



Footpaths

Community Assets – At the Core of Your Neighbourhood

Willoughby City Council 20 Year Asset Management Plans

2013/2014



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1. Executive Summary

This Asset Management Plan is to be read in conjunction with Council's Asset Management Policy & Strategy.

1.1. What does council provide?

Willoughby City Council provides a footway network to enable safe access and movement of pedestrians throughout Council's Local Government Area.

Council is responsible for the care and control of approximately 436km of footways, 387km of which is located in the road reserves with a current replacement value of \$61.3M. The remaining 49km is located in parks, playgrounds, sportsground and bushland area.

1.2. What does it cost?

The primary funding source for footpath is the general administration fund which is used for both maintenance and renewal works, with a value of approximately \$1.3M for the 2013/2014 financial year and rising with CPI (assumed 3%) every year. In addition, there are other funding sources ear-marked for specific projects or location, e.g. Missing Links, strip shopping centre improvement, etc.

Modelling of financial forecasts indicate that current expenditure trend translates to a lifecycle expenditure of \$2.23M p.a. on average. Compared to lifecycle cost of \$2.29M p.a., this indicates a funding gap of approximately \$59K p.a. The small gap relative to total funding indicates that current funding is adequate to maintain the footpath network at a satisfactory level. The accuracy of these forecasts will continue to be monitored as updated data and assumptions are refined.

1.3. How do we measure performance?

Currently Council's performance in footpath provision and maintenance is measured primarily based on the footpath network condition. Other factors, such as functionality and capacity have not been included in the assessment at this stage. However where there are indications of inadequate capacity, e.g. wear marks on turf, such locations are recorded to be included in the following years' works program.

1.4. What are the risks?

Risk management forms the basis of the prioritisation method for footpath renewal and maintenance works. This method takes into account various factors that indicate pedestrian volume and geographical location, such as distance from transport hubs, schools, and aged care centres. Based on this information, a risk and need map for the LGA have been developed. This map assigns a risk rating to the entire LGA. Coupled with the information on footpath condition data, an objective prioritisation process is then developed.

It is worth noting that there are occasions when risk mitigation to improve safety may conflict with other objectives. The construction of footpath in a conservation area is a case in point. For such instances, community engagement is carried out to consult and receive feedback from the community before works proceed.

1.5. Community consultation

Community consultation specifically relating to asset management of footpaths and other asset classes was completed in 2013 as part of Council's community engagement strategy. Council also has a broad understanding of community expectations in the context of footpaths due to the regular direct contact between community members and Council.

Consultation results show that the community rates the current condition of footpaths assets and maintenance response times as acceptable, with an 80% satisfaction level. The community's expectations about asset condition align with Council's for the majority of assets, and in some cases, the community's expectations appeared to be lower than Council's. Therefore target levels of service that were assumed by staff initially have remained unchanged following the consultation process.

1.6. What does the future hold?

Planning processes and budgeting for footpaths are now considered to be robust following years of refinements to the processes. In addition, given that community satisfaction on footpaths quality rates at 80%, and the lifecycle gap calculated from the modelling is minimal, it can safely be assumed that Council's current asset management strategy for footpaths would continue as planned. The quality and accuracy of Council's reporting on its Asset Management plans will further improve when the Asset Management System is linked with future asset construction and renewal programs via the works order process.

2. Introduction

This Asset Management Plan (henceforth referred to as the *Plan*) forms part of Council's Resourcing Strategy under the NSW Integrated Planning and Reporting Framework. It is to be read in conjunction with Council's Asset Management Policy and Improvement Strategy (AMIS), to which frequent reference is made to avoid repetition within the Plan. The AMIS should be consulted for relationships between this Plan and other documents in the Integrated Planning & Reporting Framework.

2.1. Background

The purpose of this Plan is to demonstrate the sustainable provision and maintenance of all of the assets covered in the Plan and the services that rely on those assets. This Plan is a working document that spells out in detail the current state of assets, future plans for their management, associated costs and performance targets. It is designed so that it may be referenced by Council staff and members of the community alike.

Footway assets within road reserves are generally managed by the Engineering Services Branch, whereas those in parks, playgrounds, sportsgrounds, and bushland area are managed by the Open Space Branch. The methodology in this asset management plan covers all footways. However, condition rating, levels of service and the costs of managing footways in open space area are separate and can be found in the appropriate Asset Management Plan prepared by the Open Space Branch. In the future, it is envisaged that this Asset Management Plan will incorporate footways managed by both Branches.

The chart below shows the proportion of different types of footway that are administered by the Engineering and Open Space Branches by length.

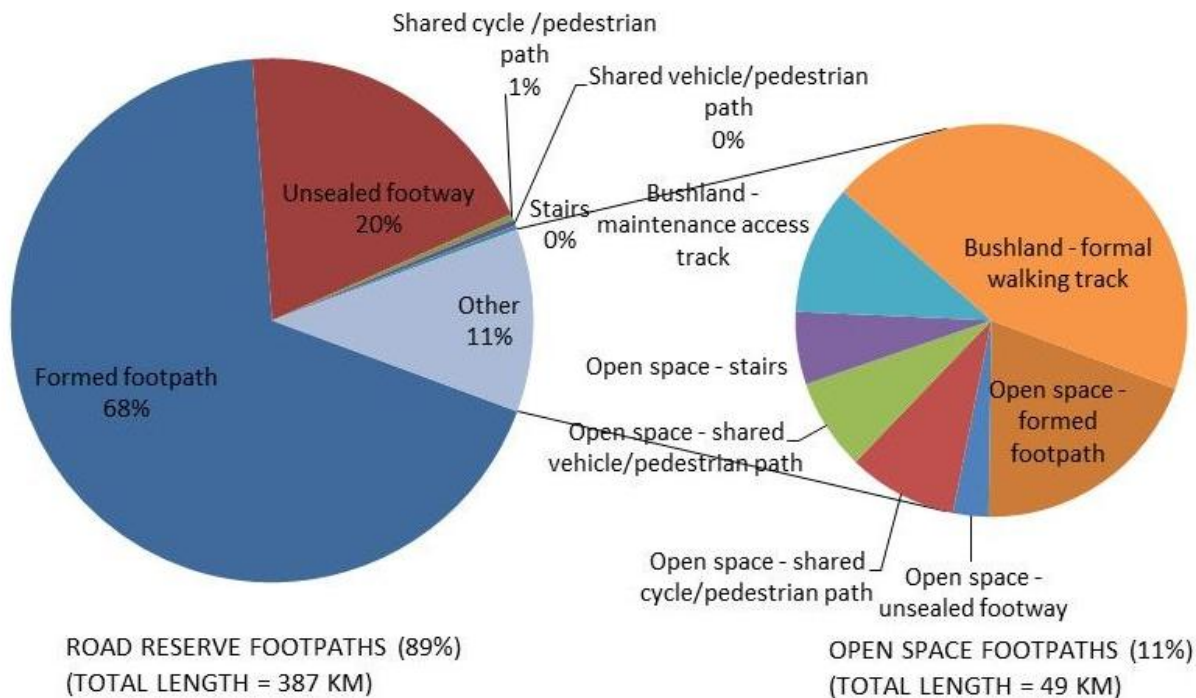


Figure 2.1 Assets covered by this plan

As shown in the chart above, 89% of the total footway length is within the road reserve. The remaining 11% is within the open space area, with further breakdown as shown. The total length of the footways captured in this plan is 436km. The current replacement cost of footways within the road reserve is \$61.3M.

Formed footpaths are typically constructed using concrete, bitumen, or pavers. In contrast, unsealed footways are walkways that are turfed or made of other naturally existing materials, e.g. nature strip. Shared paths have been constructed to cater for more than one type of path users, typically pedestrian and cyclists. The stairs that have been included in this plan are non-suspended (on-ground) steps that form part of the footway.

Note that there are other structures that form part of the footway network but have not been included in this asset management plan. For example, suspended structures such as boardwalks and metal staircases have been included in the bridge asset group due to their inherently higher exposure to risk and different inspection requirements. The table below summarises the exclusions in this Asset Management Plan. Table 2.1 lays out responsibilities for those assets not covered by this Plan.

Table 2.1 Assets NOT covered by this plan.

Asset category	Plan covering asset category	Division/branch responsible
Boardwalk	Bridge Asset Management Plan	Engineering Services
Suspended staircases	Bridge Asset Management Plan	Engineering Services
Other footways within Open Space area	Relevant Open Space Asset Management Plan depending on the footway location	Open Space

Other planning documents that apply to some or all of the assets covered in this Plan are listed in Table 2.2, and their relationship to this Plan described.

Table 2.2 Associated planning documents for this asset class

Document title	Role of document in planning process
Willoughby Footpath Masterplan – Missing Links Programme	Addresses demand for footpath currently not being addressed or new demand for footpaths to complete the continuity of Council's footpath network.
Willoughby Development Control Plan	Specifies detailed guidelines and environmental standards for new development.

Key stakeholders in the preparation and implementation of this plan and their respective roles are listed in Table 2.3.

Table 2.3 Key stakeholders and roles relating to asset management planning

Stakeholder	Role
Asset Management Controller	Coordinates preparation of plan, ensures links are retained between relevant asset management planning documents, assists with information flows into and from this Plan.
Infrastructure Services Director	Approval of capital programs, maintenance and inspection schedules and risk management.
Engineering Assets Group	Preparation of Plan, data collection and update, long term planning and prioritisation of works.
Engineering Works Services Group	Construction and maintenance of assets.
Engineering Projects Group	Design and consultation.

Stakeholder	Role
Financial Services Branch	Receipt of fair value valuations at end of financial year, provision of budgets from the long term financial plan, receipt of projections relating to expenditure gaps.
Progress associations, community	Determination of service level targets, feedback about new/upgraded assets.
Councillors	Financial and planning decisions, community representation.
Insurers and risk management staff	Risk management.

2.2. Goals and objectives of asset management

The overarching principle, goals and objectives of asset management are those described in the AMIS and are not repeated here. Council's community strategic plan – the Willoughby City Strategy – identifies a number of outcomes in order to achieve the overall vision for the community, and any of the strategies for achieving these outcomes rely on asset management strategies. The outcomes as they relate to the assets covered in this Plan are listed in Table 2.4 along with the strategies for achieving those outcomes.

Table 2.4 Outcomes and Strategies from the Willoughby City Strategy as they relate to a

Outcome as listed in the Willoughby City Strategy	Strategies within this Plan that will assist in achieving the outcome
2.1.2.a. Provide safe pedestrian links into, through and between bushland areas without endangering natural ecosystems.	Providing continuous linkage throughout Council's footpath network to enable access to transport hubs. Improving the quality of footpath for pedestrians and cyclists alike to encourage the use of paths. Reducing risks by eliminating or reducing the severity of trips and falls. Providing bike racks near transport hubs and bus stops.
4.2.1 Increased use of active and alternative transport	
4.1.2 Increased use of public transport	
4.1.3 Transport management balances our necessary private vehicle trips with alternative, more sustainable transport	
5.2.4 Our CBDs are supported by provision of utilities, public transport, road upgrades, open space infrastructure and pedestrian linkages.	

This Plan contains the works programs, maintenance and inspection regimes and actions for improvement that should be followed to ensure the outcomes in the Willoughby City Strategy, as they relate specifically to the assets covered by the Plan, are achieved.

2.3. Plan framework

This Plan contains the following information that will enable Council to achieve sound strategic management of its vast asset stock:

- Current and target levels of service provision and strategies to address gaps (Section 3)
- The impacts of current and future demand on the delivery of services and strategies to address them (Section 4)
- Activities associated with managing Council's assets throughout their life cycles (Section 5)
- A summary of the funds required to provide services and meet targets (Section 6)
- A summary of current business processes and asset management practices (Section 7)
- Actions to ensure improved management of the assets covered by this Plan (Section 8)

2.4. Core and advanced asset management

The difference between core and advanced asset management is explained in the AMIS.

This Plan has been prepared using an advanced, or bottom-up, approach. Data is available concerning the dimensions, condition and value of all assets covered by this Plan, and this data has formed the basis for all planning and financial projections. Data concerning the performance of Council's assets over time will improve assumptions relating to financial projections, such as the degradation rate or the useful life of the assets. This Plan will therefore become more advanced each time it is revised.

3. Levels of Service

The level to which services are provided by Council, termed *levels of service*, is an important factor in asset management planning. Council needs to know the type of assets required to deliver certain services, how many of them are needed, where they should be located, the quality that is expected from them, the level of maintenance required and the level of risk that might be considered acceptable. There are financial implications for all of these decisions.

The AMIS provides all necessary detail about Council's approach to determining target levels of service. Only information relating specifically to the assets covered by this Plan can be found in this Section.

3.1. Legislative requirements

While most levels of service are set in consultation with the community, the provision of certain services and assets must take place according to existing legislation. The legislative requirements that relate to this Plan are listed in Table 3.1

Table 3.1 Legislative requirements impacting on management of assets covered by this Plan

Legislation	Impact on management of assets
NSW Local Government Act 1993	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan and resourcing strategy in conjunction with asset management plans for sustainable service delivery.
Roads Act 1993	Sets out the role and responsibilities of road authorities and the rights of members of the public who use public roads.
Road Transport (General) Act 2005	Provides for the administration and enforcement as well as review of the road transport legislation, ultimately aiming to improve road safety and transport efficiency.
Road Transport (Safety and Traffic Management) Act 1999	Provides for a system of safety and traffic management, ultimately aiming to improve safety and efficiency of transport on roads and road related areas, and the efficiency of road transport administration.
Disability Services Act 1993	Sets out principles to be applied with respect to persons with disabilities and objectives for service providers and researches, and provides for funding of appropriate disability services and research and development activities.
Disability Discrimination Act 1992 Disability Discrimination and Other Human Rights Legislation Amendment 2009	Sets out responsibilities to ensure persons with disabilities have the same rights and access to the provision of goods, facilities and services.
Occupational Health and Safety Act 2000	Sets out responsibilities to secure the health, safety and welfare of persons at work.
Environmental Planning and Assessment Act 1979 Environmental Planning and Assessment Regulation 2000	Sets out the responsibilities for environmental planning between the different levels of government in the state in managing, developing and conserving resources to promote social and economic welfare of the community and a better environment.

3.2. Customer research and expectations

Council has undertaken a comprehensive community engagement program to determine the community's level of satisfaction with, and expectations for, Council's assets. The results of a detailed survey in 2013 indicated that levels of satisfaction with each major asset class were overwhelmingly high. These are summarised in Figure 3.1.

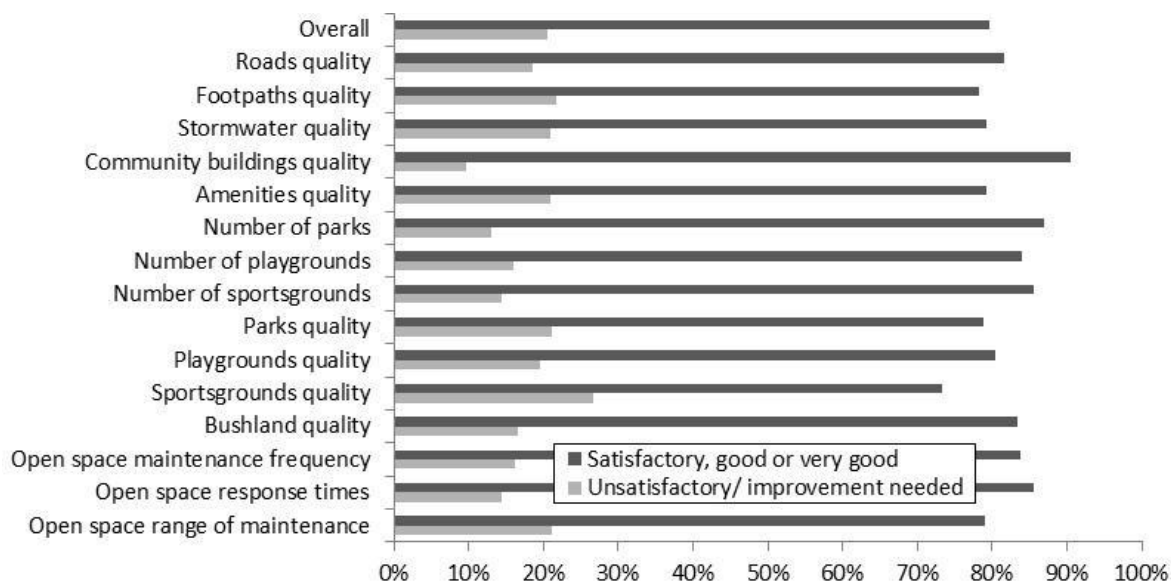


Figure 3.1 Levels of satisfaction with Council's assets (100+ surveys completed in 2013)

Expectations for assets were determined through comments from the same detailed survey as well as an online forum with high participation and consultation with a panel of 40 community members who had the opportunity to become well informed about Council's assets and asset management processes.

Results from the community engagement program show that there is an approximately 80% satisfaction level in the quality of footpaths in the Council's area, which is similar to the average for all Council's assets.

3.3. Target levels of service

Based on the results of community engagement throughout 2013, target levels of service have been adopted by Council for assets covered by this Plan. These targets relate to the physical condition and appearance of assets, and drive renewal or rehabilitation programs. More detailed findings on the intervention point for treatment specific to footpath seem to indicate that the community's feedback corresponds to the intervention point selected by Council.

Table 3.2 Target levels of service for assets covered by this Plan.

Asset type, category or hierarchy	Target level of service
Footpaths (all types)	Intervention is triggered when footpath has degraded to Condition 2 or worse, subject to prioritisation of works.

Levels of service also need to be identified for factors other than physical condition and appearance. For the assets covered by this Plan, measures of service delivery that have not yet been developed but which are relevant include:

- Quantity & location
- Capacity
- Functionality
- Responsiveness
- Legislative compliance

These factors are already taken into account informally in everyday management, but have not been formally documented or measured. In broad terms the targets for these measures of service delivery are described and compared to current performance in Table 3.3 in the next section.

3.4. Current levels of service

Target level of service which has been formally documented and applied in Council's operation is to intervene when a footpath segment reaches condition 2 or worse. Currently there are existing segments of footpaths that are at or beyond this intervention level. However, at current funding, the target level of service of condition of not having any footpath segments beyond condition 2 should be achieved by the end of the 20 year financial modelling period.

Other measures of level of service have not yet been developed, but the table below describes these measures in general sense with a target level and compares them to the current performance.

Table 3.3 Target and Current Level of Service

Service criteria	Level of Service	Measurement Scale	Target Performance	Current Performance
Quality	Physical condition	0-5 rating scale based on % of footpath area affected by defects	Within the next 20 years, no footpath segments have more than 5% of footpath area affected by defects, which relates to Condition 2.	44% of footpath segments currently have more than 5% of footpath area affected by defects
	Cleanliness	To be determined in future levels of service	To be determined in future levels of service	To be determined in future levels of service
	Aesthetic condition	Repairs are currently undertaken based on physical condition and risk. This factor is to be determined in future levels of service	To be determined in future levels of service	To be determined in future levels of service
Quantity	Connectivity of footways	Inclusion in Missing Links Programme	Program completed within 20 years	Approximately 30% completed
Capacity	Appropriate to demand:	Wear marks on adjacent turf and/or pedestrian volume and/or Customer Service Requests	Appropriate footway to cater for pedestrian volume	CSR number reflects good performance
Functionality	Fitness for purpose	Footway types are appropriate for location and pedestrian volume	Appropriate footway depending on location and pedestrian volume	CSR number reflects good performance
Responsiveness	Inspect, make-safe or repair	Response times and number of insurance claims received by Council	Footpath issues to be inspected within 2 weeks if resources and budgets are available, and if appropriate works will be prioritised within allocated budget. No insurance claims received by Council	Number of claims received by Council is over the last few years is to be reviewed.
Conservation items	Maintain conservation status	Y, N or N/A	To maintain or replace street name stamps in concrete paths in conservation areas	Current maintenance practises allow for the replacement of these street name stamps where required.

Service criteria	Level of Service	Measurement Scale	Target Performance	Current Performance
Legislative compliance	Compliant or not	Y, N or N/A	Y	Any new footpaths constructed are based on relevant Australian Standards and hence are compliant. Some existing footpaths, due to site constraints, may not meet all legislative requirements.

4. Future demand

This section assesses current and likely future demand, and presents demand management strategies to ensure that the needs of the community continue to be met.

4.1. Demand forecast

Factors affecting demand include population change, changes in demographics, seasonal factors, vehicle ownership, consumer preferences and expectations, economic factors, environmental awareness, changing land use, underground utility improvement works, street trees, etc.

The NSW Department of Planning, through the NSW State Plan, the Sydney Metropolitan Strategy, and the Inner North Subregional Strategy, has identified requirements for Willoughby Council to provide for increased population and employment capacity. The Inner North Subregional Strategy in particular has identified Chatswood as a major shopping and business centre. This may require zoning changes in Council's Local Environmental Plan (LEP). The population is forecast to increase to approximately 78,000 between 2010 and 2031, which equates to a total increase of 13.1%¹. Employment is expected to increase by approximately 16,000 during the same period.

The table below shows in more details the projected population growth and the impacts on service delivery in the future.

Table 4.1 Population Growth and Impact on Services

Demand factor	2010	2030	% change
Population			
0 to 4 years	4,878	5,055	+3.6
5 to 11 years	5,519	6,010	+8.9
12 to 17 years	4,294	4,857	+13.1
18 to 24 years	6,330	7,249	+14.5
25 to 34 years	11,206	12,109	+8.1
35 to 49 years	16,467	17,252	+4.8
50 to 59 years	8,248	9,517	+15.4
60 to 69 years	5,773	7,195	+24.6
70 to 84 years	4,954	7,404	+49.5
85 and over years	1,462	1,532	+4.8
Total Population	69,133	78,181	+13.1

Overall increase of the total population will result in increased need for pedestrian linkages. Capacity of the facility and opportunities will need to keep pace with population and employment growth. Services will need to meet the needs of a variety of age groups. For example, the increase in the first two age groups demonstrates the potential need for footway upgrades to increase accessibility for strollers. On the other end of the scale, there is an almost 50% increase in the older age group. This may mean an increase in demand for services such as wider walking paths with ramps and layback kerbs to cater for the needs of older age groups. There

¹ Willoughby City Council Population Forecasts (<http://forecast2.id.com.au/Default.aspx?id=234&pg=5000>)

may also be a new demand for more or better pedestrian connections between homes and passive recreation areas.

4.2. Demand management plan

Demand for new services will be catered for through a combination of managing and upgrading of existing assets; and/or providing new assets. Demand management practices include non-asset solutions, which may include but is not limited to policy changes, and customer education.

Opportunities identified to date for demand management are shown below. Further opportunities will be developed in future revisions of this asset management plan.

Table 4.2 Demand Management Plan Summary

Service Activity	Demand Management Plan
Provision of new paths	Developing a policy that establishes criteria to determine the placement of new path, such as the current Missing Links Programme. New development applications may require the provision of new paths. Development applications will be assessed to ensure that there is sufficient footway area to cater for the pedestrian activity that may be generated. Construction of new footpaths may be a condition of consent for the development. Upgrade of the adjacent footpaths may be necessary.
Upgrade of existing paths	New development applications may result in a change of pedestrian activity. An assessment of the existing footpath capacity will be made as part of the application review, and as a result an upgrade of the footpaths may be required as part of the conditions of consent of the development. Upgrading of existing utilities such as the National Broad Band program could potentially require cabling under footways which may necessitate restoration of the existing paths.
Upgrade of existing paths (aesthetic)	Aesthetic upgrades are generally targeted at commercial precincts, such as the current Strip Shopping Centre upgrade program, as it may have an impact on the social and economic growth of the area.

4.3. Changes in technology

Technology changes are forecast to affect the delivery of services covered by this plan in the following areas.

Table 4.3 Changes in Technology and Forecast effect on Service Delivery

Technology Change	Effect on Service Delivery
Implementation of electronic asset management system	Key areas of concern in service delivery will be identified and addressed as implementation progresses and more data becomes available on level of service criteria. Service provision is also expected to become more efficient, enabling increased service delivery.
Improvements in data capture, analysis and monitoring	Accurate and up-to-date asset registers will lead to more accurate works planning and financial data. This will facilitate a more pro-active approach in asset management.
Changes in construction and material technology	Improved construction and/or material technology could potentially extend the life of footpath assets and may result in more cost-efficient repair methods.

4.4. New assets from growth

In general, there are two main drivers for construction of new footpaths. The first one is due to increase of pedestrian activity generated by new developments. The second is expansion of the existing footpath network as part of Council's Missing Links Programme with the objective of ensuring that linkages are provided to support social and physical connectivity throughout the city.

New development works, particularly in the CBD areas as highlighted in the NSW Inner North Subregional Strategy, will inevitably generate an increase of pedestrian activity. Footpaths may need to be upgraded by developers to cater for this and may be part of the condition of development consent.

Council's Missing Links Programme provides for multiple outcomes for Council and the community. Accessibility, recreational opportunity, community safety, supporting public transport and the provision of opportunities to reduce trips undertaken by private vehicles are realistic outcomes of the programme. In the future, it is envisaged that natural trails and shared paths will also be integrated into the programme.

The list of planned new footpaths for the programme was developed by subjecting identified missing footpath links to a prioritisation process based on need (or predicted demand) and risk reduction. For more information on this prioritisation process, see section **Error! Reference source not found. Error! Reference source not und..** Council has committed to provide an annual funding for this program.

Based on the current level of funding, the Missing Links program is expected to be completed within 20 years. The program is subject to annual review to ensure the relevance of programmed works.

The current funding for the Missing Links program is \$100,000 for the 2013/2014 financial year, and consistent with the Long Term Financial Planning, followed by the \$100,000 p.a. for the next two years and increasing by 3% p.a. thereafter, as shown in the graph below.

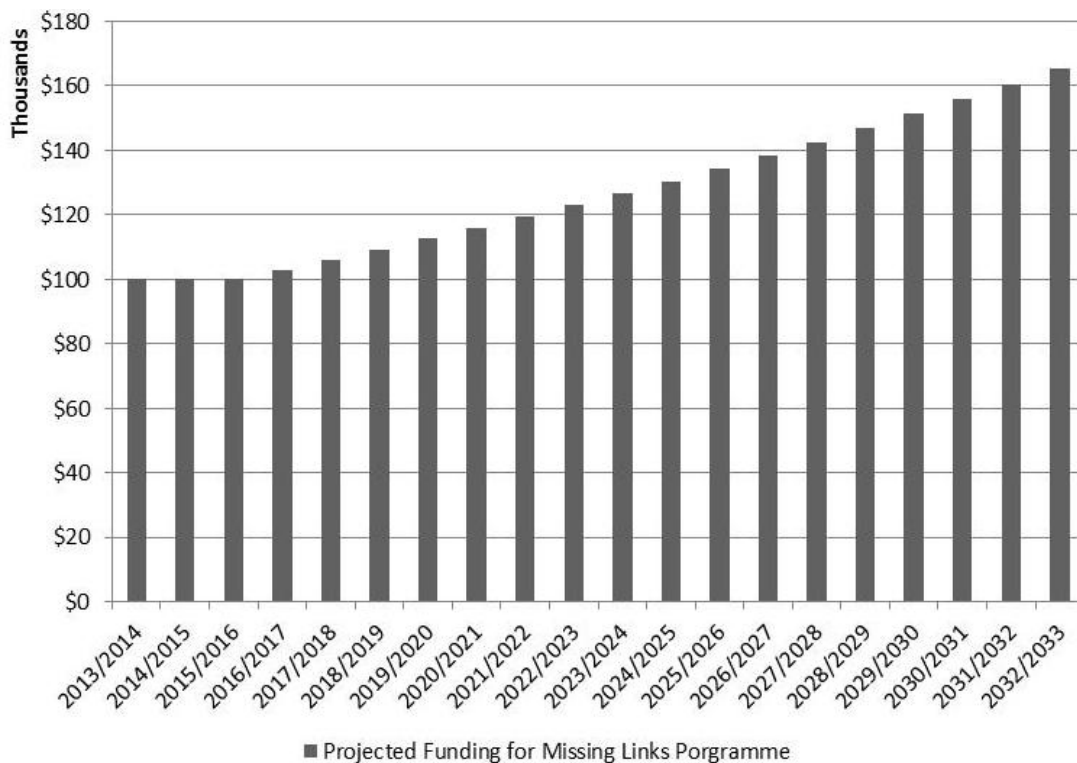


Figure 4.1 Projected Funding for Missing Links Programme

Appendix D shows the list of works in the programme based on the priority score generated from Council's prioritisation maps for footpath works. It should be noted that proposed works are subject to community support as well as budgetary and feasibility considerations on-site. For example, construction of some of the footpaths have been delayed following detailed investigations, which may involve determining if the intended path location is feasible or warranted with Council's development planners. The program is currently under review and it is anticipated that the review will determine feasibility for each project and reassess their inclusion in the program.

Consultation for footpaths in Castlecrag has drawn strong responses from residents in the area, who in the past have been evenly divided in their support (or rejection) of extending the footpath network. A Footway Master plan for Castlecrag has now been drafted as an acknowledgement of the need to have a Council endorsed plan that reflects the wishes of all stakeholders, which take into consideration the arguments for and against the proposed footway plan. With Council's agreement, the Draft Footway Master plan for Castlecrag will be put on public exhibition and feedback would be invited from the community, which will be considered as part of the consultation process.

Constructing these new footpath assets will require ongoing operational and maintenance funding requirements. These funding requirements are identified and considered in developing forecasts of future operating, maintenance, and renewal costs in the following section.

4.5. Aesthetic Upgrade of Assets

A special maintenance funding, Construction of Streetscape – Improvement and Neighbourhood Shopping Centre, has specifically been allocated for aesthetic upgrade of footpaths in strip shopping centres. This funding is subject to a different prioritisation process from general maintenance and renewal, and is driven primarily by the physical condition of the footpaths and aesthetics.

5. Lifecycle management plan

This section details how Council plans to manage and operate the assets covered by this Plan to achieve target levels of service (Section 3.3).

5.1. Background data

5.1.1. Physical parameters

The methodology in this asset management plan covers all footways in Council's network. For the number of different types of footway, both within the road reserves and open space area, refer to **Error! Reference source not found.** above.

Footways in the road reserve account for 387km or 89% of Council's footway network. Approximately 300km of this consists of formed footpath, most of which are constructed with concrete. Other materials used are bitumen, various types of pavers, tiles, stone, rubber, and granite porphyry.

Table 5.1 Data available for the assets covered by this Plan.

Asset category	Data confidence	Status of data
Footpaths in road reserve	95%	Asset register is approximately 95% complete. Data is continually being updated as works are carried out throughout the year. On a few occasions in the past, inaccuracies have been found especially where works have been carried out by external parties instead of Council staff, e.g. as part of development conditions.
Footpaths in open space area	80%	Data was almost complete and accurate as of 2007 but not all renewal works since then have been recorded and updated.

5.1.2. Asset capacity and performance

Council's services are generally provided to meet design standards or guidelines where these are available. Footpath assets are generally designed to meet Australian standards. The only known deficiency in service performance at this stage are a small percentage of existing footpaths that may not meet all requirements due to site topography constraints and other environmental factors.

5.1.3. Asset condition

The distribution of condition ratings amongst the assets covered by this Plan is shown in Figure 5.1. Council rates the physical conditions based on a standard 0-5 scale, where zero represents a brand new asset and five is the end of the expected life. For detail regarding the condition rating scale, see the AMIS.

The footpath specific 0-5 condition rating scale is based on the general condition rating scale, and is calculated using the footpath area affected by defects in a footpath segment as shown in the table below.

Table 5.2 Footpath specific 0-5 condition rating

Condition	Condition Range: % Footpath Area Affected by Defects	Condition	Condition Range: % Footpath Area Affected by Defects
0	Affected Area < 2%	3	10% ≤ Affected Area < 50%
1	2% ≤ Affected Area < 5%	4	50% ≤ Affected Area < 80%
2	5% ≤ Affected Area < 10%	5	80% ≤ Affected Area < 100%

The condition distribution of Council's footpath assets by area as at 30 June 2013 is shown in the graph below. The total area within each condition is further broken down to show how much of the area is actually affected by defects.

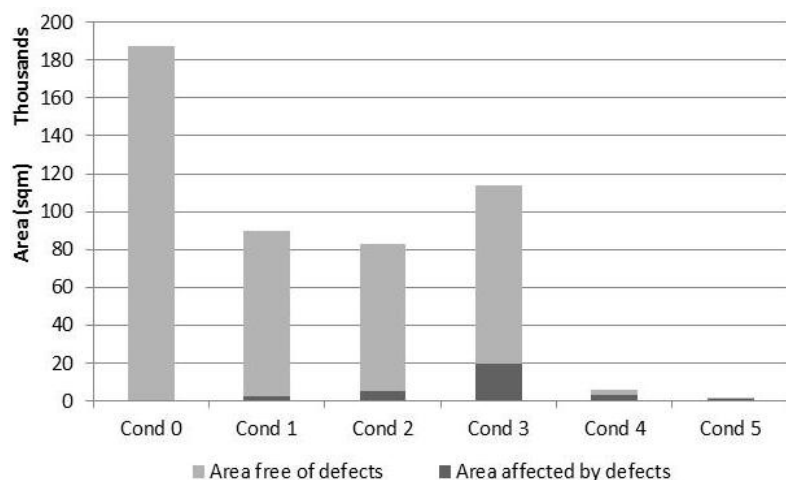


Figure 5.1 Distribution of physical condition ratings

Using this methodology gives an average condition of the entire network of 1.7 as of 30 June 2013. As shown in the table above, even though there is a significant number of footpath segments trigger a treatment intervention (being in condition 2 or worse), only a small proportion of the area in this condition is actually affected by defects.

Note that condition assessment has been conducted only on the footpaths within road reserve. Footpaths in the open space area will be subject to a similar condition assessment methodology, but will have different thresholds and levels of service and intervention points appropriate to these areas and the allocated budgets.

5.1.4. Asset valuations

Council values all assets at Fair Value. The assumptions and calculation methods associated with valuations are documented in Council's Asset Valuation Methodology. Valuations for the assets covered by this Plan are provided in Table 5.3.

Table 5.3 Valuations for assets covered by this plan

Asset type	Current replacement cost	Depreciated replacement cost (fair value)	2012/13 depreciation expense
All assets covered by this Plan	\$ 61.3 M	\$ 51.1 M	\$ 1.1 M

Indicators of Council's financial sustainability can be derived from fair value figures. These are reported in Table 5.4.

Table 5.4 Financial sustainability indicators for assets covered by this Plan

Indicator	Calculation method	Working	Result
Asset consumption	2012-2013 depreciation / depreciable amount * 100%	= \$1.13M / \$51.1M * 100%	2.2 %
Asset renewal	2012-13 renewal spend / depreciable amount * 100%	= \$1.01M / \$51.1M * 100%	2.0 %
Asset upgrade	2012-13 capital spend / depreciable amount * 100%	= \$80.0k / \$51.1M * 100%	0.2 %

Asset consumption rate falls slightly short of the asset renewal rate, which means renewal is potentially not fully funded. In theory, this may make an increasingly high difference in the long term. However, given that the difference is small, it is safe to say that there is no immediate concern and in general, footpaths are being renewed at satisfactory rate.

In addition to this, there are other issues of works not being classified strictly under the right types of works. For example, some footpath works are carried out under restoration works. Restoration works currently count as maintenance, when in fact some of these works are significant enough to be considered as “renewal”. However, Council’s current accounting and work orders systems do not separate restoration works into maintenance and renewal. This will be addressed as the Asset Management Systems and Work Order systems are fully integrated.

5.2. Risk management plan

An assessment of risks associated with service delivery from infrastructure assets has identified critical risks to Council. The risk assessment process is documented in the AMIS and identifies credible risks, likelihood of risk events occurring and consequences should the event occur. Risk ratings have been developed so that risks may be evaluated.

Specific to footpath assets within Willoughby LGA, a risk and need analysis map has been developed to enable objective prioritisation of maintenance, renewal and new works. Details on this risk-based prioritisation method can be found in Appendix E - Prioritisation methodology.

5.3. Expenditure plan

Expenditure is calculated over a 20 year period based on current levels of expenditure and projections of funds required to meet target levels of service. Two levels of funding are considered:

- (1) the base case, where expenditure follows current trends;
- (2) the sustainable case, where target levels of service are achieved but funding shortages may exist.

The types of expenditure covered include maintenance and operational, renewal, upgrade, new and disposal. These are defined in the AMIS. The method of predicting future expenditure to achieve target levels of service and the assumptions applied to modelling techniques are also explained in the AMIS, and sources of funding are listed in Table 5.5.

All maintenance, renewal, upgrade and new work is carried out in accordance with the following standards and specifications:

- Willoughby City Council’s Standard Specifications and Drawings
- Relevant Australian Standards
- Willoughby City Council’s Development Control Plans

Table 5.5 Funding sources for footpath assets

Funding sources	Budgeted amount for 2013/2014 Financial Year
<p>General Footpath Maintenance Funding</p> <p>The main source of funding for footpath works, which is used primarily for renewal and maintenance works. For financial reporting purposes, a set of capital thresholds is used to distinguish between the two. Using this threshold, in 2012/2013 financial year, 55% of footpath works undertaken with this funding source was classified as renewal, and the rest maintenance.</p>	\$ 1,300k

Funding sources	Budgeted amount for 2013/2014 Financial Year
Preventative Maintenance – Footpath	\$ 100k
CBD Paver Surface Texture Improvement	\$ 40k
Pedestrian Ramps and Pram Ramps	\$ 10k
Footpath Masterplan – Missing Links For more information, refer to section 4.4 New assets from growth	\$ 100k
Construction of Streetscape – Improvement and Neighbourhood Shopping Centre For more information, refer to section 4.5 Aesthetic Upgrade of Assets	\$ 100k
Restorations Administration Note that restorations span across several assets category and funding amounts may change throughout the year depending on the amount of works carried out by utility authorities that affect Council's assets.	\$ 1,200k

As described in the table above, some funding sources are reserved specifically for special projects or work types. Only the general footpath maintenance fund has been used to model the financial forecasts of maintenance and renewal.

In addition to the funds above, there are other funds that are related to but not specifically targeted at footpath, such as funding for bike facilities, street cleansing, etc.

5.3.1. Maintenance and operational expenditure projections

Activities included as maintenance and operational expenditure are defined in the AMIS. The past *actual* maintenance expenditure (as opposed to the allocated maintenance budget) trend for the assets covered by this Plan is shown in Figure 5.2 and Table 5.6 and does not include operational expenditure.

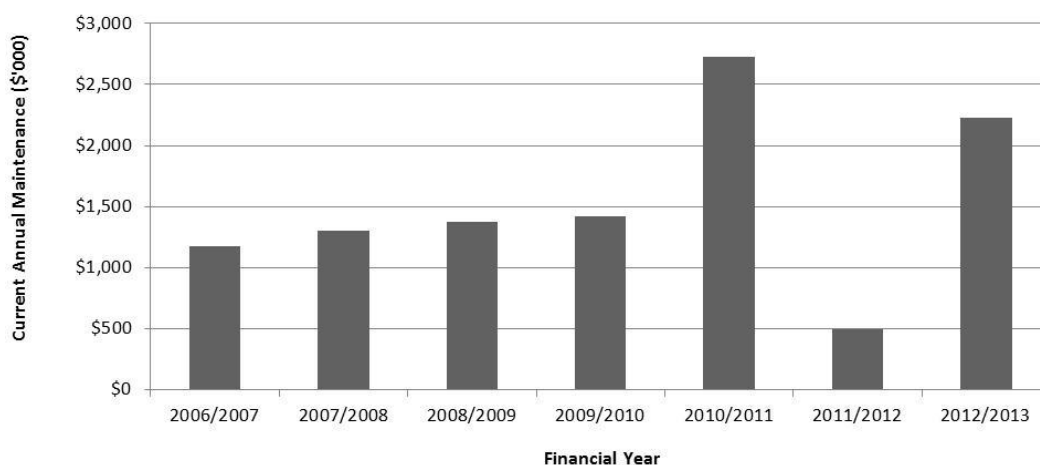


Figure 5.2 Actual maintenance expenditure history

Actual numbers and comments on trend are shown in the table below.

Table 5.6 Actual maintenance expenditure history

Financial year	Maintenance expenditure (\$'000)	Comment
2006-2007	1,174	Includes renewal and maintenance
2007-2008	1,304	Includes renewal and maintenance
2008-2009	1,374	Includes renewal and maintenance

Financial year	Maintenance expenditure (\$'000)	Comment
2009-2010	1,423	Includes renewal and maintenance
2010-2011	2,730	Includes renewal and maintenance, including Victoria Mall upgrade
2011-2012	491	Maintenance only
2012-2013	2,228	Change in Special Schedule 7 reporting method, includes: <ul style="list-style-type: none"> - Maintenance \$652k - Renewal \$1,014k - Restorations \$562k

Note that the currently adopted capitalisation threshold for footpath assets was not adopted until the 2011/2012 financial year. Up until this year, renewal and maintenance expenditures were not clearly distinguished and a lot of renewal works were included as maintenance. When the renewal works were separated out in 2011/2012, this caused a sharp decrease in maintenance expenditure that year.

In 2012/2013 financial year, for completeness of data, footpath restorations have also been included, which caused the figure to increase significantly. In the past, restoration expenditure has always stood apart from the other expenditure as restoration works were carried out outside the normal prioritisation method. However, Council recognises that these works have an impact on the footpath condition and, following that, the footpath works program in the following years and therefore should be included.

Annual maintenance expenditure (excluding renewal and restoration) is currently equivalent to 2% of the total replacement value reported in Table 5.3. On average, this is considered sufficient for the current asset stock, as community satisfaction on current standard is reflected by the outcome of the community engagement process.

Maintenance expenditure is expected to increase in line with increases to asset stock through upgrade and new capital works. For footpath assets, there are few new works that are carried each year, which is discussed in detail in section 4.4 New assets from growth. Primarily these works are part of the Missing Links program or part of new development. In the future this would impact on an increase in the maintenance expenditure, especially as the assets start to degenerate through age. Current adopted funding from which maintenance works are sourced are increased only by CPI by the year without the additional from these new assets, which means a maintenance shortfall is anticipated in the future.

In order to be financially sustainable, as a minimum maintenance expenditure needs to be kept at the current 2% of total asset stock replacement value, taking into account the increase in this value. The difference between current funding levels (base case) and projected required maintenance funding (sustainable case) is shown in Figure 5.3.

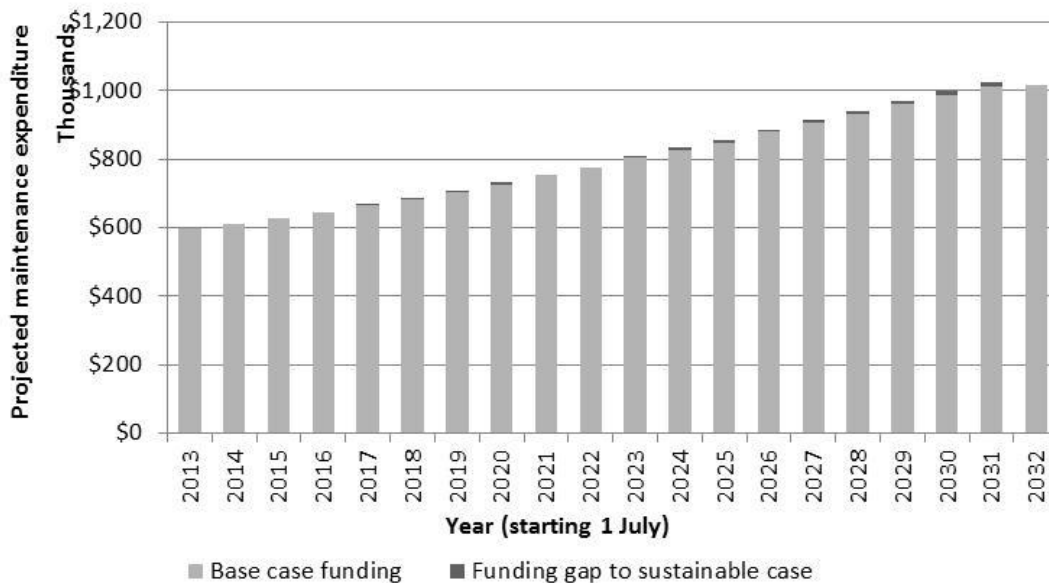


Figure 5.3 Projected maintenance expenditure under the base and sustainable cases.

As shown in the figure above, current maintenance expenditure is very close to the actual required, with minimal difference over the years.

Maintenance expenditure is also expected to increase as asset condition declines. The link between maintenance expenditure and asset condition will be determined following further data analysis.

5.3.2. Renewal expenditure projections

Renewal expenditure depends on levels of service and projections are calculated using modelling techniques and assumptions documented in the AMIS. Using condition 2 as the trigger for intervention, which is defined as more than 5% affected by defects, the total defect area that need to be repaired as of 30 June 2013 is approximately 28,700 sqm. This translates to approximately \$4m worth of works that need to be done to bring every single footpath segment to a condition better than condition 2. In theory, this means if the \$4m is expended, the required expenditure in the following years would drop dramatically. However, in practice, funding would be smoothed out to reflect on-going day to day operation rather than fluctuate wildly from year to year. To achieve this, in the funding modelling scenario, the optimised funding scenario aims to maintain the **average** of the current footpath network from year to year and to bring the footpaths to condition 2 or better within 20 years.

Regardless of whether backlog exists, additional renewal expenditure may be required in the future as a large number of assets reach their intervention point at the same time. Planning for these periods of intense expenditure is crucial. The modelling technique does have limitations which are also documented in the AMIS but still provides a good estimate of long term average funding requirements.

For the assets covered by this Plan, the cost of renewals is based on the replacement costs for the areas affected by defects. Note that this means the model will keep applying treatment as required even if it is applied on small areas, resulting in the footpath segments resembling patchwork. In reality, the treatment may, for example, be carried out at a later date but extended to include the whole segment for aesthetic reasons.

The difference between current funding levels (base case) and projected required renewal funding (sustainable case) is shown in Figure 5.4.

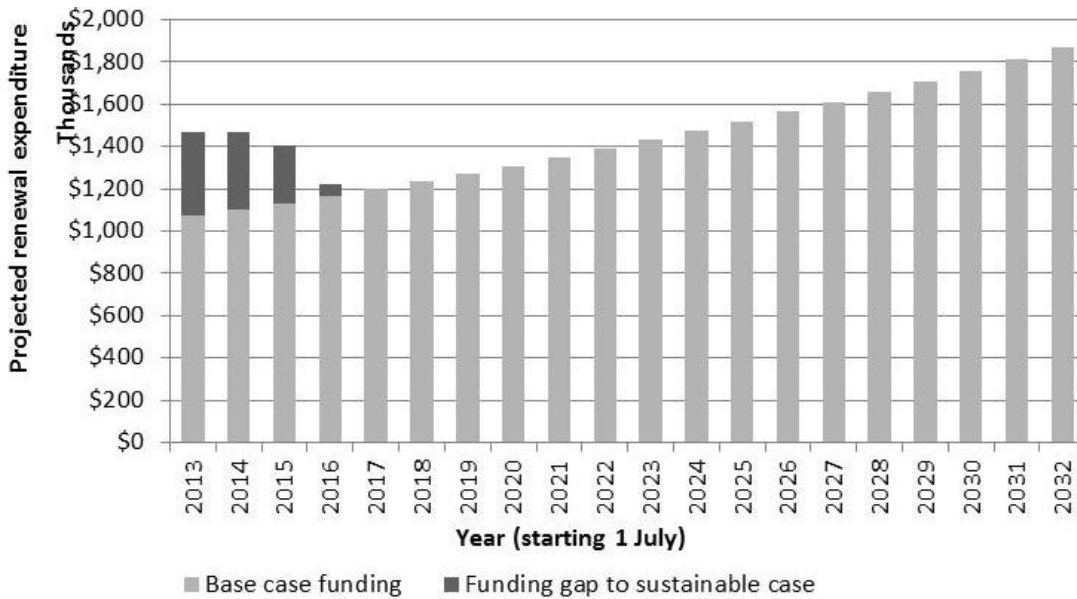


Figure 5.4 Projected renewal expenditure under the base and sustainable cases.

The results from the financial modelling forecasts indicate that, if additional funding for the sustainable case is available in the first four years, no increase from the base case funding is necessary for the remaining years. However, note that there are additional factors that the model has not taken into account, e.g. the increase in operational expenditure and additional resources that would be required by taking on more projects. Note also that the modelling is based on a number of assumptions, some of which may be revised in later years as knowledge improve. What this indicates is that funding is not far from the level at which it should be, and as assumptions and condition are updated every year, accuracy would also be improved.

When renewals cannot be completed in a timely fashion, the asset pool is expected to decline in condition overall. Figure 5.5 shows the expected degradation in the average condition of the asset pool, as well as the distribution of condition by the footpath area. Degradation in footpaths may be represented by, for example, more trip hazards as the tree roots continue to grow, increased area of cracking, etc.

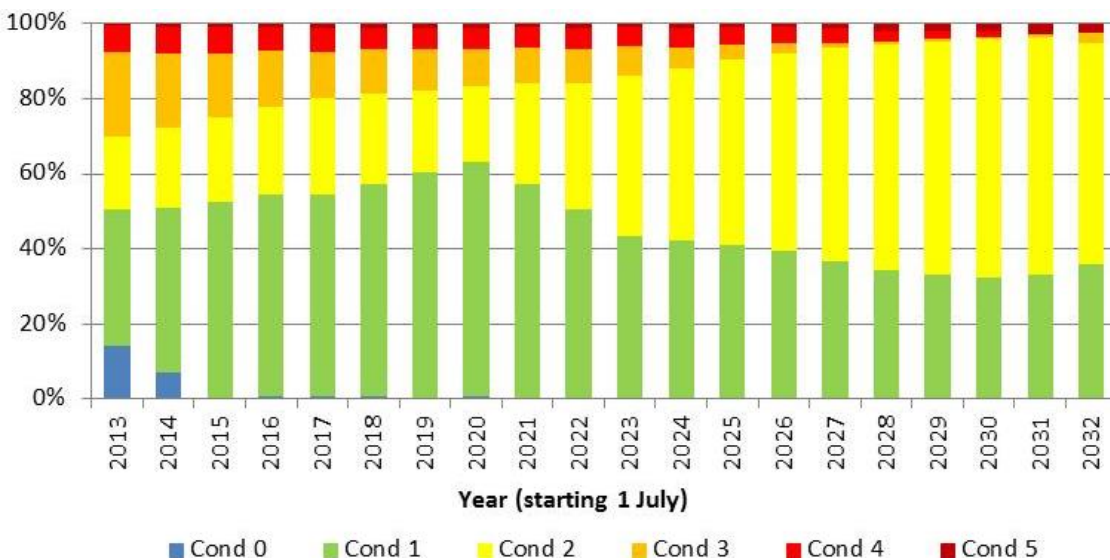


Figure 5.5 Projected asset average condition and distribution under the base case funding

Where renewal funding falls short of requirements, a prioritisation method is applied to ensure that the highest risk and highest priority assets are renewed first. Details on footpath prioritisation, which is based on risk management principles, can be found in section 5.2 Risk management plan.

Low cost renewal methods will be used wherever practical. For example, footpath grinding to eliminate trip hazards has increasingly been used as an alternative low-cost treatment instead of full slab replacements. Following the positive feedback from the community in recent years, Council is carrying out a bigger scale footpath grinding program during the 2013/2014 financial year to address as many trip hazard issues as possible, which will result in higher proportion of funding that is spent on maintenance this year relative to renewal.

5.3.3. New and upgrade expenditure projections

New or upgrade capital works are defined in the AMIS. For the assets covered by this Plan, new works are identified in the Missing Links program and are subject to prioritisation using the same risk and need map as prioritisation of existing footpaths. Upgrade work usually takes form of path widening for shared cycle/pedestrian paths, which is usually part of the sustainable transport program, or replacing existing bitumen path with concrete, which is considered on a case by case basis.

The total value of planned new and upgrade works for footpath assets covered by this Plan represents the Missing Links Programme, which is the same for current funding level (base case) and required capital funding (sustainable case), which is shown in Figure 5.6..

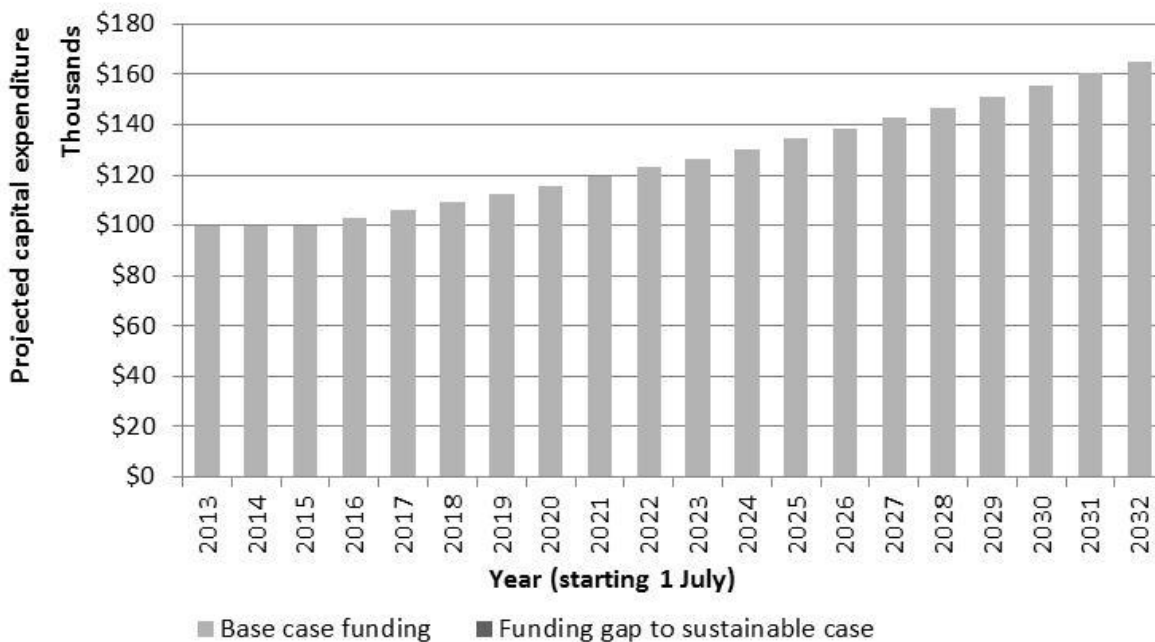


Figure 5.6 Projected new and upgrade capital expenditure under the base and sustainable case.

It should be noted that, since new and upgrade expenditure adds to the asset stock, increases in maintenance and operational expenditure can be expected in conjunction with all capital projects.

5.3.4. Disposal plan

Disposals are defined in the AMIS. Assets identified for possible decommissioning and disposal are shown in Table 5.7.

Table 5.7 Assets identified for disposal

Asset	Reason for disposal	Timing	Cash flow from disposal*
Footpaths on Aboot Rd between Barton St and McMillan Rd	Acquisition by other government body	To be determined	To be determined

*Plus sign indicates a profit; negative sign indicates a cost to Council.

5.4. Summary of future costs

For each of the funding scenarios (base case and sustainable case) the total projected expenditure is displayed in Figure 5.7 and Figure 5.8. Base case funding for renewal works mean that Council's funding for footpath works is sustainable and should be maintained at that level.

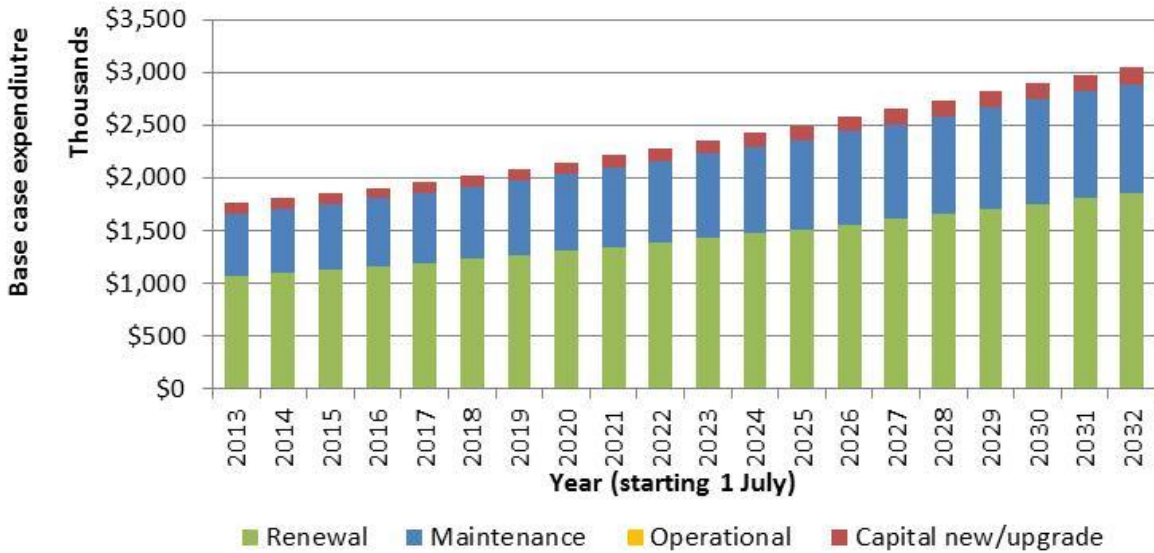


Figure 5.7 Projected 20 year asset expenditure under the base case

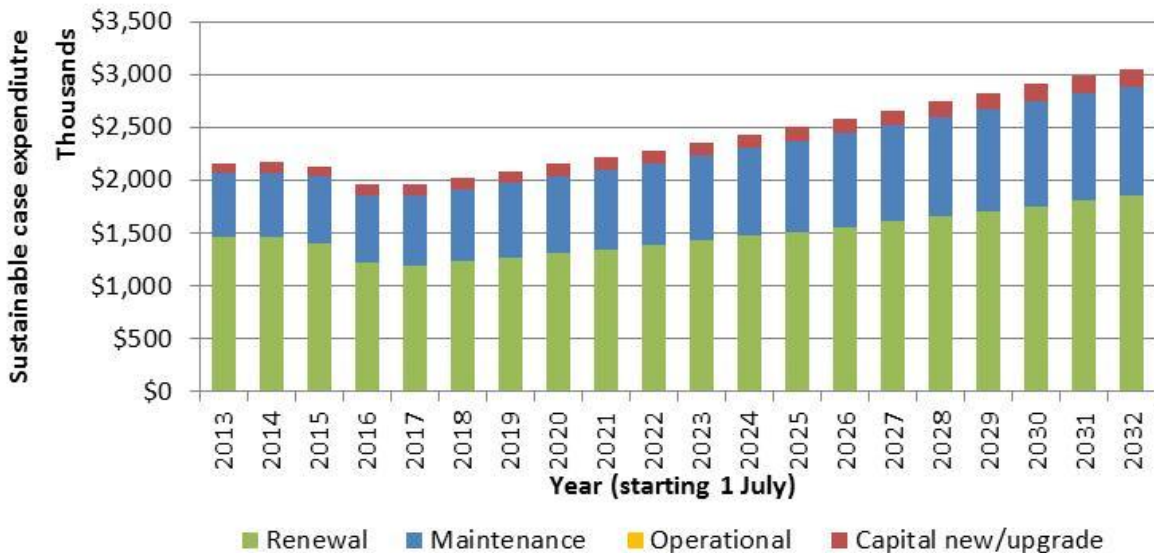


Figure 5.8 Projected 20 year asset expenditure under the sustainable case

As shown in the figures above, the sustainable case expenditure is higher than the base case only in the first four years. This means that base case funding is close to what needs to be spent to achieve the target level of service, which in this case to maintain the average footpath network condition.

These financial projections involve many assumptions, as detailed in the AMIS, and will be continually refined.

6. Financial summary

This section contains the financial requirements resulting from all the information presented in the previous sections of this asset management plan.

6.1. Financial statements and projections

Total projected expenditure under each of the two financial scenarios are presented on a single set of axes in Figure 6.1. Expenditure is not broken down into types.

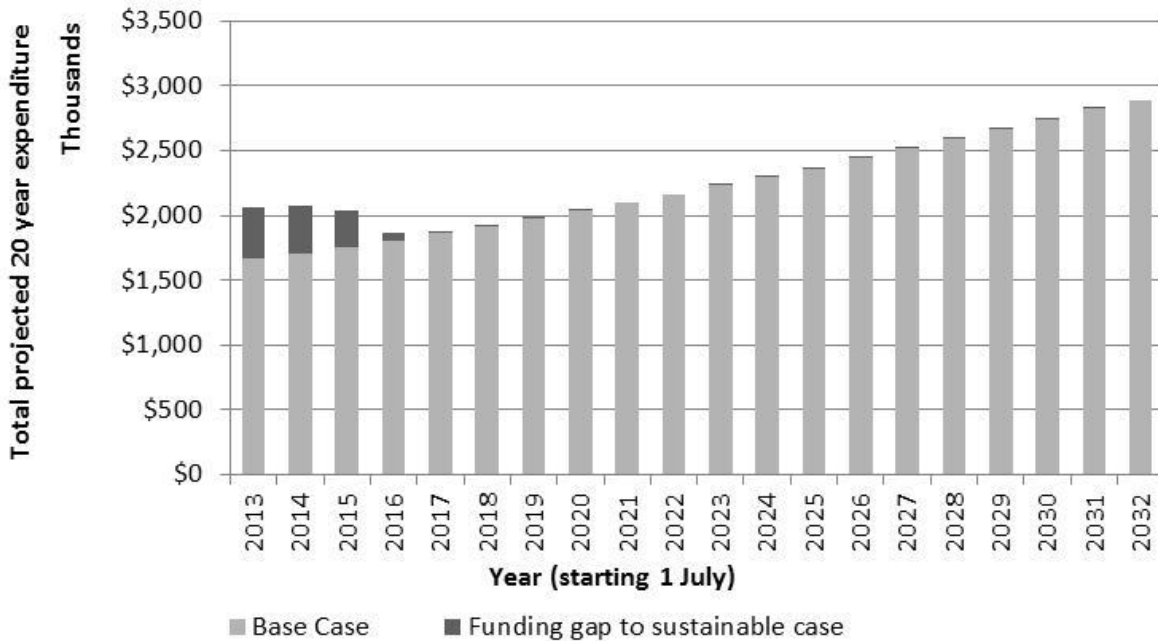


Figure 6.1 Projected 20 year expenditure for assets covered by this Plan

Inflation has been applied at a rate of 3% per annum but no allowance for discount rates has been made.

6.2. Life cycle costs and sustainability

Life cycle cost is the average annual cost of meeting target service levels. Life cycle costs include periodic asset renewals and regular maintenance, and operational expenditure where relevant. Life cycle cost can be calculated on an individual asset basis, and the total compared to current levels of expenditure for an indicator of financial sustainability.

A gap between life cycle cost and current expenditure gives an indication of whether the community is currently paying their share of the assets being consumed. Life cycle costing will be refined with each reiteration of this Plan as more information is collected about asset inventories, treatment costs and asset degradation. Life cycle costs for the assets covered by this Plan are provided in **Error! Reference source not found.**

Table 6.1 Life cycle cost analysis

Life cycle cost (annual)	Life cycle expenditure (annual)	Life cycle gap
\$ 2,287k	\$ 2,228k	\$ 59k

As shown above, the life cycle cost and life cycle expenditure is very close, with only a difference of \$59,000 p.a. on average. Note that this has not included the extra maintenance costs from the additional footpaths being built every year. In general this means that current funding for footpath assets are deemed to be adequate to achieve their sustainability, and monitoring will continue over the years to compare the validity of the assumptions made in the modelling against actual performance, e.g. the degradation rate and useful lives of the assets.

6.3. Funding strategy

The information from this Plan, including funding gaps, feeds directly into Council's Long Term Financial Plan (LTFP). The LTFP should be consulted for all funding strategies.

6.4. Valuation forecasts

Asset replacement values will increase as additional assets are added to the asset stock. As previously mentioned, new footpath assets are constructed primarily through the Missing Links program or occasionally through new development. Depreciation expense will vary according to the expenditure level, since depreciation patterns vary throughout the life cycle of assets. Fair value is expected to increase concurrently with additions to the new asset stock, but if assets are not renewed as indicated in the modelling, the overall fair value is more likely to drop. Table 6.2 compares the current and projected total replacement cost, depreciation expense and written down value of all assets covered by this Plan under each of the two expenditure cases (base and sustainable).

Table 6.2 Asset valuation forecasts under the base and sustainable cases

Financial case	Year	Replacement cost	Annual depreciation expense	Written down value (fair value)
Base case	1	\$ 61,260 k	\$ 1,360 k	\$ 52,741 k
	20	\$ 61,260 k	\$ 990 k	\$ 52,578 k
Sustainable case	1	\$ 61,260 k	\$ 1,360 k	\$ 52,741 k
	20	\$ 61,260 k	\$ 953 k	\$ 51,693 k

As mentioned previously, the funding strategy for sustainable case was optimised to maintain the starting average condition, and the base case funding scenario is essentially adequate to achieve this objective.

By the end of the 20 year period, the forecasted written down value in the sustainable case is approximately 2% lower than the base case, but this still satisfies the objective of maintaining the average condition. Generally the written down value in sustainable case at the end of the 20-year period is expected to be higher than the base case, however for footpath, the two cases are very similar, as demonstrated in the lifecycle gap previously.

6.5. Key assumptions made in financial forecasts

The broad assumptions applied to all asset classes in producing financial forecasts are described in the AMIS. Assumptions that relate specifically to this asset class are as follows:

- Repair or renewal work generally results in asset condition being restored to condition 1. In cases where the original condition is condition 5 or worse, full replacement of the footpath is assumed and hence it will be restored to condition 0, which is brand new. Bitumen paths in condition 4 or worse are also assumed to be fully replaced with concrete paths and hence this brings it back to condition 0.
- Repair cost is based on the size of area affected by the defects, the footpath material, and the NAASRA classification of the roads the footpath is adjacent to.

Accuracy of future financial forecasts may be improved in future revisions of this asset management plan by the following actions:

- Continued revision of assumptions relating to valuations such as useful life, pattern of consumption and residual values.
- Comparison with IPART cost benchmarking which is due to be published during the 2013/2014 financial year and making adjustments as necessary.
- Comparison with other Councils and discussions in Asset Management forums, bearing in mind that factors like useful life, residual values and replacement costs may vary from Council to Council depending on the location and renewal policy of each one.

7. Asset Management Practices

This section summarises Council's current asset management practices in terms of software systems and business processes. All information that applies to Council as a whole can be found in the AMIS. Only information relating specifically to the assets covered by this Plan is covered here.

7.1. Accounting/financial systems

The majority of footpath works are similar in nature, which tends to blur the distinction between maintenance and capital renewal works. Therefore, starting from 2011/2012 financial year, capital thresholds have been developed for the assets covered by this Plan to distinguish between the two. This information is held in Council's asset valuation methodology.

Some funding sources in footpaths are already allocated to specific types of works that can be classified easily, e.g. strip shopping centre improvements are normally related to footpath renewal, missing links are for new footpath works. However, the general footpath administration is used for both maintenance and renewal works depending on the capital threshold. Council has been using historical data to determine the proportion of expenditure between the two types of works, and this knowledge should become more accurate over time.

7.2. Asset management systems

Council is in the process of implementing Infor Public Sector Suite as its corporate asset management system. Details of Council-wide implementation, including integration with other Council systems, can be found in the AMIS.

The status of asset management system implementation for the assets covered by this Plan is near completion and accurate in terms of asset register. Defects data, which affect condition rating and therefore prioritisation system, are also continually being updated by a dedicated officer and synchronised in the system as works are carried out. However, major collection of the defect data encompassing the whole Council LGA was last carried out in 2010 and a new round of data collection is due to be carried out during the 2013/2014 financial year.

Major renewal works and new construction of footpaths are updated towards the end of the financial year, although starting from 2013/2014, the plan is to update them as works are completed.

When work orders system is eventually integrated with the asset management systems, it would be possible to distinguish better between maintenance and capital renewal works, rather than using a general threshold rule mentioned above in section 7.1 Accounting/financial systems.

7.3. Information flow requirements and processes

The key information flows *into* this asset management plan are:

- Data from the asset register on size, age, value, condition, remaining life (see asset valuation methodology);
- Unit rates for treatments/replacements and asset consumption patterns (see asset valuation methodology)
- Adopted service levels (Section 3.3 of this Plan)
- Projections of various factors affecting future demand for services (Section 4.1 of this Plan)
- Available budgets from the long term financial plan

- Long term capital project planning
- Outputs from renewal modelling
- Data on new assets acquired by Council and future disposals

The key information flows *from* this asset management plan are:

- The works program
- The annual operational plan and budget
- The 4 year delivery program
- Required funding to address any renewal and maintenance gaps for the long term financial plan
- Business processes in relation to the assets covered by this Plan are continually being improved

7.4. Standards and guidelines

This Plan has been prepared under the Division of Local Government's Integrated Planning & Reporting Framework with guidance from the IPWEA International Infrastructure Management Manual.

8. Plan Improvement and Monitoring

This section deals with the improvement of this Plan and the management of assets covered by this Plan, including performance measures, an action plan for improvement and review procedures.

8.1. Performance measures

The effectiveness of this Plan can be measured in the following ways:

- Integration of the contents of this Plan with the other documents that constitute the Integrated Planning and Reporting Framework, particularly the Resourcing Strategy.
- The level of deviation from previously published capital works programs and budgets.
- Improvement in data confidence.

Previous generation of this Asset Management Plan has listed, as one of the plan improvements, a bi-weekly inspection of newly repaired and built footways to continuously update the asset conditions. A dedicated Asset Inspector now undertakes this duty to keep the condition data up to date.

8.2. Action plan for improvement

Actions that can be undertaken to ensure this Plan is improved in the future are listed in Table 8.1

Table 8.1 Action plan for improvement

Task #	Task description	Officer Responsible	Resources required
1	Scheduled timeline to produce programmed maintenance as the condition data is updated.	Engineering Services	Staff
2	Integrating the asset management data with the work orders	AM Project Team with relevant supervisors and officers	-
3	Review the deterioration pattern to confirm assumptions made in the modelling	Engineering Services	Staff

Improvement in Council-wide asset management practices, business processes, workflows and systems is detailed in the AMIS.

8.3. Monitoring and review procedures

This Plan will be reviewed in November and December annually during the preparation of the annual budget and amended to recognise any changes in levels of service and/or resources available to deliver those services as a result of financial decisions in the long term financial plan.

9. References

NSW DLG Integrated Planning and Reporting Manual

<http://www.dlg.nsw.gov.au/dlg/dlghome/Documents/Information/Intergrated%20Planning%20and%20Reportin%20Manual%20-%20March%202013.pdf>

Willoughby City Strategy 2013-2029

<http://www.willoughby.nsw.gov.au/Community/Community-Planning/Willoughby-City-Strategy/>

Willoughby City Council Delivery Program 2013-2017 and Operation Plan

<http://www.willoughby.nsw.gov.au/About-Council/Forms-Policies---Publications/delivery-program-and-operational-plan-2010-2014/>

Willoughby City Council Resourcing Strategy

<http://www.willoughby.nsw.gov.au/About-Council/Forms-Policies---Publications/resourcing-strategy/>

10. Appendix A – Capital works program

10.1. Capital New Works

Capital renewal programs are dynamic and changes as works are carried out throughout the year. For example, some may be delayed and done as a larger project in later years, and some may be treated with maintenance works upon on-site inspections.

Capital programs for new assets is essentially Willoughby Council's Footpath Missing Links Program list as of July 2010, which is shown below (subject to review). An updated listing which will have the most current result from on-site feasibility assessment which is currently under way.

Assumptions
 - Footpaths have been assumed to be 1.2m wide as this is the standard width of most footpaths in the LGA
 - Footpaths marked with an asterisk require detailed investigation of land acquisition/developer contribution
 - Footpaths have been costed at a rate of \$120/m2. This rate includes some contingency to allow for unusual site conditions, price increases, etc. Some costings have been estimated in more detail.

Year	Location	Status	Length (m)	Est. Cost
1-5	Northern end of Hampden Lane and Lane W141 connect to Hampden Rd	Constructed 2007/2008	38	\$5,498
	North side of Oliver Rd between Pacific Hwy and Whitton Rd	Constructed 2007/2008	95	\$13,664
	East side of Reserve Rd between Jersey Rd and Barton Rd	Constructed 2007/2008	232	\$33,349
	West side of Anderson St between Ashley St and Wilson St	Constructed 2007/2008	155	\$22,378
	Hotham St east side	Constructed 2007/2008	126	\$18,099
	East side of Kendall Rd between Rosebridge Ave and Holly St	Constructed 2007/2008	112	\$16,068
	Kendall Rd east side between Boundary St and Rosebridge Avenue	Constructed 2007/2008	112	\$16,068
	East side of Claude St from Johnson St to Northern end of Claude St	Constructed 2007/2008	189	\$24,343
	East side of De Villiers Ave from 1 Dardanelles Rd to Eddy Rd	Constructed 2008/2009	126	\$45,000
	West side of Olga St between Victoria Ave and Albert Ave	Constructed 2008/2009	124	\$28,000
	Greenfield Ave from Eastern Valley Way to Glenroy Ave	Constructed 2008/2009	245	\$30,000
	Bertram St East Side from Albert to Johnson	Constructed 2008/2009	233	\$38,000
	Western Way between Pacific Hwy and James St	Alternate footpath in park, available	74	\$10,606
	Pathway in between Broughton Rd and Jersey Rd, from west side of Hampden Lane to east side of Buller Rd	Investigate with planners	230	\$33,120
	North side of Fehon Rd between Pacific Hwy and Whitton Rd	Investigate further - trees preventing footpath construction	129	\$18,505
	Spring Pl *	Existing footpath, No works required	73	\$10,509
	Lane W124	Proposed development with road widening, DA lodged 13/06/09.	197	\$28,408
	East side of Gibbs St close to Smith St	Constructed 2008/2009	47	\$6,808
	West side of Denavien Ave	Footpath constructed as part of Castlecove footpath plan.	73	\$10,450
	Cambridge Lane between McIntosh St and Help St *	Constructed - Developer	76	\$10,977
	Link along drainage channel between Gibbs St and Eastern Valley Way *	Investigate with planners	169	\$24,339
	Between William St and Boundary St: Next to railway *	Further investigation with railcorp and planners	187	\$26,912
	East side of Lawrence St	Investigate further - trees preventing footpath construction	131	\$18,850
	South side of Campbell St between Pacific Hwy and Clarendon St *	Adjacent ABC development site will construct footpath	154	\$22,241
	Range St at Millwood Ave	Investigate further - trees preventing footpath construction	44	\$6,278
	Road between Devonshire and Claude, behind Westfield Carpark	Investigate with planners - existing footpath available.	66	\$9,469
	South side of Holly St from east side of Kendall rd to Castle Cove oval	Constructed 2008/2009	210	\$33,000
52 Pullers Rd - access to reserve behind Tennis Courts	Investigate further with open space	135	\$19,532	
Between Winsor Rd and Eastern Valley Way, from Edinburgh Rd to Warners Ave *	Investigate with planners	79	\$11,416	
Western end of Raleigh St to Mowbray Rd	Investigate further with railcorp and planners	78	\$11,216	
Link Rd bridge to Talus Reserve	Constructed 2008/2009	75	\$10,786	
From Rimmington St to White St *	Investigate with planners through private property	106	\$15,212	
South side of Northcote St from Lane W77 to Christie St	Investigate with planners through private property	103	\$14,854	
Parallel to west side of Railway Line between Nelson and Mowbray	Constructed 2008/2009	46	\$6,666	
Laneway between 25-27 Heights Cres to South side of Greenfield Ave	Investigate with railcorp, EA, and planners	142	\$20,458	
West side of Anthony St	Investigate with planners	116	\$16,773	
Reserve between 124 and 122 Boundary Rd	Constructed 2009/2010	175	\$25,147	
West side of Claire St between Garland Rd and Central St	Existing footpath - No works required	92	\$13,190	
West side of Talus St between Lane W80 and Francis St	Investigate further - trees and steep grade preventing footpath construction	256	\$36,809	
West side of Macquarie St between Lane W39 and Boundary St	Constructed 2009/2010 - scope of works altered	142	\$20,415	
South side of The Lee from Covelea Crct to the cul-de-sac	Existing footpath. No works required	45	\$6,440	
North side of Greenfield Ave from frontage of 1A Greenfield to 2 Glenroy Ave	Proposed 2010/2011	113	\$16,256	
Olga St west side between Albert Ave and Johnson St	Constructed 2008/2009	108	\$15,558	
End of laneway between 269-267 Eastern Valley Way	Works abandoned - residents strongly opposed to installation	277	\$39,953	
East side of Tyreside Ave outside the school oval	Investigate further - trees preventing footpath construction	252	\$36,317	
Warane Road between McCabe Pl and EVW	Investigate further - trees preventing footpath construction	103	\$14,761	
South side of Small St between Marlborough Rd and Tulloh St	Proposed 2010/2011	114	\$16,416	
North side of Nolan Cres between Lane W82 and Waters Rd	Waiting on the completion of the renovation to the incinerator	198	\$28,571	
Bus stop at frontage of 7 Victoria Ave to 266 Eastern Valley Way	Constructed 2009/2010	30	\$4,314	
South side of Northcote St from Plunkett St to Lane W77	Constructed 2009/2010	104	\$14,970	
North side of Chowrie Pl	Constructed 2008/2009	56	\$8,006	
	Investigate further - trees preventing footpath construction	213	\$30,655	

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Year	Location	Status	Length (m)	Est. Cost
10-15	North side of Sunny Side Cres	Proposed 2010/2011	895	\$128,912
	North side of Nolan Cres between Lane W82 and Station St	Constructed 2009/2010	64	\$9,181
	At junction of Royal St and Lamette St	Investigate with Sydney Water	94	\$13,486
	North side Eric Rd, opposite to 2-20 Eric Rd	Constructed 2009/2010	138	\$19,840
	South side of Crichton Rd between Whitton Rd and Goodchap Rd	Investigate further - grade and trees preventing footpath construction	70	\$10,133
	West side of Headland Road from Neerim Road to Castle Cove Oval	Proposed 2010/2011	145	\$20,880
	Southern end of Boundary St between Kendall Rd and Warrane Pl	Investigate further - trees and rocks preventing footpath construction	163	\$23,443
	Southern end of Rembrandt Dr at North Arm Rd to the existing shared path	Investigate further - No works required	322	\$46,355
	Western end of Neerim Rd at Headland Rd	Inspected - Possible job 2011/2012	51	\$7,357
	North side of T14 Whitton Rd	Investigate with planners	34	\$4,908
	From Sharland Ave to Mowbray Rd West *	Investigate further	111	\$16,049
	Lane way between 16-18 Kendall Rd and 34-36 Deepwater Rd	Investigate with planners	101	\$14,518
	End of Spencer Pl to bus stop on Mowbray Rd *	Constructed 2008/2009	171	\$24,608
	Jack McLeure Pl east side to Warners Park	Investigate further - trees and rocks preventing footpath construction	18	\$2,542
	Frontage of 28 to 64 Rembrandt Dr	Investigate further	693	\$99,726
	Link between Northern end of High St and Gibbs St *	Existing footpath. No works required	217	\$31,211
	Between Windsor Rd and Eastern Valley Way, from Mowbray Pl to Warners Ave *	Investigate with planners	167	\$24,011
	Culgosa St	Investigate further - narrow path	100	\$14,367
	South side of Northcote St from Lane W78 to Plunkett St	Constructed 2008/2009	29	\$4,239
	Southern and western side of 11-15 Goodchap Rd (From the frontage of the property to North side of Fehon Rd)	Inspected - Possible job 2011/2012	82	\$11,838
	East side of Barcoo st at Barambah Rd	Investigate further	36	\$5,174
	Northern end of High St	Constructed 2008/2009	54	\$7,728
	South side of Northcote St from existing formed path to Lane W78	Investigate further	63	\$9,138
	West side of 739-759 Mowbray Rd West (near ex-RTA depot)	Investigate further	206	\$29,701
	End of Hawthorne Ave at playing field	Investigate with planners	166	\$23,894
	Southern end of Holham St	Investigate further	111	\$16,036
	West side of Coolawin Rd between Sailors Bay Rd and Bourmac Ave	Inspected - Possible job 2011/2012	270	\$38,938
South side of Bourmac Ave	Inspected - Possible job 2011/2012	185	\$26,591	
Southern end of Remuera St	Investigate with planners	81	\$11,647	
Eastern end of Peckham Ave	Investigate with planners	73	\$10,515	
North side of Ranelagh Cres full length	Constructed 2009/2010	105	\$15,157	
Northern end of Douglas Ave		93	\$13,414	
West side of Neerim Rd to south side of Willowie Rd via west side of Padulla Pl		198	\$28,486	
Frontage of 289 Edinburgh Rd		15	\$2,105	
Fullers Road south side between The Fairway and Hawthorne Ave		171	\$24,661	
Linden Way east side from Edinburgh Rd to reserve		116	\$16,636	
North side of Ross St between Ross Ln and Lawson Ln		61	\$8,729	
North side of Ross St between Mitchell St and Ross Ln		34	\$4,936	
From French St to White St *		94	\$13,532	
Frontage of 8- 14 Waltham St		39	\$5,620	
Frontage of 108 Warrane Rd to North side of Victoria Ave		62	\$8,994	
Northern end of West side Douglas Ave		39	\$5,561	
East side of Holly St next to the Castle Cove Oval		144	\$20,735	
South side of Bega Rd from 2 Bega Rd to Tunks St		50	\$7,255	
North side of Sharland Ave from No. 1 to No. 31 Sharland Ave		285	\$41,100	
North side of Scott Cres, frontage of 5 to T1 Scott Cres		71	\$10,166	
East side of Greville St between Kareela Rd and Wood St		160	\$23,059	
Between northern end of Eden St and southern end of Warrah St		140	\$20,200	
Section of south side Edinburgh Rd close to The High Tor		42	\$6,041	
Between William St and Wararah St, Next to railway		61	\$8,846	
West side of Lower Bligh St between Kameruka Rd and Clifton Ave		118	\$16,923	
East side of Greville St between Kooaba Ave and Kareela Rd		114	\$16,381	
Outside 20 Castle Cove Dr		16	\$2,238	
West side of Courallie Rd between Lane W48 and Minnamurra Rd		216	\$31,071	
Pathway between Upper Minimbah and Minnamurra Rds Northbridge		79	\$11,442	
Between Sylvia St and Centennial Ave		150	\$21,646	
East side of The Outpost at The Pallsade		24	\$3,408	
Frontage of 8- 14 Waltham St		27	\$3,862	
End of Reid Drive		13	\$1,934	
Punch St & Lambs Rd - Corner		15	\$1,250	
Northern end of Parker St cul-de-sac		102	\$14,688	

Year	Location	Status	Length (m)	Est. Cost
	Lane way from 29 Hinkler Cres to 32 Avian Cres		91	\$13,085
	From 280 Edinburgh Rd along the east side of Edinburgh Rd to 292 Edinburgh Rd		220	\$31,713
	Frontage of 71 Sugarloaf Cres around the cul-de-sac into the drainage reserve to bush walk		81	\$11,601
	Edinburgh Rd to The Tor Walk through laneway between 278A - 278 Edinburgh Rd		80	\$11,532
20+	Moola Parade north side		390	\$56,100
	Hallstrom Close north side		88	\$12,666
	Quarry Street between shared path and Marks Street		55	\$7,883
	West side of West St between Grafton Ave and existing formed path		53	\$7,667
	West side of West St between Dawson St and Grafton Ave		95	\$13,614
	Southern end of Neville St		17	\$2,480
	Total for all paths		13948	\$2,327,135

10.2. Capital Renewal Program

This appendix lists all capital works projects identified in asset management plans for the five years beginning 2013/14. The types of works included are renewal of existing assets, upgrade of existing assets and purchase/construction of new assets. These are presented according to the two financial cases covered by the Long Term Financial Plan:

- **Base Case** – works that will almost certainly take place if funding continues at present levels
- **Sustainable case** – works that either could not be carried out, or would be carried out later than is ideal, without a special rate variation.

Whilst reviewing this list of works, it is very important to note that it does not represent a prescriptive capital works program. The proposed year of works is listed against each item based on current priorities. As asset degradation and use profiles can only ever be estimated rather than accurately predicted, it is likely that priorities will shift over time. Each proposed work will require on-site investigation before determining its final inclusion in the works program, and the condition of many assets will be reassessed in this financial year. This may result in considerable variation of proposed works, depending on actual asset degradation.

It is standard practice for Council staff to review such lists of Capital works at budget time each year, and often much more frequently for network assets such as footpaths. As such, this list should be considered an indicator of the *quantity* and *distribution* of works that are likely to be undertaken. The accuracy of these capital works programs decreases with each subsequent year. Nonetheless, long-term planning and identification of these projects is an essential part of ensuring that Council attains financial sustainability.

The following table provides the 5-year total expenditure for footpath works by ward. These have been compiled to provide an overview by ward.

Table 10.1 Summary of capital works by ward

Asset class	Ward	Projects total value over 5 years (Base case)	Additional projects value over 5 years (Sustainable case)
Footpaths	West Ward	\$1,430,211	\$310,020
	Sailors Bay Ward	\$1,677,047	\$295,977
	Middle Harbour Ward	\$1,434,717	\$244,495
	Naremburn Ward	\$1,087,396	\$201,521

Works are presented in a tabular fashion by year. “Year 1” is the 2013/14 financial year, “Year 2” is the 14/15 financial year, and so on. All planned works for footpaths involve partial or complete renewal.

10.2.1. Base Case

Street	Ward	Year	Value
Thomas Street	West Ward	1	\$27,318
Eastern Valley Way	Sailors Bay Ward	1	\$15,175
Sailors Bay Road	Sailors Bay Ward	1	\$13,317
Victoria Avenue	West Ward	1	\$7,794
Anderson St South	West Ward	1	\$46,393
Pacific Hwy	West Ward	1	\$165,063
High Street	Middle Harbour Ward	1	\$7,700

Street	Ward	Year	Value
Pacific Hwy	Naremburn Ward	1	\$76,397
Chandos Street	Naremburn Ward	1	\$7,235
Rohan Street	Naremburn Ward	1	\$5,571
Mowbray Road	West Ward	1	\$5,408
Penshurst Street	Sailors Bay Ward	1	\$12,781
Kameruka Road	Sailors Bay Ward	1	\$6,380
Anderson Street	West Ward	1	\$23,791
Hampden Lane	Naremburn Ward	1	\$2,084
Willandra Street	West Ward	1	\$5,859

Street	Ward	Year	Value
Eastern Valley Way	Middle Harbour Ward	1	\$28,672
Oscar Street	Middle Harbour Ward	1	\$24,522
Mcintosh Street	West Ward	1	\$1,805
Mills Lane	Middle Harbour Ward	1	\$1,714
Artarmon Road	Naremburn Ward	1	\$4,493
Hercules Street	Middle Harbour Ward	1	\$7,811
Frenchs Road	Sailors Bay Ward	1	\$51,498
Hampden Road	Naremburn Ward	1	\$37,440
Centennial Avenue	West Ward	1	\$16,795
Mowbray Road	Sailors Bay Ward	1	\$44,439
Willoughby Road	Sailors Bay Ward	1	\$50,699
Kitchener Road	Naremburn Ward	1	\$5,859
Western Way	West Ward	1	\$7,186
Corona Avenue	West Ward	1	\$16,631
Penshurst Street	Middle Harbour Ward	1	\$48,191
Johnson Street	Middle Harbour Ward	1	\$10,265
Post Office Lane	West Ward	1	\$6,259
Albert Avenue	West Ward	1	\$6,080
Tenilba Road	Sailors Bay Ward	1	\$17,726
Oakville Street	Sailors Bay Ward	1	\$4,990
Barton Road	Naremburn Ward	1	\$6,770
Northcote Street	Naremburn Ward	1	\$19,306
Endeavour Street	West Ward	1	\$41,537
Railway Street	West Ward	1	\$33,955
Minnamurra Road	Sailors Bay Ward	1	\$11,117
Oliver Road	West Ward	1	\$14,366
Pearl Avenue	West Ward	1	\$4,487
Dickson Avenue	Naremburn Ward	1	\$13,342
Cheyne Walk	Sailors Bay Ward	1	\$19,673
Bertram Street	Middle Harbour Ward	1	\$15,487
Jenkins Street	West Ward	1	\$6,529
Herbert Street	Naremburn Ward	1	\$3,981
Nicholson Street	Middle Harbour Ward	1	\$11,037
Deepwater Road	Middle Harbour Ward	1	\$6,156
Fleet Lane	West Ward	1	\$6,593

Street	Ward	Year	Value
Armstrong Street	Sailors Bay Ward	1	\$14,594
Day Street	West Ward	1	\$11,999
Macmahon Street	Middle Harbour Ward	2	\$15,238
Bellambi Street	Sailors Bay Ward	2	\$19,704
Bertram Street	Middle Harbour Ward	2	\$6,732
Mowbray Road	Sailors Bay Ward	2	\$10,547
Anglo Street	West Ward	2	\$8,861
Gordon Avenue	West Ward	2	\$10,631
Pendey Street	Sailors Bay Ward	2	\$2,254
Sugarloaf Crescent	Sailors Bay Ward	2	\$13,759
Pacific Hwy	Naremburn Ward	2	\$39,842
Pacific Hwy	West Ward	2	\$86,226
Centennial Avenue	West Ward	2	\$4,729
Nicholson Street	Middle Harbour Ward	2	\$19,619
Penshurst Street	Middle Harbour Ward	2	\$74,992
Willoughby Road	Naremburn Ward	2	\$17,523
Mowbray Road	Naremburn Ward	2	\$6,200
Tunks Street	Sailors Bay Ward	2	\$10,443
De Villiers Avenue	West Ward	2	\$1,794
Robert Street	Middle Harbour Ward	2	\$11,068
Ward Street	Sailors Bay Ward	2	\$24,197
Narooma Road	Sailors Bay Ward	2	\$36,102
Sailors Bay Road	Sailors Bay Ward	2	\$46,098
Pathway 56	Naremburn Ward	2	\$5,692
Boundary Street	West Ward	2	\$5,704
Eddy Road	West Ward	2	\$3,071
Sydney Street	Sailors Bay Ward	2	\$4,189
Eastern Valley Way	Middle Harbour Ward	2	\$59,458
Whiting Street	Naremburn Ward	2	\$7,661
Punch Street	Naremburn Ward	2	\$23,377
Covelee Circuit	Sailors Bay Ward	2	\$8,754
Deepwater Road	Middle Harbour Ward	2	\$2,137
Albert Avenue	Middle Harbour Ward	2	\$6,132
Mann Street	Middle Harbour Ward	2	\$9,648

Street	Ward	Year	Value
Central Street	Naremburn Ward	2	\$7,539
Kirk Street	West Ward	2	\$4,858
Orchard Road	West Ward	2	\$15,315
Railway Street	West Ward	2	\$5,194
Elizabeth Street	Naremburn Ward	2	\$4,743
Greville Street	West Ward	2	\$2,354
Anthony Street	Middle Harbour Ward	2	\$3,844
Anderson St South	West Ward	2	\$16,419
Frederick Street	Naremburn Ward	2	\$2,854
Help Street	West Ward	2	\$8,667
Archer Street	West Ward	2	\$3,846
Freeman Road	West Ward	2	\$2,938
Berenices Way	West Ward	2	\$3,593
Stephen Street	Sailors Bay Ward	2	\$26,413
Moriarty Road	West Ward	2	\$5,415
Moola Parade	West Ward	2	\$1,416
Edinburgh Road	Middle Harbour Ward	2	\$4,711
Rembrandt Drive	Middle Harbour Ward	2	\$4,474
Eastern Valley Way	Sailors Bay Ward	2	\$9,407
Neeworra Road	Sailors Bay Ward	2	\$2,083
Lower Gibbes Street	Middle Harbour Ward	2	\$8,638
Clarendon Street	Naremburn Ward	2	\$30,033
Artarmon Road	Naremburn Ward	2	\$3,495
Hampden Road	Naremburn Ward	2	\$6,269
Alto Place	Naremburn Ward	2	\$3,258
Hotham Parade	Naremburn Ward	2	\$4,836
Beresford Avenue	West Ward	2	\$2,968
Mclean Avenue	West Ward	2	\$4,793
Stafford Road	Naremburn Ward	2	\$13,435
High Street	Sailors Bay Ward	2	\$4,085
Edinburgh Road	Sailors Bay Ward	2	\$7,328
Cawarra Road	Middle Harbour Ward	2	\$2,131
Havilah Street	Middle Harbour Ward	2	\$3,387
Darvall Street	Naremburn Ward	2	\$4,437
Carlotta Street	Naremburn Ward	2	\$12,628
Edna Street	Middle Harbour Ward	2	\$15,887

Street	Ward	Year	Value
Penshurst Street	Sailors Bay Ward	2	\$7,458
Smith Road	Naremburn Ward	2	\$3,482
Weetawaa Road	Sailors Bay Ward	2	\$13,094
Barham Lane	Naremburn Ward	2	\$3,326
Edmund Street	Middle Harbour Ward	2	\$8,315
Glenmore Street	Naremburn Ward	2	\$8,663
James Street	West Ward	2	\$6,313
Ann Street	Middle Harbour Ward	2	\$15,145
Sutherland Road	West Ward	2	\$1,424
Mcclelland Street	Middle Harbour Ward	2	\$6,401
Gibbes Street	Middle Harbour Ward	2	\$5,080
Donnelly Road	Naremburn Ward	2	\$2,373
Chandos Street	Naremburn Ward	2	\$4,019
Warrane Road	Middle Harbour Ward	2	\$5,001
Lambs Road	Naremburn Ward	2	\$5,072
Goodchap Road	West Ward	2	\$1,817
Widgiewa Road	Sailors Bay Ward	2	\$5,821
Jenkins Street	West Ward	2	\$3,451
Stan Street	Middle Harbour Ward	2	\$2,061
Small Street	Sailors Bay Ward	2	\$3,233
Malacoota Road	Sailors Bay Ward	2	\$8,436
Victoria Avenue	Middle Harbour Ward	2	\$1,223
Haig Street	Middle Harbour Ward	2	\$4,672
Chelmsford Avenue	Naremburn Ward	2	\$6,708
Reserve Road	Naremburn Ward	2	\$3,276
Ashley Street	Middle Harbour Ward	2	\$22,757
Albert Avenue	West Ward	2	\$2,656
Alexander Avenue	Middle Harbour Ward	2	\$2,165
Marlborough Road	Sailors Bay Ward	2	\$3,750
Pathway 10	Naremburn Ward	2	\$5,233
Boundary Street	Middle Harbour Ward	2	\$2,216
Royal Street	Middle Harbour Ward	2	\$4,029
Harden Road	Naremburn Ward	2	\$20,642

Street	Ward	Year	Value
Mowbray Road West	West Ward	2	\$6,162
View Street	West Ward	2	\$21,839
High Street	Middle Harbour Ward	2	\$1,620
Nicholson Street	Middle Harbour Ward	3	\$19,144
Fullers Road	West Ward	3	\$32,276
Frenchs Road	Sailors Bay Ward	3	\$8,217
Mowbray Road	West Ward	3	\$4,485
Denawen Avenue	Middle Harbour Ward	3	\$1,899
Pacific Hwy	West Ward	3	\$68,070
Chandos Street	Naremburn Ward	3	\$5,940
Brown Street	West Ward	3	\$3,573
Marooba Road	Sailors Bay Ward	3	\$27,875
Bowen Street	West Ward	3	\$4,005
Macmahon Street	Middle Harbour Ward	3	\$5,075
Baroona Road	Sailors Bay Ward	3	\$54,450
Herbert Street	Naremburn Ward	3	\$7,462
Eric Road	Naremburn Ward	3	\$5,924
Cevu Avenue	Sailors Bay Ward	3	\$2,709
Westbourne Street	Naremburn Ward	3	\$8,021
Forsyth Street	Sailors Bay Ward	3	\$5,249
Holland Street	Sailors Bay Ward	3	\$20,282
Linden Way	Sailors Bay Ward	3	\$13,176
Whitton Road	West Ward	3	\$1,197
Slade Street	Naremburn Ward	3	\$11,807
Laurel Street	Sailors Bay Ward	3	\$8,610
Onyx Road	Naremburn Ward	3	\$3,399
Noonbinna Crescent	Sailors Bay Ward	3	\$4,679
Edinburgh Road	Sailors Bay Ward	3	\$1,806
Pathway 41	Sailors Bay Ward	3	\$1,060
Dalmeny Road	Sailors Bay Ward	3	\$3,304
Sailors Bay Road	Sailors Bay Ward	3	\$50,141
Victoria Avenue	Middle Harbour Ward	3	\$9,747
Barcoo Street	Middle Harbour Ward	3	\$20,546
Bertram Street	Middle Harbour Ward	3	\$26,105
Glenmore Street	Naremburn Ward	3	\$6,325

Street	Ward	Year	Value
Christie Street	Naremburn Ward	3	\$4,410
Hotham Parade	Naremburn Ward	3	\$11,881
Lady Game Drive	West Ward	3	\$1,158
Penshurst Street	Middle Harbour Ward	3	\$11,777
Lower Bligh St	Sailors Bay Ward	3	\$2,529
Matheson Avenue	Sailors Bay Ward	3	\$23,215
Narani Crescent	Sailors Bay Ward	3	\$7,168
Pathway 12	Naremburn Ward	3	\$2,576
Daisy Street	West Ward	3	\$3,584
Macquarie Street	Middle Harbour Ward	3	\$8,980
Hercules Street	Middle Harbour Ward	3	\$3,454
William Street	Middle Harbour Ward	3	\$2,078
William Street East	Middle Harbour Ward	3	\$14,868
Neridah Street	Middle Harbour Ward	3	\$3,133
Douglas Avenue	Middle Harbour Ward	3	\$3,596
Darling Street	Middle Harbour Ward	3	\$30,111
Baldry Street	Middle Harbour Ward	3	\$8,503
Reserve Road	Naremburn Ward	3	\$1,782
Pyalla Street	Sailors Bay Ward	3	\$8,485
Probate Street	Naremburn Ward	3	\$3,881
Marks Street	Naremburn Ward	3	\$1,201
Hampden Road	Naremburn Ward	3	\$3,844
Mcmillan Road	Naremburn Ward	3	\$1,227
Simpson Street	Naremburn Ward	3	\$1,664
Lawson Lane	Naremburn Ward	3	\$4,038
Park Road	Naremburn Ward	3	\$1,657
First Avenue	Middle Harbour Ward	3	\$8,966
Woonona Road	Sailors Bay Ward	3	\$4,544
Deepwater Road	Middle Harbour Ward	3	\$21,012
Tunks Street	Sailors Bay Ward	3	\$5,744
Robinson Street	Middle Harbour Ward	3	\$2,772
Barambah Road	Middle Harbour Ward	3	\$6,289

Street	Ward	Year	Value
Barambah Lane	Middle Harbour Ward	3	\$4,230
Plunkett Street	Naremburn Ward	3	\$9,158
Dargan Street	Naremburn Ward	3	\$11,985
Oliver Road	West Ward	3	\$1,515
Mowbray Road West	West Ward	3	\$29,799
Greville Street	West Ward	3	\$1,248
Keary Street	Sailors Bay Ward	3	\$10,575
Stan Street	Middle Harbour Ward	3	\$7,607
Willoughby Road	Sailors Bay Ward	3	\$36,147
Johnson Street	West Ward	3	\$7,427
Stanley Street	Middle Harbour Ward	3	\$10,331
Bryson Street	West Ward	3	\$772
Wallace Street	Sailors Bay Ward	3	\$20,007
High Street	Middle Harbour Ward	3	\$4,437
Eastern Valley Way	Middle Harbour Ward	3	\$6,120
Spring Place	Middle Harbour Ward	3	\$2,138
Quiamong Road	Naremburn Ward	3	\$2,809
Marden Street	Naremburn Ward	3	\$1,764
Willoughby Road	Naremburn Ward	3	\$4,532
Centennial Avenue	West Ward	3	\$5,606
Millwood Avenue	West Ward	3	\$8,160
High Street	Sailors Bay Ward	3	\$1,754
Forsyth Street	Middle Harbour Ward	3	\$5,968
Kalgoorlie Street	Sailors Bay Ward	3	\$4,749
Warrah Street	Middle Harbour Ward	3	\$6,770
Archer Street	Middle Harbour Ward	3	\$51,251
Pathway 01	West Ward	3	\$3,666
View Street	West Ward	3	\$1,923
Castle Cove Drive	Middle Harbour Ward	3	\$4,488
Help Street	West Ward	3	\$1,934
Pathway 21	Sailors Bay Ward	3	\$3,642
Artarmon Road	Naremburn Ward	3	\$8,044
Rosebridge Avenue	Middle Harbour Ward	3	\$7,319

Street	Ward	Year	Value
Bellambi Street	Sailors Bay Ward	3	\$1,245
Lower Gibbes Street	Middle Harbour Ward	3	\$4,043
Carlotta Street	Naremburn Ward	3	\$5,316
Sydney Street	Sailors Bay Ward	3	\$13,548
Robert Street	Middle Harbour Ward	3	\$5,562
Kitchener Road	Naremburn Ward	3	\$14,189
Anderson Street	West Ward	3	\$10,131
Rohan Street	Naremburn Ward	3	\$3,779
Namoi Road	Sailors Bay Ward	3	\$8,016
Ashley Street	Middle Harbour Ward	3	\$7,152
Tulloh Street	Sailors Bay Ward	3	\$4,685
Mabel Street	Sailors Bay Ward	3	\$15,597
Ward Street	Sailors Bay Ward	3	\$19,959
Acacia Lane	Middle Harbour Ward	3	\$2,312
Dalkieth Street	Sailors Bay Ward	3	\$8,985
Mowbray Road	Sailors Bay Ward	3	\$2,907
Archer Street	West Ward	3	\$6,873
Dulwich Road	West Ward	3	\$13,755
Small Street	Sailors Bay Ward	3	\$5,823
Chatswood Avenue	Middle Harbour Ward	3	\$5,604
Peckham Avenue	West Ward	3	\$4,521
View Lane	West Ward	4	\$14,485
Pacific Hwy	West Ward	4	\$104,883
Campbell Street	Naremburn Ward	4	\$13,054
Whitton Road	West Ward	4	\$1,802
Carr Street	West Ward	4	\$3,337
Claude Street	West Ward	4	\$1,051
Eastern Valley Way	Sailors Bay Ward	4	\$13,227
Boundary Street	Middle Harbour Ward	4	\$14,241
View Street	West Ward	4	\$21,983
Fullers Road	West Ward	4	\$52,327
Penshurst Street	Middle Harbour Ward	4	\$26,924
Pearl Avenue	West Ward	4	\$31,580
Daisy Street	West Ward	4	\$399
Victoria Avenue	Middle Harbour Ward	4	\$7,922
Oakville Street	Sailors Bay Ward	4	\$3,382

Street	Ward	Year	Value
Wyalong Street	Sailors Bay Ward	4	\$20,481
Parker Street	Sailors Bay Ward	4	\$7,157
Neeworra Road	Sailors Bay Ward	4	\$2,186
Deepwater Road	Middle Harbour Ward	4	\$17,069
Coolawin Road	Sailors Bay Ward	4	\$10,245
Unname Lane 03	Naremburn Ward	4	\$2,489
Lower Gibbes Street	Middle Harbour Ward	4	\$1,543
Whiting Street	Naremburn Ward	4	\$33,567
Pacific Hwy	Naremburn Ward	4	\$12,841
Francis Road	Naremburn Ward	4	\$4,152
Central Street	Naremburn Ward	4	\$3,495
Goodchap Road	West Ward	4	\$3,367
Dalrymple Avenue	West Ward	4	\$9,024
Chandos Street	Naremburn Ward	4	\$20,093
Marks Street	Naremburn Ward	4	\$12,799
Alexander Avenue	Middle Harbour Ward	4	\$10,726
William Street	Middle Harbour Ward	4	\$15,445
Charlotte Lane	West Ward	4	\$862
Baldry Street	Middle Harbour Ward	4	\$8,743
Parkes Road	Naremburn Ward	4	\$2,322
Hotham Parade	Naremburn Ward	4	\$4,223
Barton Road	Naremburn Ward	4	\$2,178
Millwood Avenue	West Ward	4	\$1,944
Alpha Road	Sailors Bay Ward	4	\$38,736
Albert Avenue	Middle Harbour Ward	4	\$9,479
Stanley Street	Sailors Bay Ward	4	\$4,033
Borlaise Street	Sailors Bay Ward	4	\$22,351
Hollywood Crescent	Middle Harbour Ward	4	\$4,762
High Street	Middle Harbour Ward	4	\$6,477
Holly Street	Middle Harbour Ward	4	\$2,531
Mckenzie Lane	Sailors Bay Ward	4	\$3,368
Dalleys Road	Naremburn Ward	4	\$1,231
Garland Road	Naremburn Ward	4	\$1,391
Carlotta Street	Naremburn Ward	4	\$3,116
Willoughby Road	Naremburn Ward	4	\$6,539
Herbert Street	Naremburn Ward	4	\$35,358

Street	Ward	Year	Value
Cleg Street	Naremburn Ward	4	\$4,027
Market Street	Naremburn Ward	4	\$6,586
Sutherland Road	West Ward	4	\$7,412
Mowbray Road West	West Ward	4	\$19,335
Edgar Street	West Ward	4	\$7,471
Forsyth Street	Sailors Bay Ward	4	\$5,373
Willoughby Road	Sailors Bay Ward	4	\$1,246
Mowbray Road	Sailors Bay Ward	4	\$3,509
Tunks Street	Sailors Bay Ward	4	\$10,965
Adolphus Street	Naremburn Ward	4	\$6,444
Artarmon Road	Naremburn Ward	4	\$9,627
Merrenburn Avenue	Naremburn Ward	4	\$6,463
Victor Street	West Ward	4	\$3,316
Tulloh Street	Sailors Bay Ward	4	\$3,901
Mowbray Road	Naremburn Ward	4	\$8,813
Fourth Avenue	Middle Harbour Ward	4	\$4,589
Malacoota Road	Sailors Bay Ward	4	\$3,638
Kendall Road	Middle Harbour Ward	4	\$5,659
Lane W95	Naremburn Ward	4	\$2,629
Darling Street	Middle Harbour Ward	4	\$3,487
Eastern Valley Way	Middle Harbour Ward	4	\$28,365
Smith Street	Middle Harbour Ward	4	\$3,237
Reserve Road	Naremburn Ward	4	\$4,338
Ella Street	Naremburn Ward	4	\$2,596
Beaconsfield Road	West Ward	4	\$5,717
Wilson Street	West Ward	4	\$3,138
Coorabin Road	Sailors Bay Ward	4	\$35,407
Edward Street	Sailors Bay Ward	4	\$9,155
Marlborough Road	Sailors Bay Ward	4	\$4,254
Waratah Street	Middle Harbour Ward	4	\$8,596
Dowel Street	Middle Harbour Ward	4	\$42,331
Nicholson Street	Middle Harbour Ward	4	\$13,032
Flat Rock Drive	Sailors Bay Ward	4	\$7,626
Park Avenue	West Ward	4	\$3,968

Street	Ward	Year	Value
Orchard Road	West Ward	4	\$1,919
Laurel Street	Sailors Bay Ward	4	\$4,161
Matheson Avenue	Sailors Bay Ward	4	\$23,959
Glover Street	Middle Harbour Ward	4	\$9,524
The Postern	Sailors Bay Ward	4	\$3,543
Edinburgh Road	Sailors Bay Ward	4	\$571
Sailors Bay Road	Sailors Bay Ward	4	\$32,682
Day Street	West Ward	4	\$1,354
Robert Street	Naremburn Ward	4	\$2,155
Woonona Road	Sailors Bay Ward	4	\$4,042
Violet Street	West Ward	4	\$4,291
Orara Street	Middle Harbour Ward	4	\$2,000
Brook Street	Naremburn Ward	4	\$7,388
Centennial Avenue	West Ward	4	\$5,570
Bellevue Avenue	West Ward	4	\$4,285
West Parade	West Ward	4	\$5,143
Nea Street	West Ward	4	\$3,816
Mabel Street	Sailors Bay Ward	4	\$21,873
Plunkett Street	Naremburn Ward	4	\$6,129
Wallace Street	Sailors Bay Ward	4	\$7,330
Greenfield Avenue	Middle Harbour Ward	4	\$4,701
Barcoo Street	Middle Harbour Ward	4	\$32,856
Anderson Street	West Ward	4	\$1,872
Eddy Road	West Ward	4	\$14,225
Clanwilliam Street	Sailors Bay Ward	4	\$3,576
Pathway 18	Sailors Bay Ward	5	\$3,523
Spearman Street	Middle Harbour Ward	5	\$2,964
Brook Street	Naremburn Ward	5	\$8,227
Albert Avenue	Middle Harbour Ward	5	\$2,530
Sailors Bay Road	Sailors Bay Ward	5	\$24,661
Lone Pine Avenue	West Ward	5	\$20,677
Mowbray Place	Sailors Bay Ward	5	\$5,438
Mcclelland Street	Middle Harbour Ward	5	\$9,240
Mowbray Road	Sailors Bay Ward	5	\$20,954
Bellambi Street	Sailors Bay Ward	5	\$656
Ashley Street	Middle Harbour Ward	5	\$2,968

Street	Ward	Year	Value
Kareela Road	West Ward	5	\$5,912
Martin Street	Naremburn Ward	5	\$6,285
Pacific Hwy	West Ward	5	\$12,147
Fourth Avenue	Middle Harbour Ward	5	\$7,140
Edinburgh Road	Sailors Bay Ward	5	\$6,997
Bongalong Street	Naremburn Ward	5	\$2,966
Barcoo Street	Middle Harbour Ward	5	\$2,904
Eric Road	Naremburn Ward	5	\$1,482
Slade Street	Naremburn Ward	5	\$2,322
Probate Street	Naremburn Ward	5	\$6,705
Sharland Avenue	West Ward	5	\$8,873
Hallstrom Close	Sailors Bay Ward	5	\$9,812
Drainage Reserve 01	Middle Harbour Ward	5	\$41,631
Milton Street	Middle Harbour Ward	5	\$10,697
Francis Street	Naremburn Ward	5	\$11,763
Dickson Avenue	Naremburn Ward	5	\$5,042
Remuera Street	Sailors Bay Ward	5	\$7,239
Robert Street	Middle Harbour Ward	5	\$14,248
Stanley Street	Sailors Bay Ward	5	\$18,455
Deepwater Road	Middle Harbour Ward	5	\$12,494
Boundary Street	Middle Harbour Ward	5	\$11,765
Baringa Road	Sailors Bay Ward	5	\$6,368
Bega Road	Sailors Bay Ward	5	\$12,399
Nicholson Street	Middle Harbour Ward	5	\$11,383
Onyx Road	Naremburn Ward	5	\$8,494
Dalmeny Road	Sailors Bay Ward	5	\$31,630
West Parade	West Ward	5	\$3,937
Dalrymple Avenue	West Ward	5	\$28,288
Reserve Road	Naremburn Ward	5	\$3,537
Anthony Street	Middle Harbour Ward	5	\$1,754
Olga Street	Middle Harbour Ward	5	\$2,863
William Street	Middle Harbour Ward	5	\$12,618
Chandos Street	Naremburn Ward	5	\$15,846
Telford Lane	Middle Harbour Ward	5	\$3,489

Street	Ward	Year	Value
Penshurst Street	Middle Harbour Ward	5	\$6,015
Cameron Avenue	Naremburn Ward	5	\$4,034
First Avenue	Middle Harbour Ward	5	\$3,223
Young Street	West Ward	5	\$3,708
Hopetoun Avenue	West Ward	5	\$2,188
Hercules Street	Sailors Bay Ward	5	\$32,123
Frederick Street	Naremburn Ward	5	\$34,602
Grandview Street	Naremburn Ward	5	\$5,892
Mowbray Road West	West Ward	5	\$3,762
Second Avenue	Middle Harbour Ward	5	\$5,339
Calbina Road	Sailors Bay Ward	5	\$3,611
Penshurst Street	Sailors Bay Ward	5	\$5,399
Railway Street	West Ward	5	\$1,224
Ann Street	Middle Harbour Ward	5	\$16,515
Megalong Avenue	Middle Harbour Ward	5	\$6,757
Lower Bligh St	Sailors Bay Ward	5	\$1,017
Mann Street	Middle Harbour Ward	5	\$13,200
Hampden Road	Naremburn Ward	5	\$1,438
Barton Road	Naremburn Ward	5	\$4,515
Beaconsfield Road	West Ward	5	\$5,955
Penkivil Street	Sailors Bay Ward	5	\$8,726
Shepherd Road	Naremburn Ward	5	\$2,044
Victor Street	West Ward	5	\$1,739
Smith Road	Naremburn Ward	5	\$11,002
Jack Mclure Place	Sailors Bay Ward	5	\$1,482
Weemala Road	Sailors Bay Ward	5	\$19,822
Cleland Road	Naremburn Ward	5	\$5,678
Ruth Street	Naremburn Ward	5	\$1,610
Mabel Street	Sailors Bay Ward	5	\$17,879
Mowbray Road	Naremburn Ward	5	\$16,966
Pathway 17	Sailors Bay Ward	5	\$15,876
Coolawin Road	Sailors Bay Ward	5	\$5,427
Neerim Road	Middle Harbour Ward	5	\$4,347
Sortie Port	Sailors Bay Ward	5	\$10,735
Septimus Street	Middle Harbour Ward	5	\$2,542

Street	Ward	Year	Value
Pyalla Street	Sailors Bay Ward	5	\$10,105
Waltham Street	Naremburn Ward	5	\$3,690
Buller Road	Naremburn Ward	5	\$9,465
Park Road	Naremburn Ward	5	\$13,508
Hatfield Street	West Ward	5	\$2,163
Goodchap Road	West Ward	5	\$4,481
Nea Street	West Ward	5	\$2,294
Sydney Street	Middle Harbour Ward	5	\$3,746
Garland Road	Naremburn Ward	5	\$2,903
White Street	Naremburn Ward	5	\$7,026
Waters Road	Naremburn Ward	5	\$7,488
Critchett Road	West Ward	5	\$8,188
Sydney Street	Sailors Bay Ward	5	\$5,067
Alexander Avenue	Middle Harbour Ward	5	\$2,136
Woonona Road	Sailors Bay Ward	5	\$6,607
Eastern Valley Way	Sailors Bay Ward	5	\$9,075
Warrane Place	Middle Harbour Ward	5	\$2,244
Donnelly Road	Naremburn Ward	5	\$1,044
Dulwich Road	West Ward	5	\$2,832
Hector Road	Sailors Bay Ward	5	\$13,947
Cobar Street	Sailors Bay Ward	5	\$25,983
Small Street	Sailors Bay Ward	5	\$1,976
Pacific Hwy	Naremburn Ward	5	\$13,487
Mccabe Place	Middle Harbour Ward	5	\$5,367
Crick Street	Middle Harbour Ward	5	\$6,565
Palmer Street	Naremburn Ward	5	\$7,090
Elizabeth Street	Naremburn Ward	5	\$17,748
Royal Street	Middle Harbour Ward	5	\$4,533
Archer Street	Middle Harbour Ward	5	\$2,914
William Street East	Middle Harbour Ward	5	\$2,658
Footway 01	West Ward	5	\$7,223
Lower Gibbes Street	Middle Harbour Ward	5	\$14,856
Chapman Avenue	West Ward	5	\$1,556
Northcote Street	Naremburn Ward	5	\$3,796
Johnson Street	West Ward	5	\$2,069

Street	Ward	Year	Value
Nelson Street	West Ward	5	\$1,302
Artarmon Road	Sailors Bay Ward	5	\$4,436
Stan Street	Middle Harbour Ward	5	\$15,251
Clanwilliam Street	Sailors Bay Ward	5	\$4,615
Sydney Street	Naremburn Ward	5	\$4,456
Saywell Street	West Ward	5	\$5,076
Horsley Avenue	Middle Harbour Ward	5	\$6,322
Tyneside Avenue	Middle Harbour Ward	5	\$2,197
Ward Street	Sailors Bay Ward	5	\$17,050
Wyalong Street	Sailors Bay Ward	5	\$20,589
Pathway 22	Sailors Bay Ward	5	\$3,076
Station Street	Naremburn Ward	5	\$2,174
Francis Road	Naremburn Ward	5	\$5,064
Artarmon Road	Naremburn Ward	5	\$6,004
Wyvern Avenue	West Ward	5	\$3,295
Mooney Street	West Ward	5	\$2,864
Park Avenue	West Ward	5	\$16,094

Street	Ward	Year	Value
Pathway 28	Middle Harbour Ward	5	\$22,973
Pathway 60	West Ward	5	\$8,807
Tindale Road	Naremburn Ward	5	\$5,387
Warrane Road	Middle Harbour Ward	5	\$5,670
Mowbray Road	Middle Harbour Ward	5	\$2,138
Stanley Street	Middle Harbour Ward	5	\$1,709
High Street	Sailors Bay Ward	5	\$11,035
Tycannah Road	Sailors Bay Ward	5	\$20,855
Paradise Avenue	Middle Harbour Ward	5	\$4,635
Macquarie Street	Middle Harbour Ward	5	\$2,219
Clarendon Street	Naremburn Ward	5	\$2,870
Findlay Avenue	West Ward	5	\$8,835
Millwood Avenue	West Ward	5	\$868

10.2.2. Sustainable Case

Street	Ward	Year	Value
Albert Avenue	Middle Harbour Ward	5	\$932
Alexander Avenue	Middle Harbour Ward	5	\$54,968
Alleyne Street	Middle Harbour Ward	5	\$11,884
Archer Street	Middle Harbour Ward	5	\$1,772
Ashley Street	Middle Harbour Ward	5	\$2,190
Bertram Street	Middle Harbour Ward	5	\$7,492
Cambridge Street	Middle Harbour Ward	5	\$3,945
Council Street	Middle Harbour Ward	5	\$2,448
Crick Street	Middle Harbour Ward	5	\$6,094
Darling Street	Middle Harbour Ward	5	\$1,222
Deepwater Road	Middle Harbour Ward	5	\$4,100
Edinburgh Road	Middle Harbour Ward	5	\$4,847

Street	Ward	Year	Value
Ferncourt Avenue	Middle Harbour Ward	5	\$3,008
Gibbes Street	Middle Harbour Ward	5	\$35,554
Glover Street	Middle Harbour Ward	5	\$6,735
High Street	Middle Harbour Ward	5	\$4,020
Holly Street	Middle Harbour Ward	5	\$9,417
Hollywood Crescent	Middle Harbour Ward	5	\$3,600
Lamette Street	Middle Harbour Ward	5	\$5,881
Macquarie Street	Middle Harbour Ward	5	\$7,064
Mccabe Place	Middle Harbour Ward	5	\$4,042
Mills Lane	Middle Harbour Ward	5	\$5,363
Milton Street	Middle Harbour Ward	5	\$1,757
Neridah Street	Middle Harbour Ward	5	\$3,293

Street	Ward	Year	Value
Nicholson Street	Middle Harbour Ward	5	\$2,651
Olga Street	Middle Harbour Ward	5	\$7,398
Oscar Street	Middle Harbour Ward	5	\$17,764
Pathway 05	Middle Harbour Ward	5	\$10,910
Patrick Street	Middle Harbour Ward	5	\$7,360
Penshurst Street	Middle Harbour Ward	5	\$10,265
Robert Street	Middle Harbour Ward	5	\$2,749
Rosebridge Avenue	Middle Harbour Ward	5	\$248
Royal Street	Middle Harbour Ward	5	\$4,736
Scott Crescent	Middle Harbour Ward	5	\$2,085
Short Street	Middle Harbour Ward	5	\$1,004
Stanley Street	Middle Harbour Ward	5	\$2,943
Victoria Avenue	Middle Harbour Ward	5	\$4,343
Warrane Road	Middle Harbour Ward	5	\$2,530
William Street	Middle Harbour Ward	5	\$1,369
Adolphus Street	Naremburn Ward	5	\$1,823
Artarmon Road	Naremburn Ward	5	\$10,808
Berry Avenue	Naremburn Ward	5	\$4,257
Broughton Road	Naremburn Ward	5	\$744
Cambridge Road	Naremburn Ward	5	\$9,959
Campbell Street	Naremburn Ward	5	\$5,995
Central Street	Naremburn Ward	5	\$2,922
Chandos Street	Naremburn Ward	5	\$3,034
Cooney Road	Naremburn Ward	5	\$1,416
Coree Road	Naremburn Ward	5	\$1,817
Dalleys Road	Naremburn Ward	5	\$14,704
Dawson Street	Naremburn Ward	5	\$3,615
Elizabeth Street	Naremburn Ward	5	\$2,148
Ella Street	Naremburn Ward	5	\$489
Evans Lane	Naremburn Ward	5	\$848
Francis Road	Naremburn Ward	5	\$3,764

Street	Ward	Year	Value
Francis Street	Naremburn Ward	5	\$1,789
Garland Road	Naremburn Ward	5	\$5,009
George Place	Naremburn Ward	5	\$38,035
Glenmore Street	Naremburn Ward	5	\$1,529
Godfrey Road	Naremburn Ward	5	\$3,834
Grafton Avenue	Naremburn Ward	5	\$1,792
Hamilton Avenue	Naremburn Ward	5	\$8,372
Hampden Road	Naremburn Ward	5	\$3,617
Harden Road	Naremburn Ward	5	\$1,086
Hawkins Street	Naremburn Ward	5	\$971
Herbert Street	Naremburn Ward	5	\$24,067
Kitchener Road	Naremburn Ward	5	\$20,684
Marden Street	Naremburn Ward	5	\$7,108
Marlow Road	Naremburn Ward	5	\$1,668
Muttama Road	Naremburn Ward	5	\$12,891
Northcote Street	Naremburn Ward	5	\$779
Pacific Hwy	Naremburn Ward	5	\$3,043
Park Road	Naremburn Ward	5	\$1,039
Plunkett Street	Naremburn Ward	5	\$9,800
Reserve Road	Naremburn Ward	5	\$517
Rohan Street	Naremburn Ward	5	\$530
Shepherd Road	Naremburn Ward	5	\$934
Smith Road	Naremburn Ward	5	\$1,534
Station Street	Naremburn Ward	5	\$686
Sydney Street	Naremburn Ward	5	\$3,721
Talus Street	Naremburn Ward	5	\$3,625
Tindale Road	Naremburn Ward	5	\$13,963
Waltham Street	Naremburn Ward	5	\$2,010
Waters Road	Naremburn Ward	5	\$7,234
West Street	Naremburn Ward	5	\$20,404
Westbourne Street	Naremburn Ward	5	\$2,170
Whiting Street	Naremburn Ward	5	\$10,094
Wilksch Lane	Naremburn Ward	5	\$588
Alpha Road	Sailors Bay Ward	5	\$1,144
Baringa Road	Sailors Bay Ward	5	\$4,378
Bellambi Street	Sailors Bay Ward	5	\$6,807
Bennell Lane	Sailors Bay Ward	5	\$5,982
Cheyne Walk	Sailors Bay Ward	5	\$21,217
Cliff Avenue	Sailors Bay Ward	5	\$903
Cobar Street	Sailors Bay Ward	5	\$2,843
Eastern Valley Way	Sailors Bay Ward	5	\$3,265









Street	Ward	Year	Value
Edinburgh Road	Sailors Bay Ward	5	\$817
Edward Street	Sailors Bay Ward	5	\$2,263
Frenchs Road	Sailors Bay Ward	5	\$649
Fry Street	Sailors Bay Ward	5	\$579
Harden Avenue	Sailors Bay Ward	5	\$4,783
High Street	Sailors Bay Ward	5	\$2,905
Julian Street	Sailors Bay Ward	5	\$3,246
Keary Street	Sailors Bay Ward	5	\$1,646
Laurel Street	Sailors Bay Ward	5	\$1,925
Marlborough Road	Sailors Bay Ward	5	\$1,741
Nardoo Road	Sailors Bay Ward	5	\$100
Neeworra Road	Sailors Bay Ward	5	\$191
Oakville Street	Sailors Bay Ward	5	\$1,220
Parker Street	Sailors Bay Ward	5	\$5,110
Pathway 05	Sailors Bay Ward	5	\$169
Pathway 18	Sailors Bay Ward	5	\$2,742
Pathway 43	Sailors Bay Ward	5	\$1,214
Pendey Street	Sailors Bay Ward	5	\$23,104
Penshurst Street	Sailors Bay Ward	5	\$2,988
Sailors Bay Road	Sailors Bay Ward	5	\$488
Salisbury Road	Sailors Bay Ward	5	\$25,472
Stanley Street	Sailors Bay Ward	5	\$563
Strathallen Avenue	Sailors Bay Ward	5	\$2,314
Sydney Street	Sailors Bay Ward	5	\$14,238
The Bulwark	Sailors Bay Ward	5	\$3,769
The Outpost	Sailors Bay Ward	5	\$7,855
Tulloh Street	Sailors Bay Ward	5	\$2,523
Wallace Street	Sailors Bay Ward	5	\$3,577
Warners Avenue	Sailors Bay Ward	5	\$1,483
Weetawaa Road	Sailors Bay Ward	5	\$3,585
Willoughby Road	Sailors Bay Ward	5	\$4,414
Windsor Road	Sailors Bay Ward	5	\$1,219
Wyalong Street	Sailors Bay Ward	5	\$6,268
Albert Avenue	West Ward	5	\$10,003
Anderson St South	West Ward	5	\$15,263
Anderson Street	West Ward	5	\$1,736
Archer Street	West Ward	5	\$16,698
Centennial Avenue	West Ward	5	\$898











Street	Ward	Year	Value
Charlotte Lane	West Ward	5	\$6,657
Coolaroo Road	West Ward	5	\$1,058
Critchett Road	West Ward	5	\$26,794
Daisy Street	West Ward	5	\$2,911
Dalrymple Avenue	West Ward	5	\$10,267
Dardanelles Road	West Ward	5	\$7,885
Eddy Road	West Ward	5	\$6,156
Ferndale Street	West Ward	5	\$13,890
Fullers Road	West Ward	5	\$6,429
Goodchap Road	West Ward	5	\$2,495
Greenlands Road	West Ward	5	\$1,010
Greville Street	West Ward	5	\$4,266
Help Street	West Ward	5	\$779
Ivy Street	West Ward	5	\$1,139
Johnson Street	West Ward	5	\$18,694
Katherine Street	West Ward	5	\$17,844
Mcintosh Street	West Ward	5	\$6,482
Millwood Avenue	West Ward	5	\$3,317
Mowbray Road West	West Ward	5	\$9,294
Obrien Street	West Ward	5	\$2,449
Orchard Road	West Ward	5	\$436
Pacific Hwy	West Ward	5	\$2,980
Parkside Lane	West Ward	5	\$3,557
Pathway 60	West Ward	5	\$4,060
Railway Street	West Ward	5	\$1,390
Range Street	West Ward	5	\$14,419
Sharland Avenue	West Ward	5	\$1,468
Thomas Street	West Ward	5	\$1,319
Tryon Lane	West Ward	5	\$8,830
Tryon Street	West Ward	5	\$3,069
Tulip Street	West Ward	5	\$3,941
Victor Street	West Ward	5	\$4,443
Victoria Avenue	West Ward	5	\$6,716
View Lane	West Ward	5	\$10,488
Violet Street	West Ward	5	\$7,274
Whitton Road	West Ward	5	\$270
William Street	West Ward	5	\$45,446
Young Street	West Ward	5	\$2,346


11. Appendix B - Asset assessment manual

Council currently performs regular condition inspection to allow better understanding of the footway within the Council area. To allow objective, repeatable assessment of the footway, a number of defect types have been identified and a rating assigned depending on the magnitude of the defect, as shown in the following table.

Table 11.1 Footpath Defects

Footpath Condition Assessment			
Defect Type	Magnitude 1	Magnitude 2	Magnitude 3
Height differential			
	5-10mm	10-30mm	>30mm
Cracked slab			
	Stable		Unstable / Uneven
Depression			
	20-50mm	50-100mm	>100mm
Hump			
	20-50mm	50-100mm	>100mm
Uneven surface			
	5-10mm	10-30mm	>30mm

Incomplete restoration			
	5-10mm	10-30mm	>30mm
Edge drop off			
	20-50mm	50-100mm	>100mm
Loose pavers			
		Edge	Centre
Broken pavers			
		Edge	Centre
Missing pavers			
		Edge	Centre
Object overhanging path			
	(% path width)	<25%	25-50%

Slippery surface			
		Yes	
Driveway			
		Loose materials	Uneven &/or loose materials
Wear marks on turf			
	At path edge	Nature strip, no path	
Stormwater lid			
	5-10mm	10-30mm	>30mm
Stormwater lintel			
	5-10mm	10-30mm	>30mm
Stormwater grate			
	5-10mm	10-30mm	>30mm

For valuation purposes, footpaths will be condition rated in a scale ranging from 0 to 5, 0 being brand new, 1 in very good condition and 5 at intervention point. The condition of the footpath is expressed as a percentage of the total footpath area affected by defects within that footpath segment.

Table 11.2 Footpath Condition Assessment

Condition	% Footpath Area Affected by Defects within Road Segments
0	Affected Area < 2%
1	2% ≤ Affected Area < 5%
2	5% ≤ Affected Area < 10%
3	10% ≤ Affected Area < 50%
4	50% ≤ Affected Area < 80%
5	80% ≤ Affected Area < 100%

Regardless of whether the footpath is affected by minor or major defects, the rehabilitation method is generally the same, e.g. grinding or replacement. Therefore, the percentage of area affected is the factor used to indicate the condition, not the severity or location of the defects.

Only certain types of defects will be used in generating this 1-5 condition rating. The following table shows which defect types are used to generate this condition rating.

Table 11.3 Defects Included in Condition Rating

Defects	Material																							
	Bitumen	Concrete pavers	Brick pavers	Granite pavers	Sandstone pavers	Ceramic tile	Granite porphyry	Concrete	Insitu material	Insitu with stone steps	Insitu with timber steps	Sandstone	Stabilised decomposed granite	Stabilised crushed sandstone	Road base	Turf	Brick pavers border with bitumen infill	Concrete pavers border with bitumen infill	Granite pavers border with bitumen infill	Steel	Timber	Rubber	Aluminium	
Height differential	✓	✓	✓	✓	✓	✓	✓	✓	x	x	x	✓					✓	✓	✓	✓	✓	✓	✓	✓
Uneven surface	✓	✓	✓	✓	✓	✓	✓	✓	x	x	x	✓						✓	✓	✓	✓	✓	✓	✓
Cracked slab								✓																
Depression	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	x		✓	✓	✓	✓	✓	✓	✓	✓
Hump	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	x		✓	✓	✓	✓	✓	✓	✓	✓
Broken pavers		✓	✓	✓	✓	✓	✓										✓	✓	✓					
Loose pavers		✓	✓	✓	✓	✓	✓										✓	✓	✓					
Missing pavers		✓	✓	✓	✓	✓	✓										✓	✓	✓					
Worn / uneven step	✓	✓	✓	✓	✓	✓	✓	✓	x	x	x	✓						✓	✓	✓	✓	✓	✓	✓
Slippery surface	✓	✓	✓	✓	✓	✓	✓	✓	x	x	x	✓	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓
Tree stump	✓	✓	✓	✓	✓	✓	✓	✓	x	x	x	✓	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓
Object overhanging path	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Wear marks on turf																x								
Edge drop off	x	x	x	x	x	x	x	x	x	x	x	x					x	x	x	x	x	x	x	x
Driveway	x	x	x	x	x	x	x	x									x	x	x	x	x	x	x	x
Stormwater grate	x	x	x	x	x	x	x	x									x	x	x	x				
Stormwater lid	x	x	x	x	x	x	x	x									x	x	x	x				
Stormwater lintel	x	x	x	x	x	x	x	x									x	x	x	x				

Legend:

- ✓ included in the condition rating
- x Noted but not included in the condition rating
- Combination of defect and material is not applicable.

During the condition assessment, it is also noted if the observed defects are the result of incomplete restoration works and whether the adjacent pavement is affected.

As seen in the table above, not all the information collected feeds directly into the condition rating and subsequently the valuation of the footway assets. However, as part of total asset management, the information collected is used to note other issues. For example, information on defects due to incomplete restoration is forwarded to Council staff specifically responsible for restoration works. Wear marks on turf may be an early indication that a path is required, or in the cases of existing path, the need for a wider path, to be taken into account in the future upgrade program.

Some defects do not directly indicate the condition of the footway itself and hence is excluded from the rating. For example, object overhanging path and edge drop off are not related to the physical condition of the footway, but may affect its functionality. These defects will be considered in the long term maintenance program, unless a high risk safety issue has been identified.

12. Appendix C – Risk analysis

Prioritisation of renewal, maintenance and new works is based on risk analysis and need. To assist in doing this, a risk and need analysis map has been developed for the Willoughby LGA.

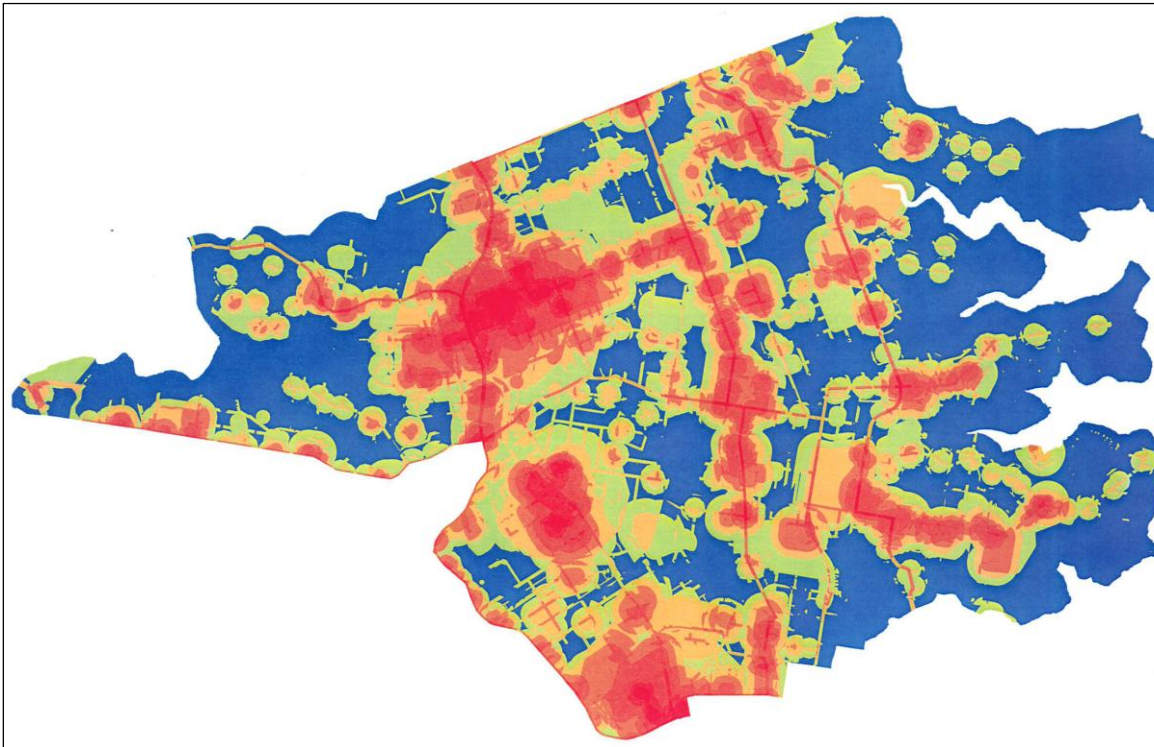
The following table shows the factors that have been taken into account in the development of the rating scheme for the creation of this map.

Table 12.1 Risk and Need Map Rating Scheme

Dataset	Category	Score	Weighting
High-use attractors (shops, schools, TAFE, hospitals)	< 50 m	3	0.9
	50 – 100 m	2	
	100 – 150 m	1	
Train stations	< 250 m	3	0.8
	250 – 500 m	2	
	500 – 750 m	1	
Bus stops	< 50 m	3	0.6
	50 – 75 m	2	
	75 – 100 m	1	
Other attractors (ovals, places of worship, etc)	< 50 m	3	0.4
	50 – 100 m	2	
	100 – 150 m	1	
Road hierarchy	Arterial state	6	0.3
	Arterial regional	5	
	Sub-arterial regional	4	
	Sub-arterial local	3	
	Collector local	2	
	Local	1	
Footpath gradients (%)	> 20%	3	0.2
	12 – 20%	2	
	5 – 12%	1	
	0 – 5%	0.1	
Age data (over 50 years old / hectare)	> 10.5	3	0.1
	7.5 – 10.5	2	
	0 – 7.5	1	

This rating scheme results in overall risk score ranging from 0 to 10, which is then applied to the map of Willoughby LGA to produce the risk and need map shown below. Areas highlighted with deep red represent higher risk to Council.

Figure 12.1 Risk and need map



This risk and need map is then used as a base for determining:

- Inspection frequency (see Appendix D – Inspection Program)
- Prioritisation methodology (see Appendix E - Prioritisation methodology)

13. Appendix D – Inspection Program

Frequency of inspections varies depending on the level of service and level of use of the footpath, which again relate to risk. Using the risk and need map shown in Section 6.2, the average risk per segment of roadway was identified and grouped accordingly, creating areas of high, medium, and low risk for inspection purposes. The grouping of risk area is similar to kerb and gutter inspection grouping, which is conducted simultaneously.

The frequency of inspection for each area is as follows:

Area	Frequency
High risk	Once every three years
Medium risk	Once every five years
Low risk	Once every seven years

These areas are shown in the following Figure 13.1. Note that this is the *target* inspection frequency, which can only be carried out if there is availability of budgets and resources. Council’s preferred frequency of inspection may be higher if a more optimum budget and resources are available. A full inspection of the entire network may take three to six months for two inspectors to undertake, hence the limit on resources govern the inspection schedule. As mentioned previously, inspection for kerb and gutter are often undertaken at the same time.

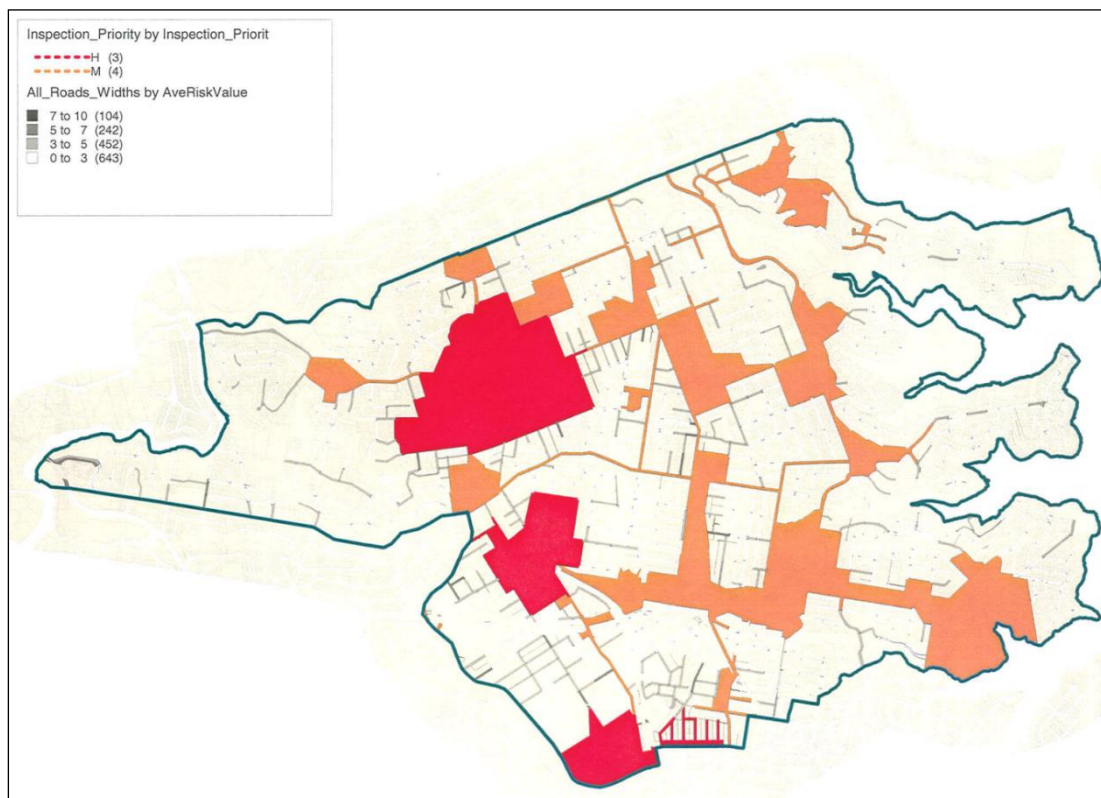


Figure 13.1 Footpath inspection frequency

In addition to this overall network inspection, regular inspection will also be undertaken at regular intervals following maintenance and renewal works to ensure that the condition data is updated. Based on this reinspection, a new condition rating is then assigned for that segment. Footpaths are also field-assessed by works staff when Council receives a CSR.

14. Appendix E - Prioritisation methodology

Prioritisation process of footpath works is based on both the data collected during the condition assessment process (section 11 - Appendix B - Asset assessment manual) and the results of risk and need analysis (section 12 - Appendix C – Risk analysis).

Each defect data collected is identified and given a condition rating, which is then applied against the risk score in the Priority Rating Matrix below. This categorizes each defect into a low (L), medium (M), high (H) and urgent (U) priority.

Table 14.1 Priority rating matrix

Priority		Risk									
		1	2	3	4	5	6	7	8	9	10
Condition State	1	L	L	L	L	M	M	M	M	M	M
	2	L	L	M	M	M	M	H	H	H	H
	3	M	M	M	M	H	H	U	U	U	U

To translate the priority rating of each defect into a meaningful work program, a priority scoring system has been developed to assign a total defect score per road segment. Through a series of iterations, the following score weighting system for each individual defect has been adopted.

Table 14.2 Priority Weighting

Score	Weighting
L	1
M	5
H	10
U	1000

The priority score for each defect is calculated by multiplying the priority score weighting (shown above) and the area affected by that defect, using a minimum area of 1 m² for each defect.

$$\text{Priority score for each defect} = \text{Priority score weighting} * \text{Area affected}$$

The total defect score of each footpath segment is then determined by summing the priority scores of all defects contained within that footpath segment.

$$\text{Segment score} = \sum \text{Priority score of each defect (for all defects on the footpath segment)}$$

These footpath segment scores are then broken into 5 ranges as follows.

Table 14.3 Grouping of priority score

Priority	Priority Score Range
1	Priority Score ≥ 8000
2	750 ≤ Priority Score < 8000
3	220 ≤ Priority Score < 750
4	19 ≤ Priority Score < 220
5	Priority Score < 19

The priority score range is a dynamic range that will be adjusted as required depending on the overall condition of the footpath network. The range is used primarily for general grouping to give an overview of the extent of works to be done. The main driver that feeds into the priorities of the works programme is the actual footpath segment scores, together with practical consideration made on a project-by-project basis.

In addition to the prioritisation process, there will be other factors taken into account at the project level, such as proposed development works and notice of proposed service adjustments from utility providers. For example, a programmed footpath works may be deferred or taken off the program if it is known that there will be a new development proposed in the area; or if a utility provider is proposing to carry out utility upgrade works in the near future. Deferral of such work would avoid damage to new footpaths. Works may also be deferred if other upgrades are due at the same location, for example kerb and gutter renewal, so that both may happen at the same time. Additionally, for practical purposes, footpaths in the same vicinity may be repaired at the same time that a high priority path is repaired.

Funding that has been earmarked for special projects are also excluded from this prioritisation process. For example the construction of streetscape for improvement and neighbourhood shopping centre (see Section 4.5 Aesthetic Upgrade of Assets). The prioritisation for these projects is largely driven by footway condition at this stage. However, a refinement of the methodology is currently being considered.