



Pathway Asset Management Plan



Document Control

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1 EXECUTIVE SUMMARY

Introduction

Warrnambool City Council owns and manages approximately 328km of pathways across the municipality, similar to the distance between Warrnambool and Shepparton. This network of footpaths and shared paths assists the Council in supporting recreation, delivering sustainable transport options and providing a convenient means of access.

Council's pathway network is valued at approximately \$46,000,000 and thus ensuring an effective approach to managing pathway infrastructure is of significant importance. This plan is a means of structuring and outlining the processes and key elements required for achieving Council's vision for the service provided by pathways and infrastructure asset management in general.

Pathways Asset Summary:

Asset Category	Area (m ²)	Length (km)	Condition 0 (New) – 5 (Very Poor)	Replacement Value
Concrete Pathways	431,197 m ²	283 km	2.5	\$41,255,337
Gravel Pathways	60,692 m ²	21 km	2.8	\$1,409,433
Asphalt Pathways	2,478 m ²	1 km	2.6	\$99,520
Spray Sealed Pathways	59,574 m ²	18 km	2.6	\$1,457,647
Paved Pathways	4,548 m ²	2 km	0.9	\$308,511
Timber Pathways (including boardwalks)	6,578 m ²	3 km	1.7	\$1,713,061
Total	565,067 m²	328 km	2.49 (Fair)^[1]	\$46,243,509

Table 1: Asset Overview

[1]: Total condition is a weighted average of all pathways.

This Pathway Asset Management Plan, alongside Council's entire set of Plans, is crucial in achieving the following strategies listed in the Council Plan.

- Promote healthy lifestyles
- Encourage and support participation in sport, recreation and physical activity
- Build better connections for cyclists and pedestrians
- Build infrastructure that best meets current and future community needs
- Enhance movement in and around the city
- Maintain and enhance existing Council infrastructure
- Enhance the visitor experience
- Advocate for and improve infrastructure including transport, services and digital infrastructure
- Ensure financial sustainability through effective use of Council's resources and assets and prudent management of risk
- Develop policies, strategic plans and processes to address local and regional issues, guide service provision and operational effectiveness

Levels of Service

The current levels of service have been formulated with regard for legislative requirements, Australian standards and Austroads guidelines, results from the community satisfaction survey and through analysis of customer requests. Service level performance will be monitored in accordance with this plan over the 15 year period, which will provide guidance on the required funding to ensure these service levels. The service demands which Council is aiming to provide for the community are shown below (with more detail provided in section 3.4):

Pathway Service Demands

- Pathways are provided where they are reasonably required.
- Pathways will be safe to use.
- Pathways are accessible by people of all abilities.
- Appropriate auxiliary assets are provided (lighting, signage, etc.).
- Pathways will be wide enough to prevent conflict between users.

Future Demand

Understanding the future demand for footpaths and shared paths within the municipality is essential in ensuring an ongoing appropriate service is provided to the community. Council recognises and plans for many factors which are predicted to influence the future service requirements of pathways (section 4.1). The key factors are the following:

- Changes in population and demographics – The population of Warrnambool is increasing at a rate of 1.4% per annum. In addition to this, an increase of 43% in persons in the age categories of 60-79 is expected to occur (between 2011-2026). Effects of this are predicted to include increased demand for Council's pathways assets and an increase in the demand for accessibility upgrades.
- Changes in economics – Changes in unit rate costs for pathway renewal will affect Council's potential to deliver a level of service. Also, shifting levels of willingness to pay will take place as the overall macro-economy changes.
- Changes in the natural environment – According to the Victorian Governments Infrastructure and climate change risk assessment, pathways will experience an increase in flood damage, increased structural and foundation damage through increased geotechnical effects and more generally an accelerated degradation of materials and structures through increased temperature and radiation effects.

Risk Management

Managing the risks associated with Council pathways is critical in achieving an effective system of asset management. Council has in place a Municipal Road Management Plan which assists Council in providing a safe pathway system through prescribing condition standards, intervention levels and inspection frequencies.

During the process of identifying significant risks (refer to appendix 1 – Pathways Risk Register), assets which present a high consequence of failure were highlighted as critical assets such that they may potentially receive greater consideration during the formulation of works programs, with respect to their overall risk rating.

Critical Assets:

Description Assets with high consequence (Major or Catastrophic) of failure	Area of Impact	Actions to Address	Critical Assets
<ul style="list-style-type: none"> Category 1 pathway sections which provide direct access to key facilities. Category 1 and Category 2 pathways that are on one side of the street only. 	Customers & community	<ul style="list-style-type: none"> Greater consideration in renewal programs. Higher level of service within Council's Road Management Plan. 	Refer to appendix 3 for an illustration of the pathway

Table 2: Asset Criticality

Life Cycle Management PlanBackground Data

This Asset Management Plan has been formulated using the latest set of pathway asset data, produced from a condition audit in April 2013. Typically, pathways condition data should be collected every 4 years, meaning that Council is scheduled to complete a condition assessment.

Key asset data facts

- Council provides an extensive pathway network, with over 102km of pathway per 10,000 population.
- Council manages pathways with a wide range of ages, over 60% (over 200km) of Council's pathways are over 30 years old, and the average expected life of Council's pathways is approximately 55 years.
- Approximately 5% of pathways (about 16km) require intervention, meaning that they are currently in poor or very poor condition at high risk of being unsafe and potentially closed. Completing all of these "above intervention" works is estimated to cost approximately \$1,500,000.
- Approximately 60% (close to 200km) of pathways are in fair condition, which suggests an increase is expected for renewal requirements in the short to medium term.
- Council's pathway total replacement value is expected to increase between approximately 10-40% (about \$4,500,000 to \$18,000,000) in the coming 15 years (depending on funding for new/upgrade projects) due to development and city growth.

Maintenance and Operations Plan

Council's pathway maintenance and operations programs include reactive, proactive and cyclic activities. Included within this is pathway inspections, pathway sweeping, pathway defect repairs, pathway grinding, gravel resheeting and sealed pathway reseals.

Council’s pathways are inspected in accordance with the Municipal Road Management Plan. Included within the plan is the inspection frequency depending on the functional hierarchy of the pathway, the intervention standards for various common pathway defects and the time afforded to Council to repair the defect or alleviate the associated risk. Maintenance activities are undertaken to a standard that returns the asset to a safe, useable, fit for use condition or to its original condition.

The inspections frequencies for Council’s pathways are as follows:

Functional Hierarchy	Defect Inspection Frequency	Condition Inspection Frequency
Category 1	Two per calendar year	Typically every 4 years
Category 2	One per calendar year	Typically every 4 years
Category 3	One every two calendar years	Typically every 4 years

Table 3: Pathway Inspection Calendar

Asset Renewal Plan

Renewal involves the replacement or rehabilitation of an existing asset. Ultimately, Council aims to maintain the standard of service that the footpath and shared path network is currently providing. In order to achieve this, Council is required to fund pathway renewal to the value of pathways which are predicted to reach a condition which no longer fulfills the required service standard.

The figure below indicates the effect of the proposed funding amount for renewal of pathways over the coming 15 years. It is considered that 5% (16km) of pathway assets above intervention forms an “acceptable limit” of deteriorated assets (black line in the graph below). At this moment, Council’s pathways above intervention sit at this limit. Council is currently not allocating a sufficient amount of funds to treat all of the required assets, if this is continued, over 20% of pathway assets will deteriorate past a reasonable condition by 2029/30. As a result of this plan, Council may choose to amend the service levels detailed in section 3. Or conversely, Council may decide to amend funding allocations for pathway renewal over the coming 15 year period.

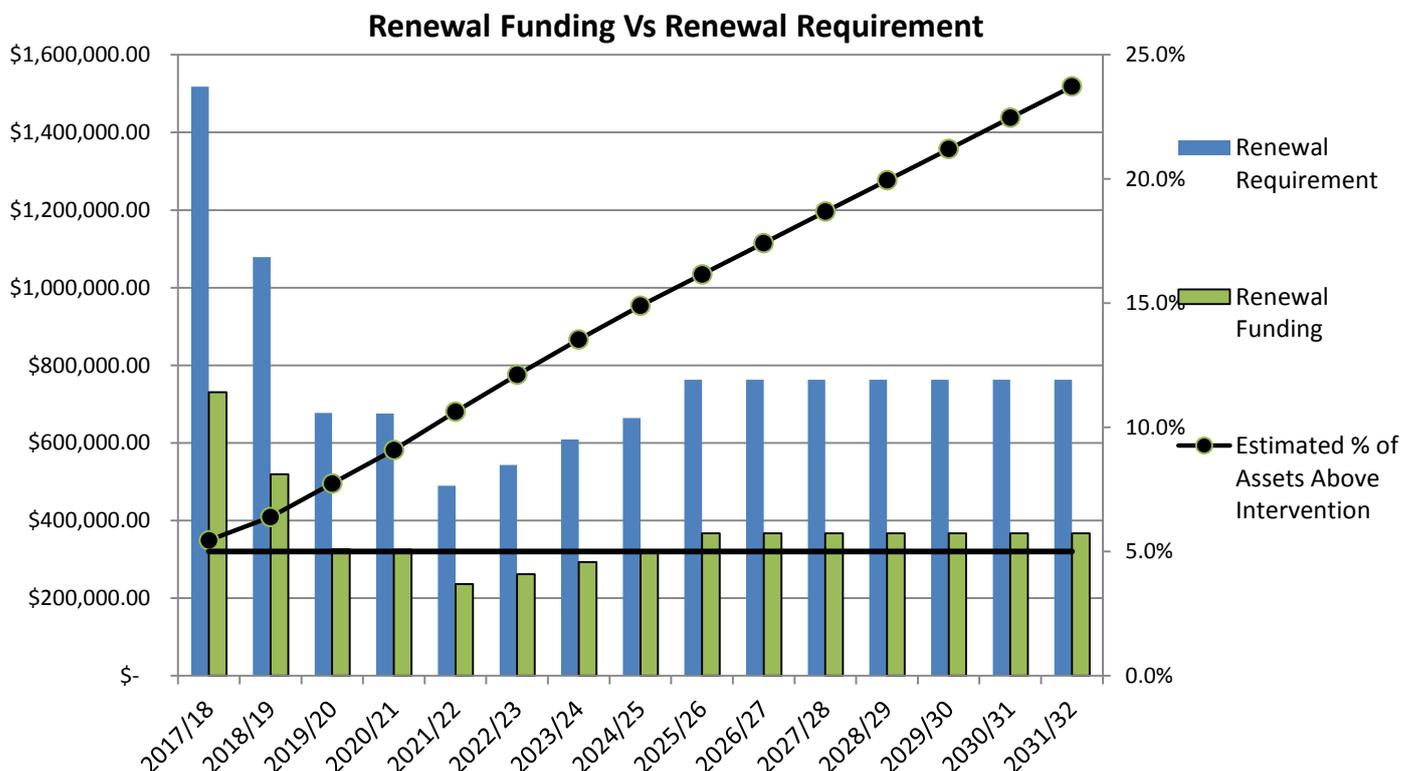


Figure 1: Pathway Renewal Demand vs Renewal Funding

New and Upgrade Plan

Council typically acquires pathway assets through both the sub divisional and development process and the creation of a new pathway or shared path when a gap in the network has been identified. Council's suite of strategic planning documents plan for the provision of approximately \$5,720,000 (over 25km) of pathways, the projects included in this figure are provided in section 6.4.1.

The Sustainable Transport Strategy lists approximately \$12,850,000 (over 65km) of pathways in total which have been identified as required to both improve and assist the overall connectivity of the pathway network. Timing the construction of these projects is; however, dependent on resource allocation and is unlikely to be completed entirely over the coming 15 years.

As Council acquires new assets, it is important that the consequential costs (i.e. maintenance and operational works) are established and allowed for in future budgets. Alternatively, Council may decide to not allocate additional funds for the treatment of new assets and accept a reduction in level of service.

Financial Plan

The table below provides a summary of the key financial parameters:

Asset Description	Total Quantity	Weighted Av. Asset Condition	Av. Asset Life in Years	Replacement Value	Written Down Value	Accumulated Depreciation	Annual Depreciation	Date of Condition Assessment
Pathways	328 km	2.49	≈55	\$46,243,509	\$26,882,898	\$19,360,611	\$948,150	April 2013

Table 4: Key Financial Parameters

Key funding facts

- Council has a 15 year renewal requirement of \$11,596,810, corresponding to an average annual requirement of \$773,121.
- Council is currently funding 48% of the renewal requirement, corresponding to an average annual shortfall of approximately \$404,000 per year (total shortfall of \$6,060,000 over 15 years).
- Council's "backlog" of pathway renewal works, being works which were due for renewal but not funded in previous years amounts to \$912,000 (as at July 2017).
- An increase of approximately \$90,000 (total) to Council's sealed path and gravel path maintenance and resurfacing budgets would be appropriate to effectively maintain these assets as safe and maintained as open.
- Council's pathways are, on average, deteriorating at a rate which is 2.6 times faster than the average annual renewal funding is being allocated.
- Concrete pathways provide the best financial result by far over the life of all pathway construction materials due to their long life and relatively low maintenance requirement.
- Around \$18,000,000 of new and upgrade projects have been identified in the Sustainable Transport Strategy and Growth Area Planning. Completion of these works is subject to budget allocation and city growth.

Improvement Activities

The items listed below are the priority improvement actions identified during the development of this plan. Refer to the action plan (Appendix 2) for the full list of actions and further details.

- A significant portion of Council's pathway assets are set to exceed their useful life in the coming 15 years, which is supported through Council's available condition data which shows that over 60% of Council's pathways are in "fair" condition (one step from "poor" condition). During the next update of the Plan, following the next network wide condition assessment, the document should include a section which focuses on the trend in pathway condition.
- As the Principal Pedestrian Network develops, the results of the project shall be utilised to improve the Plan. For instance, the "gaps" in the network which are identified in the study should be included within the Plan as future new/upgrade projects, which in turn affect the future requirement for new, renewal and maintenance funding.
- During the next community consultation on the road and pathway network, the community's opinion on the state of the pathway network and the service levels described within this plan shall be gauged so that Council may confirm or amend the service levels accordingly.

2 INTRODUCTION

2.1 Background

2.1.1 Purpose of this Plan

The Pathway Asset Management Plan (AMP) is a means of structuring and outlining the processes and key elements required for effective management of Council's Pathway infrastructure. The plan combines management, financial, engineering and technical practices to ensure that the required service levels of pathways are met by the most efficient means with consideration for Council's fiscal and resource limitations.

Specifically, the purpose of this plan is to:

- Give effect to asset management and strategic objectives as outlined in related documents
- Demonstrate responsible stewardship of Pathway infrastructure
- Manage the risks associated with the service delivery of Pathways
- Provide input into the long term financial planning for Pathway infrastructure
- Support community engagement to determine suitable service delivery requirements
- Optimise spending on Pathway infrastructure by taking a whole of life approach
- Guide the development of maintenance practices
- Drive continuous improvement

2.1.2 Asset Management Framework

This plan is part of Council's overall suite of asset management plans as described below:

- Asset Management Policy
 - Asset Management Strategy
 - Road Asset Management Plan (Scheduled 2018/19)
 - Bridge Asset Management Plan (Adopted – 2017)
 - Building Asset Management Plan (Scheduled 2018/19)
 - **Pathway Asset Management Plan (Drafted – 2017/18)**
 - Drainage Asset Management Plan (Scheduled 2017/18)
 - Sporting Facility Asset Management Plan (Scheduled 2018/19)
 - Open Space Asset Management Plan (Scheduled 2017/18)
 - Information Communication Technology Asset Management Plan (TBC)
 - Plant and Fleet Asset Management Plan (Scheduled 2017/18)
 - Collections and Heritage Asset Management Plan (TBC)
 - Land Asset Management Plan (TBC)

2.1.3 Related Internal Plans and Strategies

This document intends to support the strategic objectives of related internal planning documents. The following documents are noted as having significant influence on the strategic direction of pathways asset management:

- Municipal Road Management Plan
- Council Plan
- Warrnambool Planning Scheme
- Structure and Development Plans
- Warrnambool Municipal Road Hierarchy Review and Traffic Management Plan
- Road User Plan
- Housing Diversity Strategy (in development)
- Active Warrnambool (in development)
- Warrnambool Health and Wellbeing Plan
- Sustainable Transport Strategy
- Principal Pedestrian Network (in development)
- Warrnambool City-Wide Housing Strategy
- Warrnambool Open Space Strategy

2.1.4 Scope of this Plan

The term “Pathways” generally encompasses the infrastructure required for delivering footpaths and shared paths to the community for the purposes of transport efficiency, recreation, health and safety. Footpaths are primarily used by pedestrians and are typically located along roadsides, and in some instances through parks and other recreational areas. Shared paths are generally constructed to provide more substantial transport routes for use by pedestrians and cyclists.

There are multiple pathways within the municipality which are not the responsibility of Council, thus management of these is provided by other authorities or private entities. These include:

- VicRoads footpaths and kerb ramps (including tactile indicators) as defined in the Operational Responsibility for Public Roads Code of Practice.
- Culvert crossings providing access to private property are the responsibility of the land owner and are not included in this plan.
- Driveway infill between the kerb and the footpath and between the footpath and the property.
- Footbridges (management of Council’s footbridges is considered in the Bridges Asset Management Plan).
- On-road bicycle paths (these are considered part of the road and are thus managed in accordance with Council’s Road Asset Management Plan and Municipal Road Management Plan).
- Unmade paths, footways and nature strip areas.
- Jetties and waterway access structures.
- Committee of management paths where Council does not form the committee of management.

Asset Components Included in the Plan

The following table lists the various asset components belonging to the asset groups described above whose management is governed via the processes and principles described in this document.

Asset Category	Asset Type	Asset Components/Elements Included
Pathways	Footpaths	<ul style="list-style-type: none"> • Surface • Pavement • Ramps • Rails • Signs & Marking • Lights
	Shared Paths	<ul style="list-style-type: none"> • Surface • Pavement • Ramps • Rails • Signs & Marking • Lights

Table 5: Asset Components

2.1.5 Asset Function

Council's pathway infrastructure assists the overall transport network to promote a high level of connectivity throughout the municipality; in addition, pathways encourage and enable the community to engage in passive recreation. Each pathway is classified according to a functional hierarchy which is dependent on the type of traffic experienced, volume of traffic, specific function and potential risk.

2.1.6 Key Stakeholders in the Plan

External and Community Stakeholders

Stakeholder	Role in this Plan
The general community;	Customer
Residents and businesses;	Customer
Pedestrians (including all abilities and age groups);	Customer
Users of a range of miscellaneous smaller, lightweight vehicles such as pedal cyclists, motorised buggies, wheel chairs, prams, etc.;	Customer
Postal service	Customer
Local schools	Customer
Tourists and visitors to the area;	Customer
Traffic and Transportation managers;	Other interested party
Construction and maintenance personnel who build and maintain asset components;	Other interested party
Contractors and suppliers;	Other interested party
Land Developers;	Other interested party
Utilities (Water, sewerage, gas, electricity, telecommunications);	Other interested party
Councillors as custodians of the asset;	Other interested party
State and Federal Government;	Other interested party
Council's Insurer.	Other interested party

Table 6: External Stakeholders

2.1.7 Asset Responsibility

Service Managers

Service managers are responsible for the planning, controlling and directing of one or more of Council's services. Where a service portfolio includes pathway assets, a service manager may hold one or more of the following responsibilities depending on the assets associated extent of delivery.

- Monitoring the risks associated with the respective asset/s
- Providing input into required service levels such as performance, safety, maintenance and aesthetics
- Understanding the service needs that generate the required asset/s
- Providing guidance on the asset/s future requirements
- Assisting in ensuring the performance of the asset/s meets service level performance targets
- Providing reports and metrics concerning the asset/s service performance

Council's services which include Pathways within their service portfolio:

Service	Responsibility
Transport	Manager Infrastructure Services
Parks & Gardens – Botanical Gardens	Team Leader Trees and Botanics
Parks & Gardens – Lake Pertobe	Manager Recreation and Culture
General Recreation	Manager Recreation and Culture
Flagstaff Hill	Service Manager Flagstaff Hill
Holiday Parks	Service Manager Holiday Parks
Regulatory Control – School Crossings	Coordinator Local Laws & Animal Control
Airport	Service Manager Airport
AquaZone	Service Manager AquaZone
Warrnambool Multi-Purpose Stadium	Service Manager Warrnambool Stadium
Saleyards	Service Manager – Livestock Exchange
Corporate Strategies	Director Corporate Strategies

Table 7: Service Managers

Asset Managers

Asset managers are responsible for planning for the delivery and longevity of assets required for Council's services. The asset manager of pathways is the Coordinator Infrastructure Management, who is responsible for the following:

- Conducting asset inspections
- Ensuring adequate maintenance of assets
- Monitoring and developing asset service levels
- Meeting the agreed service level performance targets
- Collecting and managing asset data
- Developing asset renewal and upgrade programs
- Assist service managers in planning for future demand and disposal

2.2 Goals and Objectives of Asset Ownership

2.2.1 Links to Organisation Vision, Mission, Goals and Objectives

The Council Plan describes the objectives and strategies of the Council in reaching its vision for the City. The following table lists the strategies from the Council Plan (2017-2021) which are supported through this Asset Management Plan.

Document	Objective	Strategy
Council Plan (2017-21)	Foster a healthy city that is socially and culturally rich	Promote healthy lifestyles (2.1)
		Encourage and support participation in sport, recreation and physical activity (2.4)
	Maintain and improve the physical fabric of the city	Build better connections for cyclists and pedestrians (3.1)
		Build infrastructure that best meets current and future community needs (3.3)
		Enhance movement in and around the city (3.4)
		Maintain and enhance existing Council infrastructure (3.5)
	Develop a modern economy with diverse and sustainable employment	Enhance the visitor experience (4.3)
		Advocate for and improve infrastructure including transport, services and digital infrastructure (4.4)
	Practice good governance through openness and accountability	Develop policies, strategic plans and processes to address local and regional issues, guide service provision and ensure operational effectiveness (5.7)
		Ensure financial sustainability through effective use of Council's resources and assets and prudent management of risk (5.8)

Table 8: Links to Councils Vision and Objectives

3 LEVELS OF SERVICE

3.1 Asset Classification and Functional Hierarchy

3.1.1 Asset Classification and Functional Hierarchy

Council pathways are classified by their use and location on the functional hierarchy. The functional hierarchy allows Council to more effectively treat pathway infrastructure given the differing characteristics of use throughout the municipality. For instance, a footpath through the City Centre of Warrnambool is used far more prevalently in comparison to a footpath in a low level residential street and therefore is provided a higher level of service.

Classification by Design

Classification by Use	Use Description	Classification by Design Material
Pedestrian Footpath	Pathways which are designed for use by pedestrians primarily.	Concrete
		Gravel
		Asphalt
		Paved
		Timber
		Bluestone
Shared Pathway	Pathways which are designed for use by both pedestrians and cyclists.	Concrete
		Gravel
		Asphalt

Table 9: Classification by Design and Construction

Classification by Function Hierarchy

Classification	Description
Category 1	CBD and those pathways within the vicinity of schools, hospitals and aged care centres
Category 2	Selected medium use pathways in prominent areas other than described above and routes to schools.
Category 3	Pathways in residential, commercial and industrial areas other than as described above.

Table 10: Classification by Functional Hierarchy

Note: Refer to Appendix 3 for a map of Council's Pathway Hierarchy

3.2 Community Engagement and Expectations

3.2.1 Background and Customer Engagement Undertaken

The following table provides a background on the resources used by Council to formulate the required levels of service for Council's pathways. The Regional Asset Service Project provides a valuable resource in adopting a region wide guide for community requirements in Infrastructural assets. This project, feedback from the community and the pathway user requirements as detailed in Austroads Guide to Road Design 6A – "Pedestrian and Cyclist Paths" provide the foundation for developing Council's pathway service levels.

Audience/ Technique /Date	Needs/comments/outcomes/issues
Community Satisfaction Survey – Condition of Local Streets and Footpaths	Warrnambool Council Performance (%): 55% (2017) ↓ 58% (2016)
	Warrnambool Community Importance (%): 76% (2017) ↓ 77% (2016)
	State wide Council Performance (%): 57% (2017) 57% (2016)
	State wide Community Importance (%): 77% (2017) 77% (2016)
Pathway user requirements from "Austroads – Guide to Road Design Part 6A: Pedestrian and Cyclist Paths"	<ul style="list-style-type: none"> • Provide good access to key destinations. • Meet design standards with respect to footpath widths and gradients; provide good quality walking surfaces and appropriate facilities for impaired people. • Ensure that cyclists do not conflict with pedestrians. • Provide a walking surface that is clear of obstructions and is well maintained (compliance with the Municipal Road Management Plan). • Include crossings that are appropriate for the traffic volume and traffic speed environment. • Provide adequate lighting to ensure that pedestrians feel safe when using paths at night and do not walk on the edge of the road (or take a less direct route). • Ensure that streets can be crossed easily and safely. • Ensure that footpaths are substantially free from litter, debris and other deposits.
Expectations developed from the Regional Asset Service Project (MAV STEP)	<ul style="list-style-type: none"> • That I have a footpath in my street • The path will be safe to use • Path crossings accessible by a wheelchair or pram • Paths will be wide • Paths should include features such as seats and shade

Table 11: Service Requirements and Community Engagement Results

3.2.2 Community Service Level Outcomes

In lieu of thorough community engagement on pathway service levels, the following has been developed utilising the information in the table above, to produce what is considered to be a reasonable position regarding the fundamental needs of the community's footpaths and shared paths.

Asset Category	Customer Needs
Footpaths	<ul style="list-style-type: none"> • Pathways are provided where they are deemed to be required • Pathways will be safe to use • Pathways are accessible by people of all abilities. • Appropriate auxiliary assets are provided (lighting, signage, etc.)
Shared Paths	<ul style="list-style-type: none"> • Wide enough to prevent conflict between user groups • Appropriate auxiliary assets are provided (lighting, signage, etc.)

Table 12: Service Level Outcomes Derived from Community Demand

3.2.3 Community Engagement Plan

Community consultation regarding the pathway network is planned to occur in conjunction with the development and validation of Council's Principal Pedestrian Network (PPN). As a part of the engagement process, consultation on service levels and performance targets specific to pathway infrastructure shall be considered for inclusion alongside that which is required by the scope of the PPN project.

Council's rated performance level for 'streets and footpaths' of 55% from the 2017 community satisfaction survey has now dropped two points below the state average and has declined for two consecutive years since the 2015 performance score of 65%. The outcomes from the community consultation on pathways will be used to develop strategies to address the growing gap between the level of community satisfaction in Council's performance around local streets and pathways and the level of importance that the community places on these services.

3.3 Legislative Requirements

The table below outlines the related legislation for pathway infrastructure. These references form a framework which dictate the minimum levels of service for Council's footpaths and shared paths.

Reference	Description
Road Management Act (2004) (alongside associated Regulations and Codes of Practice)	In summary, the act: <ul style="list-style-type: none"> Establishes a new statutory framework for the management of the road network which facilitates the coordination of the various uses of road reserves for roadways, pathways, infrastructure and similar purposes. Establishes the general principles which apply to road management. Provides for the role, functions and powers of a road authority. Provides for the construction, inspection, maintenance and repair of public roads. Sets out the road management functions of road authorities. Sets out the road management functions of infrastructure managers and works managers in providing infrastructure or conducting works.
Local Government Act (1989)	Details the functions of Council in regards to the provision of services and facilities for the community as well as providing the legal framework for establishing and administering Councils.
Road Safety Act (1986)	Details the safety requirements relating to the use and operation of the road network.
Disability Discrimination Act (1992)	Details the liabilities for provisions of access for persons with disabilities.
Planning and Environment Act (1987)	Establishes the framework for planning the use of land and preparing planning schemes which set requirements for pathways in new subdivisions.

Table 13: Legislative requirements

3.4 Current Levels of Service

The following table outlines the proposed levels of service, current performance and performance targets for Council's pathways.

Pathway Service Levels						
Service Demands	Service Indicator	Community Levels of Service		Technical Levels of Service		
		Community Measure	Community Target	Technical Measure	Current Performance	Technical Target
Pathways are provided where they are deemed to be required	Serviceability	Number of areas requiring pathway assets.	Pathway assets are located in all areas which reasonably require them.	Km of new/upgrade paths constructed annually ^[1]	Achieved, 4.7km of pathway constructed in 16/17	2km of new/upgrade paths constructed annually
Pathways will be safe to use	Safety & Serviceability	Amount of accidents per year resulting from poorly conditioned pathway assets.	No accidents resulting per year from poorly conditioned pathway assets.	Inspection and repair of Council's pathways in accordance with the Municipal Road Management Plan.	99.1% of inspections undertaken within time (16/17 current). 76.2% of pathway defects mitigated within time (16/17 current)	100% of inspections undertaken within time. 100% of defects mitigated within time.
Pathways are accessible by people with disabilities	Accessibility	Amount of pathway locations which do not currently provide sufficient access and mobility for people with disabilities.	All pathways should be accessible by and serviceable for people with disabilities.	Adherence to contemporary design standards and guidelines (tactile ground surface indicators, gradients, signage etc.).	Performance is yet to be measured ^[2]	100% compliance with contemporary design standards and guidelines, where compliance is identified as being required.
Pathways are wide enough to prevent conflict between users	Safety & Serviceability	Amount of pathways which are not wide enough to allow for free and safe movement.	All pathways are wide enough to allow for free and safe movement.	Adherence with recommended width values within Austroads "Guide to Road Design – Part 6A – Pedestrian and Cyclist Paths".	97.3% of footpaths and 85.0% of shared paths (by length) are compliant.	<ul style="list-style-type: none"> Existing Footpaths to be <u>at a minimum</u> 1.2m wide. New footpaths to be constructed at a minimum width of 1.5m. Shared Paths to be <u>at a minimum</u> 2.5m wide.

Appropriate auxiliary assets are provided (lighting, signage, etc.)	Safety & Serviceability	Amount of auxiliary assets not provided where they are reasonably required.	Pathways have appropriate levels of lighting and signage.	Amount of customer requests in the past year.	Achieved, 5 customer requests received last financial year relating to the provision of auxiliary pathway assets ^[3]	Less than 10 customer requests regarding the provision of auxiliary pathway assets per year.
Road crossings allow pedestrians to move safely and easily.	Safety & Serviceability	Amount of accidents resulting from inadequate road/pathway interface design.	No accidents should result from inadequate road/pathway interface design.	Number of road/pathway safety audits undertaken.	Performance is yet to be measured. This service level will be monitored at the commencement of auditing in the next financial year (17/18).	5 road/pathway safety audits undertaken in each financial year.

Table 14: Pathways Community and Technical Service Levels

[1]: Including all pathway sections, constructed by Council or otherwise.

[2]: Refer to action plan – Council shall begin to develop monitoring procedures for this service level following the adoption of this Plan.

[3]: Refer to action plan – Council shall investigate the possibility of undertaking a project to generate isolux diagrams for Council roads and pathways which will inform Council as to the underperforming sections.

3.5 Service Level Consequences and Development Plan

The following table discusses the development of Council's service level performance and any associated cost or risk based consequences.

Service Level	Discussions
Pathways are provided where they are reasonably required.	Whilst Council is achieving the technical target associated with this service level, the development of a Principal Pedestrian Network will assist Council over the next 15 years to both identify and prioritise all required new and upgrade pathways. Therefore, this shall assist Council in advancing the means by which Council delivers on this service level.
Pathways will be safe to use.	With Council's adherence with the Municipal Road Management Plan inspections being over 99% on average, the performance of this service level is currently high. With regard to defects being mitigated within time, Council has been compliant approximately 76% of the time. Council shall; however, endeavor to complete all defect repairs and asset inspections within the prescribed time periods within Council's Municipal Road Management Plan.
Pathways are accessible by people of all abilities.	The upgrade of all non-compliant sections of Council footpaths and shared paths is outside of the financial capability of Council. As sections of non-compliant pathways reach their natural end of life, upgrade of the section shall be considered. Evaluation of the suitability of the upgrade project shall have consideration for the risk imposed by the current arrangement, cost implications, community demand and the location of the site on Council's functional hierarchy.
Pathways are wide enough to prevent conflict between user groups.	Due to the extensive amount of pathways which would need to be upgraded, current funding allocations do not allow for the timely upgrade of all non-compliant sections. Once these pathways reach an end of life condition, the renewal/replacement of the section of pathway will include an upgrade to widen the pathway to the minimum requirement as dictated by the relevant standards.
Appropriate auxiliary assets are provided (lighting, rubbish bins, signage, etc.)	Council is currently achieving this service level and intends to continue providing appropriate auxiliary assets for use on pathways. One key outcome of the Principal Pedestrian Network, which is currently in development, is the identification of new and upgrade works specifically relating to auxiliary assets (shelters, rest points, signage, lighting, bins, crossings, etc.). The completion of this project will further assist Council in delivering this service in the coming years.
Road crossings allow pedestrians to move safely and easily.	Following the identification of an under-service crossing a safety audit inspection shall evaluate the suitability of the site for an upgrade. Rationalising the upgrade of non-compliant sections shall include risk to safety, cost implications, community demand and the classification by functional hierarchy.

Table 15: Service Level Consequences and Development

4 FUTURE DEMAND

4.1 Demand Forecast and Management Plan

A crucial factor in planning for future community demands and technical requirements for infrastructure is to accurately understand how a wide variety of social, economic, environmental and technological changes will influence the operating environment. Furthermore, it is necessary to develop a plan to manage said changes appropriately. The following table lists various areas of potential change alongside their expected impacts and approach to management.

Factor	Description	Expected Impact	Management Plan
Natural Environment			
Climate Change	A notable risk is posed by climate change through increasing storm surges, sea level rise, ground level movement, groundwater changes, temperature and solar radiation and frequency and intensity of extreme rainfall events.	Pathways will experience an increase in flood damage, increased structural and foundation damage through increased geotechnical effects and more generally an accelerated degradation of materials and structures through increased temperature and radiation effects. Pathways within floodplains will be exposed to increased risk of damage through more frequent and intense rainfall events.	Continue to monitor developments in this space such that the projected climate change and effects on infrastructure may be accurately quantified. Appropriate measures may then be taken to account for these effects in asset management practices, infrastructure planning and material and design standards.
Demographics and Land Use			
Increasing Dwelling Density	One of the recommendations of the Warrnambool City-Wide Housing Strategy is that housing densities should be expected to increase in many parts of Warrnambool.	Areas of increased housing density can be expected to have increased volumes of use on the Council's road and pathway network.	Monitor population and pedestrian count data in developing areas alongside continuing to develop works programs with consideration of zonal requirements. Use the Housing Diversity Strategy (in development) to assist in the prioritisation and zoning of future pathways.
Ageing Population	Population forecasting indicates there will be increases in all age groups between 2011 and 2026. The largest proportional increase (relative to population size) will be in the 60 to 79 (43%) and 20 to 39 age groups (20%) (Warrnambool City-Wide Housing Strategy).	With a large relative proportion of the population moving into the 60 to 79 age group an increased demand upon the pathway network may be expected.	Continue to monitor age trends with a focus on potential infrastructure demand effects, alongside continuing to gather pedestrian count data.
Population Changes	Population in Warrnambool is currently increasing at an average rate of 0.9% per annum on average (Population data from the Australian Bureau of Statistics)	An increased load on pathways assets can be expected proportional to the increase in population.	Monitor population and pedestrian count data alongside continuing to develop works programs with consideration of population trends.
City growth and development	In accordance with Council's adopted growth area structure plans, footpaths and shared paths will be constructed as growth areas develop.	Over the coming 15 year period, over 20 kilometers of pathways are expected to be constructed in accordance with Council's endorsed growth area structure plans.	The construction of and planning for growth area footpath and shared path infrastructure is managed through the planning process. As handover of pathways occurs, this

			asset management plan, alongside Council's asset management system and processes becomes the primary means of management.
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Technology			
Technology Improvement Utilisation	Increases in available technology for the management, construction, design and maintenance of pathway infrastructure.	Possible opportunities for cost savings across all fields involved in the service. Improvements in the structural integrity, life and aesthetics of pathways infrastructure. Improvements in asset management capability and data analysis.	Continue to monitor developments in this space such that Council may adopt available new and improved technology in a timely manner with the vision of improving the operating environment of pathways infrastructure delivery.
Finance and Economics			
Unit Rate Cost Changes	Unit rate costs may potentially increase in rates larger than expected, or vice versa.	Changes in unit rates will effect Council's utilisation of renewal and capital expenditure.	Conduct annual review of unit rates including benchmarking, project reviews and industry research.
Economic effects on willingness to pay	Potential strengthening/weakening of the macro-economy could potentially affect the willingness to pay of the community	Shifting levels of willingness to pay within the community will create changes in service level demand.	Continual and progressive community engagement surrounding service level requirements and associated costs.

Table 16: Future Demand Forecast and Management

Refer to the action plan (Appendix 4) for a plan of progression and development of the management and control measures for the areas of impact.

5 RISK MANAGEMENT

Integrating risk management practices within the system of asset management plays an important role in optimising the decision making of Council. In addition, planning for the risks involved with an asset is essential in providing appropriate levels of service. For more detail regarding Council's`

5.1 Risk Identification

Event	Cause	Area of Impact	Controls
Pedestrian fall	<ul style="list-style-type: none"> • Joint misalignment from trees • Rough uneven surface • Ground movement • Inappropriate, missing signage • Path edge drop off • Slippery surface, water • Defective service pits • Vegetation intrusion • Misuse of, or inattention during, the use of pathways. 	Public health & safety	<ul style="list-style-type: none"> • Defect inspection frequency • Defect intervention • Pathway material selection • Street lighting
Collision with overhanging limbs	<ul style="list-style-type: none"> • Overgrown vegetation • Misuse of, or inattention during, the use of pathways. 	Public health & safety	<ul style="list-style-type: none"> • Maintenance inspection and works programming • Local laws notice procedure • Municipal Road Management Plan Intervention
Conflict with vehicle	<ul style="list-style-type: none"> • No path present walking on road^[1] • Turning traffic at intersections • Turning and exit traffic at properties • Inappropriate, missing signage • Misuse of, or inattention during, the use of pathways. 	Public health & safety	<ul style="list-style-type: none"> • Level of service for provision of path appropriate for level of use • Tree planting policy addresses type and location • Road safety audits
Damage from unauthorised vehicle	<ul style="list-style-type: none"> • Building construction traffic^[1] 	Financial & Reputational	<ul style="list-style-type: none"> • Pre-inspection of building works and follow up • Asset protection permits and local laws processes
Deterioration of Financial Sustainability	<ul style="list-style-type: none"> • Continued gap between required renewal expenditure and funding allocation. • Unsustainable growth of pathway assets under Council management 	Financial & Reputational	<ul style="list-style-type: none"> • Policy development for appropriate renewal and maintenance allocation • Long Term Financial Plan and Strategic Resource Plan
Conflict between pedestrian and bicycle users on shared paths	<ul style="list-style-type: none"> • Inadequate signage, road marking • Poor design • Misuse of, or inattention during, the use of pathways. 	Public health & safety	<ul style="list-style-type: none"> • Signage • Design standards appropriate for level of use

Table 17: Risk Identification and Control

Refer to the Infrastructure Risk Register for pathways for more information (Appendix 1)

[1]: The following risks have been identified as unacceptable and are referred to the action plan for further development.

- Conflict with vehicle, where the lack of pathway and frequent pedestrian use puts pedestrians in conflict with vehicles.

- Major injury arising from damage caused by unauthorized heavy vehicles.

5.1.1 Risk Evaluation and Control Development

The risk register in Appendix 1 of this document identifies two “unacceptable risks” in the delivery and management of pathway infrastructure, they are the following:

- Pedestrian injury caused through conflict with a vehicle, where the lack of a pathway, high pedestrian demand and the abutting traffic environment puts pedestrians at significant risk.
- Major damage to pathway infrastructure caused by unauthorized heavy vehicles.

The development of further controls for these risks is referred to the action plan of this document where each risk which has been currently identified shall be further evaluated for opportunities to introduce management processes and controls which shall reduce Council’s overall exposure to risk.

5.2 Asset Criticality

Critical assets are those which would result in a high consequence of failure. As such, Council understands the importance of identifying critical footpaths and shared paths, to the effect that maintenance, investigative and capital expenditure plans may be refined in light of critical areas. In the event that pathway sections fail, critical assets shall be prioritised for treatment.

The table below summarises the pathways which hold in them the implication of high consequence of failure along with the appropriate actions that Council will make to minimise the risk of such failures occurring.

5.2.1 Critical Assets

Description Assets with high consequence (Major or Catastrophic) of failure	Area of Impact	Actions to Address	Critical Assets
<ul style="list-style-type: none"> • Category 1 pathway sections which provide direct access to key facilities. • Category 1 and 2 paths on streets with a pathway on one side of the street only. 	Customers & community	<ul style="list-style-type: none"> • Greater consideration in renewal programs. • Higher level of service within Council’s Road Management Plan. 	Refer to appendix 3 for an illustration of the pathway

Table 18: Asset Criticality

6 LIFECYCLE MANAGEMENT PLAN

6.1 Background Data

Pathway asset data is collected, maintained and presented for inclusion within this Asset Management Plan by the Strategic Asset Management team.

6.1.1 Asset Quantities

Asset Component	Length	Area
Concrete Pathways	283 km	431,197 m ²
Gravel Pathways	21 km	60,692 m ²
Asphalt Pathways	1 km	2,478 m ²
Spray Sealed Pathways	18 km	59,574 m ²
Paved Pathways	2 km	4,548 m ²
Timber Pathways	3 km	6,578 m ²
Total	328 km	565,067 m²

Table 19: Asset Overview

Note: Quantities are correct only at the time of the development of this plan. Up to date information is obtained from the asset register.

6.1.2 Asset Ages

Council’s pathways which are operational today hold a wide range of ages, extending to over 70 years. The graph below provides an illustration of the amount of pathways constructed within each five year period. It may be seen that over the past 15 years Council has acquired approximately 60,000 m² in gravel pathways (included within “other” below), largely due to the construction of the rail trail and also the Moore St and Koroit Street gravel pathways.

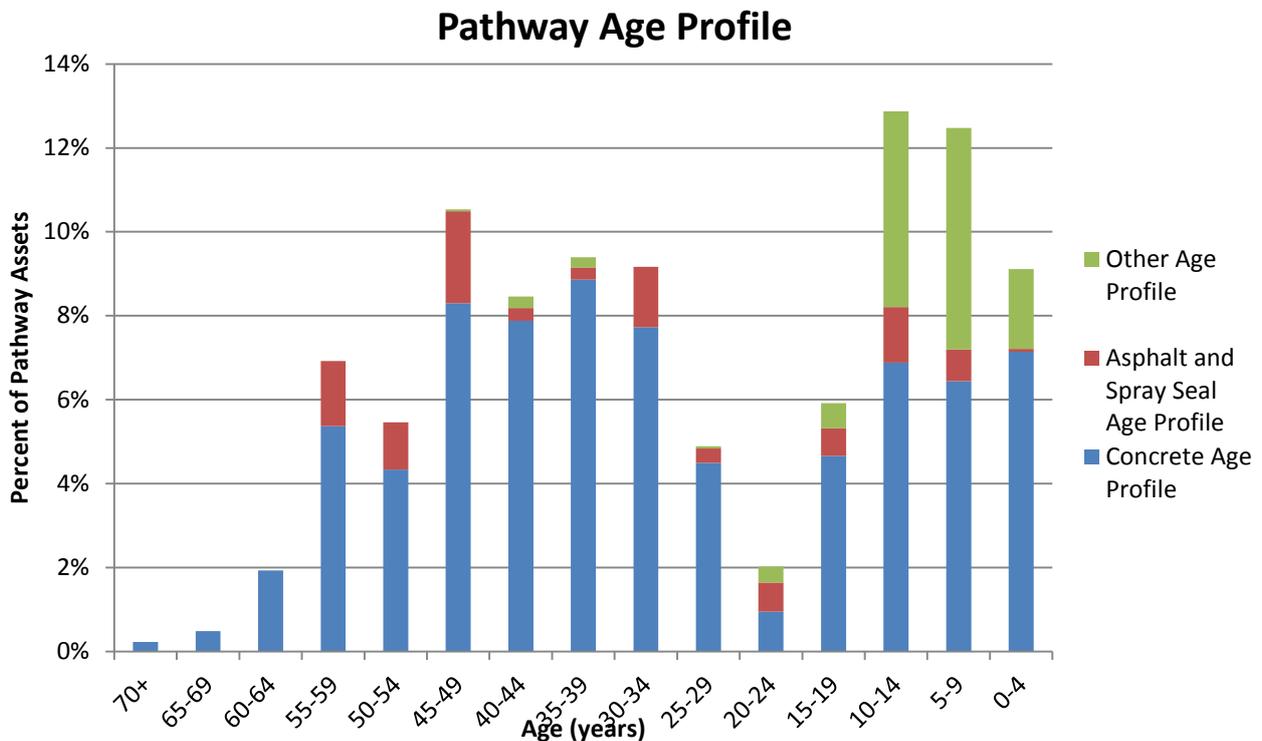


Figure 2: Asset Age Distribution

6.1.3 Current Issues in Pathway Management

Issue	Comment
Structural failures, damage and misalignments.	<ul style="list-style-type: none"> • Resulting from movement and breakages in the path structure caused by tree roots, thermal expansion and subsidence of service authority trenches. • Resulting from misuse by vehicles using the path, etc. that cause structural failures and tripping hazards.
Informed hand-over procedures	<ul style="list-style-type: none"> • A policy is required to ensure that maintenance funding is allocated for newly acquired footpaths and shared paths. • Will require more emphasis on inspections to ensure prescribed standards are met in both design and works as constructed.
Streets within the municipality's urban environment that do not have a footpath.	<ul style="list-style-type: none"> • Gaps in the network are identified in the Sustainable Transport Strategy and shall be prioritised through the development of Council's Principal Pedestrian Network.
Large amount of structural and serviceability failure expected in the coming 15 years.	<ul style="list-style-type: none"> • Approximately 35% of Council's pathways will reach "end of design life" in the coming 15 years. • Approximately 60% of Pathways are in condition 3, where deterioration to condition 4 warrants consideration for renewal intervention.

Table 20: Current Pathway Issues

6.1.4 Asset Capacity/Performance

The following table lists the assets which are not meeting their service level requirements. The upgrade of these assets may be evaluated with consideration for the project's cost, associated risk, community demand and the assets current condition.

Level of Service Measure <i>(import directly from Levels of Service)</i>	Level of Service Target <i>(import directly from Levels of Service)</i>	Current Assets Under-Capacity/Performance	Comment/Action
Pathways are provided where they are reasonably required	2 km of new/upgrade paths constructed annually	The Sustainable Transport Strategy lists Council's pathway projects which are identified as being required. The Principal Pedestrian Network will assist in developing a prioritised list of projects for future works.	4.7km of pathways were constructed last financial year. Further development of the Principal Pedestrian Network is currently waiting on funding.
Pathways will be safe to use	100% compliance with the Municipal Road Management Plan inspection frequencies and response times	<ul style="list-style-type: none"> ○ No assets are currently non-compliant with the Municipal Road Management Plan in relation to routine inspections. ○ The sections of pathway which are currently non-compliant with Council's Municipal Road Management Plan are logged within Council's Asset Management System. 	<ul style="list-style-type: none"> ○ Presently, all assets have been inspected in accordance with the Municipal Road Management Plan. ○ Council shall endeavor to ensure 100% compliance in responses to pathway defects. Based on the information in this Plan, that shall require additional maintenance funding.
Pathways are accessible by people of all abilities.	100% compliance with relevant design standards and guidelines.	Performance is yet to be evaluated, as monitoring processes are developed, Council may identify and prioritise under-performing assets.	The development of the Warrnambool Principal Pedestrian Network shall assist Council in identifying and prioritising non-compliant sections.
Pathways are wide enough to prevent conflict between user groups	100% compliance with Austroads "Guide to Road Design – Part 6A – Pedestrian and Cyclist Paths".	<p>Shared Paths: 4,959 meters (length) of shared paths with non-compliant widths.</p> <p>Footpaths: 10,728 meters (length) of footpaths with non-compliant widths.</p>	Upgrade of pathway sections shall form part of renewal projects at their end of life.
Appropriate auxiliary assets are provided (lighting, signage, etc.)	Less than 10 complaints per year regarding pathway lighting, signage etc.	Performance is yet to be evaluated, as monitoring processes are developed, Council may identify and prioritise under-performing assets.	The development of the Warrnambool Principal Pedestrian Network shall assist Council in identifying auxiliary asset requirements.
Road crossing allow pedestrians to move safely and easily	Number of road/pathway safety audits undertaken.	Performance is yet to be evaluated, as monitoring processes are developed, Council may identify and prioritise under-performing assets.	The development of the Warrnambool Principal Pedestrian Network, alongside road/pathway safety audits, shall assist Council in identifying road crossing enhancement projects.

Table 21: Asset Capacity and Performance

Identified assets are referred to the New and Upgrade Plan and Financial Summary for consideration in the Long Term New and Upgrade Works Program.

6.1.5 Asset Condition

Condition Monitoring

Warrnambool City Council updates its pathways condition data typically every 4 years (with the last condition audit being in April 2013). These condition audits assist in achieving the following goals of asset management:

- To confirm or establish asset inventory
- To develop a plan for segment replacement/rehabilitation
- To identify long-term condition trends which guide strategies for optimising the performance of the pathway network
- To monitor the performance of the pathway network relating to agreed service levels.

During the audit, each pathway segment is assigned a rating using a 5-level system, of which, the following criteria acts as a general guide:

Condition Rating	Description
1 (New/Very good)	The pathway is in 'as new' condition and therefore no intervention is warranted.
2 (Good)	Some minor defects or concerns with the pathway segment, however nothing is significant in nature or extent.
3 (Fair)	Some moderate defects or concerns with the pathway segment, some of these may be appropriate for planned or immediate maintenance.
4 (Poor)	Pathway defects are significant and the segment is no longer considered to be providing an acceptable level of service. Segment requires significant renewal/rehabilitation.
5 (Very poor)	Pathway has significant defects in both severity and extent, such that the pathway is not useable. Segment requires full replacement.

Table 22: Condition Criteria Description

Acceptable Conditions:



Condition 1 "Very Good"



Condition 2 "Good"



Condition 3 "Fair"

Unacceptable Conditions:



Condition 4 "Poor"



Condition 5 "Very Poor"

Asset Condition Profile

The chart below illustrates the condition breakdown of Council's pathways. It may be seen that the majority of Council's pathways are in "fair" condition and approximately 5% of Council's pathways are in the "poor" or "very poor" condition, which does not meet the set levels of service and is hence above intervention.

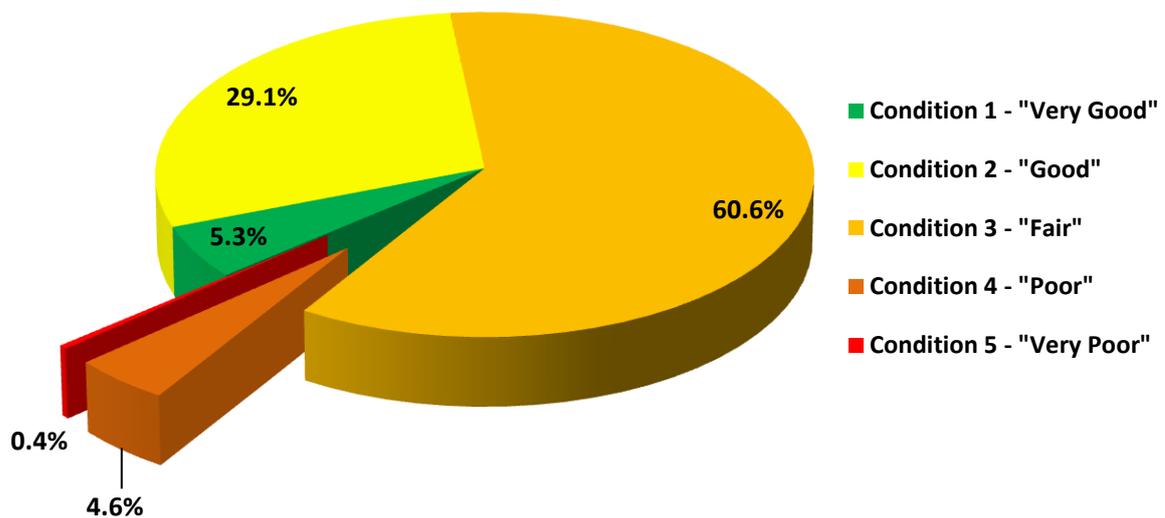


Figure 3: Asset Condition Profile

6.1.6 Asset Valuations and Useful Lives

Pathway Type	Total Valuation		Accumulated Depreciation ^[3]	Annual Depreciation ^[4]	Asset Type Physical Life (years)	Asset Type % of Value
	Replacement Value ^[1]	Written Down Value ^[2]				
Concrete Pathways	\$41,255,337	\$24,554,684	\$16,700,653	\$687,589	60-80	89.2%
Gravel Pathways	\$1,409,433	\$603,145	\$806,288	\$93,962	15	3.0%
Asphalt Pathways	\$99,520	\$58,802	\$40,718	\$3,317	30	0.2%
Spray Sealed Pathways	\$1,457,647	\$592,581	\$865,066	\$72,882	20	3.2%
Paved Pathways	\$308,511	\$192,659	\$115,852	\$4,747	65	0.7%
Timber Pathways	\$1,713,061	\$881,027	\$832,034	\$85,653	20	3.7%
Totals	\$46,243,509	\$26,882,898	\$19,360,611	\$948,150	15-65	100%

Table 23: Current Asset Valuation

[1]: Replacement Value – The cost incurred to acquire an equivalent new asset on the reporting date.

[2]: Written Down Value – The replacement cost of an asset less, where applicable, accumulated depreciation to reflect the already consumed economic benefit of the asset.

[3]: Accumulated Depreciation – The total cost incurred, at the reporting date, through the consumption or expiration of future economic benefits of the asset.

[4]: Annual Depreciation – Annual depreciation is the cost of an asset incurred through depletion of future economic benefits over a year.

6.2 Maintenance and Operations Plan

Maintenance and Operations works are undertaken by the Depot Operations team on behalf of the Infrastructure Management team.

6.2.1 Operations Programs

Council undertakes pathway operational activities in-house by trained staff members in conjunction with pathway maintenance activities. Council's operational program includes routine maintenance inspections and pathway sweeping.

Pathways within the CBD of Warrnambool are swept mechanically to ensure that pathways remain safe and relatively free of loose stones, dirt, litter or any other debris. In addition to assisting in creating a safe environment for pedestrians, pathway sweeping supports Council's drainage network in operating efficiently and ensures that pedestrian areas within the CBD are maintained at a high level of amenity.

6.2.1.1 Pathway Inspections

Maintenance Inspections

Council's maintenance inspections are undertaken in accordance with the Municipal Road Management Plan, meaning that Council's inspection officer shall identify pathway defects which fall below the standard prescribed within the Plan. As such, the Municipal Road Management Plan guides the levels of service Council provides with regard to footpath and shared path maintenance.

Council may also complete maintenance inspections of pathways if prompted by an incident or by a concern raised via a customer request. The details of maintenance inspections are further explained in the table below:

Inspection Type	Defects Recorded	Frequency	Responsibility
Routine Footpath Inspection	Refer to Council's Municipal Road Management Plan		
Request Inspection	In response to customer or user request.	As required	Asset Inspector
Incident Inspection	Nature of, and any defect that may have contributed to the incident, brief description of the location of the incident, date, time and prevailing weather conditions at which the incident occurred, and any other information that may be deemed to be applicable.	As required	Asset Inspector

Table 24: Defect Inspection frequency and Responsibility

Condition Inspections

Condition inspections on Council's Pathways are undertaken typically every 4 years and are the responsibility of the Strategic Asset Management Coordinator. These inspections differ from defect inspections in that they aim at evaluating the status of the overall pathway network, providing data to discern any trends arising within the network and to guide long term strategic planning for pathway assets.

6.2.2 Maintenance Programs

6.2.2.1 Reactive Maintenance

Council conducts reactive maintenance in accordance with the Municipal Road Management Plan. The Plan details Council's policies and standards relating to road and pathway management including inspection frequencies, defect intervention standards and defect response times.

Reactive maintenance works may be triggered by:

- Reactive inspections following a customer request,
- Routine inspections in accordance with the Municipal Road Management Plan,
- Inspections following an incident on Council's pathways.

6.2.2.2 Prioritisation of Maintenance Works

Priority	Description	Action
1. Urgent	Where the inspection reveals a change or fault that represents an immediate threat to the safety of the public/structure or exceeds any nominated intervention level	<ul style="list-style-type: none"> - Refer to Intervention Standard and response in the Municipal Road Management Plan. - For assets not covered under the Municipal Road Management Plan, works are undertaken using the RMP as a guide.
2. Intervention	Where the inspection reveals a change or fault that may constitute a threat to the safety of the public or exceeds any nominated intervention level	<ul style="list-style-type: none"> - Refer to Intervention Standard and response in the Municipal Road Management Plan. - For assets not covered under the Municipal Road Management Plan, works are undertaken using the RMP as a guide.
3. Programmed	<p>In assessing the priority of programmed maintenance works, a works program shall take into account:</p> <ul style="list-style-type: none"> • Extent • Severity • Component • Hierarchy • Public safety • Work efficiency 	Works shall be undertaken at such a time taking into account a number of factors including condition, safety, and impact on the public.

Table 25: Maintenance works Prioritisation

6.2.2.3 Maintenance Standards and Specification

Maintenance activities are undertaken to a standard that retains or returns the asset to a safe, useable, fit for use condition.

6.2.3 Maintenance and Operations Budget

Maintenance and Operations activities listed in the general ledger for the year (16/17) are:

Activity	Amount	Percent of Budget	% of Paths Treated	% of Assets over Intervention	Budget per km	Budget per m ²
Maintenance Budget						
Concrete Footpath Grinding	\$ 27,448.00	27%	76.3%	67%	\$96	6c
Sealed Footpath Maintenance	\$ 5,198.00	5%	10.9%	19%	\$1,860	57c
Sealed Footpath Reseal Program	\$ 30,158.00	30%	As above	As above	As above	As above
Gravel Path Maintenance	\$ 23,682.00	23%	10.7%	14%	\$1,638	58c
Rail Trail Maintenance	\$ 15,621.00	15%	As above	As above	As above	As above
Total	\$ 102,107.00	100%	-	-	-	-
Operations Budget						
Pathway Sweeping	\$ 132,419.00	100%	-	-	-	-
Total	\$ 132,419.00	100%	-	-	-	-

Table 26: Maintenance Activities and Budget

It is evident through the declining condition of sealed and gravel pathways that the maintenance budgets and the resulting maintenance programs are not adequate to prevent reduced service level provision.

Using the maintenance figures provided in “Guide to Bicycle and Shared Path Selection – Using Whole of Life Cycle Cost” (adjusted for Warrnambool City Council unit rates) the required maintenance costs for gravel pathways and sealed pathways is approximately \$1.45 per m² per year and \$1.19 per m² per year respectfully. Council manages a total of 62,054 m² of spray sealed and asphalt pathways and 60,692 m² of gravel pathways, corresponding to maintenance budget requirements of \$73,844 and \$88,003 respectfully (a net increase of approximately \$90,000 to the total of existing maintenance budgets).

An increase in the sealed footpath reseal program, sealed footpath maintenance, gravel path maintenance and the rail trail maintenance budgets, to account for the funding calculations above, would provide appropriate maintenance for Council’s pathways. The pathway sweeping and concrete footpath grinding budgets will need to be monitored further to accurately gauge the suitability of their allocations.

6.3 Renewal Plan

Renewal involves the replacement or rehabilitation of an existing asset. Generally speaking, Council renews its footpaths and shared paths when they no longer fulfill the required service standard for the community. Generally, Council considers that a section of pathway is no longer performing at the required standard when the section has a condition which is “poor” or “very poor”. Council’s renewal projects are formulated both reactively (through routine maintenance inspections or customer requests) and proactively (through available condition, function and capacity data).

6.3.1 Renewal Capital Works Program and Priority Ranking

Renewal Program

Appendix 5 of the Plan illustrates all of the sections of pathway which warrant renewal intervention. Due to pathway condition data being scheduled for revision, it must be noted that a limitation exists in achieving an accurate and optimal renewal program.

Council does not currently have a formal long term renewal plan for Council's pathways, nor does Council pro-actively resurface or rehabilitate Council's asphalt and spray sealed pathways (with respect to their useful life), including those found within the Central Business District. Over the coming years, Council shall endeavor to formulate a rolling long term program for the renewal of Council's pathways with regard for their required amenity, condition and functionality.

Renewal Program Priority Ranking

During the formulation of any renewal works concerning pathway assets, the following criteria are considered in generating an appropriately ranked list of projects.

Criterion
Condition
Condition 1 – Very good
Condition 2 – Good
Condition 3 – Fair
Condition 4 – Poor
Condition 5 – Very poor
Function / Capacity
Path width > 1.2m (Footpaths)
Path width > 2.5m (Shared paths)
Path width < 1.2m (Footpaths)
Path width < 2.5m (shared paths)
Location (Functional Hierarchy)
Category 1
Category 2
Category 3
Failure Extent
Small – 2 or less bays
Medium – 2 to 6 bays
High - 6 + bays

Table 27: Renewal Program Priority Ranking

Renewal Requirement

The graph below details year by year the required funds to fully meet pathway renewal demand such that Council maintains existing service levels. The first year of the graph includes the existing backlog of renewal works which have not been funded in prior years. These backlog projects include a range of different projects, from isolated sections of poor condition path across the city to several whole blocks of poor condition path within the CBD. (E.g. Kepler Street between Koroit and Timor)

Pathways Renewal Requirement

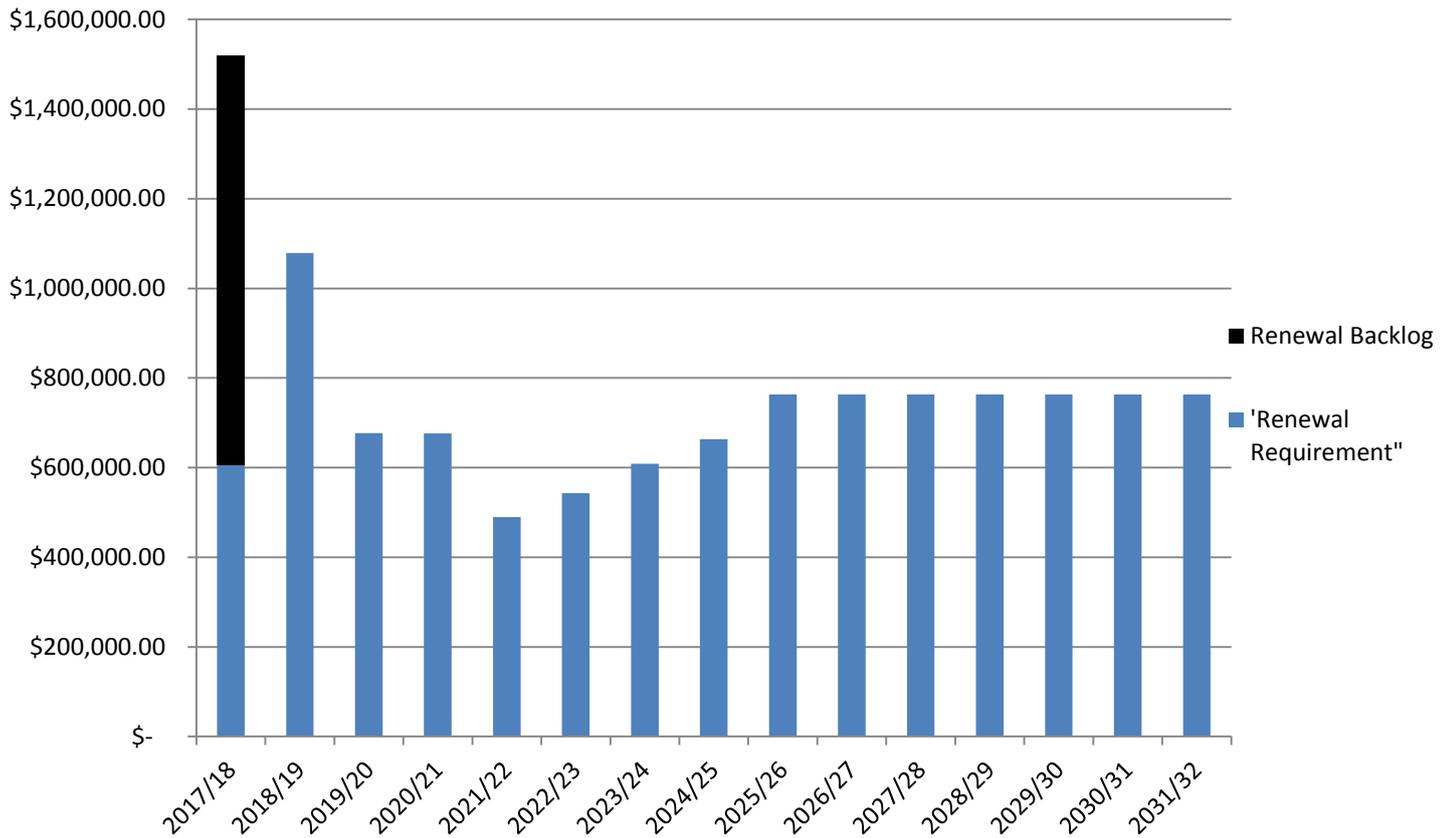


Figure 4: Pathways Renewal Requirement

6.3.2 Future Renewal Costs

Council's rates below have been developed through the analysis of contract rates, guidance documents and benchmarking with other similar Council's rates.

Asset Component	Renewal Rate	Maintenance Cost	Useful Life	Lifecycle Cost
Concrete Pathways (125mm w Reo)	\$146.00 /m ²	3 cents per m ² per year	80	\$1.86 per m ² per year
Concrete Pathways (75mm no Reo)	\$93.00 /m ²	6 cents per m ² per year	50	\$1.92 per m ² per year
Brick Pathways	\$120.00 /m ²	6 cents per m ² per year	45	\$2.72 per m ² per year
Asphalt Pathways	\$42.00 /m ²	\$1.19 per m ² per year	30	\$2.59 per m ² per year
Sealed Pathways	\$28.00 /m ²	\$1.19 per m ² per year	20	\$2.59 per m ² per year
Gravel Pathways	\$20.00 /m ²	\$1.45 per m ² per year	15	\$2.78 per m ² per year
Bluestone Pathways	\$542.00 /m ²	Negligible	65	\$8.33 per m ² per year

Table 28: Pathways Whole of life Costs

The figures above demonstrate that concrete pathways (125mm w Reo) provide the best financial result for Council over the life of all pathway assets. Council should, as a result of this analysis, require all new pathway assets to construct to this standard and investigate the suitability of upgrading non-concrete pathways. In addition to providing a cost effective solution, concrete provides a smooth surface which has long term durability, low maintenance requirements, fast installation but also allows for an opportunity to integrate the pathway with the environment at a high level with innovations such as coloured concrete.

Asphalt and spray seal pathways are approximately 40% more expensive to construct and maintain over their lifecycle in comparison to concrete pathways with respect to their lower life and substantial maintenance requirements.

Gravel pathways have almost the highest lifecycle cost second only to bluestone pathways, coming in at 50% more than the total cost of concrete pathways. Gravel pathways require a large investment in maintenance due to their susceptibility to rapid environmentally caused failure. Council's current allocation for gravel path maintenance does not effectively account for this characteristics of gravel paths (refer to the figures detailed in section 6.2.3). This is further supported through gravel pathways relative condition with concrete pathways, 2.8 and 2.5 respectively, and the images of gravel pathways below (which are all relatively new).



6.3.3 Renewal Funding

The following renewal funding allocations have been sourced from the Long Term Financial Plan with additions being made to account for the pathway renewal component of the City Centre renewal project.

Year	LTFP Renewal Funding	City Centre Project Pathway Renewal	Total
2017/2018	\$296,000.00	\$107,000.00	\$403,000.00
2018/2019	\$303,400.00	\$170,000.00	\$473,400.00
2019/2020	\$310,985.00	\$0	\$310,985.00
2020/2021	\$318,760.00	\$0	\$318,760.00
2021/2022	\$326,729.00	\$0	\$326,729.00
2022/2023	\$334,897.00	\$0	\$334,897.00
2023/2024	\$343,269.00	\$0	\$343,269.00
2024/2025	\$351,851.00	\$0	\$351,851.00
2025/2026	\$360,647.00	\$0	\$360,647.00
2026/2027	\$369,663.00	\$0	\$369,663.00
2027/2028	\$378,905.00	\$0	\$378,905.00
2028/2029	\$388,378.00	\$0	\$388,378.00
2029/2030	\$398,087.00	\$0	\$398,087.00
2030/2031	\$408,039.00	\$0	\$408,039.00
2031/2032	\$418,240.00	\$0	\$418,240.00

Table 29: Pathways Renewal Funding

6.3.4 Renewal Gap

The following graph illustrates the cumulative renewal gap of Council’s pathway assets. A renewal gap is the difference between what Council is required to spend on renewal projects to maintain pathway service levels and what Council actually spends. The renewal gap will grow in a cumulative fashion from year to year with consideration of the gap from that respective year and the backlog of projects from the previous year.

Pathways Cumulative Renewal Gap

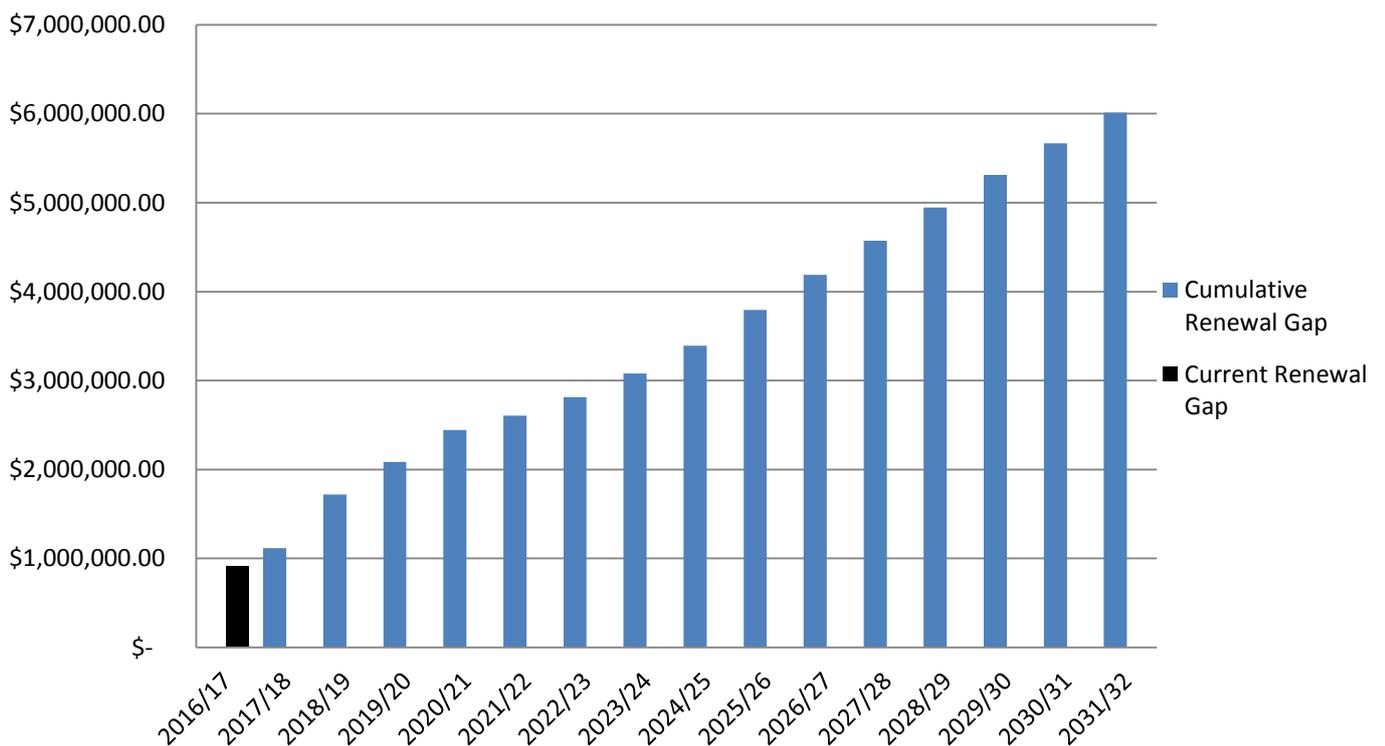


Figure 5: Pathways Cumulative Renewal Gap

The following factors have a critical influence on the renewal gap;

- The condition of pathways and the rate of condition decline (maintenance has an impact on this)
- The levels of service to be provided, including renewal intervention levels.
- Funding provided through the budget and long term financial plan
- Renewal requirement and the actual cost of renewal

The graph above highlights that based on current information the current backlog of unfunded, poor condition footpaths requiring replacement will increase from \$912,000 to more than \$6,000,000 over the next 15 years.

6.3.5 Asset Renewal Sustainability

The table below presents a number of asset renewal sustainability figures. These figures provide Council with a means of quantifiably monitoring the long term sustainability of Council with regard to the renewal of pathway infrastructure.

To achieve a sustainable level of funding, Council would aim to fund renewal at the same rate as assets are consumed (deteriorated). A report by the Victorian Auditor-General's Office entitled "Asset Management and Maintenance by Councils" discussed the growing concern with Council's being unable or unwilling to address the renewal requirements of key existing community infrastructure, including pathways.

Spending on existing assets is not keeping pace with the consumption of these assets. Audited councils are not able to meet existing asset renewal requirements, resulting in cumulative renewal gaps growing every year. This situation is likely to adversely impact the condition of assets, service levels and councils' long-term financial sustainability (Victorian Auditor-General's Office, 2014).

Consumption/Renewal Factor	2016/17	Target
Asset Consumption $\left(\frac{\text{Asset Depreciation}}{\text{Replacement Value}}\right)$	2.05%	N/A
Asset Renewal $\left(\frac{\text{Renewal expenditure}}{\text{Replacement Value}}\right)$	0.80%	2.05%
Amount of Asset Depreciation Funded	38.7%	100%

Table 30: Asset Consumption/Renewal Factors

Asset consumption is dictated by the dimensions of the pathway network and therefore there are limited opportunities for Council to lower the rate at which pathway infrastructure is consumed. Asset renewal is controlled by the amount of funding allocated towards pathway renewal and can be adjusted.

When the rate at which assets are renewed (asset renewal) is greater than or equal to the rate of asset consumption, Council is successful in treating an acceptable amount of assets to maintain the existing service levels. Given that the figures below suggest that Council's pathway assets are being consumed at rates significantly larger than the rate that Council is renewing pathways, this may be taken as evidence that pathway service levels are deteriorating.

6.4 New and Upgrade Plan

Provision of new or upgraded works fall into the following categories depending upon the extent and type of works:

- Council funded, or
- Developer funded as part of subdivisional development, or
- Contribution to the cost by either the developer and/or Council, or
- Contribution to the cost by property owners in accordance with special charge schemes.

Where possible, developers of new subdivisions are required, as part of the development approvals process, to provide the pathway infrastructure to the standard appropriate for that development.

In addition, as Council acquires new assets through the subdivision development process it is important that the consequential costs (i.e. maintenance and operational works) are established and allowed for in future budgets. Alternatively, Council may decide to not allocate additional funds for the treatment of new assets and accept a reduction in levels of service.

New and Upgrade programs may be identified from:

- A relevant Service Strategy,
- Current issues discussions,
- Under-capacity/function analysis,
- An assessment of future demand, and
- Risk assessments.

Council typically acquires pathway assets through both the sub divisional and development process and the creation of a new pathway or shared path when a gap in the network has been identified. Council's suite of strategic planning documents details plans for the provision of approximately \$5,720,000 (over 25km) of pathways, the projects included in this figure are provided in the table below.

The Sustainable Transport Strategy lists a total of approximately \$12,850,000 (over 65km) of pathways which have been identified as required to assist the overall connectivity of the pathway network. Timing the construction of these projects is; however, dependent on resource allocation and is unlikely to be completed entirely over the coming 15 years.

As Council acquires new assets, it is important that the consequential costs (i.e. maintenance and operational works) are established and allowed for in future budgets. Alternatively, Council may decide to not allocate additional funds for the treatment of new assets and accept a reduction in level of service.

6.4.1 Future New and Upgrade Pathway Projects

Asset	Project/Program Identified/source	Timing	Project Cost ^[2]	Project Cost to WCC
Shared pathway network along the North of the Merri floodplain (2.5m wide concrete, approx. 6.85km length)	North of the Merri Structure Plan	2028/29 completion (to be confirmed)	\$1,198,750.00	\$0 ^[1]
Shared loop path along Merri River (2m wide concrete)	North Dennington Structure Plan	2025/26 completion (to be confirmed)	\$918,720.00	\$0 ^[1]
Shared pathway connecting public open space / Merri River floodplain to community facilities (3m wide reinforced concrete)	North Dennington Structure Plan	2025/26 completion (to be confirmed)	\$429,000.00	\$0 ^[1]
2.5m concrete shared pathways located within open space, linear reserves. Approx. 3250m in total.	Warrnambool Eastern Activity Centre Structure Plan ^[4]	To be confirmed	\$455,000.00	\$0 ^[1]
Dales Road construction – shared path (2.5m) between Horne Road and Gateway Road.	Warrnambool Eastern Activity Centre Structure Plan ^[4]	To be confirmed	\$367,500.00	\$0 ^[1]
Dales Road/ Horne Road intersection pathways and DDA compliant pram/wheelchair crossing	Warrnambool Eastern Activity Centre Structure Plan ^[4]	To be confirmed	\$58,400.00	\$0 ^[1]
Raglan Parade and proposed north/south road next to Glynbeudy street and	Warrnambool Eastern Activity Centre Structure Plan ^[4]	To be confirmed	\$84,700.00	\$0 ^[1]
Horne Road upgrade from Dales to Raglan – Shared path (2.5m)	Warrnambool Eastern Activity Centre Structure Plan ^[4]	To be confirmed	\$196,000.00	\$0 ^[1]
Open space shared path link – (2.5m) concrete	Northern Edge Development Plan	To be confirmed	\$352,000.00	\$0 ^[1]
Concrete footpaths (1.5m) on both sides of the road (entire estate).	Northern Edge Development Plan	To be confirmed	\$1,655,500.00	\$0 ^[1]
Concrete footpaths (1.5m) on both sides of the road (entire estate).	Coastal Hopkins River Structure Plan	To be confirmed	Cost currently unavailable	\$0 ^[1]
Shared Path network (2.5m) concrete.	Coastal Hopkins River Structure Plan	To be confirmed	Cost currently unavailable	\$0 ^[1]
Pathways acquired as a result of regular sub-divisional works	Planning requirements	Ongoing		
New and upgrade projects identified in the Sustainable Transport Strategy ^[6] and Open Space Strategy and prioritised in the Principal Pedestrian Network (under development)	Sustainable Transport Strategy & Principal Pedestrian Network	Timing of projects is dependent on budget allocation.	\$12,853,732.00	\$12,853,732.00 ^[2]
Total			\$18,569,302.00^[5]	\$12,853,732.00^[2]

Table 31: Future New and Upgrade Projects

[1]: The total cost of these projects shall be funded fully by external parties in accordance with the relevant Development Contribution Plans.

[2]: Given that detailed costing are yet to be determined, the costs provided are indicative only.

[3]: The new and upgrade projects which are identified and prioritised in the principal pedestrian network shall be included here in more detail (include costing) following the completion of the project.

[4]: The Warrnambool Eastern Activity Precinct Plan is yet to be finalised; therefore, the projects and figures provided are indicative only.

[5]: Disregarding the Coastal Hopkins River Structure Plan project costs, which are currently unavailable.

[6]: The Sustainable Transport Strategy lists a total of approximately 65km of pathways which have been identified as required to assist the overall connectivity of the pathway network. Timing the construction of these projects is; however, dependent on resource allocation and is unlikely to be completed entirely over the coming 15 years.

Principal Pedestrian Network

Warrnambool City Council is in the initial stages of developing a Principal Pedestrian Network, the staging of which is dependent on funding. The project aims at identifying strategic routes where footpaths and shared paths are required, alongside other related fittings and assets. The Principal Pedestrian Network, when completed, will provide a foundation for developing Council's new and upgrade project plan.

6.5 Construction Standard

Council requires all pathways being constructed (or renewed) to be designed and constructed in accordance with the Infrastructure Design Manual. Refer to the IDM for the full set of design standards and conditions, alongside the associated standard drawings.

The following table details the relevant key standards:

Classification	Construction Standard
Footpaths (all categories)	<ul style="list-style-type: none"> • 2.0m width required in commercial areas and 1.5m width required in residential areas. • 125mm thick (25 Mpa) concrete in residential areas w SL72 mesh placed centrally. • 150mm thick (32Mpa) concrete in commercial areas w SL72 mesh placed centrally.
Shared Paths (all categories)	Design to be in accordance with Austroads Guide to Road Design Part 6A: Pedestrian and Cyclist Paths (Minimum width being 2.5m).

Table 32: Pathways Construction Standard

6.6 Disposal Plan

In order to achieve a holistic approach for infrastructure financial sustainability, Council must ensure that resources are not spent on maintaining or renewing assets which no longer serve a genuine community demand. Disposal of assets, therefore, serves as a tool for achieving optimal use of the available resources. Pathway infrastructure is generally considered to be essential to the connectivity of Warrnambool's transport and recreation needs, therefore demand for disposals is usually low. Council shall; however, endeavor to evaluate the community demand for pathway assets upon their end of life in order to ascertain if an overall benefit is provided to the community by allocating funds to conduct renewal works.

The disposal of pathways infrastructure may occur under the following conditions:

- A request is made by the community which is approved by Council;
- Following a study of demand, it is demonstrated that an asset receives low or no usage and thus continual expenditure on maintaining the asset is not justified; or
- An asset is handed over to a private interest or other authority.

Currently no pathway infrastructure is planned for disposal.

7 FINANCIAL PLAN

7.1 Current Financial Position

To achieve improved asset management outcomes, a sustained commitment to the provision of adequate funding for asset renewal, maintenance and new and upgrade works is required. The funding targets necessary to deliver sound asset management for the next five years based on the financial model are summarised in the tables below.

7.1.1 Current Asset Valuations

The tables below present a summary of the overall asset quantities and valuations of Council's pathway infrastructure.

Latest Survey Valuations

Asset Description	Total Quantity	Weighted Av. Asset Condition	Av. Asset Life in Years	Replacement Value	Written Down Value	Accumulated Depreciation	Annual Depreciation	Date of Condition Assessment
Pathways	328 km	2.49 (Fair)	≈55	\$46,243,509	\$26,882,898	\$19,360,611	\$948,150	April 2013

Table 33: Key Financial Parameters

[1]: For definitions see notes for table 23 on page 35.

7.1.2 Current Levels of Renewal Expenditure and Depreciation

Current Renewal Expenditure vs. Average Long-term Demand

The following table compares, over the coming 15 year period, the average amount of annual funding with depreciation and the total renewal requirement. These figures demonstrate that the allocations made in Council's Long Term Financial Plan account for less than half of the required funds for pathway renewal. To effectively manage Council's pathways, 100% of the total 15 year renewal requirement should be the target for renewal allocation.

Present total Annual Capital Renewal Expenditure (Average)	Annual Depreciation or Average Long-term Annual Demand	% of Annual Depreciation Being Met	% of Total 15 Year Renewal Requirement funded
\$367,190.00	\$948,150	38.7%	47.5%

Table 34: Current Renewal Expenditure vs. Average Long-term Demand

NB: The annual depreciation is a long-term figure whereas the present annual renewal expenditure is a short term indicative figure. As such, the "% of annual depreciation being met" is expected to be dynamic over the short term as large scale projects are required/not-required.

7.2 Financial Forecasting

The following graph illustrates the required funding and the actual funding for each respective year in the coming 15 year period. The line on the graph details the cumulative effect of the separation between the required and actual funding for renewal resulting in the increase of poor condition assets which are not funded.

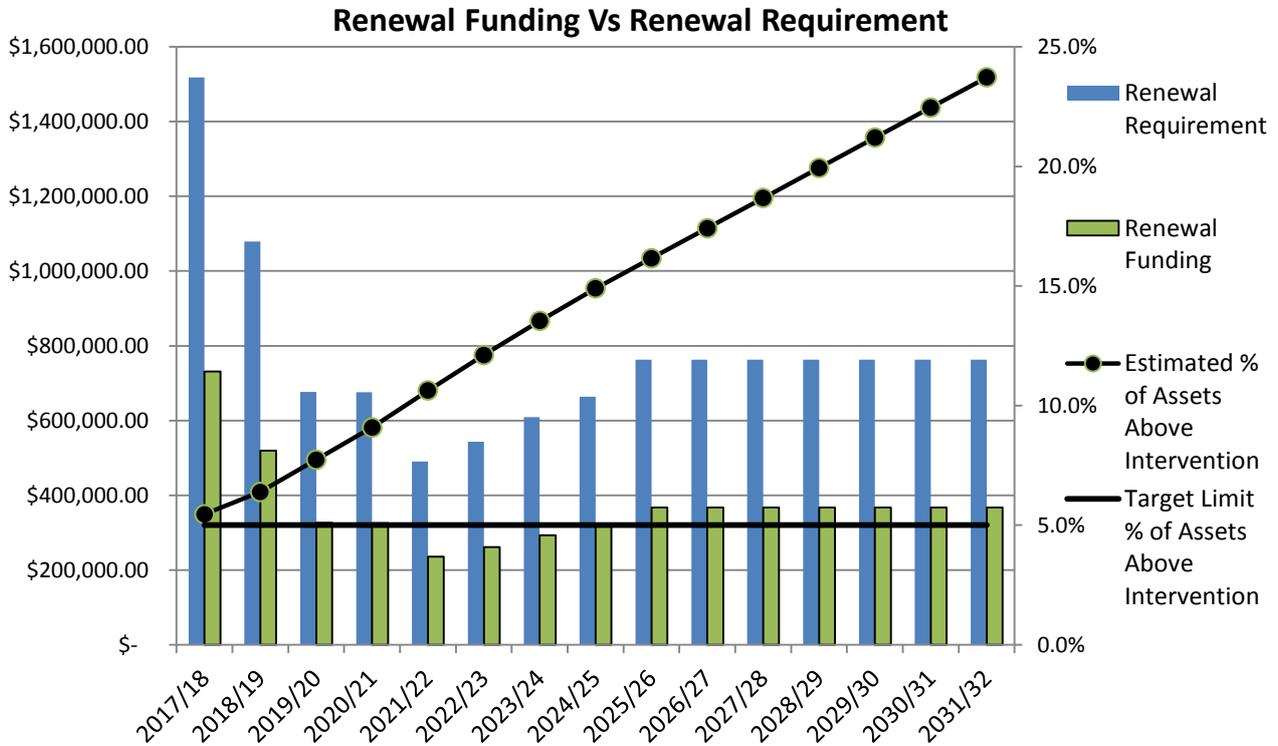


Figure 6: Pathways Renewal Funding Vs Renewal Requirement

As shown in the model above, Council is not meeting the required funding for pathway renewal and this is predicted to result in a significant deterioration of Council’s footpaths and shared paths. The target limit of assets over intervention is 5% for Council’s pathways; this is considered to be the manageable limit of projects before which Council should begin deliberating on the various sustainability consequences of further deterioration. Council may, as a result of this analysis, choose to increase funding towards pathway renewal, or alternatively proceed with the current funding adopted and accept that there will be a corresponding decrease in service levels and pathway condition. Consideration of pathway service levels for the coming 15 years will provide an opportunity to improve the management of Council’s pathways and this Asset Management Plan.

7.3 Funding Strategy

Pathways works are typically funded from the following sources:

- Rates
- Grants
- Gifted assets
 - VicRoads Principal Bicycle Path funding
 - Recreational grants
 - Products of development
- Developer contributions
- Asset protection enforcement
- Special charge schemes
- Footpath inspection fees

Council may, as a result of this plan, consider the funding or treatment arrangements over the coming years to manage the discrepancies between available and required renewal funding amounts to ensure that the existing service levels are maintained. If this cannot be achieved, Council may alternatively decide to accept a lower level of service for pathway infrastructure and manage the associated additional risk.

7.3.1 Funding Relationships

If Council proceeds with the funding allocation presented in this plan, and therefore accepts a declining level of service for pathway assets, it must be noted that this would result in the requirement for Council to allocate increased maintenance and operational funding above what has already been identified in section 6.2.3. Council would expect to record, in this case, increased levels of structural and serviceability failures which are over intervention in accordance with the Municipal Road Management Plan. Conversely, if Council were to decide to fully fund the renewal requirement (average of \$773,121 annually), a lower amount of maintenance works would be required to be compliant with the Municipal Road Management Plan.

As pathways are renewed, if the previous width of the pathway is non-compliant with the required standards, the renewal project will include an upgrade to the modern day equivalent. Therefore, it must be noted that the figures included within this plan do not have regard for the increased costs associated with this upgrade component. Given the minor extent of non-compliant pathways, this increased expenditure requirement; however, is not considered to be significant.

7.4 Valuation Forecasts

The following figure illustrates that Council's pathways will increase in total replacement cost due to acquired assets by approximately 12% over the coming 15 years. The following total replacement cost figures do not account for new pathways constructed through Sustainable Transport Strategy and Principal Pedestrian Network projects, which are dependent on funding allocation.

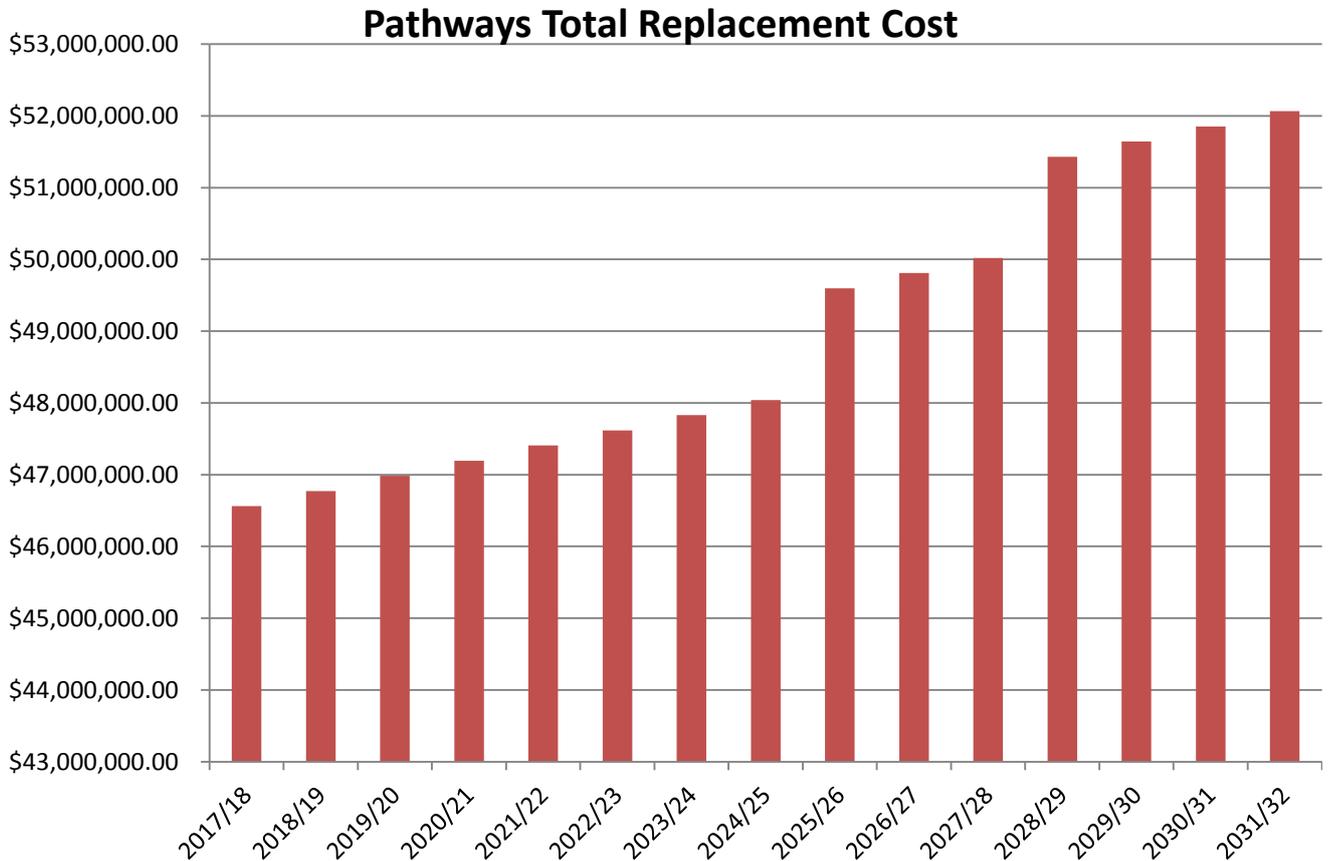


Figure 7: Pathways Forecast Valuation

7.5 Key Assumptions Made in the Financial Forecast

The key assumptions made in conducting the financial forecast for Pathway assets are:

- Structures will deteriorate with respect to their estimated "physical life" and require renewal upon reaching the end of the structures estimated "useful life";
- Structures of the same class/construction standard will deteriorate at the same rate;
- Renewal funding figures detailed in 6.3.4 are equal to the actual spend figures in each year.
- Present service level requirements shall remain reasonably consistent; and
- Unit rates for renewal are reflective of actual present industry construction rates.

8 ASSET MANAGEMENT PRACTICES

8.1 Asset Management Systems

The conquest asset management system contains the asset register for pathways and all assets generally. The register currently contains fields regarding the structures location, description, dimensions, condition, function, capacity, replacement cost, written down value, useful life, construction date and more. Conquest has the capacity for integration with Councils Geographical Information System (MapInfo), as such; all pathways assets have been mapped.

8.2 Information Flow

The key input information for this asset management plan is:

- Related council strategies which guide the provision of new assets and the management of existing assets;
- Asset data; including condition, age and cost values;
- Typical asset useful lives and unit rate costs for different construction standards;
- Projections and modelling of renewal requirements;
- Documented service levels;
- Future demand projections and factors affecting future demand;
- Forecasted works programs.

The key output information from this asset management plan is:

- Forecasted medium and long term renewal expenditure requirements to meet renewal demand.
- 15 year proposed renewal expenditure profile alongside the renewal demand and cost implications of the profile.
- A clear definition of the current value, type, service levels and condition concerning pathway assets, which enables the community and stakeholders to participate in balancing service levels with the available resources.
- The activities identified for the improvement of this plan and the overall management of pathways.

8.3 Standards and Guidelines

- International Infrastructure Management Manual (IIMM) 2006, IPWEA.
- Australian Accounting Standard AAS27
- Risk Management Standard, AS/NZS 4360
- ISO 55000:2014 Asset Management

9 PLAN IMPROVEMENTS AND MONITORING

9.1 Improvement Program

Levels of Service

- During the next community consultation on the pathway network, the community's opinion on the state of the pathway network and the service levels described within this plan shall be gauged so that Council may confirm or amend the service levels accordingly.
- Ensuring adequate lighting is critical in ensuring a safe and serviceable road and pathway network. An investigation into lighting standards and requirements shall take place with regard for Council's functional hierarchy. Part of the investigation should consider the development of isolux diagrams to assist Council in identifying pathway sections which are under-function.
- A significant portion of Council's pathway assets are bound to expire with regard to their useful life in the coming 15 years. This is supported through Council's available condition data which shows that over 60% of Council's pathways are in "fair" condition (one step from "poor" condition). During the next update of the Plan, following the next network wide condition assessment, the document should include a section which focuses on the trend in pathway condition.
- Council is not currently monitoring its performance in compliance with disability access standards and road crossing design for pathways. Prior to the next update of the plan, the means of monitoring and measuring Council's performance shall be developed to ensure that Council may identify and prioritise under-service sections of pathway.

Future Demand

- Council has an accurate understanding of what factors affect the future demand of footpaths and shared paths. Some of these factors, however, require a detailed quantitative prediction of what the effect on the future demand will be. An investigation shall be undertaken during the next review of this document.

Risk Management

- With the view of progressing towards a more "advanced" approach in managing the risks involved with providing pathways, the current system of risk identification shall be developed to include more specific and detailed responses for identified risks including prioritised actions for high risk events.

Life Cycle Management Plan

- A full condition inspection of Council's pathways is typically undertaken every 4 years. Given that the previous condition inspection was completed in April 2013, a condition inspection is required. Once the condition inspection is completed, the new data shall be incorporated within the Plan during the annual review.
- As the Principal Pedestrian Network develops, the results of the project shall be utilised to improve the Plan. For instance, the "gaps" in the network which are identified in the study should be included within the Plan as future new/upgrade projects, which in turn affect the future requirement for new, renewal and maintenance funding.
- Over the coming years, Council shall endeavor to formulate a rolling long term program for the renewal of Council's pathways with regard for their required amenity, condition and functionality.

9.2 Monitoring and Review Procedures

The Pathway Asset Management Plan is a dynamic document. As such, regular review of this document is required so that the plan remains relevant and in accordance with asset management best practice. It is planned that this document shall be reviewed annually, in accordance with Councils Asset Management Strategy.

Every four years, following a network wide condition inspection, the Infrastructure Management team shall conduct a substantial review and revision shall take place to reflect the change in asset knowledge. The review of the plan shall reflect changes in the condition of pathways, disposed and created assets, new technologies effecting management and service delivery, community requirements and funding. Additionally, following any formal community engagement relating to pathway Infrastructure, a review of the service levels and service level consequences within this document shall be undertaken.

10 REFERENCES

These references are separate internal documents and are available for inspection on Council's website:

- Municipal Road Management Plan (2017)
- Council Plan (2017-2021)
- Warrnambool Planning Scheme
- Structure and Development Plans
- Warrnambool Municipal Road Hierarchy Review and Traffic Management Plan (2016)
- Road User Plan (2013-2018)
- Active Warrnambool (in development)
- Warrnambool Health and Wellbeing Plan (2013-2017)
- Sustainable Transport Strategy (2010-2020)
- Principal Pedestrian Network (in development)
- Warrnambool City-Wide Housing Strategy
- Warrnambool Open Space Strategy (2014)

External References:

- Austroads Guide to Road Design Part 6A: Pedestrian and Cyclist Paths
- Austroads Guide to Traffic Management: Part 6 Intersection Interchanges and Crossings
- Infrastructure Design Manual (2015)
- AS 1428 – Design for Access and Mobility
- AS 1158.1 - Road Lighting - Pedestrian Area
- Road Management Act (2004)
- Local Government Act (1989)
- Road Safety Act (1986)
- Disability Discrimination Act (1992)
- International Infrastructure Management Manual (IIMM) 2006, IPWEA.
- Australian Accounting Standard AAS27
- Risk Management Standard, AS/NZS 4360
- ISO 55000:2014 Asset Management
- Asset Management and Maintenance by Council's (2014), Victorian Auditor-General's Office
- User Guide to Bicycle and Shared Path Selection – Using Whole-of-Life Costing (2006), Australian Bicycle Council

11 APPENDICES

- 1 – Pathway Infrastructure Risk Register
- 2 – Pathways Asset Management Action Plan
- 3 – Pathways Hierarchy Maps
- 4 – Under Function/Capacity Pathway Assets

11.1 Pathways Infrastructure Risks Register

RISK IDENTIFICATION							RISK ANALYSIS				
Risk No.	Asset at Risk	What can happen?	When can it occur?	Possible cause	Existing controls	Is risk credible?	Likelihood	Consequences	Risk rating	Action required	Is risk acceptable?
1	Pathways	Pedestrian Fall	Anytime now	Misalignment from trees	Defect inspection (RMP)	Yes	Possible	Minor	Medium	Planned action required	Yes
2	Pathways	Pedestrian Fall	Anytime now	Rough and/or un-even surface	Defect inspection (RMP)	Yes	Possible	Minor	Medium	Planned action required	Yes
3	Pathways	Pedestrian Fall	Anytime now	Ground Movement	Defect inspection (RMP)	Yes	Unlikely	Minor	Low	Manage by routine procedures	Yes
4	Pathways	Pedestrian Fall	Anytime now	Inappropriate or missing signage	Defect inspection (RMP)	Yes	Unlikely	Minor	Low	Manage by routine procedures	Yes
5	Pathways	Pedestrian Fall	Anytime now	Path edge drop off	Defect inspection (RMP)	Yes	Possible	Minor	Medium	Planned action required	Yes
6	Pathways	Pedestrian Fall	Anytime now	Slippery surface/water inundation	Defect inspection (RMP)	Yes	Possible	Minor	Medium	Planned action required	Yes
7	Pathways	Pedestrian Fall	Anytime now	Service pit defect	Defect inspection (RMP)	Yes	Likely	Minor	Medium	Planned action required	Yes
8	Pathways	Pedestrian Fall	Anytime now	Vegetation intrusion	Defect inspection (RMP)	Yes	Possible	Minor	Medium	Planned action required	Yes
9	Pathways	Collision with overhanging tree limbs	Anytime now	Overgrown vegetation	RMP Inspection and Local Laws procedures	Yes	Unlikely	Minor	Low	Manage by routine procedures	Yes

10	Pathways	Conflict with vehicle	Anytime now	No path for separation of pedestrians and vehicles	Rationalisation of requirement for pathways where non-existent	Yes	Unlikely	Major	Medium	Planned action required	No
11	Pathways	Conflict with vehicle	Anytime now	Turning traffic at intersections	Design standards	Yes	Unlikely	Moderate	Medium	Planned action required	Yes
12	Pathways	Conflict with vehicle	Anytime now	Turning and exit traffic at properties	Design standards	Yes	Possible	Minor	Medium	Planned action required	Yes
13	Pathways	Conflict with vehicle	Anytime now	Inappropriate or missing signage	RMP inspection and defect response times	Yes	Unlikely	Moderate	Medium	Planned action required	Yes
14	Pathways	Damage from unauthorised (heavy) vehicle	Anytime now	Construction traffic and/or unlawful entry	Construction supervision, local laws enforcement and VicRoads policing	Yes	Likely	Moderate	High	Prioritised action required	No
15	Pathways	Conflict from inappropriate use by motor bikes	Anytime now	Unlawful use by motor vehicles	Policing, signage and barriers.	No			#N/A	#N/A	
16	Pathways	Conflict between pedestrian and bicycle users on shared paths	Anytime now	Inadequate design	Design Planning (i.e. line marking and signage where required)	Yes	Unlikely	Minor	Low	Manage by routine procedures	Yes

11.2 Pathways Asset Management Action Plan

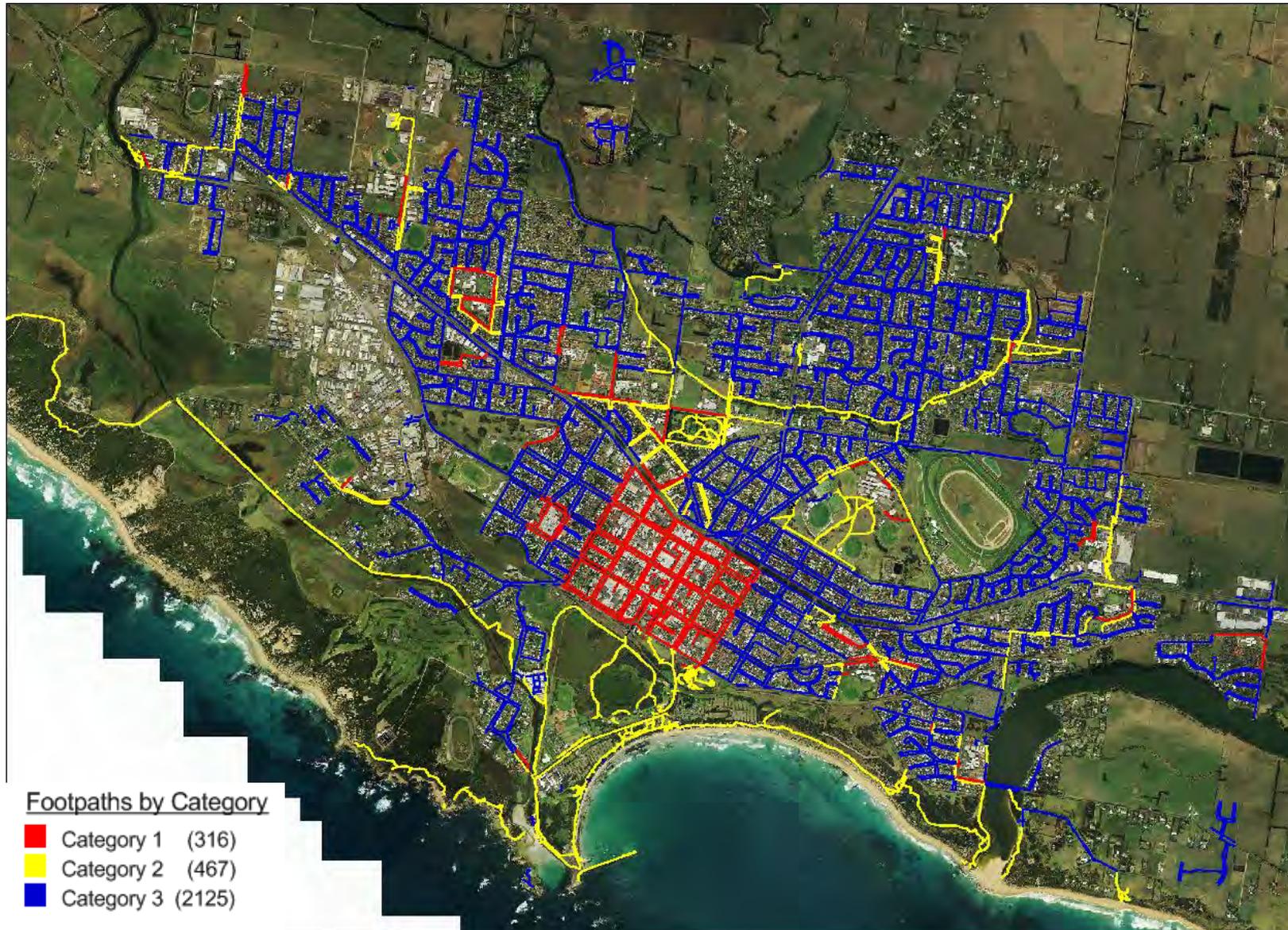
Related Section/Topic	Action	Responsible Officer	Timeline
Levels of Service – Community Engagement	During the next community consultation on the road and pathway network, the community’s opinion on the state of the pathway network and the service levels described within this plan shall be gauged so that Council may confirm or amend the service levels accordingly.	Strategic Asset Management Coordinator	During the community consultation component of the PPN project
Levels of Service – Service level Performance Measurement: Lighting	Ensuring adequate lighting is critical in ensuring a safe and serviceable road and pathway network. Subject to the availability of resources, an investigation into options for evaluating lighting standards and requirements shall take place with regard for Council’s functional hierarchy. Part of the investigation should involve the development of isolux diagrams to assist Council in identifying pathway sections which are under-function.	Coordinator Infrastructure Management	Prior to the next large scale review of the Plan.
Level of Service - Performance Measurement: Pathways Accessibility	The means for monitoring and measuring Council’s performance in complying with disability access standards and appropriate design of road/pathway crossings is required to be developed prior to the next update of the Plan.	Coordinator Infrastructure Management	Prior to the next large scale review of the Plan.
Future Demand – Natural Environment	For each environmental change anticipated which shall impact on the life of pathway infrastructure, research shall be conducted on the projected quantifiable change. Once these values have been sourced, subsequent research shall take place on the formulaic relationships between environmental conditions and specific infrastructural life. Once this research is completed, an accurate value for the expected environmental impact shall be calculated and thus an effective and targeted management plan may be developed.	Strategic Asset Management Coordinator	Prior to the next large scale review of the Plan.
Future Demand – Demographics and Land Use	Further work shall be completed to quantify the total effect resulting from demographic and land use developments. The results of these developments are represented through the characteristics of travel throughout the pathway network. Once an accurate predicted total change is produced, implications for the pathway hierarchy and levels of service shall be identified.	Strategic Asset Management Coordinator	Prior to the next large scale review of the Plan.
Future Demand – Finance and Economics	<p>The macro-economic effects of willingness to pay shall be measured through changes in service level demands (assuming that consequences of service level change are effectively demonstrated). During the community engagement on the road and footpath network, this phenomenon shall be measured and planned for in conjunction with unrelated service level changes.</p> <p>The predicted changes in unit rate cost shall be sourced through industry research literature and by the analysis of the local change in previous years.</p>	Strategic Asset Management Coordinator	Prior to the next large scale review of the Plan.

Lifecycle Management Plan - Structural deterioration /failure via tree roots, third-party assets and heavy vehicles.	An investigation into possible solutions for minimising structural failures by third party assets or tree roots shall be undertaken. In addition, Council shall attempt to identify any potential improvements to the controls and protocols in place for damage resulting from private assets/parties.	Strategic Asset Management Coordinator	Prior to the next large scale review of the Plan.
Lifecycle Management Plan - Hand-over procedures and asset maintenance planning.	A review of Council's handover procedures shall be completed to investigate options for pursuing additions to maintenance, operational and renewal funding to account for increased costs associated for acquired assets.	Strategic Asset Management Coordinator	Prior to the next large scale review of the Plan.
Lifecycle Management Plan – Condition deterioration monitoring	During the development of this plan, it was found that a significant portion of Council's pathway assets are bound to expire with regard to their useful life in the coming 15 years. This is supported through Council's available condition data which shows that over 60% of Council's pathways are in "fair" condition (one step from "poor" condition). During the next update of the Plan, following the next network wide condition assessment, the document should include a section which focuses on the trend in pathway condition.	Strategic Asset Management Coordinator	Prior to the next large scale review of the Plan.
Lifecycle Management Plan – Commercial Area Mapping and Conditions	The Infrastructure Design Manual requires 2.0m wide pathways within commercial areas. Currently, Council evaluates the application of "commercial" at the project level. An exercise shall be completed to formalise the classification of commercial streets and footpaths, alongside defining what constitutes "commercial" for future classification.	Strategic Asset Management Coordinator	Prior to the next large scale review of the Plan.
Lifecycle Management Plan – Condition Assessment	Prior to the end of the financial year and subject to budget availability, the condition of Council's pathway network should be assessed and the performance of the assets evaluated. From the results of the assessment, the levels of service which Council is providing may more accurately be measured and included in the Pathway Asset Management Plan during the annual review.	Strategic Asset Management Coordinator	Prior to completion of the 17/18 financial year.
Lifecycle Management Plan – Renewal Ranking Implementation	The renewal ranking system detailed in section 6.3.1 is yet to be utilised in the formulation of Council's renewal program. Following the adoption of this plan, any renewal works planning shall be undertaken through the use of this ranking system. The system may then be evaluated and modified, if required, to achieve the most appropriate weighting of the various factors.	Strategic Asset Management Coordinator	Prior to the next large scale review of the Plan.
Lifecycle Management Plan – Principal Pedestrian Network	As the Principal Pedestrian Network develops, the results of the project shall be utilised to improve the Plan. For instance, the "gaps" in the network which are identified in the study should be included within the Plan as future new/upgrade projects; in addition, the inclusion of these projects within the plan provides the opportunity to plan for future maintenance and operational requirements.	Strategic Asset Management Coordinator	Prior to completion of the 17/18 financial year.
Lifecycle Management Plan – Road and pathways safety audits	Over the coming financial year, if the availability of resources allows, Council shall undertake 5 road and pathway safety audits of strategic locations to, for at least one reason, to evaluate the suitability of the road and pathway interface in regard to contemporary design standards.	Coordinator Infrastructure Management	Prior to completion of the 17/18 financial year.

Lifecycle Management Plan – Long Term Renewal and Resurfacing Program	Council does not currently have a formal long term renewal plan for Council’s pathways. Nor does Council undertake a resurfacing or surface rehabilitation program for Council’s asphalt and spray sealed pathways, including those found within the Central Business District. Over the coming years, Council shall endeavor to formulate a rolling long term program for the renewal of Council’s pathways with regard for their required amenity, condition and functionality.	Strategic Asset Management Coordinator	Prior to the next large scale review of the Plan.
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11.3 Pathways Hierarchy:

Warrnambool City



Warrnambool City (1)



Warrnambool City (2)



Warrnambool City (3)



Warrnambool City (4)



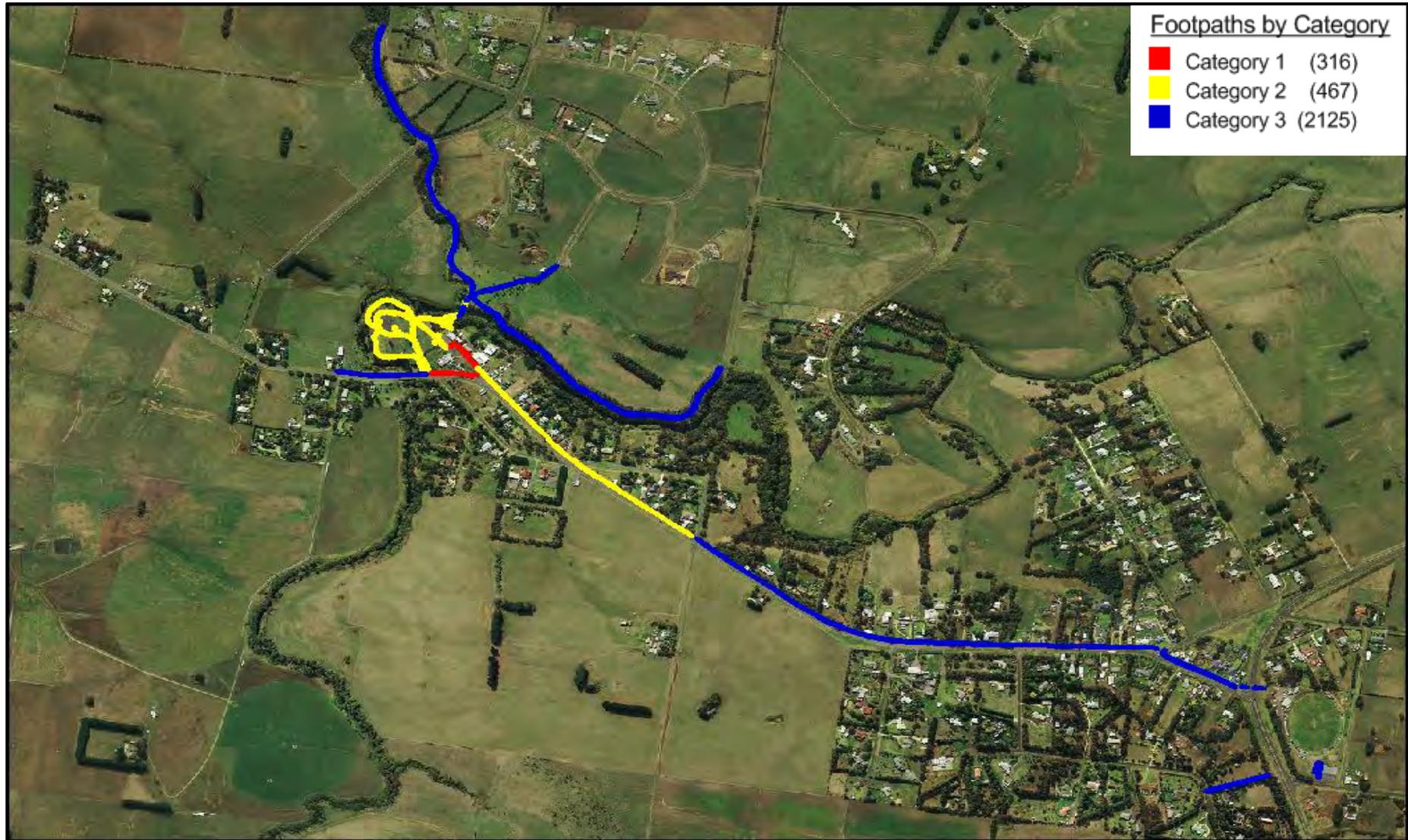
Warrnambool City (5)



Warrnambool City (6)



Woodford/Bushfield

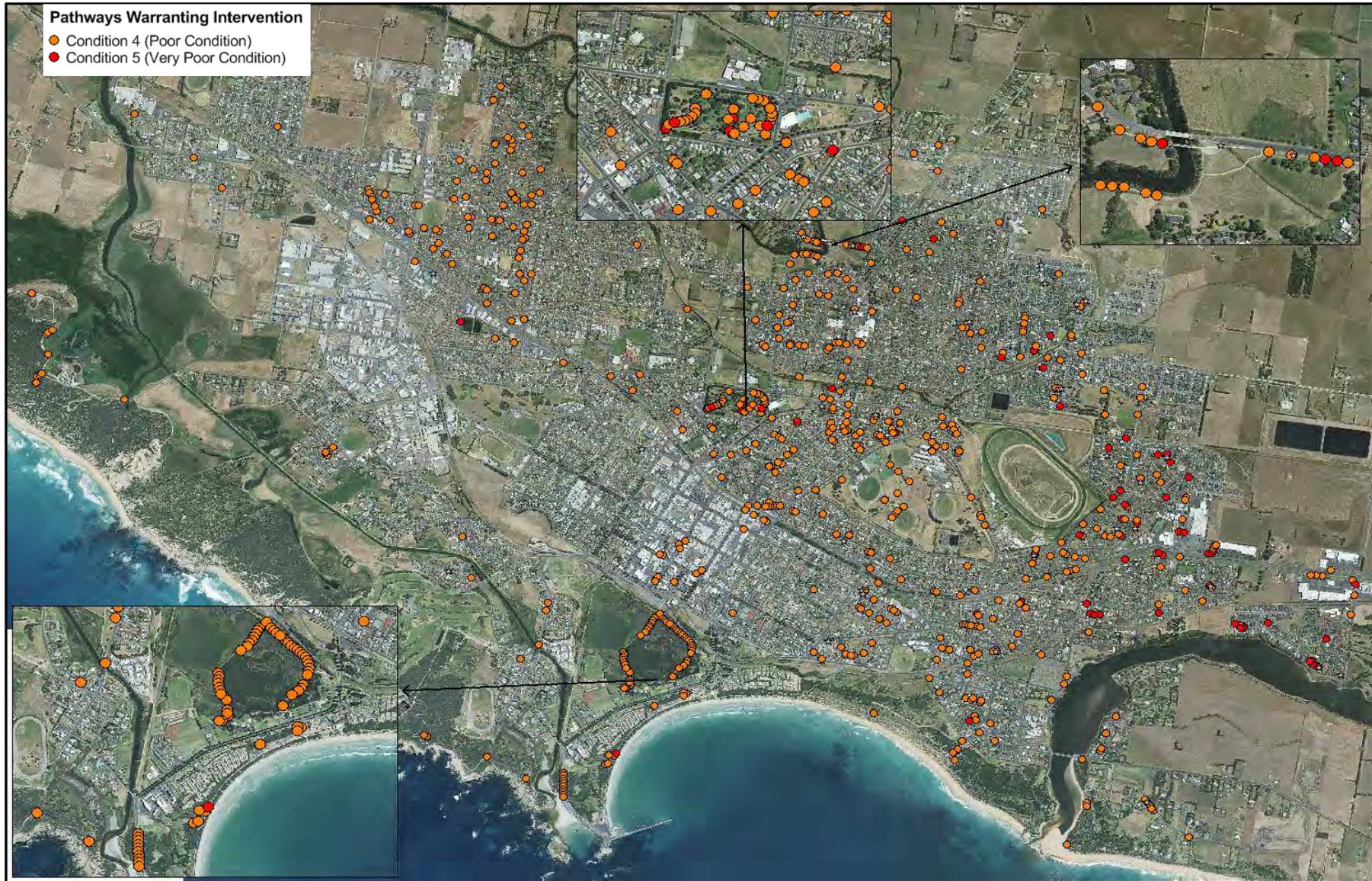


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11.4 Renewal Works Program

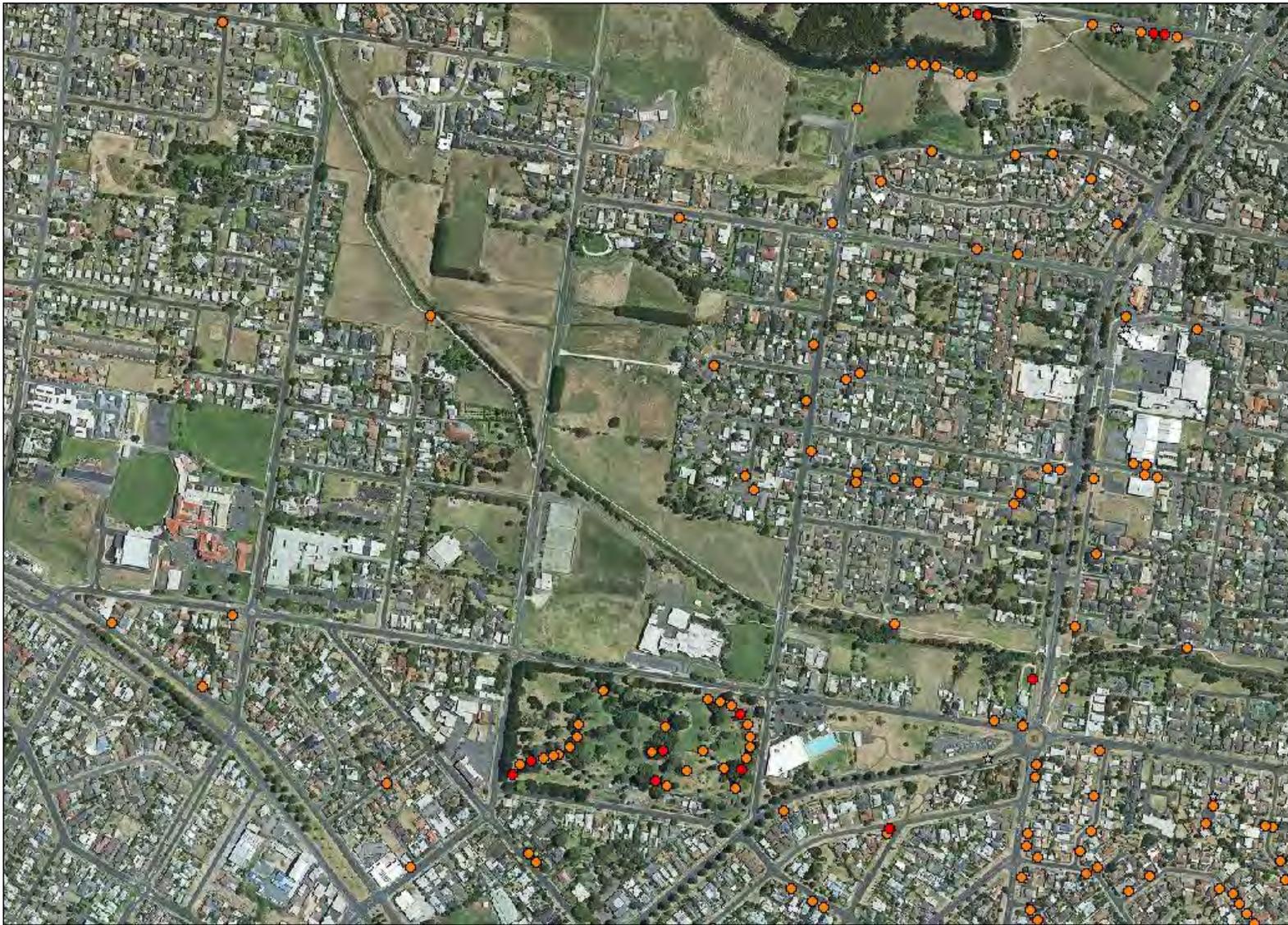
Warrnambool City



Warrnambool City (1)



Warrnambool City (2)



Warrnambool City (3)



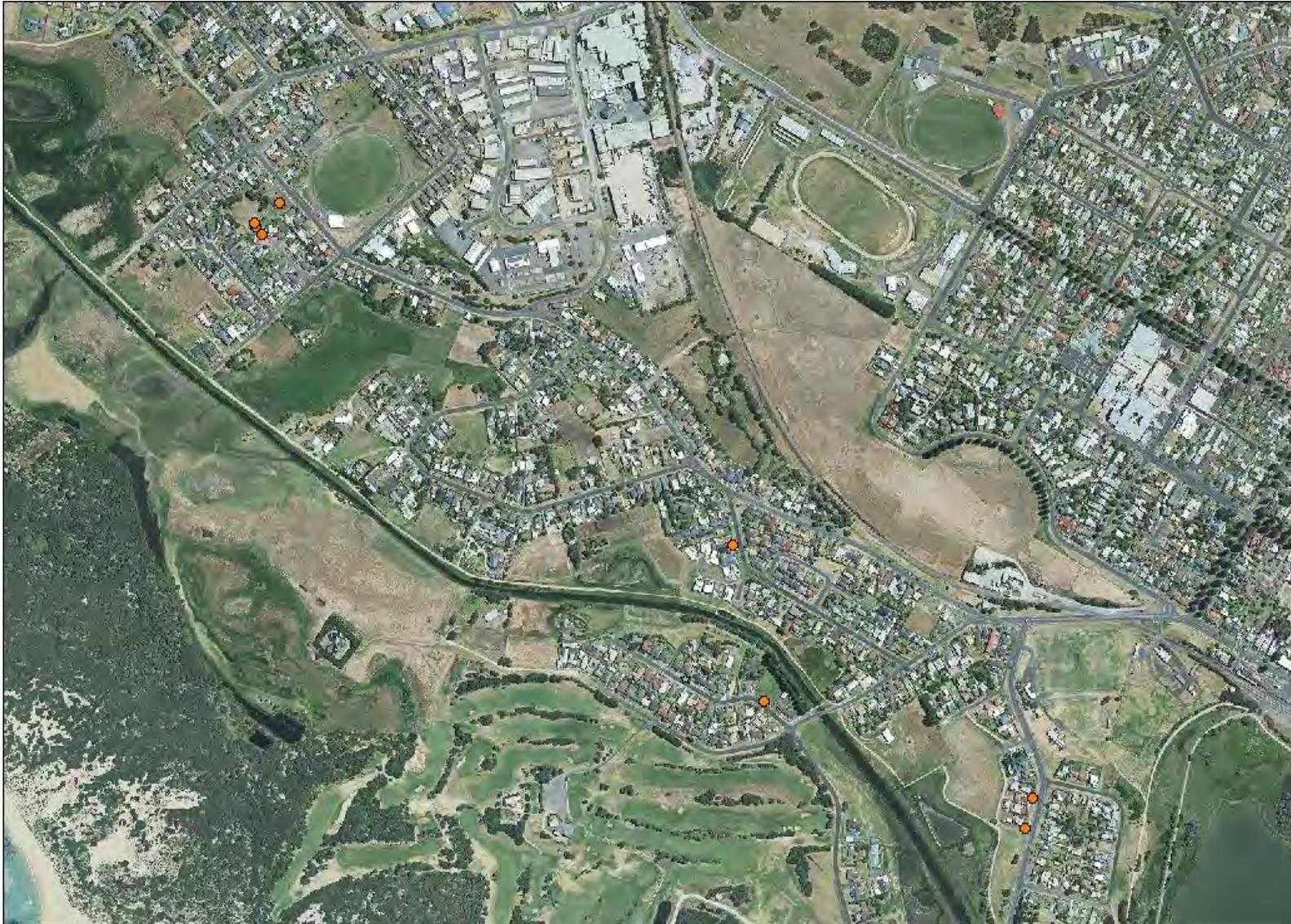
Warrnambool City (4)



Warrnambool City (5)



Warrnambool City (6)



Woodford/Bushfield



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