

Community Paths (Footpaths and Cyclepaths) and Public Pavements (Shopping Centre pavements)

Overview

Canberra consists of 106 suburbs spread over 2,358 km² with a population of approx. 370,000 at the end of June 2012. The community path assets within and around these suburbs provides a crucial network which links Canberra residents to the wider community. Community path assets are designed to provide a safe, easy to use, comfortable and convenient off-road network for all pedestrians and cyclists to use.

Roads ACT has a responsibility to maintain all community path assets within the ACT, with the exception of assets within places of the ANU, Canberra University, Defence land, Department of Education, Department of Health, Commonwealth land, National Capital Authority (NCA) managed land and private leases.

The following sections of the Life Cycle Management provide an overview of the community paths asset group and discuss the procedures put in place to maintain the assets to the required standard.

Asset Description

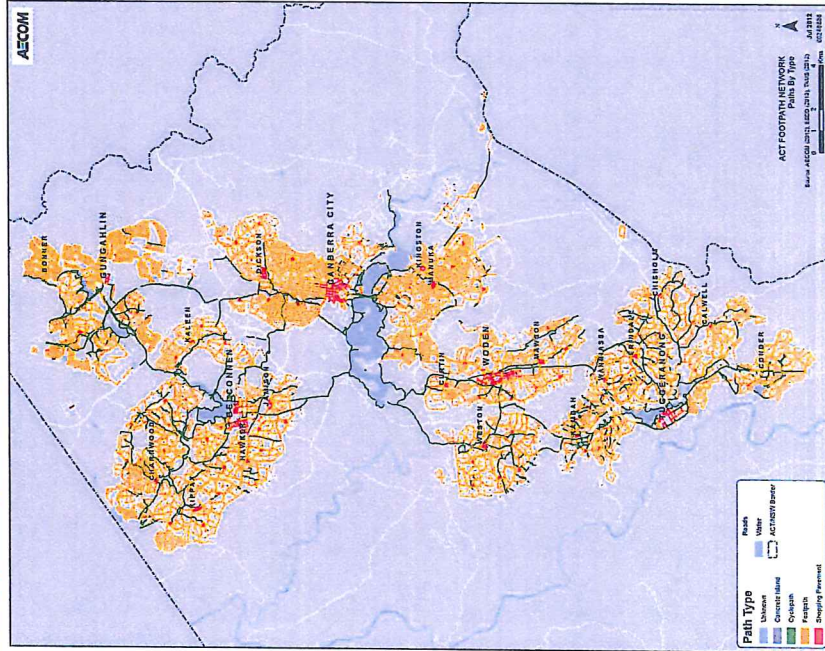
The community paths category of the Strategic Asset Management Plan (SAMP) consists of two main path types: footpaths and cycle paths. There is currently approximately 2,533 km (2,190 km of footpaths and 343 km of off-road cycle paths)¹ of community footpaths and cycle paths in the 106 suburbs of Canberra, adding up to a total area of approximately 3,525,000 m² of community paths. In addition approximately 550,000 m² of public pavements around shopping centres and town centres are included in the community paths asset group.

The community path asset network is stored in the Integrated Asset Management System (IAMS). The data stored in the IAMS covers a number of attributes of the community path network. Some of the key path attributes stored in the IAMS data include:

- Suburb in which path is located
- District in which path is located
- Age of path (the age of some paths are estimated based on the age of the suburb it is located in)
- Path segment length
- Area of path segment
- Type of path
- Path surface and finish.

The entire community path asset network in the ACT is shown in Figure 8

Figure 8 - Community Paths - Path Type



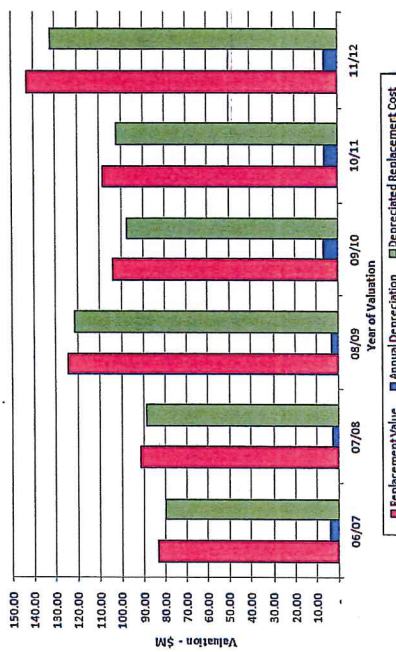
Asset Value

The community path asset group (including footpaths, cycle paths and public pavements) is valued at \$125.17 million as of 30 June 2012.

Graph 21 shows the replacement value, annual depreciation and depreciated replacement cost of the community paths asset group between the 2006/2007 and 2011/2012 financial years.

Data provided generally shows an increasing trend of path asset value from 2006 to 2012. This may be expected in the ACT which is currently undergoing significant residential land development and a growing asset base. Some discrepancies appear in the data provided, particularly for the 2008/2009 financial year. It is our understanding that this may be due to the inclusion of inconsistency in the asset classes included in 2008/09 which may include driveways.

Graph 21 - Community Paths Asset Valuation (source: Assets Forecasts for SAMP July 2012)



The valuation information provided in this SAMP is based on the spread sheet "Assets Forecasts for SAMP July 2012" provided by Roads ACT.

Table 35 - Asset Information

Asset	Quantity ²	Gross Replacement Cost - \$ ³	Annual Depreciation - \$ ²	Depreciated Replacement Cost - \$ ²
Community Paths (footpaths and cycle paths)	2,533 km	258.02	60.27	4.85
Public Pavements (Shopping Centre Pavements)	549,000 m ²	73.18	52.38	1.46
TOTAL		331.2	112.65	6.31

Asset Service Standards (Current & Target)

The Level of Service (LoS) Chapter of the SAMP defines that the community paths and pavements asset group currently performs at a 'normal' LoS, providing a service that reflects operational need.. This LoS meets the required standard, except for the Public Pavement asset which has a higher LoS target for maintenance.

Community paths and pedestrian facilities in the ACT are to be designed to comply with TAMS Design Standards for Urban Infrastructure - Section 13: Pedestrian and Cycle Facilities as well as Austroads, "A Guide to Road Design Part 6A: Pedestrian and Cycle Facilities". Some of the community paths and public pavements assets were constructed prior to the implementation of the Austroads standard, and as such, do not comply with all of the criteria stipulated in the document.

² Source: IAMS, 30 June 2012

³ Source: Finance - TAMS (Assets Forecast for SAMP July 2012)

The current level of service of the community path asset group incorporates the following key principles, which are also the criteria in DS13:

- Coherence
 - All walking routes easy to find and clearly signposted
 - Quality is consistent with minimal changes
 - User has freedom of route choice
 - User can easily connect to other paths
- Directness
 - Allow user to reach destination with minimal unnecessary detours
 - Limit delay times at crossings and other stopping points
 - Detour distances are not so large as to encourage users to make shortcuts
- Safety
 - Minimise conflicts at road crossings
 - Ensure geometric design of foot paths and cycle paths allows users to travel safely without being hit by other users or surrounding vehicles
 - Ensure paths are designed to allow less experienced users to easily travel without trepidation
- Attractiveness
 - have a high level of urban design
 - include interesting pedestrian routes
 - ensure footpaths are free from litter, debris and other deposits,
 - have a safe environment free from crime or fear of crime
- Comfort
 - Provide good quality walking surfaces with adequate widths and gradients
 - Provide appropriate facilities for users with impairments
 - Ensure cyclists do not conflict with pedestrians
 - Ensure paths are clear from obstructions such as broken pavers, trees, fallen debris, vehicles, manhole covers and grates
 - Include appropriate facilities where traffic crossings are required
 - Provide adequate lighting to ensure users feel safe in dark conditions

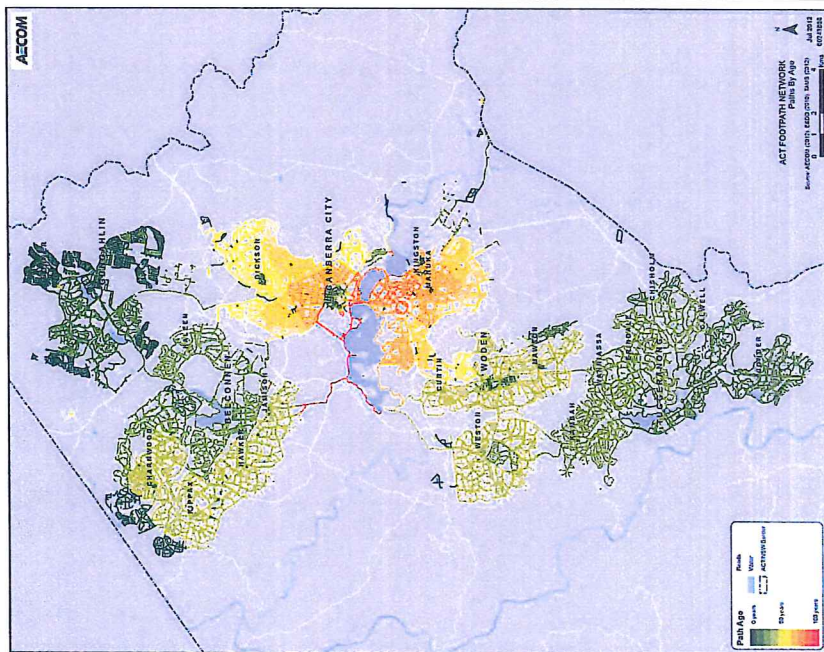
If the community paths and public pavements assets are designed and maintained to incorporate the above key principles, the required Level of Service will be met.

Asset Age

Figure 9 shows the age of the community path assets by suburb. As can be seen a large number of footpaths and cycle paths around the older suburbs of Canberra have an age which currently exceeds their original design life (approximately 40 years). The figure also indicates a significant proportion of footpath assets are between 20 and 50 years of age (64% of total length).

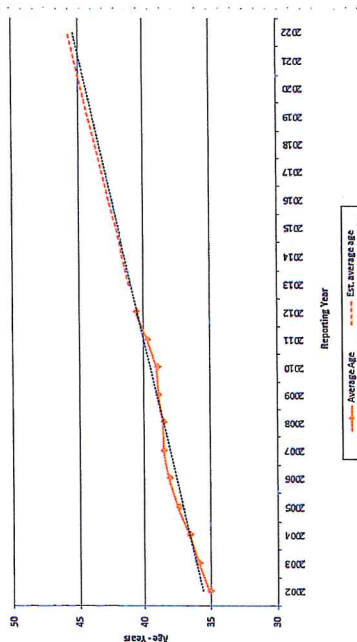
Note: The age of some of the community path assets in the older suburbs of Canberra have been estimated based on the age of the suburb in which they are located.

Figure 9 - Community Paths - Path Age



The projected age profile for the community paths assets is shown in Graph 22. Over the last ten years, the average asset age has increased from 35.1 to 40.6. Over the coming decade, based on the current asset base and without any changes to the asset renewal funding, it can be expected that the average asset age will reach about 45 years. As the average age increases, it can be expected that planned and reactive maintenance requirements will grow and generate a significant budget constraint for the ACT Government. However, replacement of failed sections has allowed the design life to be exceeded without loss of the amenity.

Graph 22 - Age Profile



Asset Physical Condition

Table 36 below provides an overall condition grade and description of the assets within the community path asset group. The assets are separated into three separate asset categories: footpaths, which represent all concrete paths not specifically designed for cycle use; cycle paths, which represent all asphalt and concrete paths which are specifically designed for cyclists and shared paths; and, public pavements, which consists of all the paving around town centres.

Table 36 Community Paths - Condition Grade (refer to Table 46 in Asset Condition & Performance for condition grade rating)

Asset	Condition Grade	Description
Footpaths	Fair	Footpaths are still serviceable in the majority of areas however on-going maintenance and repair is required to ensure level of service is maintained. A number of areas require significant repair and maintenance, with some path segments beyond repair and requiring replacement.
Cycle paths	Fair	Cycle path assets tend to have the highest physical condition due to stringent design standards. The lower number of defects and claims recorded compared to footpaths and pavements supports this.
Public Pavement (Shopping Centre Pavements)	Fair	The public pavement assets are generally maintained to a high standard due to the large traffic volume. As the majority of the public pavements are located in Civic and other major town centres, they are seen as a critical asset and generally maintained accordingly.

Information within the IAMS on the physical condition of community path assets is not extensive. The best indication of the physical condition of community path assets is provided by the defects recorded in the IAMS.

The ACT Government defect records were assessed for the period between 2006 and 2012. A total of 19,306 defects were recorded on community footpaths, cycle paths and public pavement assets during this period. The majority of the defects - approximately 88% - were recorded on the concrete footpath and cycle path assets. This figure is to be expected as concrete paths make up more than 88 % of footpaths in the ACT. It should also be noted that the percentage of defects recorded on asphalt paths and public pavements during the same period was 4.5% and 4.1% respectively.

Another data set which can be used as an indication of the general condition of the community paths assets is the claims from the public relating to accidents. The claims submitted to the ACT Government for accidents relating to the community paths asset group were assessed for the period 1st July 2010 to 30th June 2012. It was noted that 33% of the claims received were in relation to accidents occurring on public pavements around shopping centres, while 53% of the claims were related to accidents which occurred on pedestrian footpaths.

The claims data also showed that the highest numbers of claims were received from accidents on the public pavements in the Canberra city centre. This is likely due to the large extent of pavement in the area, as well as the higher number of pedestrians, greater use and increased service requirements associated with this area.

Roads ACT is currently considering a revision to the current inspection regime, which could allocate a condition rating to paths as part of the routine and planned inspections. This information could greatly assist in assessing the physical condition of the asset group as a whole, as well as evaluating the amount of funding that is required to be spent in order to maintain the network to the required level of service. A simple framework such as the one shown in Table 37 could be used to assign each asset a condition rating.

Table 37: Asset Condition Rating System

Condition Rating	Condition Description
1	Excellent: Asset is as new. No defects present with no maintenance required. Asset poses no risk to public safety.
2	Good: Minor signs of wear and tear with some defects present. No immediate maintenance required. Asset poses no risk to public safety.
3	Average: Some defects present. Maintenance is not required immediately however it should be planned for the near future. Asset poses low risk to public due to minor surface defects.
4	Poor: A number of significant defects present. Maintenance should be carried out as soon as possible. Asset poses significant risk to public safety.
5	Unacceptable: Asset contains a number of severe defects. High level cracking, potholes and displacement are present. Immediate maintenance required. Asset likely requires replacement. Asset poses high risk of injury to public.

Asset Utilisation

Utilisation is monitored through the use of pedestrian and cycle surveys, and is not considered to be a significant issue affecting the community paths asset group. It is unlikely that a drop in the utilisation will occur for the community paths asset group. Improvements to community path assets as well as expanding the existing path network will only help to increase the number of people using these assets.

As the Sustainable Transport Plan (now Canberra Plan) for the ACT continues to increase the transport mode share of walking and cycling, a likely growth in the number of people using foot paths and cycle paths in their daily commute is expected.

An important factor which can affect the utilisation of an asset is the level of service it provides. Consequently, it is important that the community path asset group meets the level of service outlined in the previous sections in order to encourage the community to make use of the network provided. No utilisation data for community path assets is currently kept in the IAMS.

Asset Functionality

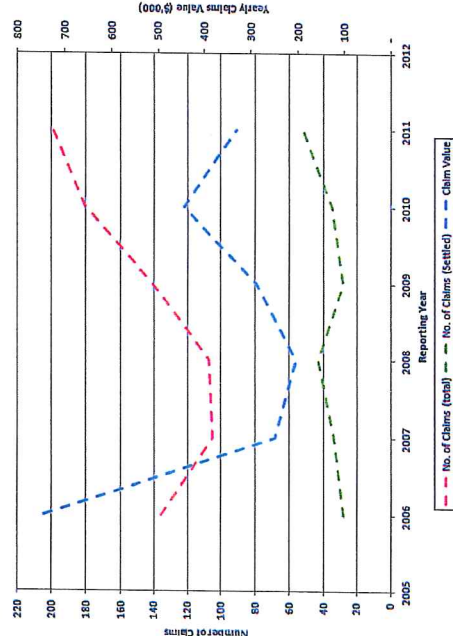
The level to which the community path network meets the public's expectation is a large factor which determines the functionality of the asset group. For community path assets the public have an expectation to be able to use the path network to travel to their destination with a level of safety. If the Level of Service outlined in the previous sections of the chapter is maintained, it is expected that the asset group will meet the public's expectation. Maintaining the community paths asset group to the required level of service will ensure that assets meet the public's expectations by:

- Not causing any trip or slip hazards
- Having adequate width to allow multiple users to pass by without being forced off the path
- Being free from obstructions such as tree branches, fallen trees and bushes overhanging the path
- Not being excessively steep in grade
- Being safe for people to use without fear of being attacked
- Being repaired in a timely manner once defects are reported.

Generally the members of the public which need to be considered most in relation to the level of service of community paths is the elderly or disabled who may be more susceptible to trips from path defects.

A qualitative indicator of an assets ability to perform its intended function is the amount and severity of claims against the asset received from the public. The number of claims as well as the value of claims made in relation to the community paths asset group between the period 2006-2011 is shown in Graph 23

Graph 23 - Claims Data



The data in Graph 23 shows that the number of claims submitted has progressively increased since 2007. If this trend were to continue in future years, the potential financial commitment for the ACT Government in settling the claims would potentially impact the budget available for enhancing the community path asset group through maintenance, renewals and new paths. This trend will be monitored, and if necessary measures such as increasing the maintenance inspections and budget or reviewing the defect criterion may be required to address continual increases in the number of claims.

When evaluating the claims expenditure, it must be noted that Roads ACT only commits to cover \$5,000 per claim. Expenditure over \$5,000 is paid by the ACT Insurance Authority (ACTIA).

Asset Financial Performance

Like a number of extensive linear asset groups, community paths and public pavement assets struggle to demonstrate value for money. The main factor which contributes to the low value is the size of the path network and area of pavements which is managed by Roads ACT. The maintenance cost of community path assets is relatively low when compared to roads or other assets, however due to the significantly larger quantity of community paths in the ACT, it is difficult to maintain all assets at the required standard.

Data Confidence & Reliability

Table 38 shows the confidence rating of the data kept in the IAMS on the community paths asset group.

Table 38: Asset Data Confidence and Reliability (refer to Table 7 for colour rating)

Asset	Data Completeness	Quantity	Age	Condition
Foot Paths	60 - 80%	Highly Reliable	Reliable	Uncertain
Cycle Paths	60 - 80%	Highly Reliable	Reliable	Uncertain
Public Pavements	60 - 80%	Highly Reliable	Reliable	Uncertain

The community paths data provided by the IAMS extensively covers the majority of the network, however, a number of gaps appear to exist in the information and data.

There is little data provided on the condition of the path network, apart from defects and maintenance information provided as a result of the planned inspections. If more information was provided on the condition of the path network from the planned inspections, a better understanding of the overall condition of the network could be gained.

As mentioned previously, a condition rating of all paths inspected should be provided as part of the information kept within the IAMS. This would allow Strategic Planning and Development to gain a better understanding of what is required to maintain assets at the necessary levels of service.

Another inconsistency identified in the data relates to the useful life of the community path assets. It appears from the asset records that some of the assets which have an age considerably older than 40 years (the design life of paths) have been given a useful remaining life larger than expected. For example, a number of assets created between 1920 and 1960 have been given a useful life of 8 years. It would be expected that assets this old would have exceeded their useful design life. Conversation with Finance - TAMS indicates that this has historically been driven by the need to estimate the useful life of assets for insurance purposes, which is often given a default 20 year value when assets reach the end of the useful life. This artificially inflates the useful life of assets without any material justification or rationale.

Key Issues

There are a number of issues currently affecting the community path asset group. The main issue relates to the size of the path network across the ACT. With over 2,533km² of community paths and 549,000m² of public pavements, the time and cost associated with carrying out frequent inspections on the entire network has historically been prohibitive.

The current planned maintenance regime provides regular inspections across 26 suburbs identified as high priority, and these are inspected in the allocated four year cycle. However, it is difficult to complete the same level of regular inspections on the remaining, lower priority suburbs within the same four year period and so the data on the entire network is incomplete over a four year period. The lack of regular inspection and maintenance on the entire path network, inevitably leads to the overall condition of the path network deteriorating.

Another key issue affecting the community paths assets relates to low-utilisation paths which may be in poor condition. There are a large number of paths which are in poor condition with a number of defects. However, due to their low priority there is insufficient justification to rehabilitate these sections of path when there are other high priority areas, such as shopping centre areas, which

require the funding. This in-turn, escalates the risk of claims being lodged as a result of an accident occurring.

Funding for renewals

The funding for renewals is explained in the Expenditure Forecast section of the SAMIP chapter.

Key Risks

Roads ACT acknowledges the importance of risk management in the delivery of timely, quality and competitive services to the ACT community. It maintains and adheres to established risk management policy to meet three core objectives:

- Continuously promote a proactive risk management culture
- Identify the nature, likelihood and consequences of risk exposure, and
- Integrate risk analysis in decision making.

The following risks were taken from the Roads ACT SAMIP Risk Register and identified as being the key risks affecting the community paths asset group:

- Inability to meet Government priorities (Inability to deliver Capital Works program, and core service delivery requirements)
- Loss or unacceptable deterioration of infrastructure within TAMIS' portfolio
- Loss of reputation
- Major incident accident (OHS, Public Safety, Natural Disaster)
- Inability to plan for the future responses to incidents, deliver services, develop program
- Difficulty in benchmarking services with other jurisdictions
- Lack of coordinated response to incidents
- Failure of IAMS
- Lack of access to information systems
- Inability to respond to community feedback and respond to requests for service
- Inability to monitor impact of work on environment
- Inability to prioritise work
- Inadequate funding levels
- Inadequate level of service
- Inability to achieve expenditure for Capital works program
- ACT Government/community unsatisfied with services
- Inability to deliver services
- Ability to monitor performance

Asset Strategies

Strategies for Sustaining Existing Assets (Operations & Maintenance Plan)

The preservation of the entire community path asset group is carried out through the annual routine and planned maintenance work and Capital Upgrade programs.

Based on a number of factors such as frequency of use and previous compensation claims, twenty-six (26) suburbs in the ACT were identified as being high priority for replacement and maintenance of community path assets. The 26 high priority suburbs are listed in Table 39.

Table 39 26 High Priority Suburbs

26 Priority Suburbs for Community Paths Replacement and Maintenance	
ACTON	HUGHES
BARTON	KINGSTON
BELCONNEN	MACQUARIE
BLACK MOUNTAIN PENINSULA	MAWSON
BRADDON	MITCHELL
CITY	PARKES
CONDER	PHILLIP
DICKSON	REID
FYSHWICK	RUSSELL
GREENWAY	TURNER
GRIFFITH	WANNIASSA
GUNGHALIN	WESTON
HOLT	YARRALUMLA

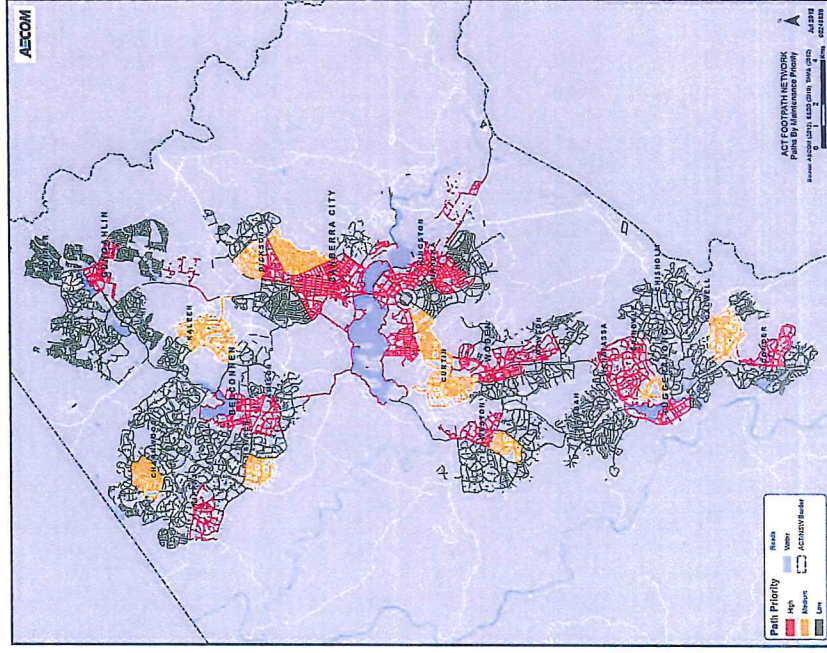
A planned inspection program for the 26 high priority suburbs was implemented by Roads ACT in the early 2000's. The frequency of planned inspection is based upon a priority rating given to each of the suburbs and locations, ranging from every year to every four years. The frequency and priority for each path location in the community paths planned maintenance inspections for the 26 high priority suburbs is outlined in Table 40.

Table 40 Inspection Frequency of High Priority Suburbs

Location	Priority	Inspection Frequency	Extent of Inspection
City Centre – Civic	1	Every 1 year	Civic Precinct
Town Centres – Woden, Belconnen, Tuggeranong, Gungahlin	2	Every 2 years	Town centre precinct
Community Facilities – Hospitals, Nursing Homes, Aged Care Facilities, Hospices, Schools, Entertainment Facilities	2	Every 2 years	To other frequently accessed facilities
Group Centres – Braddon, Phillip, Dickson, Belconnen, Erindale, Jamison	3	Every 3 years	To centre boundaries
Local Centres – Local suburban shops offering limited shopping facilities	3	Every 3 years	To centre boundaries
Industrial Centres – Fyshwick, Mitchell, Hume	3	Every 3 years	To centre boundaries
Cycle paths	3	Every 3 years	Entire length
Residential areas	4	Every 4 years	All suburban areas

Figure 10 shows the inspection priority of each suburb in the ACT. The path assets shown in red represent the paths located in the 26 high priority suburbs across the ACT. The path assets shown in yellow represent the paths located in the 10 suburbs considered to be medium priority. The paths located in these suburbs are maintained on a reactive basis. The path assets shown in green represent the low priority paths. The path assets in these areas are only maintained on a reactive basis.

Figure 10 - Community Paths – Path Priority



In order to sustain the community path asset group at the required level of service, the maintenance carried out on footpath and public pavement assets should include the following works:

- Sealing of cracks
- Grinding of raised sections
- Filling and patching of potholes
- Removal and management of weeds (maintained by Parks and Conservative Services)
- Repair of slippery surfaces on paths and pavements
- Sweeping of the cycle paths by Parks & Conservations Services

Maintenance Planning

A systematic inspection and maintenance program was implemented by Roads ACT on the community path network within the ACT. The bulk of the maintenance carried out on community paths is divided into two methods: routine maintenance and planned maintenance.

Routine Maintenance

The majority of the maintenance repairs conducted on community path assets are generally on a reactive basis i.e. "fix when defective or failed". Requests for service received from members of the public are prioritised and scheduled for inspection generally within three (3) working days. After the initial inspection, a risk rating is given to the defect, which in turn dictates when the repair of the defect will occur. Each of the risk levels and associated repair periods for defects on community paths is outlined in Table 41.

Table 41 Defect Risks and Repair Periods

Risk/Attribute	Service Standards/ Response Time:
Very High to Extreme Risk - A high danger to the user, will cause damage to persons/property	Repair within 1 business day (after initial inspection)
High Risk - A potential hazard in an area of frequent use by pedestrians.	Repair within 7 business days (after initial inspection)
Low to Medium Risk - Problems identified in low use areas.	Repair within 30 business days (after initial inspection)
Very Low risk and the replacement of the above repairs	Replace within 180 days (after initial inspection)

The requests for service from the public are processed on a case by case basis depending on the severity and risk of the defect.

In June 2010 the ACT Government launched the "Fix My Street" function on the Canberra Connect website. This facility allows members of the public the ability to notify the Government of any defects to assets in the community, including footpaths and cycle paths. The majority of the requests for service which cause reactive maintenance measures to fix defects on community path assets currently arise from the Fix My Street service. This service is an integral service which assists in maintaining the condition of community paths assets, as well as providing an indication of the current level of service of path assets and community satisfaction. In 2010, Canberra Connect received 920 requests and complaints relating to damage or defective community path assets in Canberra.

Planned Maintenance

Planned inspection of the 26 high priority suburbs is conducted on a regular basis as outlined in Table 39. Currently the planned maintenance inspection program is limited to the 26 suburbs listed as high priority due to budgetary constraints. An additional 10 suburbs have been identified to be inspected subsequent to the inspection and repair of the first 26 suburbs. Roads ACT intends to continue to expand the list of high priority suburbs to include other suburbs within the ACT which are identified to contain higher risk community paths.

As part of the planned inspection program a mechanical pavement grinder is passed over all paths in each of the priority suburbs, grinding potential trip hazards comprising of vertical displacements of 12-35 mm or greater. A detailed inspection of each path is then undertaken with any defect or element that is identified as having a potential to cause a hazard in the future recorded in the IAMS. The recorded defects are ranked according to their associated risk to members of the public, which in turn determines the urgency in which each defect must be repaired. Defects are ranked according to Table 41. A number of different repair methods are used to fix defects depending on the type and severity.

Table 42, Table 43 and Table 44 provide the assessment criteria and repair methodology for community paths with different surfacing types.

Table 42 Intervention Level and Repair Methodology for Concrete Paths

Defect	Intervention Level	Repair Method
Trips	15-35 mm trips along discontinuities	Grinding
	Trips > 35 mm along linear discontinuities	Panel Replacement (or part of)
Slab Damage	Irregular cracking with > 15 mm of vertical displacements	Replacement (or part of)
	Loose, spalling or broken panels > 15 mm width	
	Ramping > 50 mm	
	Subsidence causing significant water ponding with some safety implications	Remove and realign footpath
	Tree roots (if PACS advise that roots are non-removable)	
	Tree roots (if PACS provide approval to remove roots)	Cut roots and replace segments, request reinforcing into slab

Table 43 Intervention Level and Repair Methodology for Asphalt Paths

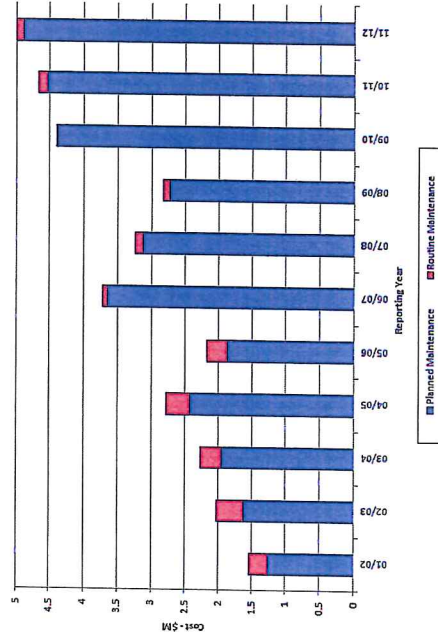
Defect	Intervention Level	Repair Method
Pavement Cracking	Extensive singular cracking of width > 15 mm with little or no vertical displacement	Crack sealing
	Significant length of weed infested pavement cracks causing water ponding	Weed poisoning and removal, and crack sealing
Slab Damage	Cracking with vertical displacements > 15 mm	Pavement reconstruction/overlay
	Shoving/undulations > 50 mm vertical displacement (as per 1.2 m straight edge)	
	Subsidence causing significant water ponding with some safety implications	
	Potholes > 25 mm	
	Tree roots (if PACS advise that roots are non-removable)	Assess height, overlay and key into existing path or remove existing AC and realign footpath
	Tree roots (if PACS provide approval to remove roots)	Cut roots and replace AC, key into existing path

Table 44 Assessment Criteria and Repair Methodology for Pavers

Defect	Intervention Level	Repair Method
Pavers Damage	Loose, broken or missing pavers	Replacement, or re-bedding
	Individual paver vertical displacement > 15 mm	
	Subsidence causing significant water ponding with some safety implications	
	Slippery pavers	Remove and realign footpath
	Tree roots (if PACS advise that roots are non-removable)	
	Tree roots (if PACS provide approval to remove roots)	

The amount spent on both routine and planned maintenance of community path assets between 2001 and 2012 is shown in Graph 24.

Graph 24- Routine and Planned Maintenance



Standards and Specifications

The maintenance of community paths assets should be carried out in accordance with Austroads Guide to Road Design Part 6A: Pedestrian and Cyclist Paths. Appendix B.2 outlines that regular maintenance on paths should include:

- Filling of cracks
- Grinding of raised sections
- Re-painting of pavement markings
- Cleaning of signs
- Trimming of trees and plants to remove obstructions and maintain sight distances

The technical standards and specifications used for the community paths asset maintenance works are defined in the technical specifications provided by Road Maintenance for the replacement, and/or repair of community paths including required material, specified dimensions and associated requirements such as traffic management plans for these contracts.

Strategies for Meeting Growth in Service Demand (Capital Works and Capital Upgrades)

Capital Works

Capital Works projects are identified as the creation of new infrastructure for projects with a higher cost and that requires a separate justification in the ACT Government budget. These projects are delivered by the Major Capital Works section in Roads ACT. Major capital works projects generally follow a project lifecycle through a number of stages, including a feasibility study, forward design, final/detailed design and construction.

Capital works projects for the community paths asset group generally only include cycle paths and cycle facilities. The program for the provision of cycle facilities includes funding for new trunk cycle paths and on-road cycle lanes (on-road cycle lanes are considered part of the signs and lines asset group in the SAMPL). The funding for these assets was provided through capital upgrades until 2009/2010, after which the funding for walking and cycling has been managed by Major Capital Works. The majority of the projects planned for future capital works funding result from the recommendations from the *Walking and Cycling Infrastructure Study* (Feb, 2011) which recommended a number of trunk cycle routes and cycle paths in high priority areas around Canberra. The recommended projects are prioritised and a separate business case can be formulated for the highest priority projects to begin the design/construction lifecycle.

Funding for new footpaths in established suburbs of Canberra is managed by the Strategic Planning & Development section of Roads ACT through the Capital Upgrades program.

Capital Upgrades

New links on the community footpath network requested by members of the public and the community are assessed on a case by case basis, prioritised, and added to the Roads ACT footpath database for consideration in future capital works and capital upgrade programs, subject to available funding and other competing projects. Construction works associated with new paths is funded through the Sustainable Transport Initiatives under the Roads ACT capital upgrades program. New works undertaken to extend the footpath network is generally undertaken in order to increase the transport modes of cycling and walking among commuters in the ACT. This is in harmony with the Sustainable Transport Plan for the ACT which aims to increase the transport mode share of walking and cycling from 5% and 2.5% respectively in 2006 to 7% for both in 2026.

The priority of each new path link is based on three key criteria:

1. Volume of vehicles using the street (ACT Residential Subdivision Development Code)
2. Expected pedestrian mix and volume
3. Presence of desire line (goat track)

Table 45, Table 46, and Table 47 show the priority range for each criteria to assist in the ranking of a new path.

Table 45 ACTCODE Warrant

ACTCODE Warrant Ranking	
1. High Priority A10	Exceeds the ACTCODE criteria of 1000 vehicles per day or ministerial direction
2. High Priority A8	Both sides of the road for bus routes (ACTCODE criteria)
3. Medium Priority A6	One side of the road where traffic exceeds 300 vehicles per day (ACTCODE criteria)
4. Low Priority A0	Does not meet ACTCODE criteria
Assessment of ACTCODE Warrant as per section described above	

Note: Scores are denoted in bold under each priority e.g. A6

Table 46 Community Facility Warrant

Community Facility Warrant Ranking	
1. High Priority C10	Likely users with mobility aids, wheelchairs, walking frames, canes, mobility scooters etc. (1)
2. High Priority C10	Likely users of education facilities schools, etc. and users of childcare facilities
3. Medium Priority C6	Medium density leases / shopping centres and other employment areas including commuter cycling links
4. Medium Priority C6	Community facilities including sports facilities, churches etc.
5. Low Priority C4	Recreational uses, parks, recreational cycling, open space
6. Low Priority C0	Roadside only, no identified pedestrian traffic generators
Linking of existing paths to be assessed based on pedestrian generation facilities on the immediate path network	

Table 47 Desire Line Warrant

Desire Line (Goat Track) Warrant Ranking	
1. High Priority D10	Clearly well trafficked desire line
2. Medium Priority D6	Poorly trafficked desire line
3. Low Priority D0	Well trafficked but desire line not appropriate
4. Low Priority D0	No observed desire line
Assessment of Desire Line warrant as described above	

The resultant score achieved from each of the three key criteria will ultimately determine the priority of each requested new path asset. A path with the highest combined rating would be identified as the most urgent to be constructed.

Strategies for Replacement of Assets (Renewal)

The most effective way to enhance the level of service of community path assets is to increase the frequency of planned inspection and maintenance on the path network as outlined in the previous sections. It is recommended that the budget allocated for the inspection and maintenance of community paths assets is increased in order to ensure the path network is maintained at the required level of service.

The renewal and replacement of old and defective paths is not widely conducted within the ACT as the most defective sections are generally replaced first, albeit in short sections. Some assets deteriorate at a rate faster than they depreciate financially, while others remain in relatively good condition for an extended period after their financial value is assessed to be zero, thus it is difficult to plan specifically for the renewal of assets.

The replacement and renewal of majorly defective sections of community path and pavement assets is carried out as part of the routine maintenance program conducted by Roads ACT outlined in the previous sections. The condition, estimated remaining life and utilisation of a community path asset should be considered when determining which assets require renewal. However, renewing an asset on the basis of little or no remaining useful life is difficult to justify as some assets with a low useful remaining life may still be operating at a suitable LoS. The asset condition and utilisation should from the primary basis of the justification to renew a community path asset, with the remaining useful life also taken into consideration.

A suggested prioritisation framework has been formulated in order to determine which assets should be repaired / maintained first. The framework allocates each path section an overall score based on a number of factors including the location, average condition and useful remaining life of the path. For each of the three criteria, the path asset is given a rating as shown Table 48, which in turn gives a total score out of a possible 20. This framework can be used to prioritise the maintenance and replacement works that are required on for community path assets, allowing the allocated budget to be spent in the most appropriate manner.

Table 48: Asset Renewal Framework

Assessment Criteria		Score
Location	City Centre	5
	Town Centres: Woden, Belconnen, Tuggeranong and Gungahlin	4
	Community Facilities: Hospitals, Nursing Homes, Aged Care Facilities, Hospices, Schools and Entertainment Facilities	3
	Group Centres: Braddon, Phillip, Dickson, Belconnen, Emdale, Jamison	
	Local Centres: Local suburban shops offering limited shopping facilities.	
	Industrial Centres: Fyshwick, Mitchell	2
	Remaining High Priority Suburbs: Acton, Barton, Black Mountain Peninsula, Conder, Greenway, Griffith, Holt, Hughes, Kingston, Macquarie, Mawson, Mitchell, Parkes, Phillip, Reid, Russell, Turner, Wanniasa, Weston, Yarralumla	
	All remaining locations	1
Condition Rating	Very Poor/ unacceptable	10
	Poor	8
	Average	5
	Good	2
	Excellent	0
Useful Life	< 5 years	5
	5 – 10 years	4
	10 – 15 years	3
	15 – 20 years	2
	20 – 30 years	1
	> 30 years	0
Total Score		/20

Table 49 shows the required actions to be taken after an asset is allocated a score from the above framework.

Table 48: Asset Renewal Framework Results

Total Score	Priority	Timeframe	Nature of works to be planned
0 - 5	Low	Long term (> 20 years)	Reactive maintenance only
5 - 10	Medium	Long term (> 20 years)	Planned maintenance, Reactive maintenance based on specific defects
10 - 15	High	Medium term (< 10 years)	Planning of renewal of assets, Reactive maintenance based on specific defects
15 - 20	Very High	Short term (< 3 years)	Renewal of assets.

Gifted Asset

Footpaths being provided by the Land Development, Agency and Developers as part of the development of sub-divisions are gifted to the Asset Acceptance section within the Operational Support Branch of the Territory and Municipal Services Directorate. Asset Acceptance undertakes initial approval and a final inspection before passing the asset on to Roads ACT. Once the asset is gifted to Roads ACT, the asset becomes the responsibility of the Road Maintenance section to adequately maintain and respond to all reported defects.

Disposal Plan

There is currently no specific disposal plan for assets in the community path network. Disposal of paths and pavements would generally only occur where old paths are replaced with new sections. In rare cases TAMS may look to dispose of an underutilised section of footpath in order to reduce the related inspection and maintenance costs or to open the land to be used for another purpose. However, such cases would require substantial prior analysis of the benefits of removing the path in order to justify to the community the disposal of the asset. Extensive community consultation is required if the decision is made to dispose of a community path asset, as the public is generally not in support of the loss of an existing service such as a footpath or cycle path.

Expenditure Forecasts – Capital Upgrade and Capital Works

New footpaths and cycle paths are generally funded from a number of sources such as the annual Capital Upgrade Program and the Capital Works Program. These footpaths include those requested from members of the public, which generally comprise "missing links" in established suburbs, and footpaths/cycle paths which are identified from studies into overall improvements to community path networks.

The current budget allocated for 2012/2013 for the provision of new community paths through the Capital Upgrade Program and the Capital Works Program is shown in Table 50

Table 50 2012/2013 Capital Upgrades and Capital Works Budget

Capital Upgrade Program (\$M)	Capital Works Program (\$M)
1.1	3.5

Capital Upgrades

Footpaths requested from members of the public are included in the Roads ACT Footpath Database as part of the Capital Upgrade Program. As at the end of June 2012 there were more than 300 requests in the database, valued at more than \$15 million. Although a significant number of these requests are unlikely to be justified due to their low priority score (i.e. below 25), it is estimated that the remaining justifiable path requests would currently number in the order of 150 with an estimated value of around \$7 million.

Despite an increase in funding over recent years, to up to \$1.1 million in 2012/2013, the quantum and value of the paths in the footpath database is steadily growing, suggesting that a commensurate increase in funding will need to be provided if this backlog is to be reduced. If this objective is to be achieved, it is recommended that the current level of funding for these paths be increased to \$1.5 million annually. The consequences of retaining or decreasing funding from the 2012/2013 level will lead to an ever increasing backlog in the database for publicly requested footpaths.

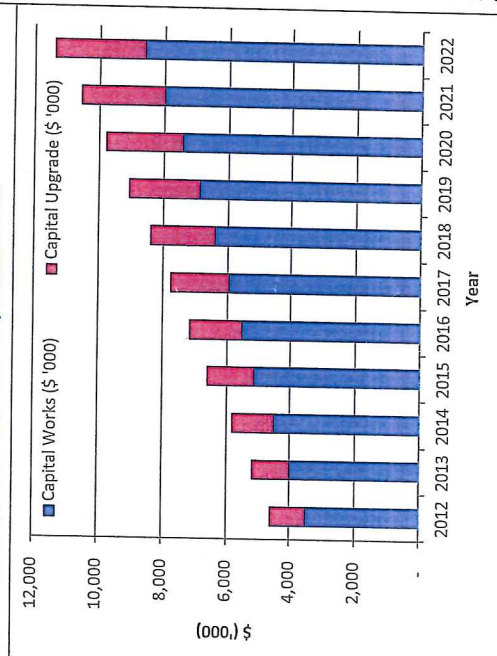
Graph 25 shows the estimated capital upgrades budget for the forward 10 years. By 2015, it is expected that the capital upgrades budget will reach \$1.59 million (+44%).

Capital Works

The capital works budget allocated for cycling and pedestrian facilities in the 2012/2013 financial year is \$3.5 million. It is expected that the capital works budget for pedestrian and cycling facilities will increase at a rate of 3% CPl over the next 10 year period.

Capital works projections need to be considered with caution. Although historical trends provide a reasonable indication of future requirements, it should be noted that capital works programs are not based solely on previous year's budgets or in response to aging infrastructure. Other factors are considered including projects associated with special events or political decisions that cannot be predicted.

Graph 25 - Capital Upgrade and Capital Works Expenditure Forecast



Expenditure Forecasts – Maintenance

The current budget allocated for 2012/2013 for the maintenance of existing footpaths and public pavements is shown in Table 51. As a result a number of defects are yet to be addressed which represent a maintenance backlog of approximately \$4.78 million.

Table 51 2012/2013 Paths Maintenance Budget

Planned Maintenance (\$M)	Reactive Maintenance (\$M)	Current Backlog (\$M)
4.2	2.9	4.8

Roads ACT needs to carefully balance the levels of service provided against the available funding in order to maintain the community path assets in a sufficient manner. It is highly probable that funding of the paths assets will need to increase in the future, to meet the growth of the asset through new developments and other projects which in turn meet the population growth and pedestrian / cyclist users needs.

With this in mind, the following section presents future projections for budget forecasting purposes. All projections have been formulated based on historical information and data. In some instances, the short period of time covered by the data limits the accuracy of the projections.

All costs have been estimated based on projections adjusted using a 3% CPl.

Planned Maintenance

The historical trend in the planned/routine maintenance budgets for the period between 2002 and 2012 features a linear increase. This trend can be statistically projected based on the average asset age in order to predict the future budget requirements. The trend was projected from the current planned maintenance budget of \$4.2 million for the 2012/2013 financial year. The budget of \$4.2 million provided by Finance - TAMS includes \$2.6 million for pedestrian paths and \$1.6 million for the cycle paths initiative.

Based on the data from the last ten years, a reasonable correlation with average asset age was found ($R^2=0.76$).

Graph 26 shows the estimated budget for the forward 10 years. By 2015, it is expected that the planned and routine maintenance budget will reach \$9.75 million (+38 %).

Routine Maintenance

The routine maintenance budget records were only available for the period between 2007 and 2012. The data was taken from the IAMS database which records all of the reported defects and includes information on when each defect was fixed and the cost associated with the repairs. Some of the repairs recorded in the spread sheet were possibly performed as part of the planned maintenance, however, it was assumed that for the purpose of the forward planning, all repairs recorded were performed as routine maintenance.

Based on the limited data it was difficult to identify particularly statistically meaningful linear regressions between total budget and the age profile of the assets. After detailed analysis, it was decided that an indicative regression was possible between age profile and number of routine maintenance interventions. The average cost per intervention was then escalated over the projection period based on CPl to determine the likely total budget.

It should be noted that the routine maintenance budget for 2007/2008 which is approximately double any other year on record was excluded. Projections are therefore only based on five data points. The correlation achieved is indicative only ($R^2=0.46$), but is the best possible informant based on the data available.

Graph 26 shows the estimated budget for the forward 10 years. By 2015, it is projected that the routine maintenance expenditure could reach \$3.44 million (+8.5%) if the funding profile remains consistent.

Backlog

Over a number of years, maintenance budgets have targeted high and medium priority works whilst lower priority maintenance work has been carried across into successive years. This process has created a backlog of outstanding, lower priority maintenance and repair work on the community path asset and is valued at approximately \$4.78 million (Table 51). The backlog represents the sum of all lower priority maintenance defects recorded in the IAMS defect database which are yet to be repaired. The defects recorded in the 30 days prior to June 30 2012 were excluded from the calculation.

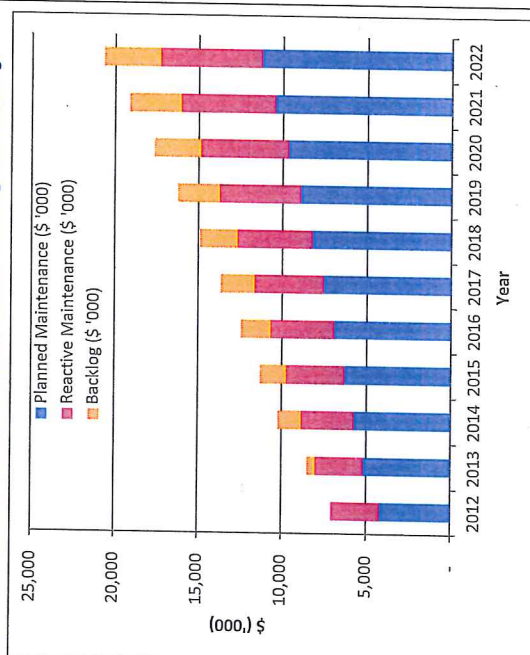
It is economical to repair lower priority defects before they become larger defects. The following projections demonstrate the likely funding requirement to repair these defects and address the backlog. This projection can be used to consider additional funding in the forward budget and to try and achieve the:

- Clearing of the existing backlog over a 10 year period
- Address the on-going creation of new backlog based on historical trends.

Graph 26 projects the budget forward for the next 10 years. By 2015, it is suggested that a supplementary allowance of \$1.5 million would be required to assist clearing the backlog.

It should be noted that failing to address the existing and on-going backlog could result in the accrual of a significant backlog by 2022. Over the period, approximately \$6.5m accrue to the existing backlog and \$16 million to the future backlog may be expected.

Graph 26 - Budget forecast Based on Business As Usual and Management of Backlog



As shown in Graph 26, the liability associated with the aging path assets reaching their useful design life is expected to increase significantly over the coming decade.

The estimated forecast of required budget in 2015 is \$10.3 million. By 2022, the forecasted budget is \$16.7 million.

The primary driver to what will be an increasingly significant burden for Roads ACT is the existing high average age of the asset. An asset renewal program, aimed at addressing this issue has been tested and discussed below.

Path Asset Renewal Program

As shown in Graph 26, the rapidly aging profile of the community path asset is forecast to become a significant budget constraint for Roads ACT, which is likely to require a significant capital investment in the future.

Several rates of asset renewal have been tested in order to establish the merits of gradually replacing the older sections of paths around the ACT. Some of the expected benefits include:

- Reduced requirements for planned and routine maintenance
- Forward planning and potential integration of the renewal program into the capital works program and long term planning of the asset.

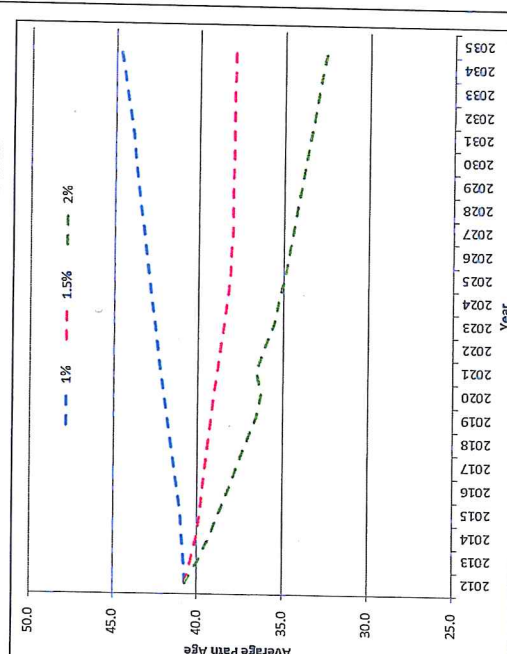
Impact of potential renewal programs on the aging profile of the asset base

Assuming that the renewal program would be continually applied to the older section of the path asset base, it has been estimated that:

- With a renewal rate of 1% (25km per annum), the aging of the asset will be slowed down. By 2022, the average age would be reduced to 42.4 years (vs. 45.8 based on Business As Usual (BAU)). By 2035, the average age would be reduced to 44.8 years (vs. 52.6 based on BAU).
- With a renewal rate of 1.5% (38.7km per annum), the aging profile will gradually improve. By 2022, the average age would be 38.7 years and only 37.9 years by 2035.
- With a renewal rate of 2% (51km per annum), the aging profile would be of 36.1 years by 2022 and 32.5 years by 2035.

This was determined using the weighted average age for all paths with renewal rates applied to the oldest assets every year (see Graph 27).

Graph 27 - Aging Profile of Paths Assets Based on Variable Renewal Rates



Potential renewal program budgets

The budget requirements associated with such an asset renewal program is important. Using a base of \$200m (this figure is used in the Roads ACT Footpath Database to estimate the cost of new assets. The cost is inclusive of all steps required in the creation of a new community paths asset, (from design to construction) of path for the renewal, it was determined that the initial budget for the year 2012/2013 is:

Table 52: 2012/2013 Renewal Program Budget Estimates

Renewal Rate	Renewal Program Budget
1%	\$5 million
1.5%	\$7.4 million
2%	\$102 million

Discussion

The significant cost associated with the renewal program ranging from \$5 to \$10.2 million per annum, for the various renewal rates that were tested, need to be considered alongside potential budget savings in planned and routine maintenance or any negative increase in the backlog.

Preliminary investigations indicated that a renewal program with a renewal rate of 1.5% over and above the current expenditure would be the most effective in producing a net benefit. If an additional 1.5% renewal rate is implemented, the program would break even (i.e. cost of the program would be fully offset by projected savings) within 7 to 8 years (Graph 28).

If a program with a 1% renewal rate is implemented, the age profile and associated maintenance would not be reduced enough to produce a net benefit. This program would eventually break even between 2022 and 2023.

If a program with a 2% renewal rate is implemented, the age profile and associated maintenance would be significantly reduced, however, the cost of path renewal would be too high to produce a net benefit. The program would be expected to break even in 2023.

The primary driver of the budget then becomes the extent of capital works which cannot be readily projected at this point in time.

Graph 28 - Net Benefit (\$ '000) at a 1.5% renewal rate

