



# Executive Summary

# Road Asset Management Plan

April 2016

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21/12/2007	Draft Asset Management Plan - Discussion	
3/3/2009	Revised Draft Circulated	
May 09	Amended Draft Circulated	
June 09	Finalised Asset Management Plan	
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## KEY FINDINGS

In order to rate and compare the condition of our roads Council operates computerised Pavement Management System (PMS) which calculates a pavement condition index (PCI) for each road based on the pavement construction, pavement and surface age, surface condition and traffic loading. The calculation produces a rating from 1 - "very poor" - to 10 - "excellent" (where the calculated index is less than 0 the road has failed)

The previous Road Asset Management Plan (RAMP), adopted by Council in 2009, set a budget to achieve a target average network Pavement Condition Index (PCI) of 7.54 - "very good" condition.

Over the past 15 years Council has made significant progress in addressing the backlog of road rehabilitation works that had built up in the south of the City and has undertaken extensive resurfacing works. Consequently, the 2015 road condition survey found that the network currently has an average PCI of 7.6 - marginally above the target PCI of 7.54.

In order to continue to provide a high level of service in 2015/16 Council adopted the use of stone mastic asphalt for its reseal program rather than conventional asphalt. Stone mastic asphalt is more expensive than conventional asphalt but can be laid in thinner layer saving up to 30% in cost. It is also more resistant to reflective cracking.

Deterioration modelling of the road network using the PMS has demonstrated that an annual budget of \$3.3m - approximately split between \$2.3m for resurfacing and \$1m for rehabilitation - will continue to keep the road network in "very good" condition.

# 1 Executive Summary

## 1.1 Introduction and Purpose

The purpose of the Road Asset Management Plan (RAMP) is to ensure that Council's Road Assets fulfil their intended purpose and life expectancy at the most economic cost to the community. The RAMP balances engineering, technical practices, financial and community expectations to achieve this purpose.

### 1.1.1 Background and Drivers

Over the last ten years there have been changes in the sector that have driven a need to improve asset management practices across Local Government. These changes include;

- Rulings on asset management by the High Court,
- Introduction of the STEP program by the MAV,
- Introduction of the Road Management Act,
- Improved understanding of the infrastructure funding gap.

Darebin City Council has also expressed a commitment in the 2013-17 Council Plan to “review and continue to manage the existing asset base, ensuring that the city's public spaces, drains, roads, footpaths, facilities street trees, parks and other infrastructure are maintained to the highest standards”

The purpose of this RAMP is to address gaps and identify improvements to Council's road asset management practices. While considerable information on road assets is available, gaps in the available data have been identified. Future versions of the RAMP will progressively improve the extent and quality of this information. The improvement actions in Section 1.8 outline the areas where more information or actions are required. These items will be fed into future versions of the RAMP.

### 1.1.2 Context

The RAMP is one of a suite of documents relating to Asset Management Policy and Strategy within the City of Darebin. The diagram below (Figure 1.2) illustrates where the RAMP fits in the Asset Management framework.

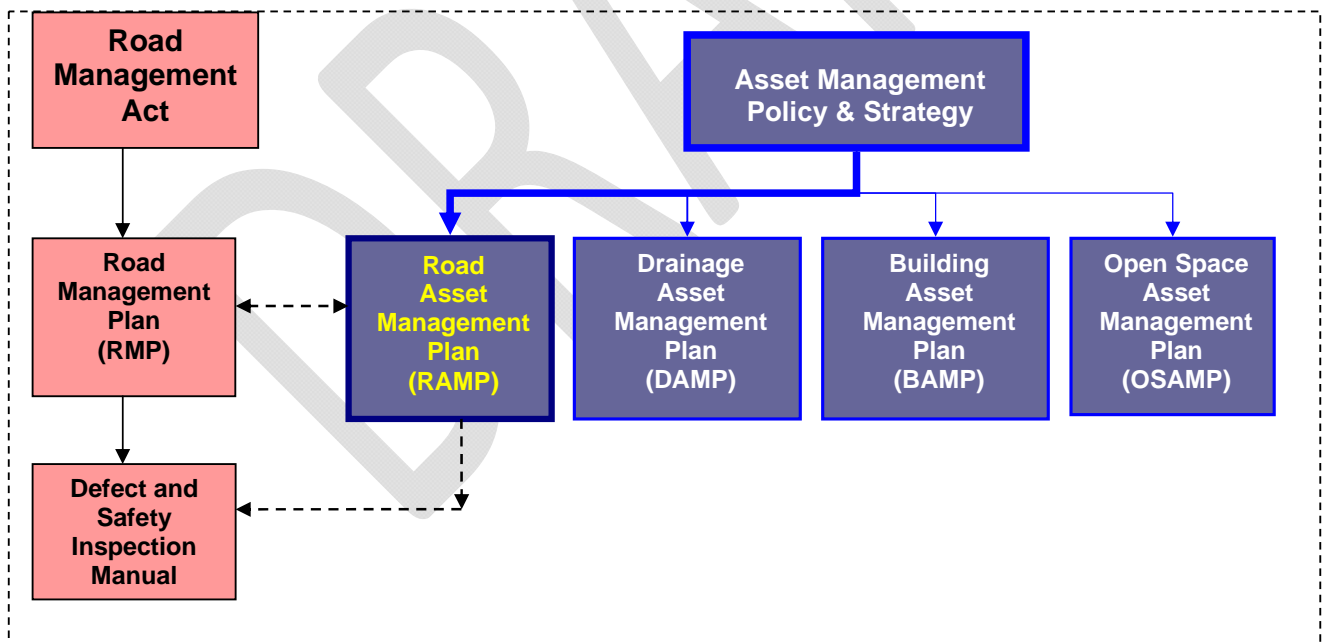


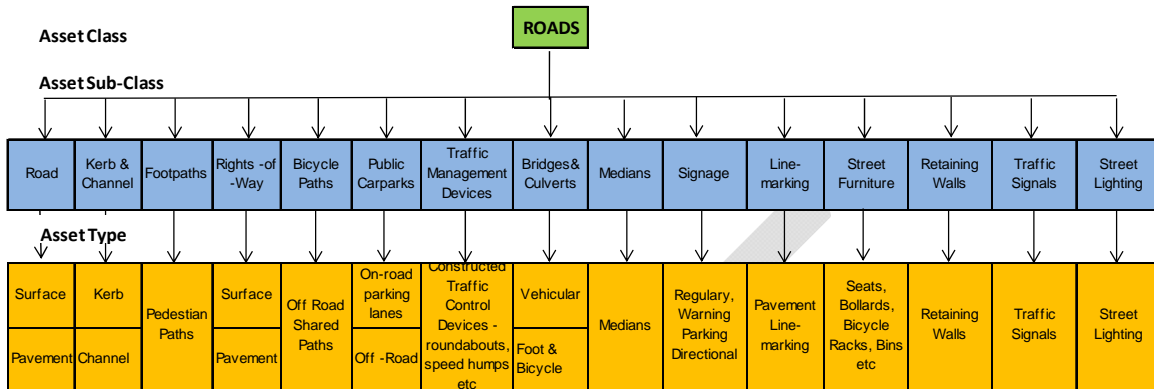
Figure 1.2 - Asset Management Policy Framework

The RAMP also interconnects with Council's Road Management Plan (RMP), established under the requirements of the Road Management Act 2004, and sets out the long term infrastructure framework for roads to meet Council's Asset Management objectives.

## 1.2 Asset Description and Profile

The Roads asset class categories those assets related to the provision of transport services for –

- Pedestrians
- Bicycles
- Private vehicles
- Commercial vehicles and (road- based public transport)



**Fig 1.3 Asset Class**

As of 30 June 2015 (date of the last valuation) Council's road assets consist of:

Asset Sub- class	Quantity	Replacement cost	Expected life	Comments
Roads - base	509 km	\$149,005,078	120 years	Average network condition – very good
Roads – wearing course	509 km	\$63,599,149	30 years	
Kerb and channel	1034 km	\$43,693,905	60 years	In Fair condition
Footpaths	1033 km	\$95,662,293	30 -50 years	In Fair to Good condition
Rights of Way	72 km (made) 19km (trafficable unmade)	\$20,688,088 \$0	100 years	In Fair condition In poor condition
Off road shared paths	26.8km	\$5,657,822	50 years	Reasonably new asset in good condition
Public Carparks	25No	\$3,120,802	120 years Base Wearing Surface 30 years	In Fair Condition
Bridges and Culverts	64 No.	\$7,781,823	50-100 years	In Good condition
Medians	2,020m <sup>2</sup>	\$117,859	60 Years	In Good Condition
Traffic Management Devices	1694 No.	\$4,796,045	50 years	In Fair condition
Street signs	7,202	N/A		No up –to-date information available on numbers and condition
Line marking	N/A	N/A	2 years	No information available on condition
Street Furniture	N/A	N/A	N/A	No information available
Retaining Walls	27 No	\$2545,000		In Fair to Good condition
Traffic signals	26 No.	\$2,931,500	20 years	No information available on condition
Public lighting owned by Council	12,305 full cost 2,156 40% cost	\$785,313	4 years	In fair condition

**Fig 1.4 -Asset Sub - classes**

## 1.3 Level of Service

Levels of service for roads and ancillary assets are divided into Customer and Technical levels of service. Customer levels of service have been set based on the results of annual Community Satisfaction Surveys and on the types and numbers of complaints received in the Customer Asset Management System (CAMS). Technical Levels of Service measure how the asset meets the required design standards and the performance of Council's maintenance operations against the requirements set in the Road Management Plan (RMP).

The level of service criteria for road assets which best describe customer expectations can be categorised by:

- **Quality (Asset Integrity)** - All roads and ancillary assets are in the best condition possible for the benefit of users.
- **Safety** - Potential hazards are well managed and accidents resulting in serious injury are rare.
- **Functionality** - Road assets are functionally fit for purpose.
- **Accessibility** - Road and footpath network is fully accessible.
- **Aesthetics** - Visually pleasing streetscape.
- **Responsiveness** - Council responds to customer requests promptly in respectful and friendly way
- **Cost Efficiency** - Deliver services at the lowest cost for the benefit of current and future users.

Performance measures have been set against each of these criteria for each asset class.

<b>Asset</b>	<b>Roads and Ancillary Assets</b>
<b>Accountable Manager</b>	<b>Manager Assets and Properties</b>
<b>Department</b>	<b>Assets and Business Services</b>
<b>Levels of Service – Roads</b>	

**What Services are provided?**

- Road surface
- Kerbs
- Footpaths
- Shared paths
- Linemarking
- Traffic signs
- Traffic signals
- Bridges

**Why do we provide these services?**

- Facilitate the movement of people and goods by motorised transport within and through the Darebin Council area
- Facilitate the movement of pedestrians
- Promote the safety of vehicles and pedestrians
- Facilitate movement of non-motorised transport

**Which group or section of the community will benefit from this activity?**

- Residents of Darebin
- Business owners
- Industry
- Commuters
- Public Transport
- Freight Transport

**Key Legislation and Strategies**

Asset Management Improvement Plan and Policy, Darebin Asset Management Strategy, Local Government Act, Code of Practice-Operational Responsibility for Public Roads, Road Management Plan, Darebin Council Plan, Going Places-the Darebin Transport Strategy 2010 -2030, Safe Travel strategy 2010-2015, The Darebin Cycling Strategy 2013-2018, Darebin Register of Public Roads



1.3.1 Levels of Service – Roads and Ancillary Assets

Levels of Service for Roads and Ancillary Assets									
Council Plan	Customer Value	Customer Levels of Service in the Asset Management Plan			Performance Measure Procedure		Technical Levels of Service in Operational Plans, Contracts Service Level Agreements	Cost of Service	
		Levels of Service	Measure	Target LOS	Measure	Current LOS	Levels of Service		
<b>Levels of Service</b>									
Goal: Vibrant City and Innovative Economy – Promote an innovative, vibrant and thriving economy with physical infrastructure that is both well maintained and appropriately regulated	<b>Quality (Asset Integrity):</b> All roads are in the best condition possible for the benefit of users	<b>Roads</b>							
		<ul style="list-style-type: none"> <li>Road surface provides a comfortable driving experience</li> </ul>	<ul style="list-style-type: none"> <li>% of satisfied customers</li> </ul>	>6.5	<ul style="list-style-type: none"> <li>2014 Community Surveys</li> </ul>	6.93	<ul style="list-style-type: none"> <li>Maintain roads at min average PCI &gt;7.0 - "Good" condition.</li> </ul>		
		<ul style="list-style-type: none"> <li>Road maintenance repairs undertaken in accordance with the Defect and Safety Inspection Manual</li> </ul>	<ul style="list-style-type: none"> <li>Repairs undertaken within the timeframes set out in the Road Management Plan</li> </ul>	>85%	<ul style="list-style-type: none"> <li>Local Gov performance ind.</li> <li>% of defects repaired within the timeframes set in the Road Management Plan</li> </ul>	0.34% 92.8	<ul style="list-style-type: none"> <li>&lt;3% of network below intervention level condition</li> <li>Repairs undertaken in accordance with the RMP &amp; appropriate engineering standards</li> </ul>		
		<b>Footpaths and Shared Paths</b>							
		<ul style="list-style-type: none"> <li>Provide an even all-weather surface</li> </ul>	<ul style="list-style-type: none"> <li>% of satisfied customers</li> </ul>	>6.5	<ul style="list-style-type: none"> <li>2014 Community Surveys</li> </ul>	6.57	<ul style="list-style-type: none"> <li>Repairs undertaken in accordance with appropriate engineering standards</li> </ul>		
		<ul style="list-style-type: none"> <li>Footpath and shared path slab replacement program undertaken to preserve and improve current condition</li> </ul>	<ul style="list-style-type: none"> <li>Repairs undertaken within the timeframes set in the Road Management Plan</li> </ul>	>85%	<ul style="list-style-type: none"> <li>% of defects repaired within the timeframes set in the Road Management Plan</li> </ul>	92.8			
		<b>Kerb and Channel</b>							
		<ul style="list-style-type: none"> <li>Kerb is in its designed horizontal and vertical alignment and does not hold water</li> </ul>	<ul style="list-style-type: none"> <li>% of satisfied customers</li> </ul>	>6.5	<ul style="list-style-type: none"> <li>2014 Community Surveys</li> </ul>	6.93	<ul style="list-style-type: none"> <li>Repairs undertaken in accordance with the RMP &amp; appropriate engineering standards</li> </ul>		Part of Roads Expenditure
		<b>Signs and Linemarking</b>							
		<ul style="list-style-type: none"> <li>Signs and Linemarking are legible and readily interpreted</li> </ul>	<ul style="list-style-type: none"> <li>Number of Complaints</li> </ul>	<10	<ul style="list-style-type: none"> <li>Customer complaints in CAMS</li> </ul>		<ul style="list-style-type: none"> <li>Road signs and linemarking complies with AS 1742</li> </ul>		
<b>Street Lighting</b>									
<ul style="list-style-type: none"> <li>Street lighting is fully operational</li> </ul>	<ul style="list-style-type: none"> <li>Number of complaints</li> </ul>	<10	<ul style="list-style-type: none"> <li>Customer complaints in CAMS</li> </ul>		<ul style="list-style-type: none"> <li>Street lighting outage reported promptly to the appropriate provider</li> </ul>				
<b>Bridges</b>									
<ul style="list-style-type: none"> <li>Bridges free of congestion</li> <li>Bridges suitable for efficient transport movement</li> </ul>	<ul style="list-style-type: none"> <li>Number of Complaints</li> </ul>	<10	<ul style="list-style-type: none"> <li>Customer complaints in CAMS</li> </ul>		<ul style="list-style-type: none"> <li>Bridge deck and footpaths treated to the same technical LOS as roads</li> </ul>				

Levels of Service for Roads and Ancillary Assets								
Council Plan	Customer Value	Customer Levels of Service in the Asset Management Plan			Performance Measure Procedure		Technical Levels of Service in Operational Plans, Contracts Service Level Agreements	Cost of Service
		Levels of Service	Measure	Target	Measure	Current		
<b>Levels of Service</b>								
Goal: Vibrant City and Innovative Economy – Promote an innovative, vibrant and thriving economy with physical infrastructure that is both well maintained and appropriately regulated	Safety: Potential hazards are well managed and accidents resulting in injury are rare	<b>Roads</b>						
		▶ Darebin Council roads pavements are safe	▶ Number of claims made against Council for damage attributable to the condition of the road	<20	▶ Insurance claims report (2014/15)	11	▶ Road repairs undertaken in accordance with the RMP  ▶ Traffic Management is in accordance with VicRoads Traffic Engineering Manual Vol 1- Traffic Management	
		▶ Roads crossings are safe for pedestrians	▶ % of satisfied customers	>6.5	▶ 2013 Community Surveys	6.7		
		▶ Traffic speeds are controlled	▶ % of satisfied customers	>6.5		5.39		
		<b>Footpaths and Shared Paths</b>						
		▶ Footpaths and shared paths are safe	▶ Number of accidents reported to Council	<10	▶ Insurance claims Report (2012/13)	33	▶ Trip hazards are repaired in accordance with the methods and timeframes set in the RMP	
			▶ % of satisfied customers	>6.5	▶ 2014 Community Surveys	6.57		
		<b>Signs and Linemarking</b>						
		▶ Signs and Linemarking are legible and readily interpreted	▶ Number of Complaints	<10	▶ Customer complaints in CAMS		▶ Signs and Linemarking comply with AS1742	
		<b>Street Lighting</b>						
▶ Level of Lighting is adequate to illuminate the road.	▶ Number of complaints	<10	▶ Customer complaints in CAMS		▶ Lighting coverage complies with AS1158			
	▶ % of satisfied customers	>6.5	▶ 2014 Community Surveys	6.54				
<b>Bridges</b>								
▶ Shared path bridges which are known to flood prone are sign posted with warning signs	▶ Number of affected bridges with warning signs	100%	▶ Visual inspection and risk assessment	Unknown	▶ VicRoads Cycle Note 21- Width of Off Road Shared Paths			
▶ Shared path bridges that do not meet current width standards are sign posted	▶ Number of affected bridges with cyclist dismount signs	100%	▶ Visual inspection and risk assessment	Unknown				

Levels of Service for Roads and Ancillary Assets								
Council Plan	Customer Value	Customer Levels of Service in the Asset Management Plan			Performance Measure Procedure		Technical Levels of Service in Operational Plans, Contracts Service Level Agreements	Cost of Service
		Levels of Service	Measure	Target	Measure	Current		
<b>Levels of Service</b>								
Goal: Vibrant City and Innovative Economy – Promote an innovative, vibrant and thriving economy with physical infrastructure that is both well maintained and appropriately regulated	Function: Road network is functionally fit for purpose	<b>Roads</b>						Approx \$1.00M pa.
		<ul style="list-style-type: none"> <li>Access to property meets customer requirements</li> <li>Road surfaces do not hold water</li> </ul>	<ul style="list-style-type: none"> <li>Functional deficiencies such as high crowns are corrected when the pavement is due for resurfacing</li> </ul>	100%	Annual Works Program	100%	<ul style="list-style-type: none"> <li>Road cross-section and long section comply with Darebin “Road Geometry and design Guidelines”</li> </ul>	
		<b>Footpaths and Shared Paths</b>						Included in above figure
		<ul style="list-style-type: none"> <li>Footpaths are reconstructed as required when functionally deficient roads are reconstructed</li> <li>New and rehabilitated shared paths comply with the latest design standards</li> </ul>	<ul style="list-style-type: none"> <li>If required footpath reconstruction included in annual works program</li> <li>Number of new and rehabilitated shared paths to complying with current standards</li> </ul>	100%	Annual Works Program	100%	<ul style="list-style-type: none"> <li>Road cross-section and long section comply with Darebin “Road Geometry and design Guidelines”</li> <li>Shared path width to comply with VicRoads Cycle Note 21- Width of Off-Road Shared Paths</li> </ul>	
		<b>Kerb and Channel</b>						Included in above figure
		<ul style="list-style-type: none"> <li>Kerb is in good condition in its designed horizontal and vertical alignment and does not hold water</li> </ul>	<ul style="list-style-type: none"> <li>Mis aligned kerb &amp; channel or broken is reconstructed as required in conjunction with road resurfacing or rehabilitation</li> </ul>	100%	Annual Works Program	100%	<ul style="list-style-type: none"> <li>Road cross-section and long section comply with Darebin “Road Geometry and Design Guidelines”</li> </ul>	
		<b>Signs and Linemarking</b>						VicRoads Traffic Engineering Manual-Vol2 Signs and Markings
		<ul style="list-style-type: none"> <li>Correct Signs and Linemarking is in place</li> </ul>	<ul style="list-style-type: none"> <li>Compliance with VicRoads design guidelines</li> </ul>	100%	Conduct audit	Unknown		
		<b>Street Lighting</b>						Lighting complies with AS1158
		<ul style="list-style-type: none"> <li>Level of Lighting</li> </ul>	<ul style="list-style-type: none"> <li>Compliance with Australian Standards</li> </ul>	100%	Conduct audit	Unknown		
<b>Bridges</b>						New bridges on shared paths to comply with VicRoads Cycle Note 21- Width of Off-Road Shared Paths		
<ul style="list-style-type: none"> <li>Bridges comply with the latest design standards</li> </ul>	<ul style="list-style-type: none"> <li>Functional deficiencies in existing bridges are clearly signposted eg Cyclist Dismount</li> <li>New bridges comply with latest design standards</li> </ul>	100%	All functionally deficient bridges signposted	100%				

Levels of Service for Roads and Ancillary Assets								
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		Levels of Service	Measure	Target	Measure	Current		
<b>Levels of Service</b>								
Goal: Vibrant City and Innovative Economy – Promote an innovative, vibrant and thriving economy with physical infrastructure that is both well maintained and appropriately regulated	Accessibility Road network fully accessible	<b>Road Pavement</b>						
		▶ Road network is fully accessible	Number of customer complaints	<5	▶ Number of customer complaints		▶ In the instance where a road is closed for reasons such as maintenance, upgrading, renewal or a public event that appropriate notification is given to users. ▶ Detours around closures are adequately signposted.	
		<b>Footpaths and Shared Paths</b>						
		▶ The footpath and shared path network is fully accessible	Number of customer complaints	<5	▶ Number of customer complaints		▶ In the instance where a footpath or shared path is closed for reasons such as maintenance, upgrading, renewal or a public event that appropriate notification is given to users. ▶ New footpaths comply with Darebin road geometry and design Guidelines ▶ New shared paths comply with VicRoads Cycle Note No 21 – Width of Off-Road Shared Paths	
		<b>Bridges</b>						
		▶ Provide fully accessible bridges on the road and shared path network	▶ Number of bridges open	100%	▶ Number of bridges open	100%	▶ In the instance where a bridge is closed for reasons such as maintenance, upgrading, renewal or a public event that appropriate notification is given to users. ▶ Detours around closures are adequately signposted	

Levels of Service for Roads and Ancillary Assets								
Council Plan	Customer Value	Customer Levels of Service in the Asset Management Plan			Performance Measure Procedure		Technical Levels of Service in Operational Plans, Contracts Service Level Agreements	Cost of Service
		Levels of Service	Measure	Target	Measure	Current		
<b>Levels of Service</b>								
Goal: Vibrant City and Innovative Economy – Promote an innovative, vibrant and thriving economy with physical infrastructure that is both well maintained and appropriately regulated	<b>Aesthetics:</b> Visually pleasing streetscape	<b>Roads</b>						
		<ul style="list-style-type: none"> <li>Road surface has a uniform surface finish free of patches or different types/ages of surfacing materials</li> <li>New road surfaces are not disturbed by known and planned service authority works</li> <li>Road surface does not hold water</li> </ul>	<ul style="list-style-type: none"> <li>Number customer complaints</li> </ul>	<10	<ul style="list-style-type: none"> <li>Number of Customer Complaints</li> </ul>	Unknown		
		<b>Footpaths and Shared Paths</b>						
		<ul style="list-style-type: none"> <li>Footpaths in shopping precincts have a uniform surface finish free of patches or different types/ages of surfacing materials</li> </ul>	<ul style="list-style-type: none"> <li>Number of Customer complaints</li> </ul>	<10	<ul style="list-style-type: none"> <li>Number of Customer Complaints</li> </ul>	Unknown		

Levels of Service for Roads and Ancillary Assets								
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		Levels of Service	Measure	Target	Measure	Current		
<b>Levels of Service</b>								
Goal: Vibrant City and Innovative Economy – Promote an innovative, vibrant and thriving economy with physical infrastructure that is both well maintained and appropriately regulated	<b>Responsiveness:</b> Council responds to customers promptly in a friendly and respectful way and issues are addressed promptly	<b>All Road Assets</b>						
		<ul style="list-style-type: none"> <li>Timely response to both urgent and non-urgent maintenance requests and repairs.</li> </ul>	<ul style="list-style-type: none"> <li>Response times in accordance with the RMP</li> </ul>	>85%	<ul style="list-style-type: none"> <li>CAMS records</li> </ul>	92.8%		

Levels of Service for Roads and Ancillary Assets								
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		Levels of Service	Measure	Target	Measure	Current		
<b>Levels of Service</b>								
Goal: Vibrant City and Innovative Economy – Promote an innovative, vibrant and thriving economy with physical infrastructure that is both well maintained and appropriately regulated	<b>Cost Efficiency:</b> Delivery of services at the lowest practical cost for present and future users	All Road Assets						
		▶ Renewal works undertaken at the optimum time as determined by the PMS	▶ Annual budget for roads meets the amounts required to meet the defined LOS		▶ Budget shortfall or excess			

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## 1.4 Future Demand

The trends that are expected to affect Darebin and impact on the condition of the road network are:

### 1.4.1 An Aging Road Network

Roads in Darebin range in age from early last century for roads in Northcote to very recent for roads in the Polaris subdivision in Bundoora. The last boom in construction in Darebin was in the 1960s. Most of these roads are now due for their second or third reseal and are showing signs of aging. The average surface age is 19 years with 78km being 30 years and older.

### 1.4.2 New Residential Development and Growth Areas

There are minimal opportunities for further subdivision development within the City however growth corridors have been identified along High St and Plenty Road for multi-unit and medium density development and the Northland Principal Activities Area is being planned as a major growth area of residential development and employment. This will increase the volume of traffic in these areas.

### 1.4.3 Population Growth

In 2007, the total population of the City was estimated at 128,000 and was predicted to increase to 136,000 by 2031. However, with a population count of 136,474 in the 2011 census this growth forecast has already been exceeded and is currently 143,075. If this rate of population increase is sustained then by 2033 the population will be in the order of 164,800.

### 1.4.4 Use of Public Transport

Significant improvement to Public Transport is necessary to reduce reliance on private motor vehicles. The provision of public transport is the responsibility of the State Government, however, Council has a role to play in influencing government.

Council's Transport Strategy comprehensively outlines Council's approach to this area, and the actions outlined in this RAMP support Council's other transport initiatives.

However, any increase in the frequency or distribution of public transport is likely to have an impact on road condition as many of the current (and possible future) bus routes are located on local residential streets which have not been designed for the increase in heavy vehicle loading imposed by regular bus traffic. A fully loaded bus does the same damage to the road pavement as more than 11,000 cars.

### 1.4.5 Use of Private Motor Vehicles

The 2011 census found that private motor vehicles are the dominant mode of transport for residents in Darebin travelling to work, with 75% of all journeys to work involving a car for all or part of the journey. The proportion was higher than the Melbourne average of 69%. The use of private motor vehicles is likely to remain high for some time.

### 1.4.6 Volume and Gross Vehicle Mass of Freight Traffic

Freight traffic is expected to double in the next twenty years. Trucks have a significant impact on the deterioration of the road network. The largest truck that can be driven legally on Council's road without restriction is 19m long with a gross vehicle mass of 42.5 tonnes. One of these trucks does the same damage to the road pavement as more than 17,000 cars.

### 1.4.7 The Effects of Peak Oil and Climate Change

Peak Oil is expected to reduce the size of private motor vehicles and introduce changes to the propulsion system, e.g. electric or hybrid cars and may influence the number of cars using the road for some period of time. It will also increase the cost of petroleum based road making material. This will increase our costs, affecting our financial projections unless affordable alternatives are found.

Changing rainfall patterns and decreasing rainfall is anticipated to lead to more extreme changes in the moisture content of subgrades leading to increased cracking of roads on reactive soils. This may result in a shorter life for these pavements. Higher summer day temperatures will affect bituminous wearing courses. Anticipated higher rainfall intensity may require the use of roads to catch or hold water.

## 1.5 Lifecycle Management Plan

Separate Life Cycle Management Plans have been prepared for each asset sub-component as listed in Fig 1.4 above.

### 1.5.1 Roads Pavements

#### 1.5.1.1 Physical Parameters

- 72% of municipal roads are access roads
- 76% of roads are surfaced with asphalt.
- 63% of the pavement within the network is more than 40 years old
- The majority of road surfaces are less than 30 years old. The predominant road width is between 6m and 7.5m.

#### 1.5.1.2 Road Condition

##### (I) Network Pavement Condition

- Roughness 110 IRI
- Cracking 4%
- The average network PCI in 2015 was 7.6 – “Very Good” condition

##### (II) Network Functional Condition

Council has a number of roads, particularly in Rucker Ward, that are functionally deficient due to:

- High crossfall
- Low kerbs
- Poor pavement shape
- Kerbs and pavements damaged by tree roots

#### 1.5.1.3 Road Valuation (2015)

- Replacement Cost - \$387,751,164
- Written down value - \$234,586,907
- Annual Depreciation, \$6,599,498

#### 1.5.1.4 Historical Data

- Average length of pavement resealed in the period 2003 to 2015 – 12.1km pa.
- Average expenditure 2002/03 to 2014/15 (in \$2014):
  - Capital Expenditure – \$4.10m pa.
  - Operations and Maintenance Expenditure - \$698,000 pa.

#### 1.5.1.5 Routine Maintenance Plan

##### (I) Maintenance Plan

Routine maintenance is the regular ongoing day – to – day work that is necessary to keep the road assets operating. The City of Darebin recognises three (3) distinct maintenance strategies which form the basis of the management of the road assets; these are:

- Preventative – Proactive Routine maintenance
- Reactive – Un-programmed maintenance, responding to reports of poor performance
- Periodic-Proactive Programmed Maintenance – this is treated as a Capital Works item

The **Preventative component** involves the requirement to carry out safety inspections and to prepare programmes using a risk assessment to complete the work identified in those inspections and complies with Council's Road Management Plan. Confirm through an auditing process that the contract works are being undertaken within the standards and to the requirements set out in legislation and this AMP.

The **Reactive component** involves the logging of requests for service from road users on CAMS, Council's Service Request Management system. These requests for service are forwarded to the responsible department for prompt assessment and prioritisation.

The **Periodic component** is based on a structural inspection undertaken of the entire road pavement and inventory network once every 4 years. This information is contained in a computerised PMS and is used to develop a long term periodic maintenance program. This may involve the renewal, replacement or reconstruction of the asset or resurfacing the road to maintain quality and extend the serviceable life of the asset.



## **(II) Current Levels of Service for Routine Maintenance**

The current level of service is based around the requirements of the Road Management Act. The detail of the LOS is stated in Council's Road Management Plan, the latest version of which was adopted by Council 1/07/2013.

## **(III) Routine Maintenance Standards**

To ensure a consistent approach to assessing and repairing defects for on the road network, Council has produced a "Defects and Safety Inspection Manual". The latest version was adopted by Council 1/07/2013.

## **(IV) Forecast Routine Maintenance Costs**

Routine Maintenance costs are estimated at \$600,000pa.

### **1.5.1.6 Roads Renewal Plan**

#### **(I) Renewal Plan**

Renewal expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original capacity. Work over and above restoring an asset to original capacity is new works expenditure.

Darebin Council uses the SMEC Pavement Management System (PMS) to generate predictions on the future state of the road network

In developing a forward Capital Works Program Council has adopted a prediction period of 20 years.

Council's PMS provides the following decision making tools:-

- A clear picture of the level of funding that Council must allocate towards sealed roads for the next 5, 10 or 20 years.
- A clear picture of the condition profile of the road network if the funding levels were altered and any risk analysis associated with any deteriorating condition.
- A funding allocation strategy by network or hierarchy, that is, optimal distribution of funding
- Maintenance including the level of minimum maintenance funding, optimal maintenance funding and the impacts of reduced maintenance funding.
- Renewal profiles and future gaps

#### **(II) Renewal Standards**

"Road Geometry and Drainage Design Guidelines" setting out Council's standards for the construction of guidelines are used for setting the standard of road geometry to be used on new developments. It details the standard of such things as, road reserve widths, pavement widths, provision for footpaths and bike paths etc. Road construction is usually carried out to the VicRoads standards, that is, VicRoads road construction new roads and reconstruction of existing roads have been developed and approved by Council. These specifications are used for tendering purposes.

Generally the standards for construction, renewal and refurbishment are based on modern construction standards taking into account the environmental sensitivities of matters such as established trees, historical features (urban character), road safety and traffic management requirements.

Increasing objections to the use of Spray seals for resurfacing of roads has lead Council to use asphalt as the resurfacing material.

#### **(III) Future Renewal Costs**

The LOS adopted for the road network is to maintain a minimum expenditure of \$3.3million pa (in \$2015), including \$2.3m pa of resurfacing and \$1.0m pa. of rehabilitation works on functionally deficient roads and failed road pavements p.a. Modelling through the PMS demonstrates that this level of funding will initially result in a small reduction in the network PCI from the current level of 7.6 to 7.4 before it gradually rises again to a level of PCI 8 in 2027.

#### **(IV) Creation/Acquisition/Augmentation Plan**

New road assets are usually created as a result of sub-divisional development (Donated Assets) or Special Charge Schemes. With the completion of the Polaris subdivision in Bundoora in 2013 there is little opportunity within the municipality for further major road creation.

There are a number of unmade Access Roads within the Municipality which could be upgraded in the future by Special Charge Scheme. Council will only proceed in declaring a Special Charge Scheme after

majority support from abutting owners is canvassed and received. This is in compliance with the Act. There may be a requirement for Council to make a contribution usually up to 33% of the total cost.

**(V) Disposal Plan**

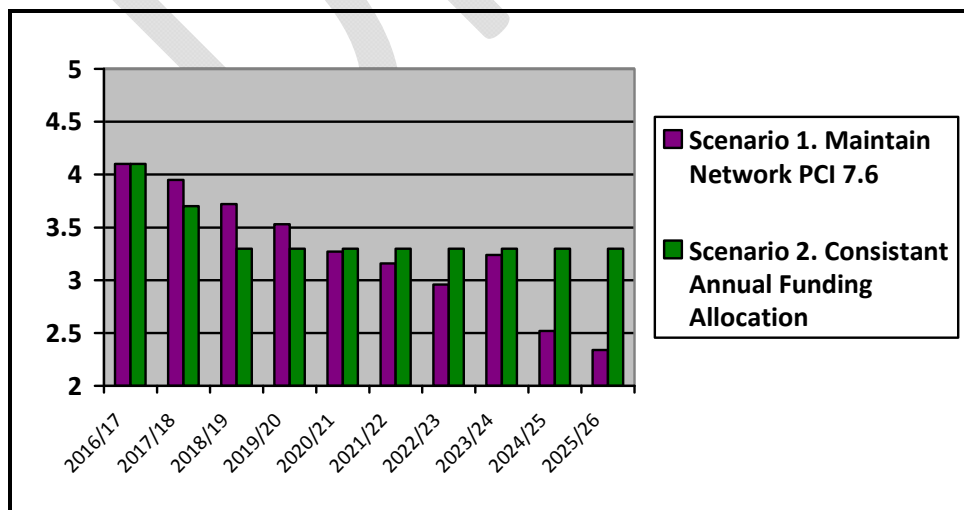
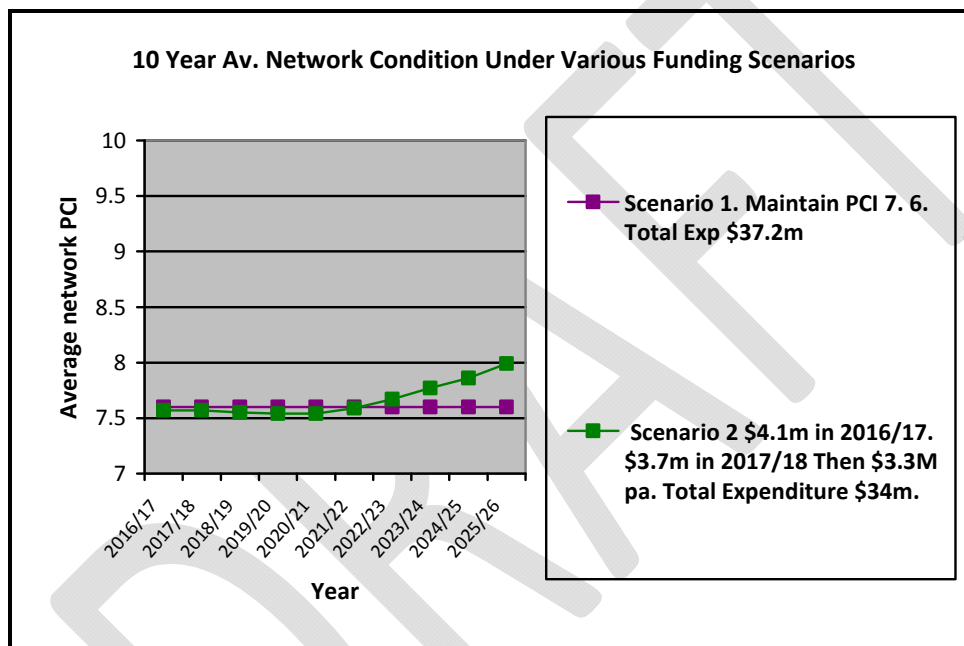
Disposal is any of the activities associated with disposal of a decommissioned asset, including sale, demolition or relocation. It is uncommon for the discontinuance of any roads forming a frontage to properties within Darebin

**(VI) Funding For Roads to Meet the Level of Service**

Council's pavement management system has the ability to predict the level of funding required to maintain the road network using two different scenarios:

- Scenario 1 – Determination of the level of funding required each year to maintain the roads at a predetermined condition level.
- Scenario 2 - Adopting a set budget and determining the condition that the roads will be in at that level of expenditure.

Both Scenarios were modelled over a 10 year period, to determine the total required expenditure.



NOTE::The higher levels of funding 2016/17 and 2017/18 are the result of increase in the Roads to Recovery funding in those years

For scenario 2 the network PCI falls from 7.6 to 7.54 in 2019/20 before rising again to 7.6 in 2020/22. This is only a minor reduction in network condition and still within the “very good” condition range.

Therefore, in this update of the Road Asset Management Plan the level of funding for roads was determined using scenario 2 as it was felt that this gave Council the best certainty for future budget planning, while also giving a lower level of total funding over the 10 year period than Scenario 1

In calculating the funding gap “Roads” includes road pavement and surfacing. The annual depreciation amount calculated for these assets in 2015 was \$3.36m p.a. The proposed 20 year funding for roads is shown below. Total funding for 10 years is \$34million and the projected 20 Year expenditure is \$67million.

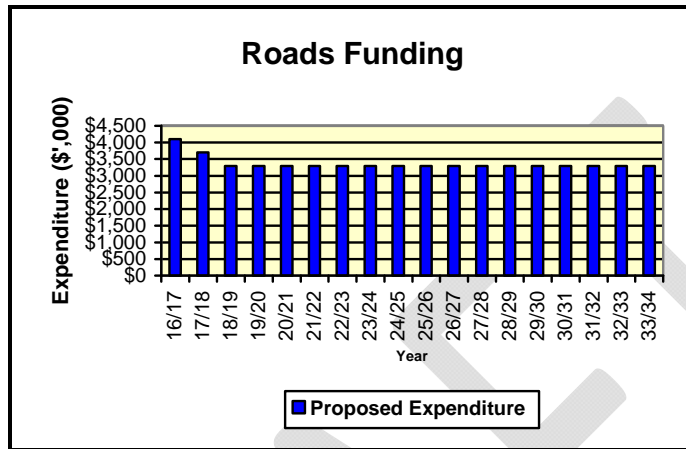


Fig 1.5 – Proposed Funding Level for Roads

The above profile demonstrates that with a set expenditure of \$3.3million pa (which is in line with recent budget allocation for roads), the current “very good” road condition can be maintained. It is recommended that once the network condition reaches PCI 8 in 2025/26 that the level funding be reviewed.

## 1.5.2 Kerb and Channel

### 1.5.2.1 Physical Parameters

- Length of Kerb and Channel (all types) – 1034km
- 929km (89.8 is concrete kerb and Channel)

### 1.5.2.2 Kerb and Channel Condition

- 99.8% of the kerb and channel length is in “fair” condition or better

### 1.5.2.3 Valuation

The kerb and channel valuation at 30/06/2015 had a total Replacement Value of \$43,693,905 and a Written Down Value (WDV) of \$24,215,231 with an Annual Depreciation of \$728,232 The annual depreciation was calculated based on condition.

### 1.5.2.4 Forecast Routine Maintenance and Renewal Expenditure

The forecast expenditure for kerb and channels is included as part of the road pavement analysis.

## 1.5.3 Footpaths

### 1.5.3.1 Physical Parameters

- Length of footpath – 1033km
- 96.7% concrete and 3% asphalt

### 1.5.3.2 Footpath Condition

- The majority of the footpath is in “good” or “fair” condition. There has been a significant improvement in footpath condition since the last RAMP in 2009.

**1.5.3.3 Valuation**

The footpath valuation at 30/06/2015 had a total Replacement Value of \$95,662,293 a Written Down Value (WDV) of \$48,481,479 with an Annual Depreciation of \$1,913,246. The annual depreciation was calculated based on condition.

**1.5.3.4 Routine Maintenance Plan**

Concrete footpaths are maintained by grinding of the joints to remove trip hazards or by replacement of the deformed or cracked footpath section. Bitumen wedges are used as a temporary measure to remove trip hazards prior to permanent repairs being undertaken.

**1.5.3.5 Forecast Routine Maintenance Expenditure**

Routine maintenance expenditure is estimated at \$400,000pa over the next 20 years

**1.5.3.6 Renewal Plan**

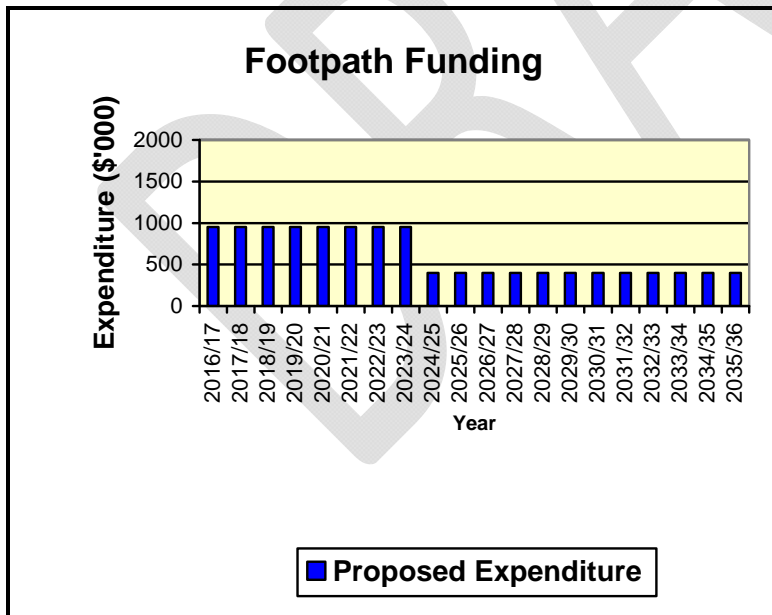
A detailed survey of Darebin’s footpaths in 2000 revealed that a footpath repair program was required. From 30/06/2009 to 30/06/2012 Council spent a total of \$4,317,182 on grinding and slab replacement programs to improve footpath condition in accordance with the requirements of council’s *“Defect and Safety Inspection Manual”*.

Footpath sections to be renewed are identified by visual inspection survey in accordance with Defect and Safety Inspection Manual component of the Road Management Plan. Failure modes include excessive displacement of the joints creating trip hazards or wide cracking.

Asphalt footpaths are generally installed in shopping precincts. Because these are areas of high use and frequent disturbance by utility authorities these footpaths are renewed on a regular basis for aesthetic reasons.

**1.5.3.7 Forecast Renewal Expenditure**

Renewal expenditure is estimated at an amount \$950,000pa over the next 8 years, falling to \$400,000 in the following 12 years. Full details of Council’s footpath renewal program are contained in Appendix 10.8. Total expenditure



**Fig 1.6 – Proposed Funding for Footpaths**

**1.5.3.8 Apparent Funding Gap - Proposed Renewal Expenditure vs Annual Depreciation**

The proposed renewal expenditure of \$950,000 pa is well below the 2015 annual depreciation rate of \$1,913,246, suggesting a funding gap.

However, the calculated depreciation is based on an adopted useful life of concrete footpaths of 50 years. A review of the actual age of Darebin's concrete footpaths and their condition strongly indicates that the useful life of Darebin's concrete footpaths is well in excess of 50 years - 425km out of 999km of existing concrete footpath is older than 50 years with 33km older than 100 years.

The useful life will be reviewed and increased in the 2016 Valuation. This will reduce the apparent funding gap with the full extent to be determined by how much useful life is extended

#### **1.5.4 Laneways (Rights-of-Way)**

Laneways included in this Plan are those listed in the Register of Public Roads. There are a further 19km of unmade, trafficable laneways which council does not presently maintain.

##### **1.5.4.1 Physical Parameters**

- **Length of laneways 72km**
  - 59.7% concrete, 27% bluestone, 13% asphalt and 0.3% gravel

##### **1.5.4.2 Laneway Condition**

- 79% of laneways considered to be in "fair" condition or better

##### **1.5.4.3 Laneway Valuation**

The laneway valuation at 30/06/15 had a total Replacement Value of \$20,371,163 and a Written Down Value (WDV) of \$12,152,849 with an Annual Depreciation of \$223,859. The annual depreciation was calculated based on condition.

##### **1.5.4.4 Historical Data - Growth/Reduction and Past Funding**

There has been a steady reduction in the length of laneways from a length of 112.5 km in 1996 to 77km in 2011/12, as Council has implemented its policy to dispose of laneways that are not reasonably required for public access discontinuing them and offering them for sale to abutting property owners.

##### **1.5.4.5 Routine Maintenance Plan and Forecast Expenditure**

Routine maintenance of laneways generally involves rubbish removal of the filling of low or sunken portions of bluestone laneways to improve ride quality and surface drainage. Funding for these works is included in the funding for road pavement maintenance.

##### **1.5.4.6 Renewal Plan and Forecast Expenditure**

Council does not currently undertake the capital upgrade of unmade laneways as part of the normal budget process. These are upgraded either by special charge schemes (which are funded by the adjoining residents (with partial funding from Council) or as a requirement of development approval (wholly funded by the developer). An amount of \$150,000 p.a. has been allocated in the current 10 year works plan specifically for the renewal of sealed laneways in "very poor" and "poor" condition. Currently there are 9 laneways totalling 650m in length in "very poor" condition and priority has been given to renewing these in the current works plan

There are 137 laneway blocks totalling 12.77km assessed as being in "poor" condition. At present there is no system for prioritising renewal works within this group. In addition 4.24km of the laneways in "poor condition" are paved in bluestone, were constructed in the first quarter of the 20<sup>th</sup> century, and are located within heritage overlay areas. These laneways present a particular challenge to Council as they must be renewed in bluestone at high cost. Also these laneways are generally built on very flat grades with inadequate underground drainage.

##### **1.5.4.7 Disposal Plan**

Laneways are generally an alternate rear access to properties that get very minor use and therefore have not received sufficient budget attention in the past. Council adopted a Right-of-Way and Road Closure Policy (1997) and a Laneway Action Plan (2006) which provides a strategic overview of laneway issues faced by Council and suggests a policy framework to guide decision making into future use, development and management of laneways in Darebin. The main actions of the plan are to:-

- Develop an overall strategy on unmade laneways (including maintenance, adverse possession, landlocked sites, pricing, communication, linkages etc to address conflict between maintenance and sales of unmade laneways).
- Develop an integrated Sales Strategy incorporating whole of Council strategic objectives as well as an internal referral process
- Identify strategic laneways for future housing, local permeability and sales purposes.
- Clarify and confirm the High Street widening of laneways planning policy and practice

- Consider a Council policy on laneway repairs and maintenance
- All items above, except item(iv) form part of the property governance framework and associated policies to be considered by Council in 2016

### 1.5.5 Bike Paths (Off-Road)/Shared Paths

#### 1.5.5.1 Physical Parameters

- Off-road bike paths/Shared Paths - 26.9km
- On road bike paths – 45.5km – treated as part of the road pavement
- 22km of bike paths are concrete

#### 1.5.5.2 Condition

- **97% of bike paths are in fair condition or better**

#### 1.5.5.3 Valuation

The off-road bike path/shared path valuation at 30/06/2012 had a total Replacement Value of \$5,006,443 and a Written Down Value (WDV) of \$3,497,643 with an Annual Depreciation of \$117,360. The annual depreciation was calculated based on condition.

#### 1.5.5.4 Historical Data

Up to 2009 expenditure was predominately for expansion of the bike path network. From 30/06/2009 to 30/06/2012 Council spent a total of \$1,150,000 replacing 2,337m of existing asphalt shared path in poor condition with new reinforced concrete footpath. In 2011/12 Council constructed 1089m of new concrete shared path and 792m of new asphalt shared path.

#### 1.5.5.5 Routine Maintenance Plan

Routine maintenance is undertaken as part of the footpath routine maintenance budget. See Section 1.5.3.

#### 1.5.5.6 Renewal/ Replacement Plan

Location	Years	Amount
Dunne St shared path; Mt Cooper bike path, All Nations shared path; Edwardes Lake shared path, St Georges Road shared path, Bracken Ave shared path	2014/15 to 2022/23	\$2,480,000

**Fig 1.7 - Bike Path/Shared Path Renewal**

#### 1.5.5.7 Creation /Acquisition/Augmentation Plan

The shared path project to be undertaken over the next 10 years is listed below:

Project	Year	Amount
St Georges Road shared path improvements	2014/15 to 2023/24	\$5,070,000

**Fig 1.8 – Future Bike Path/Shared Path Projects**

1.5.5.8 Funding Analysis

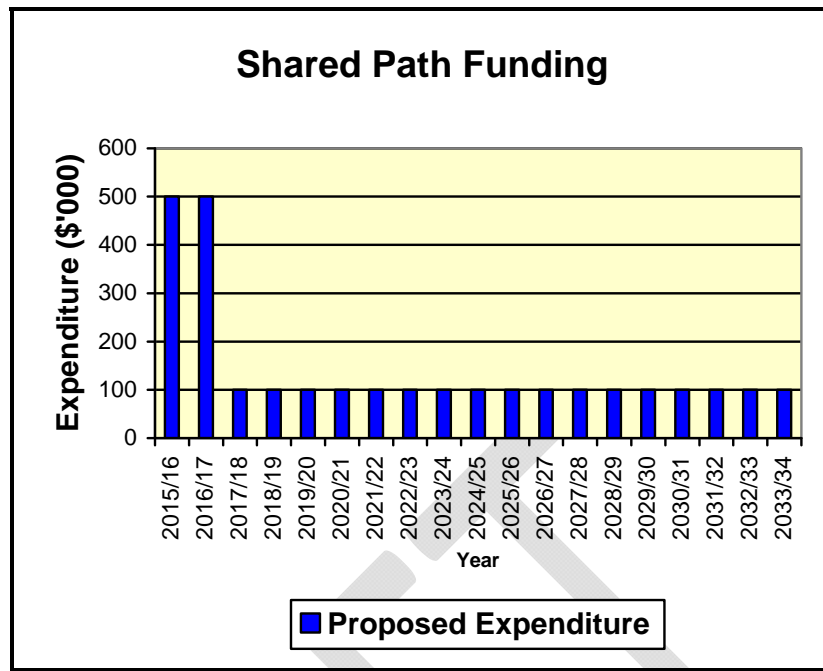


Fig 1.9 Shared Path Funding

1.5.5.9 Useful life of Concrete Shared Paths

The annual depreciation rate for shared paths is based on an adopted useful life of 50 years. The oldest concrete shared paths are currently only 26 years old. However, given that shared paths are built to a higher standard than pedestrian paths it is expected that they will perform as well or better than concrete pedestrian paths. It is therefore proposed to review the useful life of concrete shared paths to bring them into line with the new adopted life for concrete footpaths. (see 1.5.3.8)

1.5.6 Carparks

1.5.6.1 Background

Council has approximately 150,000m<sup>2</sup> of on-road carparks, off-road carparks and parking lanes servicing commercial, shopping and residential precincts, Council buildings and sporting facilities and accommodating approximately 7,000 vehicles.

These carparks are identified in Council's asset management system under the following nomenclature: Public Carparks, Reserves and Facilities Carparks and Parking Lanes.

All of the components of carparks ie surface, pavements, kerb and channel and traffic management devices are included in the physical parameters and valuations for these individual components.

1.5.6.2 Public Carparks

There are 22 carparks listed in Council's asset management system as public carparks

(I) Asset Condition and Valuation

A full condition assessment has not yet been undertaken for these carparks. The replacement cost in 2015 is \$3,120,802 with a written down value of \$ 1,772,950

(II) Asset Management

Public car parks are subject to the levels of service as set out in the RMP for Roads

1.5.6.3 Parking Lanes

A total of 432 parking lanes are identified in Council's asset management system, comprising both single and multiple parallel and angled parking spaces. All of these areas are within the road reserve. Because they are within the road reserve they are managed under the Council's Road Management Plan

**(I) Asset Value and Condition**

An audit of construction details has never been undertaken for these assets. The valuation is based on a standard pavement profile. The replacement cost of parking lanes in 2015 is \$4,847,850m with written down value of \$1,105,295.

83% of parking lanes are in "fair" condition or better.

**(II) Asset Management**

Parking lanes are subject to the levels of service as set out in the Road Management Plan.

**1.5.6.4 Reserves and Facilities Carparks**

A total of 50 Reserves and Facilities Carparks provide parking for a Council owned buildings, parks and sporting facilities. These car parks will be subject to the levels of service as set out in the RMP for roads

**(I) Asset Value and Condition**

An audit of full construction details and condition assessment has never been undertaken for these assets. The replacement cost of reserves and facilities carparks at 30/06/2015 is \$4,655,358 with written down value of \$2,047,937.

**(II) Asset Management**

The management of these carparks is set out in the Open Space Asset Management Plan and the Buildings Asset Management Plan.

These carparks will be subject to the levels of service as set out in the RMP for roads

The management of these carparks is covered by the Open Space Asset Management Plan.

**1.5.6.5 Routine Maintenance Plan**

Routine maintenance is undertaken in all carparks as required from the road pavement maintenance budget

**1.5.6.6 Renewal Plan**

A detailed 10 year works plan for carparks has not been prepared. However, based on the, age and condition of the assets an amount of \$50,000 pa has been included in the current 10 year plan for carpark renewal commencing in 2017/18

**1.5.6.7 Outstanding Issues**

There are a number of outstanding issues with carparks that require rectification:

- No condition assessment of carparks has been undertaken for the purpose of determining a written down value and to enable a long term renewal program to be formulated.
- Some facilities carparks are included with the public carparks and the lists need to be redefined.
- The construction of parking lane pavements is unknown so the Replacement Value is inaccurate
- The number of assets has not been checked and up-dated for a number of years.

**1.5.7 Traffic Control Devices**

**1.5.7.1 Physical Parameters**

Council has in the order of 1693 traffic control devices.

**1.5.7.2 Asset Condition**

97% of traffic control devices are in "fair condition or better

**1.5.7.3 Asset Valuations**

At 30/06/2015 Traffic Control Devices had a total Replacement Value of \$ 4,796,045 and a Written Down Value (WDV) of \$2,024,705.

The valuation of traffic control devices is lower than in previous years because previous valuations were done on a brownfield cost basis using a standardised value for each type of traffic control asset regardless of components and size. The 2015 valuation was done on a greenfield cost basis in accordance with the requirements of Australian Accounting Standard and an average cost for each type of device based on actual measurements of all traffic control devices.



**1.5.7.4 Routine Maintenance and Renewal Plan**

A number of traffic control devices are showing signs of age including: broken and damaged kerbs, broken and damaged garden bed surrounds and broken or dislodged paving. However, Council's Transport Management Department is currently reviewing all Local Area Traffic Management Plans. This could result in the removal or modification of a number of existing traffic management devices and accordingly, until this review is completed Council will only undertake emergency maintenance works required for public safety.

**1.5.7.5 Augmentation Plan and Forecast Expenditure**

The augmentation program seeks to construct a number of new traffic management and road safety works that address concerns and priorities that have been established through resident correspondence, Councillor action items and officer investigation. Many of these new traffic management devices are vital to the delivery of the Darebin Transport Strategy. Forecast expenditure for augmentation is \$210,000pa.

**1.5.8 Bridges and Culverts**

**1.5.8.1 Physical Parameters**

Type of Bridge	Number	Deck Area(m <sup>2</sup> )
Road Bridge	13	1,754
Footbridge – Fully Owned	31	1,566
Footbridge – Half owned	15	(full area)1,261
Board Walk/Viewing Platform	5	359
<b>Total</b>	<b>64</b>	<b>4,940</b>

**Fig 1.10 – Bridge and Culvert Details**

There are 15 half- owned bicycle and pedestrian bridges which span the Merri Creek or Darebin Creek along the municipal boundaries with Banyule, Yarra and Moreland City Councils. In addition there are 24 bridge structures in Darebin which belong to VicRoads and the Public Transport Corporation plus 1 bridge structure belonging to La Trobe University which are **not** counted in the above table and are not covered in this RAMP.

**1.5.8.2 Asset Condition**

A Level 2 bridge inspection was undertaken in 2015 on all bridges and level 3 inspections were undertaken on 5 bridges resulting in 3 bridges being identified for replacement and one bridge requiring extensive rehabilitation:

Bridge	Required Works
BR-7800 Northcote Golf Course	Rehabilitation
BR -3100 – Scott Grove	Replacement
BR-400 – Dundas St/Banksia St	Replacement
BR-3700 – Wood St/ Olympic Park	Replacement

**Fig 1.11 – Bridges Requiring Rehabilitation and Replacement**

The viewing deck at Ray Branham Gardens is in very poor condition and has been closed to pedestrian access until it is determined whether this structure will form part of the redevelopment plan for the park.

**1.5.8.3 Possible Deficiencies**

The 2009 RAMP stated that a structural analysis of all the local road bridges was undertaken by VicRoads on behalf of Council in 2002 which found that all Council's road bridges have the structural capacity to carry "higher mass limit" trucks. However, closer examination of the available documents indicates that the study only involved steel and concrete plank bridges and cast –in-situ concrete culverts but not major reinforced concrete pipe culverts.

**Executive Summary Roads Asset Management (RAMP)**

Council has one major concrete pipe culvert, being 4 x1500mm pipes at Edwardes St, Reservoir on Edgars Creek. This structure is on a route recently designated by Council as an approved heavy mass vehicle route and accordingly, the load capacity of this structure should be verified.

There are no functional deficiencies on the existing bridges, that is, the bridges do not need to be widened. However, there is a question mark over the capacity of culverts in Davidson St, Reservoir following 2 flood events in the last 3 years.

**1.5.8.4 Asset Valuations**

The Bridge valuation at 30/06/2015 had a total Replacement Value of \$7,781,824 and a Written Down Value (WDV) of \$4,645,759 with an Annual Depreciation of \$94,266 The annual depreciation was calculated based on age (straight-line).

**1.5.8.5 Routine Maintenance Plan**

All bridges deteriorate under the combined effects of loading and environmental factors – works undertaken under routine maintenance include, painting, replacement of individual timber decking places, tightening nuts, bolts and screws and repair of trip hazards

Furthermore, the amount of maintenance work required to be undertaken on bridges is dependent on weather and level of vandalism.

Funding requirements of \$80,000p.a is based on recent historical funding levels.

**1.5.8.6 Renewal Plan**

The following renewal works are required:

Bridge Renewal Works	Year	Amount	Comment
Bridge BR -7800 Northcote Golf Course –beam rehabilitation and replacement of existing timber deck	2015/16	\$60,000	
BR 3100 Scott Grove Bridge Replacement	2015/16	\$320,000	
BR 4000 – Dundas St/Banksia St Replacement	2016/17	\$500,000	Banyule Council Contribution \$250,000
BR 3700 -Wood St Northland/ Olympic Park - Replacement	2017/18	\$500,000	Banyule Council Contribution \$250,000
BR-0900 – Kendall St, Preston/Harding St Coburg , Replacement	2023/24	\$1,000,000	Moreland Council Contribution \$750,000
<b>TOTAL</b>		<b>\$2,380,000</b>	

**Fig1.12 – Bridge Renewal Works**

**1.5.9 Medians****1.5.9.1 Physical Parameters**

Median Types	Area (m <sup>2</sup> )	Useful Life	Replacement Cost
Concrete	2,020	60	\$117,859
Gravel	705	0	0
Grass	69,521	0	0
Landscaped	768	0	0
<b>Total</b>			<b>\$117,859</b>

**Fig 1.13 - Median Details**

For the 2015 valuation the kerbs associated with medians were included and valued as part of kerb and channel assets. Only constructed improvements to the median surface were valued.

**1.5.9.2 Forecast Expenditure**

Currently there are no routine maintenance identified for medians. Any future maintenance will be included as part of the capital works for road resurfacing and rehabilitation works.

**1.5.10 Signs, Linemarking and Street Furniture**

**1.5.10.1 Signs**

No audit of road signage has been undertaken since 2002. The 2009 RAMP contained the following data

**(I) Physical Parameters**

Type of Sign	Number
Regulatory	unknown
Warning	unknown
Parking	
One-plate parking sign	4,446
Two-plate parking sign	2,021
Three-plate parking sign	710
Four-plate parking sign	25
Street Name	unknown
Other (e.g. directional etc.)	unknown
<b>Total</b>	<b>7,202</b>

**Fig 1.14 – Signage Details**

**1.5.10.2 Linemarking**

**(I) Physical Parameters**

No audit has been undertaken of linemarking since 2008, when the following information was collected:

Type of Linemarking	Quantity
100mm lines	73,000 m
200mm lines	13,000 m
400mm lines	7,000 m
600mm lines	1,250 m
Bicycle and disabled marking	20 No
Raised reflective pavement markers	unknown
Arrows	60 No

**Fig 1.15 - Linemarking Details**

**(II) Routine Maintenance Plan**

It is estimated that Council is responsible for maintaining around 100km of line work throughout the municipality. The Routine Maintenance budget expenditure in 2014/15 for linemarking was \$249,793. This figure has been adopted as the annual amount for future works.

**(III) Renewal Plan**

See paragraph 1.5.10.4

**1.5.10.3 Street Furniture**

**(I) Physical Parameters**

Council does not have any information on the location, type and condition of street furniture which includes items such as: bollards, seats, bins and bicycle racks. This information should be collected over the next 4 year period.

**(II) Routine Maintenance Plan**

The Routine Maintenance budget allocation in 2014/15 for Signs and Street Furniture was \$326,260. This figure has been adopted as the annual amount for future works.

**1.5.10.4 Renewal Plans for Signs, Linemarking and Street Furniture**

New signs, linemarking and street furniture is provided in response to requests from residents, business operators, Councillors and Council officers. Approximate cost \$40,000p.a.

## 1.5.11 Retaining Walls

### 1.5.11.1 Physical Parameters

Street	Suburb	Location	Construction Material	Length (m)	Max Height (m)	Replacement Cost
Winifred St	Northcote	Side Boundary 179 Arthurton Rd and 62 Auburn Ave	Natural Bluestone	87	3	\$135,000
High St	Northcote	Road boundary	Dressed Bluestone	227	5	\$1,000,000
Pearl St	Northcote	Road -Wall 1(low)	Concrete Crib - Block	157	1.8	\$145,000
Pearl St	Northcote	Road- Wall 2 (high)	Concrete Sleeper	138	0.6	\$43,000
Pearl St	Northcote	Road - Wall 3 (low)	Bluestone	3	0.8	\$3,000
High St -Pearl St	Northcote	Pedestrian Ramp	Bluestone	39	1.2	\$100,000
Strettle St	Preston	Fyffe St intersection	Dressed Bluestone	71	0.9	\$64,000
Strettle St	Preston	Side Boundary 136 Fyffe St	Dressed Bluestone	37.5	1.5	\$56,000
Fyffe St	Preston	Front Boundary, 136 Fyffe St	Dressed Bluestone	10.6	0.6	\$5,000
Woolton Ave	Northcote	Park	Concrete rendered Bluestone	96	1.1	\$30,000
Smith St	Alphington	Shared Path (Wall 1)	Bluestone	17.7	1	\$5,000
Smith St	Alphington	Shared Path (Wall2)	Gabion Baskets	36	1	\$16,000
Smith St	Alphington	Shared Path (Wall3)	Gabion Baskets	42	3	\$50,000
Smith St	Alphington	Shared Path (Wall 4)	Bluestone	11	1	\$6,000
Smith St	Alphington	Shared Path (Wall 5)	Bluestone	14	2	\$15,000
Edwardes (North)	Reservoir	Park	Timber	217	1.4	\$100,000
Edwardes (South)	Reservoir	Park. Wall 1 (low)	Timber	291	1.5	\$130,000
Edwardes (South)	Reservoir	Park. Wall 2 (middle)	Timber	94	1	\$30,000
Edwardes (South)	Reservoir	Park. Wall 3 (high)	Timber	63	0.8	\$15,000
Breavington Way	Northcote	Park	Gabion Basket	32	2	\$30,000
Crestwood Ave	Macleod	Park	Natural Bluestone	185	0.8	\$95,000
Normanby Rd	Northcote	Northcote Golf Course	Concrete Crib-Block	150	2.5	\$265,000
Batman Park	Northcote	Arthurton Road	Dressed Bluestone	33	2	\$66,000
Little High St (East)	Northcote	Adjacent Little High St	Rough Bluestone	104	0.8	\$25,000
Little High St (East)	Northcote	Adjacent Urghart St	Dressed Bluestone	14	0.8	\$11,000
Northcote Town Hall	Northcote	Carpark	Brick (Excluding Rendered Artwork)	69	2.5	\$85,000
Glasgow Ave	Reservoir	Shared Path Downstream of Bridge	Timber sleepers	44	1.4	\$20,000
<b>TOTAL</b>						<b>\$2,545,000</b>

Fig 1.16 – Retaining Wall Details

#### 1.5.11.2 Asset Condition

The bluestone retaining wall at Ruckers Hill was built in 1890 and deflections of this wall have been documented since 1900. Regular monitoring has been undertaken and this should continue. There are no other known issues with the other retaining walls. However, annual inspections should be undertaken of all retaining walls.

#### 1.5.11.3 Asset Valuation

The replacement cost of retaining walls of \$2,545,000 was estimated using “Rawlinsons – Australian Construction Handbook”. Retaining walls are a long life asset and no specific Capital or Operational budget is allocated for the annual maintenance of these assets.

#### 1.5.11.4 Routine Maintenance and Renewal

There are no known routine maintenance or renewal requirements over the next 4 years.

## 1.5.12 Traffic Signals

### 1.5.12.1 Physical Parameters

Council is responsible for 27 traffic signals on local roads, valued at \$2,931,500

### 1.5.12.2 Routine Maintenance Plan and Forecast Funding Requirements

Traffic signal maintenance is undertaken annually by contract. Estimated expenditure is \$210,000pa.

### 1.5.12.3 Renewal Plan and Forecast Funding Requirements

There is no current capital allocation for the installation of Traffic Signals, however, from time-to-time Council allocates funds to address pedestrian and vehicle safety issues along Council local roads after Vic Roads approval has been sought.

## 1.5.13 Public Street Lighting

### 1.5.13.1 Physical Parameters

Public Street Lighting		
Funding Responsibility/Provider	No.	Replacement Cost
Non-Standard Decorative (approx)	500	\$750,000
Citipower		Operational Costs
Full Council Cost	3,443	\$223,478
Council Shared Cost (40%)	541	
SP -Ausnet		Operational Costs
Full Council Cost	523	\$39,516
Council Shared Cost (40%)	111	
Jemena		
Full Council Cost	7,839	\$522,319
Council Shared Cost (40%)	1,504	
<b>Total Operational Cost</b>		<b>\$824,752</b>

Fig 1.17 - Street Lighting Details

### 1.5.13.2 Routine Maintenance Plan

Council has a legal responsibility under the public street lighting Code to provide the street lighting service to the community. Approximately \$15,000p.a. is required for street light maintenance.

### 1.5.13.3 Renewal/Upgrade Plan and Forecast Funding

The plan is to replace approximately 10,000 of Darebin's inefficient 80W mercury vapour street lights with energy efficient lights. It is expected to reduce annual greenhouse gas emissions by approximately 3,800 tonnes, reduce energy and maintenance charges, and improve the quality of street lighting. The project is estimated to cost \$4.35M with a net saving of \$9.7M expected to be repaid within 20 years.

Commonwealth funding has been provided which reduces the payback to Council from this project to an estimated 5 years.

In addition approximately \$15,000p.a is required for new street lights.

## 1.6 Risk Management Plans

Critical roads infrastructure risks and their treatment are identified in the table below.

Service or Asset at Risk	Risk	Risk Rating	Risk Treatment Plan	Residual Risk
<b>Roads</b>	Night time hazards to the public , in particular reflectivity of traffic and regulatory signs, linemarking and street lighting	High	12 monthly night inspections of whole road network	Low
	Hazards to traffic from localised irregularities in road surface including potholes, deformation, delamination and edge breaks	High	Inspections, intervention levels and treatment times in accordance with the Road Management Plan	Low
	Hazard to traffic from poorly reinstated utility service trenches	High	Inspections, intervention levels and treatment times in accordance with the Road Management Plan	Low
<b>Footpaths and Shared paths</b>	Trip hazards caused by trees or natural ground movement	Very High	Inspections, intervention levels and treatment times in accordance with the Road management plan	Low
<b>Bridges</b>	Structural deterioration	High	6 monthly Level 1 inspections and 3 yearly level 2 inspections	Low
	Shared bridge deck hazardous in wet and icy conditions	High	Signposting, application of non-slip coatings	Low
	Width of shared bridge does not meet current design recommendations for bike paths	High	Signposting – cyclist dismount signs	Low

**Fig 1.18 – Roads Infrastructure Risks and Treatment**



## 1.7 Financial Statements and Projections

This section contains the financial requirements resulting from all the information presented in previous sections. It classifies the types of expenditure that Darebin city Council will be undertaking and explains the issues relating to finance and models that site behind the expenditure profiles

### 1.7.1 Summary of Historical Expenditure

ASSET	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
<b>CAPITAL EXPENDITURE</b>													
<b>Renewal/Upgrade</b>													
Roads Rehabilitation	1,467,600	2,562,945	2,457,499	2,459,840	2,902,776	3,508,671	4,546,073	3,374,219	1,620,214	2,751,702	1,702,488	961,980	624,281
Roads Resurfacing	770,400	522,790	675,243	865,100	896,448	966,626	919,341	931,430	1,177,291	2,103,055	1,713,251	1,824,075	2,384,441
Laneways	0	0	22,000	53,000	100,064	115,494	254,630	227,887	85,554			18,642	10,578
Carparks	99,000	0	0	300,000	90,475	1,336	66,852	27,994	35,223	75,963	31,144	38,752	78,290
Footpaths	392,500	569,531	614,569	1,181,500	905,441	1,379,730	1,207,043	578,852	485,153	1,564,570	1,002,597	1,043,811	938,792
Bikepaths	25,000	50,000	50,000	425,000	256,194	475,768	1,016,353	535,960	270,503	1,249,441	1,073,571	1,228,793	1,119,611
Program Maintenance	63,640	95,000	120,000	130,000	76,579	65,328	101,039	160,671	191,910	230,692	574,006	385,363	511,449
Bridges & Culverts	39,600	63,800	42,000	40,000	39,215	34,595	34,275	287,119	80,451	64,080	55,914	2,326	75,666
Special Charge Scheme	135,000	15,000	194,500	250,000	23,449	454,046	107,327						4,540
<b>Total Capital Expenditure</b>	<b>2,992,740</b>	<b>3,879,066</b>	<b>4,175,811</b>	<b>5,704,440</b>	<b>5,290,642</b>	<b>7,001,594</b>	<b>8,252,933</b>	<b>6,124,132</b>	<b>3,946,300</b>	<b>8,039,502</b>	<b>6,152,971</b>	<b>5,503,742</b>	<b>5,747,648</b>
<b>Total Capital. Income (R2R)</b>					<b>-395,340</b>	<b>-395,340</b>	<b>-395,340</b>	<b>-412,297</b>	<b>-460,123</b>	<b>-429,360</b>	<b>-520,988</b>	<b>-449,739</b>	<b>-436,804</b>
<b>Net Total Capital Expend</b>				<b>5,704,440</b>	<b>4,895,302</b>	<b>6,606,254</b>	<b>7,857,593</b>	<b>5,711,835</b>	<b>3,486,177</b>	<b>7,610,142</b>	<b>5,631,983</b>	<b>5,054,003</b>	<b>5,310,844</b>
<b>% Change</b>		<b>29.6</b>	<b>7.7</b>	<b>36.6</b>	<b>-14.18%</b>	<b>34.95%</b>	<b>18.94%</b>	<b>-27.31%</b>	<b>-38.97%</b>	<b>118.29%</b>	<b>-25.99%</b>	<b>-10.26%</b>	<b>5.08%</b>
<b>OPERATIONS &amp; MAINTENANCE – Routine Maintenance Actuals</b>													
Maintenance Management-Staff	466,208	429,696	298,396	405,434	843,563	707,803	1,043,317	976,913	608,371	626,427	666,320	618,118	675,194
After Hours(15% of Actual)	7,050	7,624	9,150	9,277									
Vic Roads Maintenance	111,910	141,597	87,524	0	15,609	100.51							
Inspections & Permits	133,573	145,602	143,661	141,363	-37,338	70,963	188,132	222,993	248,179	338,085	336,061	368,696	414,590
Road Reinstatements	480,004	630,303	844,748	924,057	853,092	654,268	333,496	165,897	109,083	223,550	305,202	356,556	98,724
Road Pavement Maintenance	285,096	239,433	257,825	285,542	300,488	313,966	506,834	566,798	551,332	562,413	558,354	140,160	760,327
Footpath Maintenance	461,680	491,758	513,263	607,452	544,580	627,553	748,463	700,490	825,968	900,256	799,057	744,806	832,399
Prog. Maint. Roads& Footpaths	29,444	28,774	4,660	398	0	0							
Line Marking	151,238	174,906	204,766	236,965	234,391	217,053	216,318	260,028	268,676	286,024	311,026	775,868	249,793
Signs & Road Furniture	168,770	170,803	178,784	159,685	218,126	279,528	309,613	256,475	269,757	281,681	315,140	288,282	326,260
Prog. Maint. Signs & Lines & Furniture	1,096,776	65,671	76,753	100,627									
<b>Total Routine Expenditure</b>	<b>2,404,749</b>	<b>2,526,167</b>	<b>2,619,530</b>	<b>2,870,800</b>	<b>2,972,511</b>	<b>2,871,235</b>	<b>3,346,173</b>	<b>3,149,594</b>	<b>2,881,366</b>	<b>3,218,436</b>	<b>3,291,159</b>	<b>3,292,486</b>	<b>3,357,286</b>
Income-Vic Roads Maintenance	-114,192	-148,685	-104,659	0	0	0							
Income-Permits & Inspections	-131,069	-191,245	-343,168	-320,291	-78,425	-112,959	-106,409	-111,830	-104,630	-110,840	-143,788	-147,530	-156,699
Income-Road Reinstatements	-490,536	-702,512	-888,785	-974,808	-908,820	-623,572	-569,714	-411,695	-323,870	-526,198	-311,623	-77,632	-593
Income-Road & Footpath	-36,712	-30,759	-16,004	-265	-27,790	-10,765	-147,142	-113,311	-191,068	-147,684	-159,751	-265,445	-232,872
Income-Sign, Lines & Furniture	-164,322	-123,179	-87,410	-129,582	-62,042	-38,196	-167,860	-157,593	-139,091	-152,148	-210,760	-196,184	-205,602
<b>Total Routine Maint. Income</b>	<b>-936,831</b>	<b>-1,196,380</b>	<b>-1,440,026</b>	<b>-1,424,946</b>	<b>-1,077,077</b>	<b>-785,492</b>	<b>-991,125</b>	<b>-794,429</b>	<b>-758,659</b>	<b>-936,870</b>	<b>-825,921</b>	<b>-686,792</b>	<b>-595,765</b>
<b>Net Total Routine Expenditure</b>	<b>1,467,918</b>	<b>1,329,787</b>	<b>1,179,504</b>	<b>1,445,854</b>	<b>1,895,434</b>	<b>2,085,743</b>	<b>2,355,048</b>	<b>2,355,165</b>	<b>2,122,708</b>	<b>2,281,566</b>	<b>2,465,239</b>	<b>2,605,694</b>	<b>2,761,521</b>
<b>TOTAL CAPITAL &amp; ROUTINE ROAD EXPENDITURE</b>	<b>4,460,658</b>	<b>5,208,853</b>	<b>5,355,315</b>	<b>7,150,294</b>	<b>6,790,736</b>	<b>8,691,996</b>	<b>10,212,641</b>	<b>8,067,000</b>	<b>5,608,884</b>	<b>9,891,709</b>	<b>8,097,221</b>	<b>7,659,697</b>	<b>8,072,366</b>
<b>% Change</b>		<b>16.8</b>	<b>2.8</b>	<b>33.5</b>	<b>11.6</b>	<b>6.1</b>	<b>17.49%</b>	<b>-21.01%</b>	<b>-30.47%</b>	<b>76.36%</b>	<b>-18.14%</b>	<b>-5.40%</b>	<b>5.39%</b>

**1.7.2 20 Year Forecast Expenditure**

Forecast Expenditure	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	36/36
<b>Capital Expenditure – Renewals – \$'000</b>																			
Road Rehab	1600	1400	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Road Resurfacing	2500	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300
Laneways	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Car Parks	0	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Bike Paths	500	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Footpaths	950	950	950	950	950	950	950	400	400	400	400	400	400	400	400	400	400	400	400
Program Maintenance	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
Bridges and Culverts	150	580	580	80	80	80	80	1580	80	80	80	80	80	80	80	80	80	80	80
Street lighting	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Traffic Signals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Signs, Linemarking & Street furniture	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
<b>Sub-Total</b>	<b>6155</b>	<b>5835</b>	<b>5435</b>	<b>4935</b>	<b>4935</b>	<b>4935</b>	<b>4935</b>	<b>5885</b>	<b>4385</b>	<b>4385</b>	<b>4385</b>	<b>4385</b>	<b>4385</b>	<b>4385</b>	<b>4385</b>	<b>4385</b>	<b>4385</b>	<b>4385</b>	<b>4385</b>
<b>Capital Expenditure – New Works \$'000</b>																			
Special charge Scheme	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Shared paths	630	1500	1500	1500	1500	500	50	50	50	50	50	50	50	50	50	50	50	50	50
<b>Sub -Total</b>	<b>680</b>	<b>1550</b>	<b>1550</b>	<b>1550</b>	<b>1550</b>	<b>550</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Total Capital Expenditure</b>	<b>6835</b>	<b>7385</b>	<b>6985</b>	<b>6485</b>	<b>6485</b>	<b>5485</b>	<b>5035</b>	<b>5985</b>	<b>4485</b>	<b>4485</b>	<b>4485</b>	<b>4485</b>	<b>4485</b>	<b>4485</b>	<b>4485</b>	<b>4485</b>	<b>4485</b>	<b>4485</b>	<b>4485</b>
<b>Operations and Maintenance – Routine Maintenance \$'000</b>																			
Maintenance management	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700
Maintenance Management Staff	445	445	445	445	445	445	445	445	445	445	445	445	445	445	445	445	445	445	445
Inspections & Permits	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360
Road Reinstatement	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600
Footpath Maintenance	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Shared Path Maintenance	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Linemarking	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
Signs & Road Furniture	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210
Street lighting	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Traffic Signals	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210
<b>Total Routine Maintenance Expend.</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>	<b>3440</b>
<b>Income - \$'000</b>																			
FAGS	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900
Roads to Recovery	-1008	-874	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400	-400
<b>Banyule Council</b>	<b>-35</b>	<b>-250</b>	<b>-250</b>																
<b>Moreland Council</b>								-750											
<b>Total Income</b>	<b>-1943</b>	<b>-2,024</b>	<b>-1550</b>	<b>-1300</b>	<b>-1300</b>	<b>-1300</b>	<b>-1300</b>	<b>-2050</b>	<b>-1300</b>	<b>-1300</b>	<b>-1300</b>	<b>-1300</b>	<b>-1300</b>	<b>-1300</b>	<b>-1300</b>	<b>-1300</b>	<b>-1300</b>	<b>-1300</b>	<b>-1300</b>
<b>TOTAL FORECAST EXPENDITURE</b>	<b>8332</b>	<b>8801</b>	<b>8875</b>	<b>8625</b>	<b>8625</b>	<b>7625</b>	<b>7175</b>	<b>7375</b>	<b>6625</b>	<b>6625</b>	<b>6625</b>	<b>6625</b>	<b>6625</b>	<b>6625</b>	<b>6625</b>	<b>6625</b>	<b>6625</b>	<b>6625</b>	<b>6625</b>

**Fig 6.2 - 20 Year Forecast Expenditure**



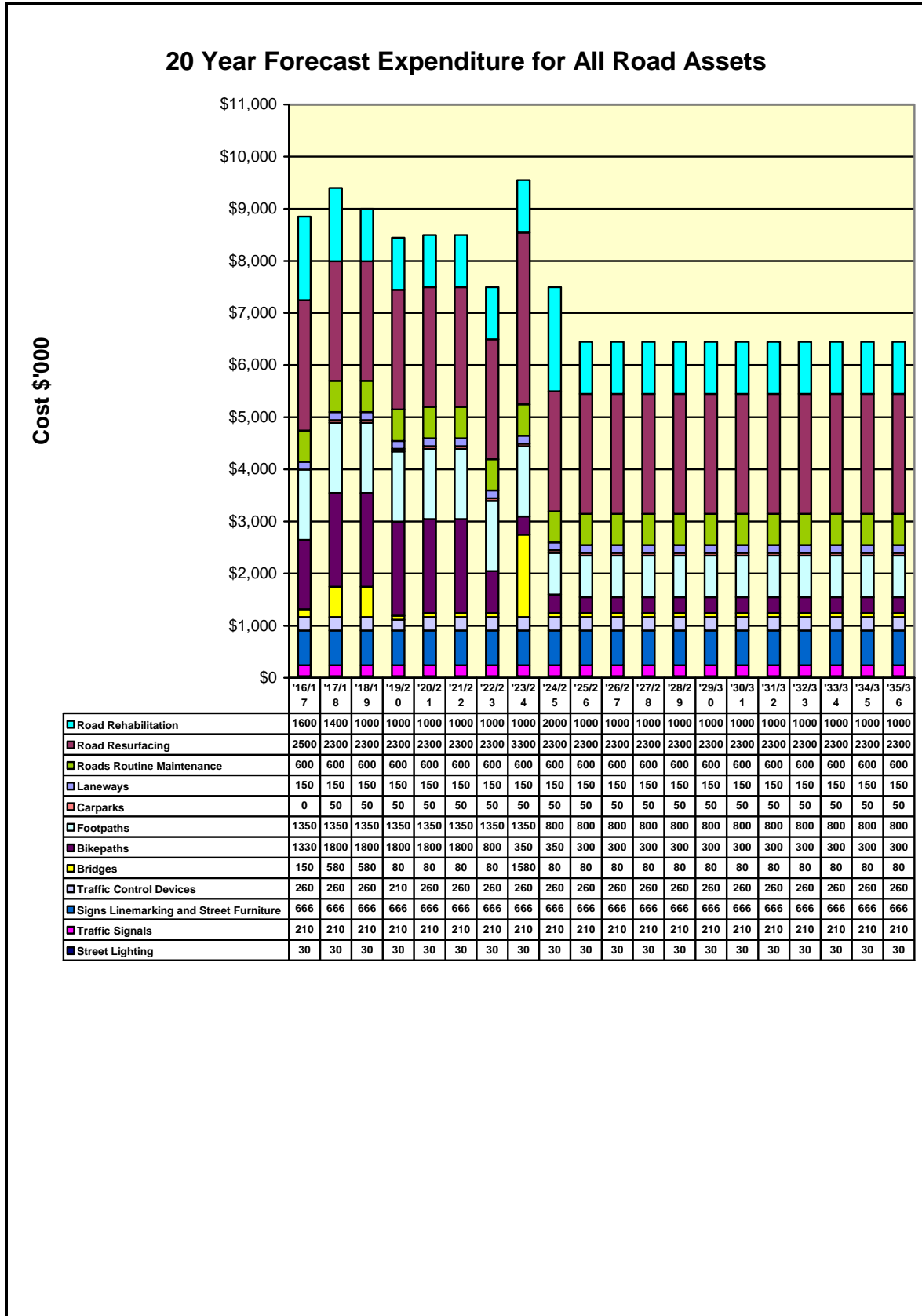


Fig 1.20

## 1.8 Asset Management Practices

Council has developed a logical and thorough decision making process for the management of roads and ancillary assets, using several management systems for:

- recording the quantum and condition of road assets
- prediction of future road condition and the development of works programs and budgets

Systems include:

### 1.8.1 SMEC Pavement Management System

The PMS contains all data on the quantity, age, construction and condition of Council's roads, kerbs, carparks, and traffic facilities.

The PMS is be used to predict future road condition and to develop maintenance works programs which optimises when money is spent on resurfacing works to achieve the greatest extension in the life of the road for the least possible lifecycle cost.

### 1.8.2 CAMS

The Customer Asset Management System (CAMS) is a system for planning, prioritising, directing and controlling maintenance work. An important part of the system is the collection of accurate field data. In particular the system provides information the performance of Council in complying with the intervention levels for roads and footpaths that have been adopted in the Road Management Plan.

## 1.9 Monitoring and Improvement Program

Issue No.	Description	Timeline
1	Review the RAMP when the new "Code of Practice for Operational Responsibility for Public Roads" is released by VicRoads to see if any changes need to be made to align the documents	Next 12 months
2	Finalise and sign Rail Safety Interface Agreement	December 2016
3	Council Boundary Agreements to be kept up-to-date	Ongoing
4	Conduct regular classified traffic counts on known heavy vehicle routes to ensure traffic information is kept up-to-date.	Ongoing
5	Climate Change and Peak Oil will have a significant effect on Council's road assets. In conjunction with the Adaptation Strategy being developed, investigate changes that can be made to the way Council maintains and manages its road assets to cope with the environmental issues that are being projected.	Over the next 3 years
6	Utilise the Customer Asset Management System (CAMS) to provide improved data collection and enable a measure of maintenance effectiveness	Over the next 2 years
7	Review the adopted useful life of concrete footpaths	2015/16 Valuation
8	Develop a priority program and budgets for renewal of laneways in "poor" condition	Over next 12 months
9	Review adopted useful life of concrete shared paths	2015/16 Valuation
10	1 Undertake an audit of the number of carparking assets within Darebin	Over next 12 months
	2 Undertake a review of pavement construction details for parking lanes and carparks	Over next 12 months
	3 Include all carparks in the next condition audit for road assets	Ongoing
	4 Manage all off-road carparks in accordance with the principals and timeframes set out in the RMP	Immediate
11	Review condition of existing Traffic Management Devices and formulate a new maintenance program when the LATM study is completed	Over next 2 years
12	Undertake a drainage study to determine the adequacy of culverts in Davidson St, Reservoir	2017/18 Budget
13	Collect information on the type, location and condition of street furniture	Over the next 2-3 years
14	Conduct regular monitoring of the condition of council retaining walls	Annually

## 1.10 Conclusion

This RAMP is the second generation plan for managing Council's road assets. The use of historical data from the 2009 RAMP has made it possible to examine long term trends in the condition and funding of these assets as well as reviewing where improvements in management data collection are required. The RAMP will be reviewed in four years from the adoption of this version, building on improvements achieved over that time.

In reviewing the information contained in this RAMP, it is concluded that significant improvements have been made to the road network condition over the last 15 years, particularly with regard to the rehabilitation of roads in the southern part of the City. Throughout this period the road network has been maintained in "very good" condition.

The funding levels proposed in this document are achievable based on historical funding levels and will continue to provide Darebin ratepayers with roads in "very good" condition.