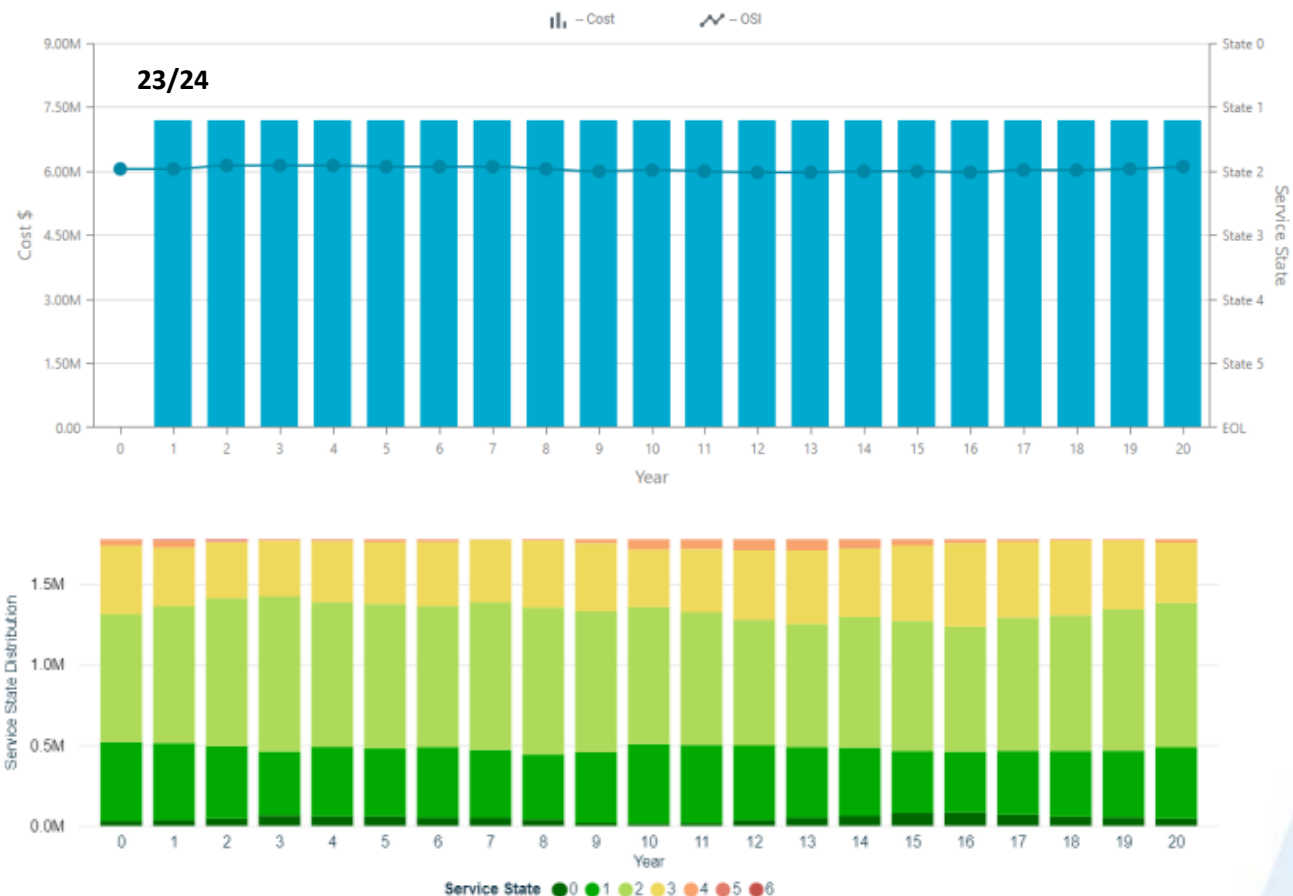


50% of Annual Depreciation – \$4.0m/yr



Unconstrained – \$7.2m/yr (average)

Road Network – Recommended Strategy



Expenditure - \$7.2M/yr

Overall service state of the network is maintained around condition state 2

Small quantity of assets fall into in condition 4 (4%) and no assets fall into condition 5.

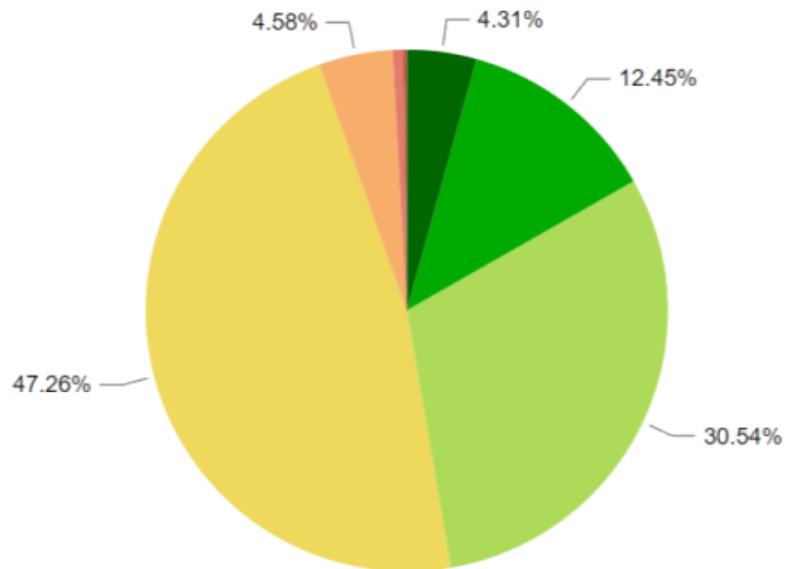
Considered acceptable from a risk management perspective, noting that isolated service deficiencies can be managed through maintenance programs.

Conclusion – recommend this strategy is adopted including an additional \$2.0m/year for required kerb and water table renewals adjacent planned road and footpath renewal projects

The background features a large, solid blue shape on the left side, which is partially overlapped by a lighter blue, semi-transparent geometric shape. The right side of the image is plain white.

Footpath Network

Footpath Network – Current Condition



Pie chart represents predicted network condition in 2022
Last condition audit was undertaken in 2021
Footpath network is condition audited every 4 years

A significant proportion of the footpath network is rated in fair condition. Ongoing investment is required over the 20-year planning period to renew assets as they deteriorate from a fair into a poor condition.

Condition 1

Very Good: asset is free of defects with no or minimal maintenance required



Condition 2

Good: minor defects, increasing maintenance required



Condition 3

Fair: aging asset with defects requiring regular and/or significant maintenance to reinstate service



Condition 4 – Poor

Poor: aging asset with significant defects. Renewal typically more cost effective than maintenance to reinstate service



Condition 5

Very Poor: physically unsound and beyond rehabilitation



Footpath Network – Consultation Feedback

Location	User Group	Consultation Question	Satisfaction Index
City Streets	Pedestrian	Footpaths are safe	74%
		Footpaths meet my needs	86%
		Footpaths are accessible and easy to navigate	81%
		Footpaths are kept clean	75%
		Footpaths are well maintained	71%
Park Lands	Pedestrian	Footpaths are safe	81%
		Footpaths meet my needs	89%
		Footpaths are accessible and easy to navigate	91%
		Footpaths are well maintained	92%
	Cyclist	Cycling paths are safe	84%
		Cycling paths meet my needs	82%
		Cycling paths are accessible and easy to navigate	92%
		Cycling paths are well maintained	89%

- Pedestrians were generally satisfied City footpaths
- Each of the 5 performance measures exceeded the corporate target of 70%
- City footpath satisfaction scores for safety and maintenance only just exceeded the 70% target, which is likely attributed to the significant proportion of assets in a fair condition (almost 50%), requiring significant and ongoing maintenance
- This score is at risk of dropping as assets in fair condition further deteriorate
- Pedestrians and cyclists were generally satisfied with the Park Land’s footpaths and shared use paths
- Each of the 5 performance measures exceeded the corporate target of 70%

Footpath Network – Renewal Intervention Criteria

Footpath renewal intervention levels have been established considering:

- Feedback provided through community consultation
- Risk management principles
- Objective to minimise footpath network whole of life costs

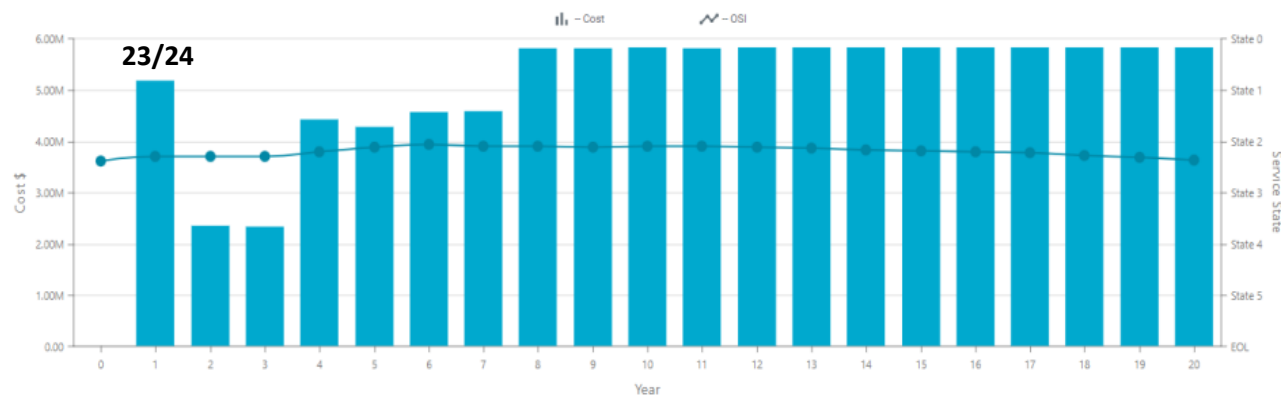
Community consultation feedback identified that footpath safety and maintenance categories for City Streets only just passed the 70% satisfaction index target.

To improve levels of user satisfaction and ensure our footpath network provides safe and efficient services, it is recommended that renewal intervention levels ensure:

- No assets reach condition state 5
- Only a minimal number of assets progress into condition state 4
- Number of assets in condition state 3 are reduced (prioritising renewals for Main Streets and City Streets with high pedestrian volumes)

These proposed renewal intervention levels ensure that asset risk is effectively managed, and maintenance remains cost-effective to optimise network lifecycle costs

Levels of Service Footpath Network – Current LTFP



Current LTFP – \$5.0-5.5M/yr

The overall footpath network condition is maintained just below condition 2

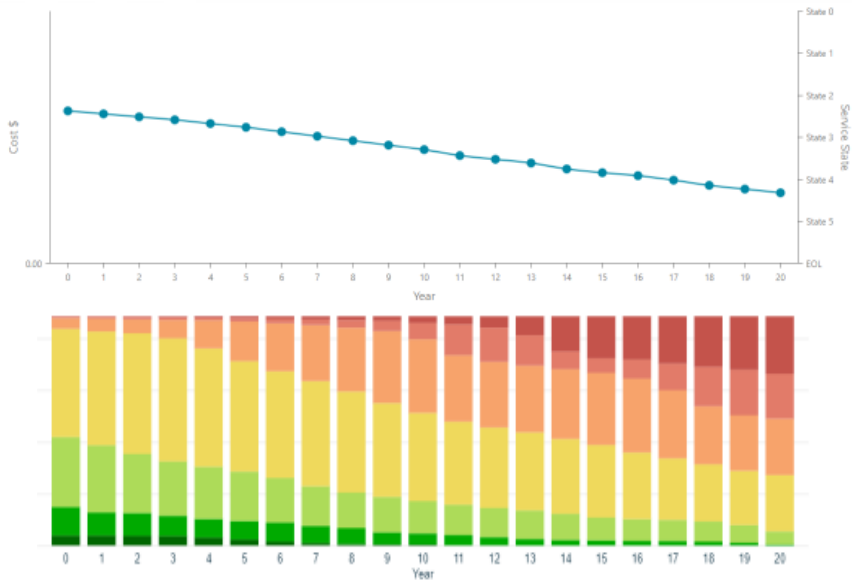
Increasing amount of condition 4 and 5 assets, due to insufficient long term funding resulting in footpath network deteriorating (11% in year 10, 19% in year 20)

It is anticipated that this would result in reduced levels of customer satisfaction and would likely go below the current target of 70%.

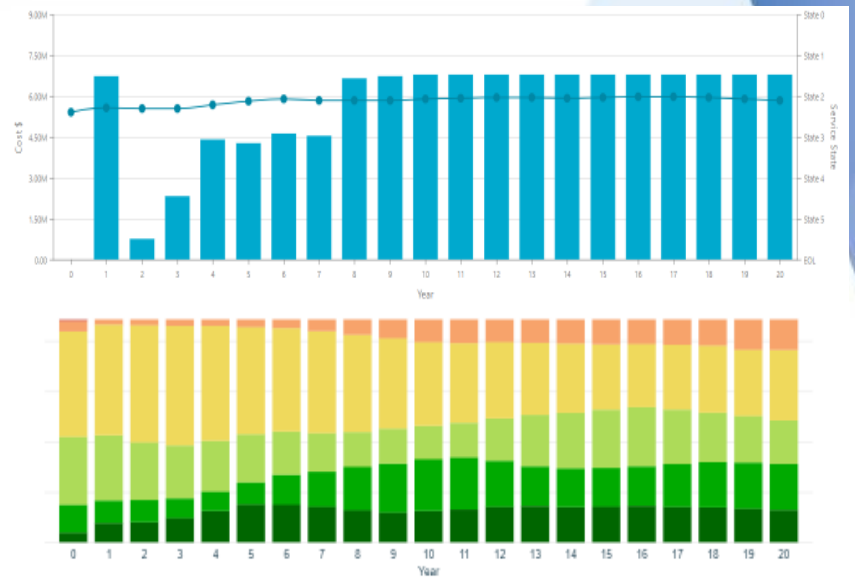
Conclusion – recommended increase to footpath renewal funding

Levels of Service

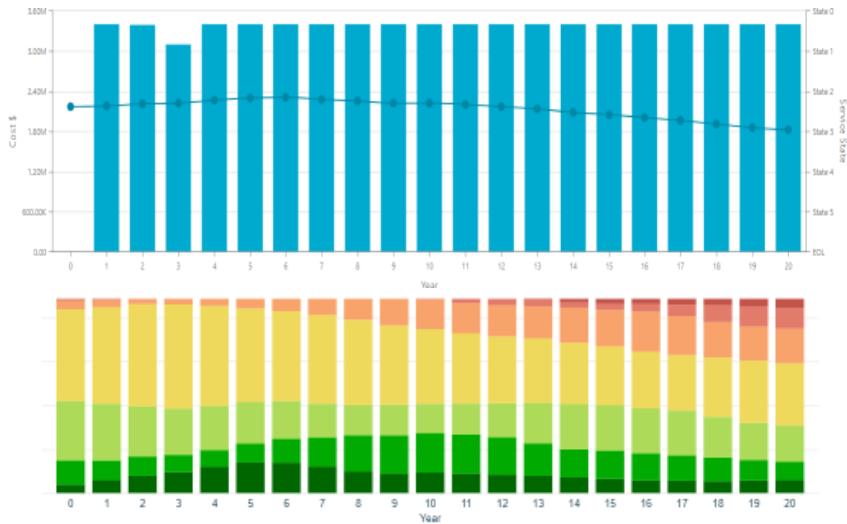
Footpath Network – Scenario Modelling



No Investment – \$0 m/yr



Annual Depreciation – \$6.8 m/yr

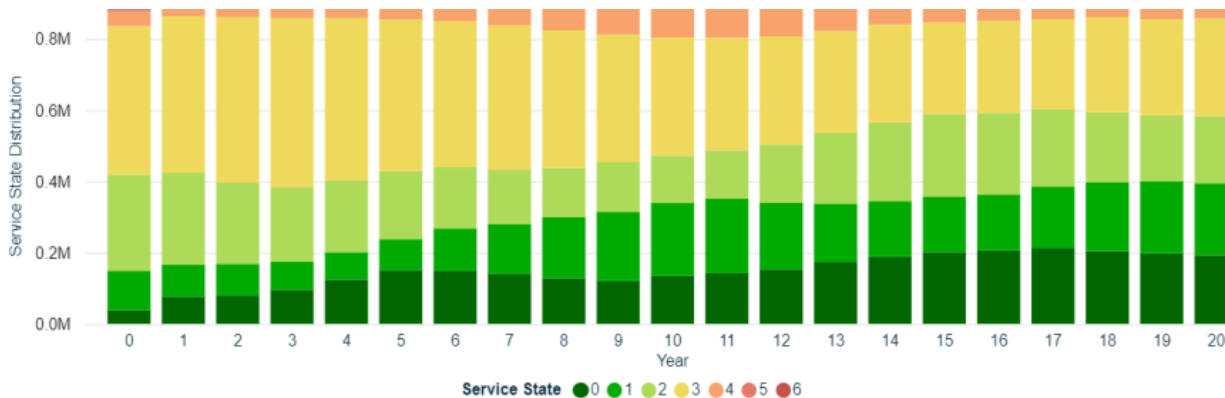
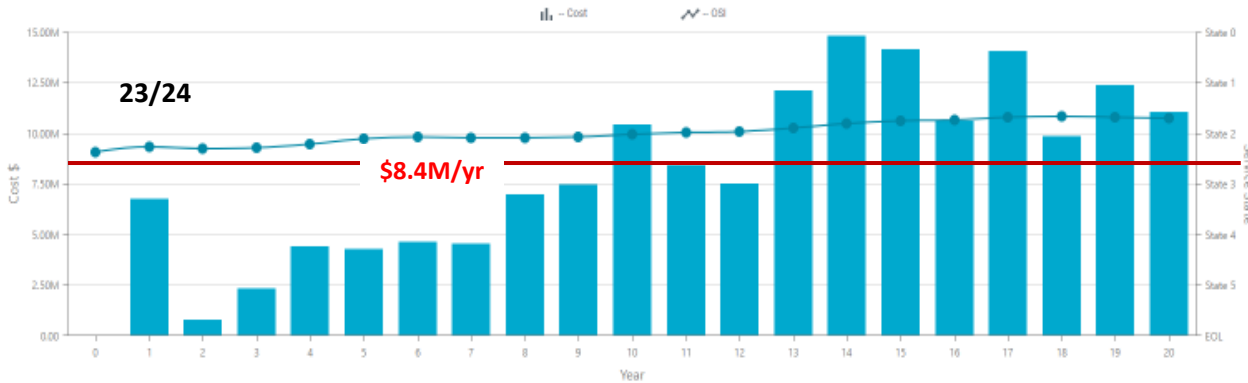


50% of Annual Depreciation – \$3.4 m/yr



Unconstrained – \$8.4 m/yr (average)

Footpath Network – Recommended Strategy



Expenditure – unconstrained model balanced average @ \$8.4M / year

Overall service state of the network is maintained around condition 2

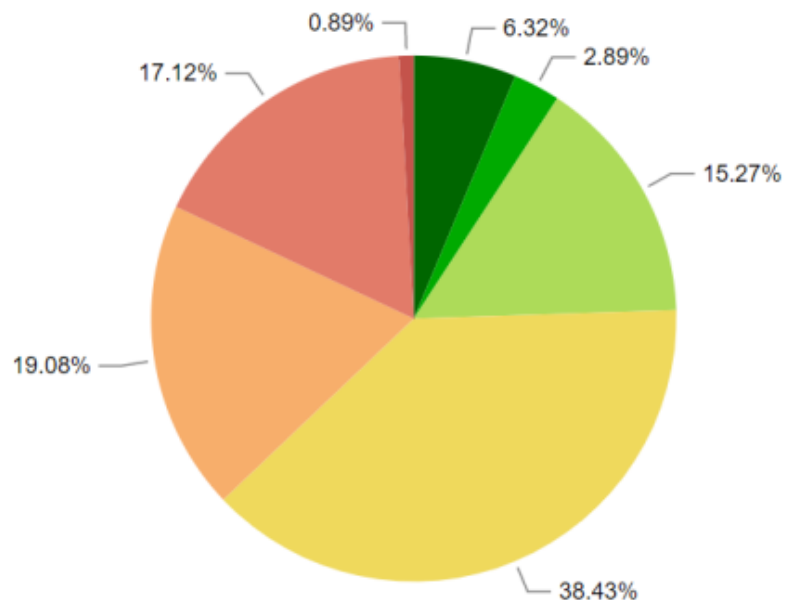
Sufficient funding to ensure assets can be renewed in accordance with the recommended intervention levels.

This would result in a healthier distribution of condition 3 footpaths and increase the percentage of assets in condition 1 and 2.

It is anticipated that this strategy would improve customer satisfaction scores, particularly for footpath maintenance and safety which currently only just meet the score targets of 70%

Traffic Signal Network

Traffic Signal Network – Current Condition



Pie chart represents predicted network condition in 2022
Last condition audit was undertaken in 2020
Traffic Signal network is condition audited every 4 years

A significant portion (37%) of the traffic signal network is approaching the end of its useful life.

To ensure that risks are managed and the network remains operational – it is recommended that an accelerated works program be implemented.

Condition 1
Very Good: asset is free of defects with no or minimal maintenance required
Condition 2
Good: minor defects, requiring infrequent planned maintenance
Condition 3
Fair: defects requiring regular planned maintenance
Condition 4
Poor: moderate defects requiring more significant maintenance
Condition 5
Very Poor: significant defects, asset approaching end of life, renewal should be planned in short-term

Traffic Signal Network – Renewal Intervention Criteria

Traffic Signal renewal intervention levels have been established considering:

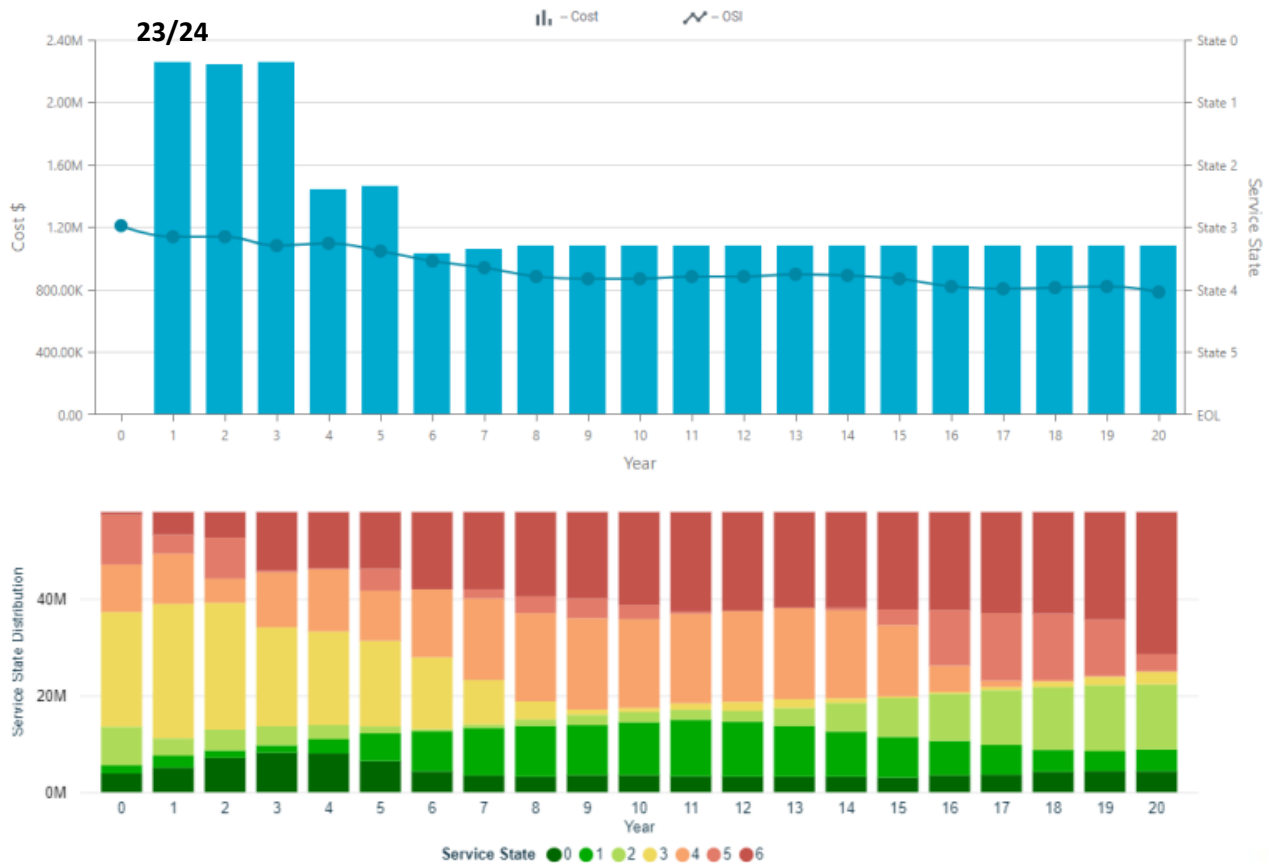
- Objective to minimise traffic signal network whole of life costs
- Risk management principles

Currently maintenance programs can cost effectively manage defects for assets in condition state 3 and 4.

When assets reach condition state 5, maintenance works become cost-prohibitive as required works are extensive and are intended to only keep that asset serviceable, rather than reducing future risk of failure.

It is recommended that assets are renewed as they transition from condition state 4 to condition state 5.

Traffic Signal Network – Current LTFP



Current LTFP - \$1.0-\$2.2M/yr

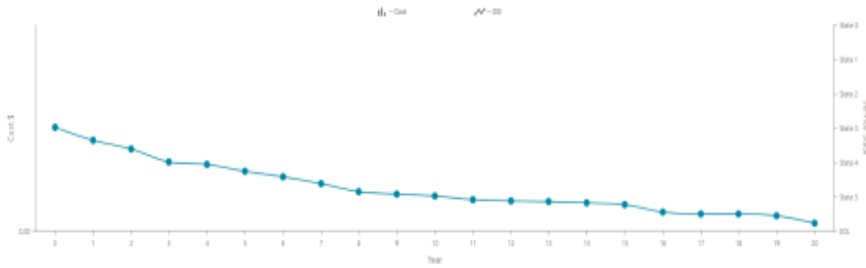
Overall service state of the network deteriorates from condition 3 to below service state 4.

Rapidly increasing amount of condition 4 and 5 assets, due to insufficient short and long term funding.

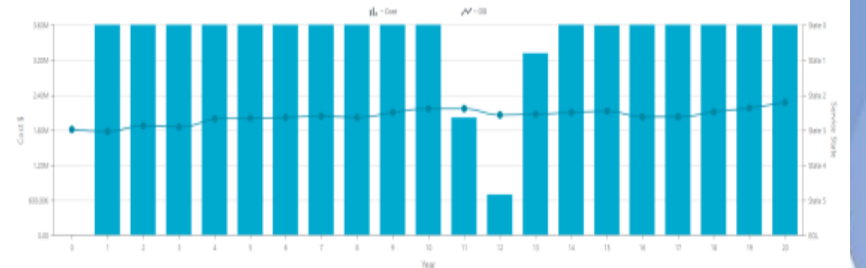
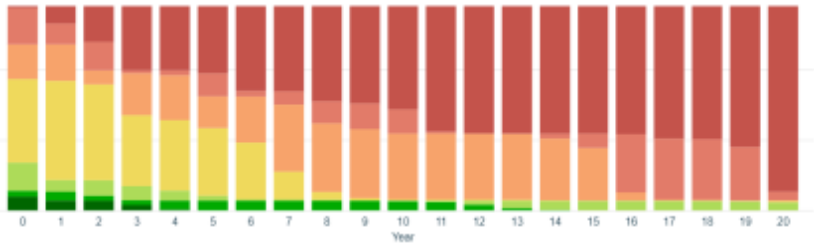
Conclusion – There is a significant risk of assets failing and no longer being able to operate unless funding levels are increased.

Levels of Service

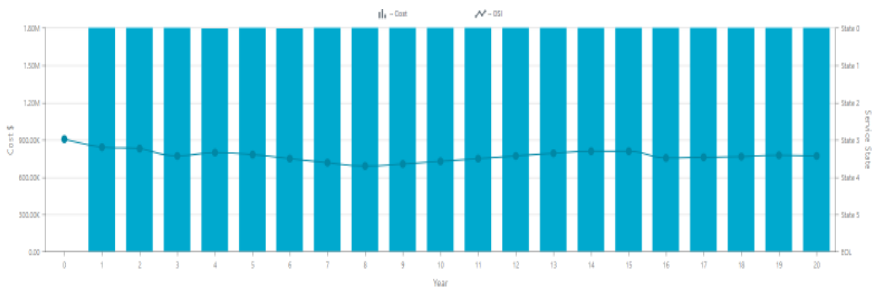
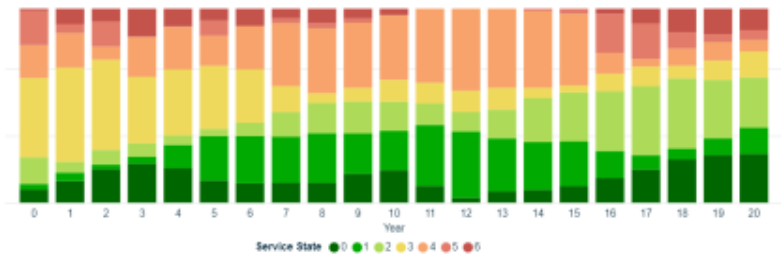
Traffic Signal Network – Scenario Modelling



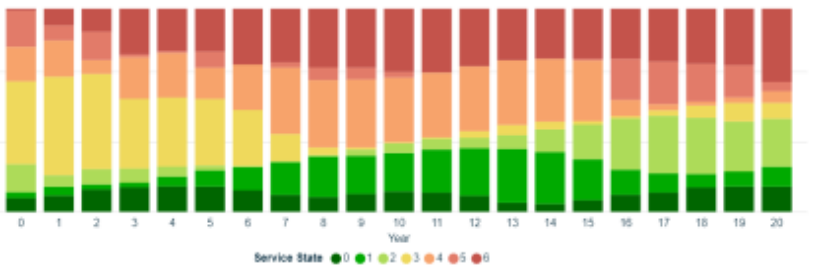
No Investment – \$0 m/yr



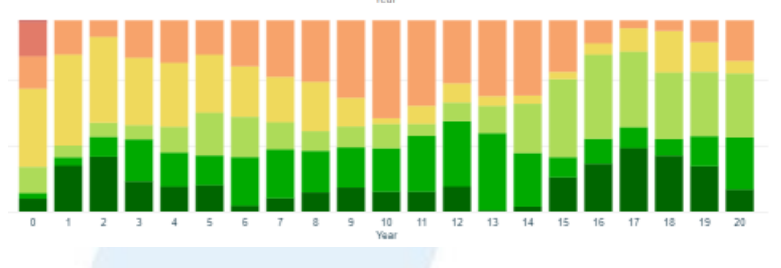
Annual Depreciation – \$3.6 m/yr



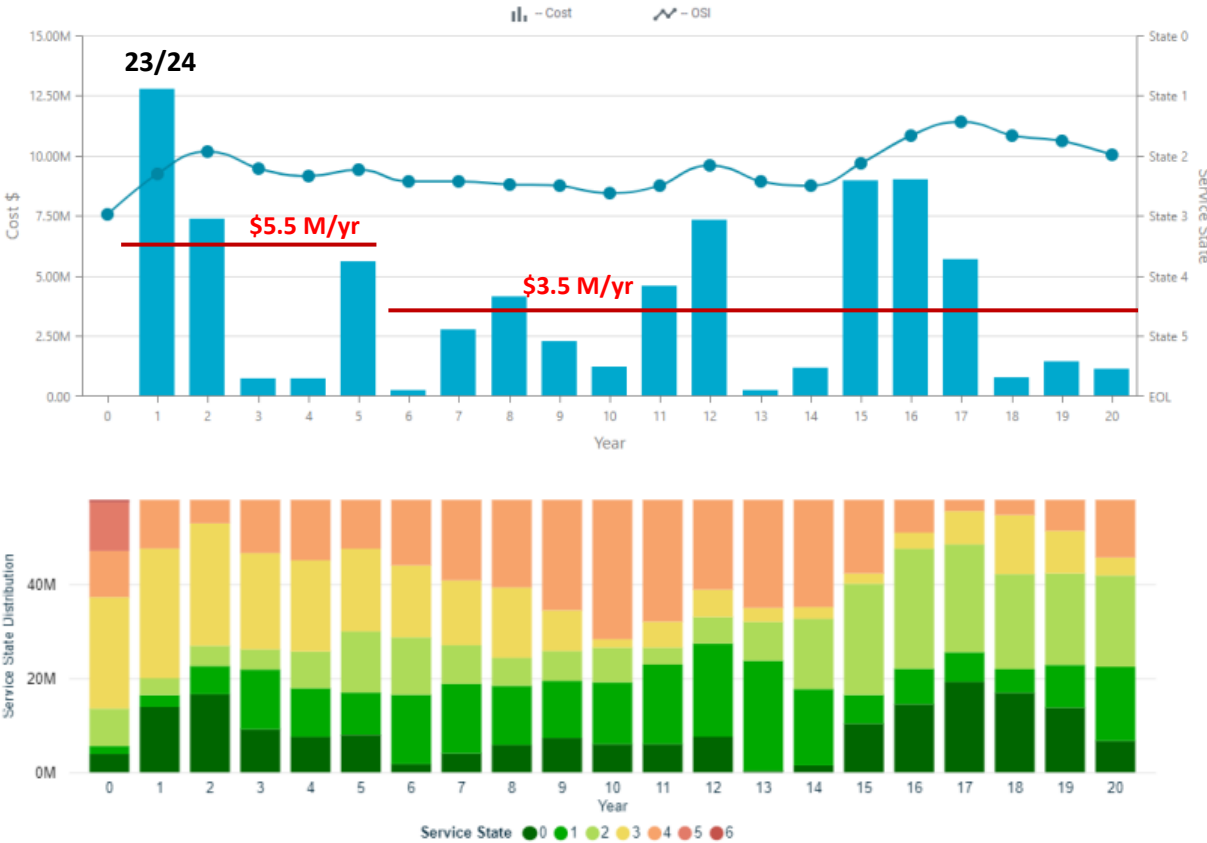
50% of Annual Depreciation – \$1.8 m/yr



Unconstrained – \$3.9 m/yr (average)



Traffic Signal Network – Recommended Strategy



Expenditure – unconstrained model balanced at \$5.5M for years 1-5, then \$3.5M for years 6-20

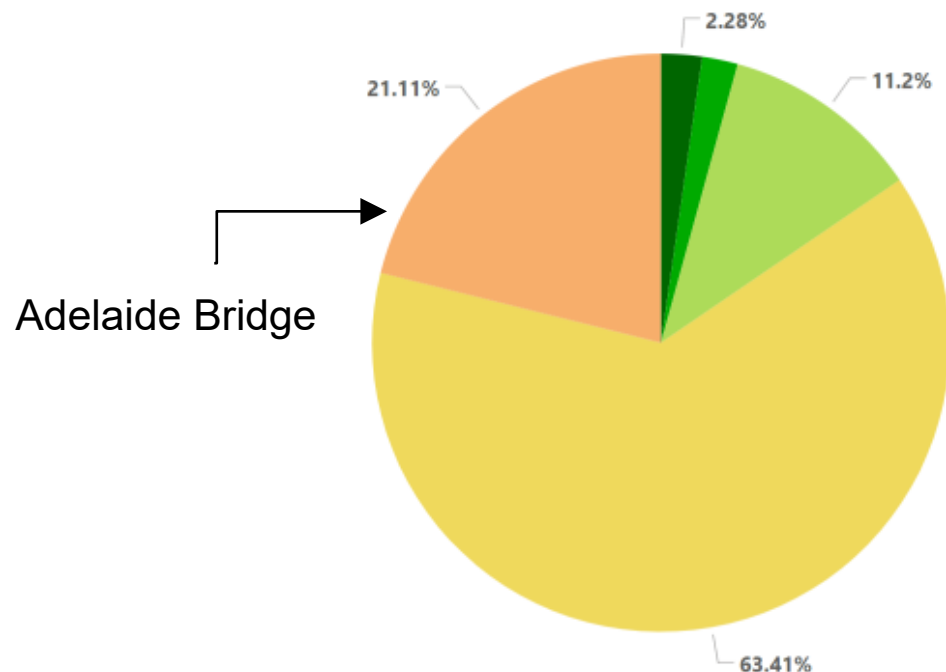
Overall service state of the network is generally maintained between condition state 2 and 3

Accelerated funding in years 1-5, allows the backlog of assets in very poor condition to be renewed and address risk of asset failure in a financially sustainable manner. Funding can then be reduced in years 6-20, following addressing the backlog

Conclusion – recommend this strategy is adopted

Bridge Infrastructure

Bridge Infrastructure – Current Condition



Pie chart represents predicted network condition in 2022
Condition audits were most recently undertaken in 2020 and 2021
Bridge assets are condition audited every 1-4 years (dependant on age of asset)

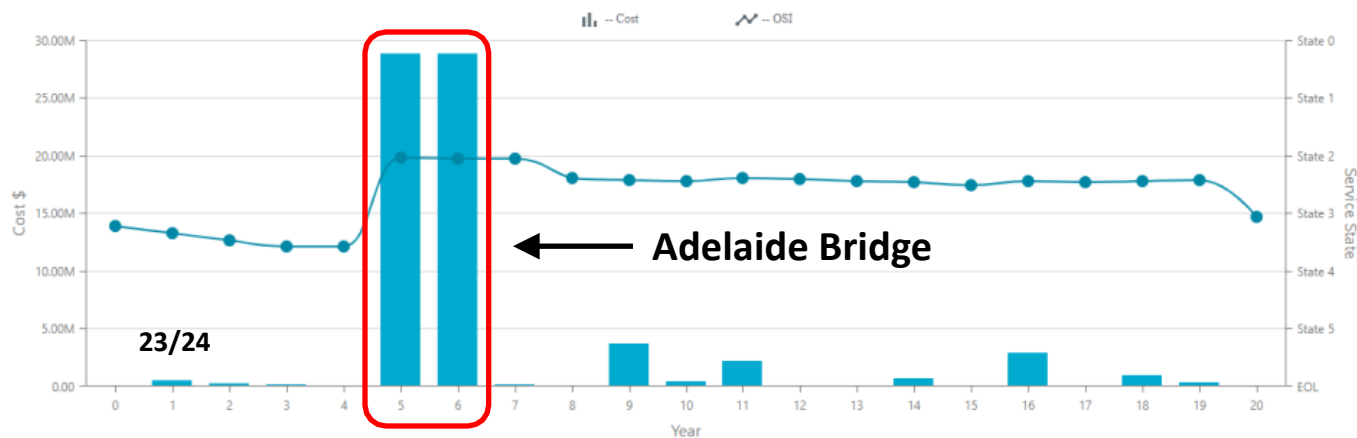
Majority of bridge infrastructure is rated in very good to satisfactory condition, the portion of assets rated in Condition 4 (Poor) predominantly represents Adelaide Bridge, which is approaching the end of its useful life

Condition 1
Very Good: asset is free of defects with no or minimal maintenance required
Condition 2
Good: minor defects, increasing maintenance required plus planned maintenance
Condition 3
Fair: defects requiring regular and routine planned maintenance
Condition 4 – Poor
Poor: significant defects, higher order cost intervention likely
Condition 5
Very Poor: physically unsound and/or beyond rehabilitation, immediate action required

Bridge Infrastructure – Renewal Intervention Criteria

- As a high risk asset class, scenario modelling has not been undertaken for the bridge asset portfolio
- Timing of planned bridge renewals are based off structural inspections, analysis and recommendations provided by external engineering consultants
- Inspections are undertaken at minimum every 4 years, and assess individual bridge components to determine the remaining useful life for components as well as well as the structure as a whole
- When major road bridges are identified as approaching end of life, an options analysis assessment is undertaken to determine the feasibility of rehabilitating the asset to extend the useful life in place of replacing the asset

Bridge Infrastructure – Recommended Strategy



The recommended strategy identifies estimated asset renewal funding requirements

As outlined in the LTFP, external funding opportunities will be discussed with all levels of Government. This aims to ensure significant City assets like Adelaide Bridge are funded appropriately without placing the sole burden on rate payers, but all those who experience the City and its surrounds.

Summary

Transportation Summary

Asset Category	Current LTFP (10 year average) (Note 90% Sustainability Ratio) (\$M)	Recommended Estimated Funding Required (10 year average) * (\$M)	Estimated Funding Change (10 year average) (\$M)
Roads #	\$8.1	\$9.2	+ \$1.1
Footpaths	\$5.5	\$8.4	+ \$2.9
Traffic Signals	\$1.5	\$4.5	+ \$3.0
Bridges	\$7.0	\$6.3	- \$0.7
Total	\$22.1	\$28.4	+ \$6.3

*Estimated renewal costs required is for construction only, design costs will be incorporated when AMP is finalised

Includes kerb and water table

The recommended estimated renewal costs required over the next 10 years is approximately \$6.3M higher (28%) than the current LTFP. This is attributed to:

- Reduced asset renewal investment and asset sustainability ratio over the past 5 years
- Additional asset renewal requirements that need to be addressed in this planning period
- Current LTFP is only based on a 90% sustainability ratio
- Increase in asset replacement costs
- Increase in the quantity of assets we manage

Next Steps



- Integrate planning principles and recommended management strategies presented into the Transportation Asset Management Plan
- Return to Council with a Draft Transportation Asset Management Plan for approval to go to community consultation in July/August 2022
- Transportation Asset Management Plan consultation with community, and required changes
- Return to Council for final approval of Transportation Asset Management Plan
- Asset Management Plans will remain as live documents and be updated annually