Penrith Accessible Trails Hierarchy Strategy (PATHS)

New Shared Pathway in Cranebrook, Penrith

PENRITH CITY COUNCIL
Serving Our Community

Adopted by Council: 25 June, 2012

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1. EXECUTIVE SUMMARY

A comprehensive, integrated shared pathway network across the City is a critical element of infrastructure to promote recreation, connectivity, accessibility and sustainable modes of transport. This Penrith Accessible Trails Hierarchy Strategy (PATHS) establishes a strategic context for the prioritised implementation of a network of district shared paths across the City, as well as proposing a network of prioritised local routes.

For the purpose of this Strategy, a "trail" is defined as a route utilised for community and recreational access that includes the use by cyclists and pedestrians and also by people using prams and other wheeled recreation devices, wheelchairs, electric mobility scooters and other personal mobility aids.

The People's Lifestyle Aspirations and Needs Study (PLANS) was adopted by Penrith City Council in March 2004 and identified the need to improve the City's pathway and cycleway network as one of the top five priorities for improvement. The adopted PLANS research also recommended incorporating the principles of social inclusion and universal (accessible and inclusive) design into the planning and design of open space areas, to better reflect and meet the needs and abilities of the City's communities. The adoption of this planning principle requires the design and delivery of quality shared pathways where access for all people with diverse abilities is a priority and the development of quality shared pathways is more important than dispersed quantity. The design specifications included in this PATHS report recommends the adoption of higher quality universal access standards.

PATHS acknowledges and encapsulates the work and research already completed, including the most recent Penrith Bike Audit by GTA (2009) and does not duplicate this work, but rather provides an integrated framework which Penrith City Council can utilise to guide the gradual and staged development of an accessible pathway network as funding becomes available in future years.

PATHS proposes the development of a major destinational pathway "spine" that provides, where possible, a safer off-road shared pathway network that will accommodate cyclists, and pedestrians and other users, linking the major City centres and urban communities as the initial priority, helping facilitate greater personal mobility choice that caters for all people with diverse abilities. The intention of the PATHS is to plan for the diverse range of users of our pathway network and not merely the traditional focus just on walking and cycling. The current NSW Bicycle Guidelines produced by the RTA (2005) acknowledges the need to separate cyclists from the dangers of traffic, where possible, by stating that "the widest section of the community prefers to cycle in environments without traffic" (p.14)

The major inter-suburban spine of "trails" is connected to local communities by a series of local pathway links and loops that provide both destinational and recreational options for residents.

Priority shared pathway projects (providing practical outcomes across the LGA) have been listed with estimated costs according to their staged development. A longer term strategy has been developed to enable an integrated network of accessible pathways in the longer term when the necessary resources can be allocated to enable their staged development according to agreed priorities in future years.

2. PENRITH CITY COUNCIL VISION AND STRATEGIC PLAN

Council's Vision for the City of Penrith is one of a sustainable and prosperous region with a harmony of urban and rural qualities and a strong commitment to environment protection and enhancement. It would offer both the cosmopolitan and cultural lifestyles of a mature city and the casual character of a rural community. In pursuing this vision, Council has a long-term goal to ensure new areas provide well planned, services and cohesive living and working environments.

Council's Strategic Plan 2031 is Council's principal policy document, guiding its leadership of the City. The plan provides a long term view for the City, stretching beyond the next ten years, and contains Council's vision and strategic directions for the future of our City. The Plan describes the City's future through five key themes with targeted objectives and strategic directions to guide both the community and Council. Underpinning all this work are Penrith's Principles for a Sustainable City.

The current Penrith City Delivery Program (2009 – 2013) identifies a number of key priorities which includes the goal for a liveable City that our physical infrastructure is adaptable, and responds to changing needs. Council's strategic response includes the need to improve the City's footpath and cycleway network, with the priorities to implement Council's network of paths and cycleways and to investigate options for a new shared pathway across Victoria Bridge.

3. SUSTAINABLE CITY BLUEPRINT FOR URBAN RELEASE AREAS, ACTION PLAN & UNEP PRINCIPLES

The Penrith City Sustainability Blueprint for Urban Release Areas identifies some key strategies in developing a sustainable transport network that includes the development of a quality pathway and cycleway network. The Penrith Sustainability Blueprint includes the following recommendations that relate to the provision of quality pathways and cycleways as an integral element in developing sustainable cities;

- Streets, walkways and cycleways are linked to public open space, sporting facilities, centres, schools, community facilities, shops and public transport services.

- Accessibility for walking and cycling is a priority.

- Where relevant proposed networks are integrated with regional walking/cycling networks.

- For safety, appropriate traffic calming measures are employed that cater for all pedestrians including older people, children, the mobility challenged and the vision impaired.

- To provide a transport system which emphasises, walking, biking and facilitates the use of public transport.

- To reduce the dependence on cars and promote the use of alternate transport. Improve air quality at the western edge of the Sydney basin whilst reducing greenhouse gas emissions.

- Footpaths are provided on both sides of every street.

- The vehicular environment is defined and separated from other uses on the street.

- Provision of shared pedestrian/cycle paths is encouraged along major travel desire lines, particularly shops and schools. The arterial and major collector road network being designed and engineered to accommodate public transport vehicles, as well as access to public transport stops for pedestrians and cyclists. (Penrith Sustainability Blueprint, 2005).

The Sustainable Penrith Action Plan outlines Penrith City Council's commitment to ensuring a higher quality of life for all – both now and in the future – through economic growth, environmental protection and social equity. Council's sustainability agenda is achieved through strategic initiatives, systems and processes outlined within its Strategic Plan and Management Plan. On the practical level, sustainable development is an approach that aims to integrate social, economic and environmental concerns. Integration is the key. Much development locally, nationally and internationally meets at least one of the social, environmental or economic goals.

In 2003, Penrith City Council adopted the United Nations Environment Program's (UNEP) 'Melbourne Principles for Sustainable Cities' to help guide our journey towards sustainability.

These principles are known as the UNEP Principles and are intended as a guide for Cities around the world to develop sustainable solutions that are relevant to their own particular circumstances. They provide a simple set of statements outlining how a Sustainable City would function, and provide a foundation for Council and our communities to work together to achieve that goal.

Council adopted these principles to help guide our thinking in our day to day decision making and operations as we work towards the long term sustainability of Council, and of the City as a whole.

The ten UNEP principles for sustainable cities that have been adopted by Penrith City Council are to:

1. *Provide a long-term vision for cities, based on sustainability; intergenerational, social, economic and political equity; and their individuality.*

2. *Achieve long-term economic and social security*

3. *Recognise the intrinsic value of biodiversity and natural ecosystems, and protect and restore them.*

4. *Enable communities to minimise their ecological footprint.*

5. *Build on the characteristics of ecosystems in the development and nurturing of healthy and sustainable cities*

6. *Recognise and build on the distinctive characteristics of cities, including their human and cultural values, history and natural systems*

7. *Empower people and foster participation.*

8. *Expand and enable cooperative networks to work towards a common, sustainable future.*

9. *Promote sustainable production and consumption, through appropriate use of environmentally sound technologies and effective demand management.*

10. *Enable continual improvement, based on accountability, transparency and good governance.*

4. NSW BIKE PLAN (May 2010)

The NSW State Government's Metropolitan Transport Plan has committed $158 million commitment toward improved urban cycle networks. The NSW Bike Plan outlines how the NSW Government will work in partnership with local Councils, communities and businesses to grow bike-riding over the next ten years.

The NSW Bike Plan outlines a ten-year bicycle infrastructure plan, including;

- $80 million over 10 years to connect Sydney's district centres by building missing links in the Metro Sydney Bike Network and
- $78 million over ten years to fast-track sub-regional bike networks for Parramatta, Liverpool and Penrith to grow cycling in these three River Cities and
- At least $5 million every year for regional cities and local councils across NSW to complete neighbourhood cycleway networks"

Web link -

http://www.pcal.nsw.gov.au/__data/assets/pdf_file/0009/90837/NSWBikePlan_WEB.pdf

5. GUIDING PRINCIPLES

The following principles guide the recommendations in this report and the subsequent delivery of an accessible trails network –

- Safety
- Connectivity
- Directness
- Universal Accessibility
- Coherence
- Sustainability
- Attractiveness
- Comfort

6. AIM, SCOPE AND OBJECTIVES

Aim

To work collaboratively to plan an integrated and prioritised hierarchy (local, district and regional) of destinational and recreation "trails" within the City of Penrith for all people with diverse abilities, in order to enhance opportunities for safe, healthy and effective personal mobility choice within the City of Penrith.

Scope

This Strategy will focus primarily on recommending a trails network that is categorised into 3 levels - local, district and regional trails with either a destinational or recreational primary function.

It will complement (not seek to duplicate) the work already completed by the Penrith Integrated Transport and Land Use Strategy (PITLUS), the Penrith Bike Audit (2009) or the Penrith City Council Pathways Improvement Program. The local footpath delivery program has already identified localised priorities for annual pathway improvements.

PATHS will focus on delivering a plan for the district strategic links with some localised recreational loops integrated into the Strategy. The modes of personal mobility that will be planned for within the PATHS project will include –

- Pedestrian[1] access

- Cycling (predominantly focusing on off-road shared path use by cyclists but also accommodates some routes that utilise on-road bicycle shoulder lanes and mixed traffic zones)

[1] ***Pedestrian – For the Australian Road Rules – Part 14, a pedestrian includes; a person driving a motorised wheelchair that cannot travel at over 10kmh (on level ground), a person in a non-motorised wheelchair, a person pushing a motorised or non-motorised wheelchair, a person in or on a wheeled recreational device or wheeled toy (skateboard, scooter etc.)***

Objectives

The objectives of PATHS include;

- To plan for effective personal mobility choice to benefit all people with diverse abilities who want to use the trails network to access a destination or for health, recreational and destinational purposes

- To enhance the safety of the trails network by planning off-road shared pathway links (where possible)

- To enhance the safety of the on-road sections by implementing clear line marking, signage and kerbside running bike lanes (where possible)

- To provide viable and attractive alternatives to motorised transport, with consideration given to the shorter trips from populated new release areas to the City Centre and links between existing urban areas to provide alternatives to those with limited public or private transport options

- To promote a healthy lifestyle and another transport option to reduce the number of cars that are used for the shorter trips

- To comply with the current Australian Standards including the current Austroads 2009 Guide to Traffic Management and Road Design, DoP guidelines for walking and cycling as a minimum requirement, but raise the bar to a universal design standard to plan effectively for enhanced access for all people with diverse abilities

- To provide a framework which can be utilised to apply for future funding sources and to deliver the staged priorities set out in the PATHS

Methodology

The PATHS project utilises the extensive research and consultation already conducted through the various bodies of work highlighted in the literature review and utilises this information to develop an integrated and equitable "trails" framework that focuses on the major shared pathway connections between key centres and trip generators within the City of Penrith.

For example, the recent findings and recommendations from the Penrith Bike Audit 2009 provides the foundation, where the major strategic routes were integrated into PATHS and various gaps in the district links were assessed and the network developed that identified the major priority district and local level routes. This process also sought to integrate the findings and recommendations from the NSW Bike Plan, where major district and Sydney wide strategic pathway routes have been identified and which rely on State Government funding for their development.

PATHS provides a long term strategy for the planning and implementation of major pathways across the City of Penrith to be delivered in stages, as funding becomes available. PATHS also responds directly to Penrith Council's direction to promote a sustainable and liveable City that all residents and visitors can enjoy.

7. OFF - ROAD FACILITIES

PATHS aims to develop safe and accessible recreational and destinational off-road trails for all users throughout the urban areas of the Penrith Local Government Area. Our area contains large expanses of relatively flat land, with views of rivers, mountains and rural landscapes, and can readily cater for all abilities.

Off-road accessible trails in Penrith will cater for all pedestrians; cyclists of any level of skill; children riding to school; active families; tourists, shoppers and commuters. The demand for improved shared pathway networks grows along with the commercial, retail and industrial areas of Penrith LGA, and as the community seeks recreational opportunities and accepts cycling as a legitimate travel mode.

As reported by GTA Consultants in the *Penrith Bike Audit 2009*, most of the existing off-road infrastructure does not comply with current standards and is in less than satisfactory condition. The existing paths considered as cycleways stand alone, are (in some instances) disconnected and have poor crossing facilities.

Potential shared use path
Glenmore Park in 2009

Untreated crossing point, Andrews Road
(GTA 2009)

The Penrith Bike Audit (2009) identified nine key routes, predominantly off-road shared path construction, requiring relatively simple design details with no major civil works required. These key routes have been incorporated into this Strategy, along with additional off-road links.

Off-Road Paths

Off-road paths provide physically separated operating space for pedestrians and cyclists within a road corridor, where the prevailing road speed and traffic volume require physical separation, or in parks and reserves. Whilst there are several types of off-road

paths, being "shared-use", "separated" and "exclusive", PATHS is focussed on the development of "shared-paths" within the urban areas of the Penrith City.

Separated and exclusive cycle paths require greater land take, being in addition to a footpath, and as a result, require more money. They are typically provided where a combination of user volumes, clearances and other factors recommend that the path width be in excess of 4m. It may be that as demand for this type of infrastructure grows in the future, these types of paths can be considered.

Part 6A of Austroads 2009 and *NSW Bicycle Guidelines* provide the standards required for shared-use paths, and relevant extracts of these are provided in Appendix A. The path widths depend on the predominant nature of the use, ie local access or recreational, and in consideration of the potential volume of users. Shared-use paths can provide good access for both cyclists and pedestrians, provided that the number of users is moderate and path widths are wide.

Shared-use path upgrade to existing footpath, Cranebrook

Maximum widths should be provided where possible, however, it is acknowledged that the urban environment poses numerous constraints and reduced path widths will be inevitable in many locations. Designs must consider gradients, sight distances and surfaces, as well as safe approach to intersections, driveway crossings, light poles, trees and their overhanging branches, fences, railings, utility services - all of which add to the cost of the path. Maintenance issues are ongoing and create hazards if left unattended.

Legislation

Under the Australian Road Rules, the term 'pedestrian' is inclusive of people on foot, people in wheelchairs, pushing wheelchairs, people who use motorised chairs that cannot travel at speeds more than 10km/hr and people riding skateboards, scooters and the like. Shared-use paths can legally be used by pedestrians and cyclists, and due to the variety of potential users and their travel speeds, care must be taken and courtesy must be given. All users should keep left of the centre line marking, signal on approach and overtaking, and control their young children and pets.

Just as on-road cyclists have the same right-of-way priorities as other vehicles on the road, people using wheeled recreation devices that are permitted on the shared paths have the same right-of-way priorities as pedestrians on foot. At street intersections, users of wheels must give way to vehicles unless otherwise signposted. Riding on pedestrian crossings is prohibited, unless bicycle lanterns are present. Failing to obey road or bicycle rules may result in a fine.

In reference to the section of an off-road shared path to be used by people using wheeled recreation devices, the Australian Road Rules state that "… people riding skateboards, scooters and the like (ARR 18, dictionary) … should keep left of the centreline marking" (ARR 250(2)). These rules also indicate that riding on pedestrian crossings is prohibited, (ARR 248) unless bicycle lanterns are present.

8. ON - ROAD FACILITIES

The main intent of PATHS is to deliver a quality network of predominantly off-road shared pathways, with some sections utilising on-road shoulder lanes and mixed traffic zones.

That said, it is acknowledged that some cyclists prefer to cycle on the roads and the Penrith Bike Audit (2009) identified and mapped key routes for the City of Penrith including the sections of on-road routes which have been captured by the PATHS priority route recommendations and general cost estimates provided.

In addition to accessible trails, and to provide for all users of the shared pathway network, it is intended to develop on-road bicycle lanes on roads that are under the care, control and management of Council.

The shared-use paths recommended in this Strategy will provide key accessible infrastructure and will encourage our community to take up or continue active transport, sports and recreation. There are some cyclists, however, who choose not to use shared-use paths, and seek a more direct, faster ride to their destination, such as commuting and other confident cyclists. Providing clear operating space for these cyclists assists in improving awareness between all road users of the presence and permissibility of cyclists on the road.

As reported by GTA Consultants in the *Penrith Bike Audit 2009*, most of the existing on-road infrastructure does not comply with current standards and is in less than satisfactory condition. GTA identified opportunities to undertake low-cost works or "quick wins" to enable local roads to better accommodate cyclists. This could be accommodated along wide sections of sealed roadways through residential estates, or wide road reserves for both urban and rural areas.

Wedmore Road, Emu Plains – example of current standard of existing on-road infrastructure. (*Penrith Bike Plan Audit 2009)*

GTA Consultants recommended 144 local cycling links in the Audit, predominantly on-road. As this infrastructure can be provided principally by way of logos, line marking and signage, and when incorporated into existing road re-sheeting/resealing programs, the works can be relatively cost effective. GTA notes that the "*potential local routes identified do not imply that all other roads which are not included are not cycle friendly or should not be given attention should a cycle issue arise. Essentially, every street is a cycling street and therefore should be maintained or restructured to be "bicycle friendly" where possible in accordance with the current standards".* Without duplicating the work of GTA Consultants in this Strategy, it is recommended that on-road cycling links be developed where appropriate, where practical and as funding is available and/or as re-sheeting / re-sealing programs are carried out.

On-Road Lanes

There are three main types of on-road infrastructure that could realistically be developed in the urban areas of Penrith LGA, being –

1. exclusive bicycle lanes,
2. bicycle/ parking lanes and
3. mixed traffic lanes.

There may also opportunities for peak period exclusive bicycle lanes, where lanes operate at times outside peak parking periods.

Austroads 2009 and *NSW Bicycle Guidelines* provide the standards required for the widths associated with exclusive and bicycle/parking lane types, and relevant extracts of these are provided in Appendix B. The provision of these lane types will depend on the road environment width and demand for on-street car parking. Generally, roads catering for on-street parking require a minimum sealed width of 14m to allow bicycle/parking lanes, unless shared with peak period parking. The reference to 14m width of minimum sealed width relates "generally" for roads where on-street parking exists on both sides of the street, for example, a 60km/hr street (see Appendix B).

To increase rider safety and alleviate the hazards of "dooring" from parked vehicles, where possible, a lane on the kerb side of the road ("kerbside running lane") may be considered in preference to the right hand side of the parked vehicle.

"Kerbside running bike lanes" provide a safe, cost-effective, practical, and proven on-road cycling solution.

(Alta Planning and Design & *Good Design Guides*, Bicycle Victoria).

In single lane streets with slower speeds, "mixed traffic" lanes are more appropriate to create a visible presence of cyclists on the road, further reduce vehicle speeds and reduce the risk of accidents between cyclists and vehicles. These lanes also provide more room for cyclists than dedicated bicycle lanes, again alleviating "dooring" hazards.

GTA Consultants highlighted the potential to promote and support active travel to and from the Penrith and St Marys City Centres. It was made clear that once in the City Centres, it is expected that cyclists would merge with pedestrians (dismount as required on footpaths) and vehicles to access the preferred destinations (station, retail and commercial facilities, etc). "Mixed traffic" lanes will also assist with future connectivity to/from proposed on-road bike routes and the off-road shared paths proposed by this Strategy. Cyclists travelling in mixed traffic lanes would generally be confident riders, familiar with travelling amongst other vehicles.

In mixed traffic lanes, bicycle riders travel in traffic lanes along with all other road users. Bicycle logos are applied on the roadway to remind drivers to expect the presence of bicycles. (City of Sydney)

It is important to strike a balance between fair and reasonable access for cyclists, to accommodate the needs of vehicular traffic and where possible, to encourage the use of routes for pedestrians and cyclists that offer "a path of least resistance" and which reduce the potential conflict with vehicular traffic.

In order to improve safety and where use of on road physical separation barriers are not feasible, the use of clear line marking, colour differentiation for on-road cycling lanes and improved signage will assist both cyclists and drivers of vehicles on the roads to ascertain which sections are designated for use by cyclists and vehicles.

This includes the use of colour for cycle lane access through major roundabouts that occur along the major district level routes that will provide a visual message to both drivers and cyclists that the coloured area is for the use of cyclists and vehicles should take care to stay clear of verging into these lanes that will improve safety for cyclists.

Note - Use of colour to delineate a cycle lane through a roundabout in Canning St. - Melbourne

Legislation, Cycling On-Road

Under the Australian Road Rules, a bicycle is considered as a vehicle, and as such, cyclists are permitted to ride on roads. Cyclists are required to obey the road rules, including stopping at red lights or "Stop" signs, giving way as indicated by signage and giving hand signals when changing direction (not stopping). During left and right hand turn manoeuvres, special attention should be paid to the rights of way, which includes giving way to traffic (including bicycles) already in a lane. Just as cyclists have responsibilities when using the road, they also have the right, like other vehicles, to use the road and be shown courtesy and care by other road users. Failing to obey road or bicycle rules may result in a fine.

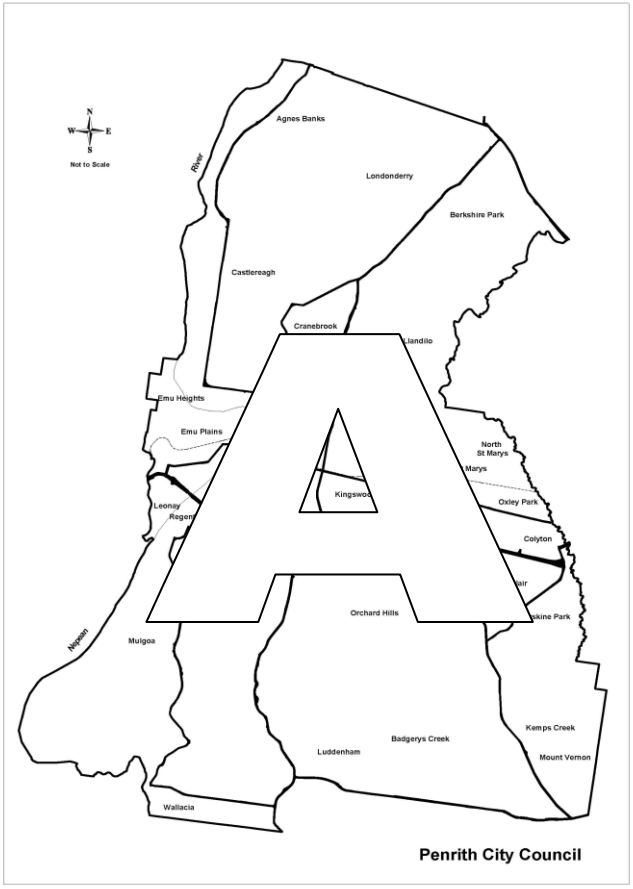
The Australian Road Rules states that "… a bicycle is considered as a vehicle, (ARR 15), and it is required that cyclists are to communicate which way they intend to travel by… giving hand signals when changing direction (not stopping). (ARR 52).

9. Main PATHS routes

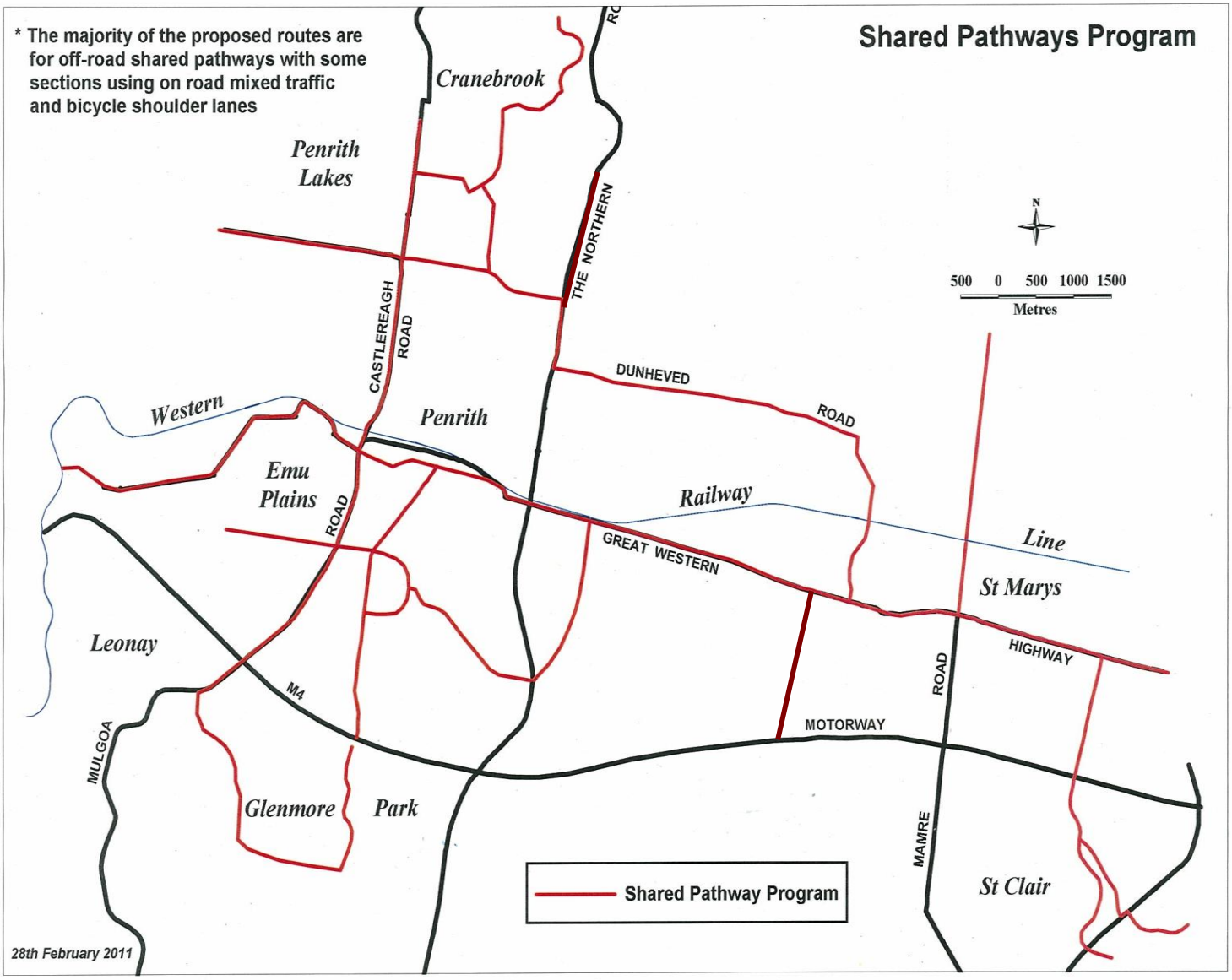
The following proposed PATHS routes provide an 'A' plan for 'Access' within the City of Penrith through the delivery of a quality "trails" network, with the major trails being designed for 'All Abilities' and providing quality public infrastructure to promote sustainable personal mobility choice. The proposed key district level routes provide major north - south and east - west trails along key transport and open space corridors which offer the path of least resistance, where possible, providing sustainable destinational and recreational transport options.

With consideration to the principles outlined in this Strategy, together with previous work undertaken in reviewing the network, a strategic network of shared pathway ("trails") has been identified within the City.

This "A Framework for Access" describes the strategic context for the development of PATHS.



The following map indicates some priority routes including the district "spine" of the shared pathways network.



FACT SHEET

SHARED PATHWAYS

Shared Pathways

Funding our Future

Route Name	Route Description
Emu Plains (Russell St) to St Marys (Queen St)	Stage 1 – St Marys (Queen St) to Gipps Street along the Great Western Highway
	Stage 2 – Gipps Street to University of Western Sydney overpass
	Stage 3 – University of Western Sydney overpass to Kingswood Station
	Stage 4 – Kingswood Station to Evan Street
	Stage 5 – Evan Street via Penrith Station to Castlereagh Road
	Stage 6 – Castlereagh Road to Russell Street
Cranebrook to Penrith	Andromeda Drive to Greygums Road
	Greygums Oval to Coreen Avenue and Borrowdale Way to Mchenry Street
Cranebrook to Penrith Lakes	Along Andrews Road from The Northern Road to Cranebrook Road
	Nepean Street between Cranebrook Road and Camelot Drive and Laycock Street to Nepean Street
St Marys to St Clair	Chapel Street between Queen Street and Glossop Street and Adelaide Street between Glossop Street and Woodland Avenue
	Bennett Road from the Great Western Highway to Shepherd Street
	Great Western Highway between Woodland Avenue and Bennett Road
	Bennett Road from Shepherd Street to Botany Lane and Mark Leece Reserve from Bennett Road to / St Clair Avenue to Endeavour Avenue
St Clair to Erskine Park	Bennett Road from Botany Lane to Erskine Park Road
	Crossing Erskine Park Road, Reserve path from Erskine Park Road to Chameleon Drive
	Endeavour Avenue Botany Lane to Banks Drive and Lukes Lane Reserve from Banks Drive to Cook Parade
	Reserve Cook Parade to Paroo Close and Reserve Bennett Road / Endeavour Avenue to Erskine Park Road
Werrington Road	Werrington Road from the Great Western Highway to the Werrington Rail overpass
Jamison Road	York Road to Tench Avenue
Fragar Road	Along the open space drainage easement from Braemar Drive and Maxwell Street to Jamison Park

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This table indicates some of the main proposed routes within the PATHS network which could be delivered in stages as funding becomes available.

10. PRIORITY TRAILS AND ESTIMATED COSTS

10.1 Cost Assumptions

A 2.5 metre wide shared pathway costs approximately $350 per linear metre and this figure has previously been used by the Penrith City Council City Infrastructure Department in 2010 for cost estimates for the RTA State Plan to include provision for the pathway development including allowances for signage, line marking, potential minor crossings and other utilities. Based on this figure, an estimated $420 per linear metre for a 3.0 metre shared pathway is proposed and $210 per linear metre for a 1.5m path. For the purpose of this exercise, the same estimate is used to determine an indicative cost for the provision of pathways based on their length only. The exception to this is where there are detailed costs provided as a result of the Penrith Bike Audit (2009) that serve as a guide to establishing the indicative costs in this Strategy.

The detailed design and assessment phase will determine more accurate costs based on individual site assessments and all of the required works for each section (ie drainage requirements, signalised crossings, re-location of existing services, approval costs and requirements resulting from approvals, road safety audits or traffic control, slope issues and need for retaining walls etc. and funding for contingencies) and this could affect the costs. In addition, existing and proposed bus shelters will create design challenges in many instances. Substantial space is required to allow for a bike route to safely negotiate a bus stop and/or shelter and required works at these locations may be costly and sometimes space prohibitive. The intent of the major district destinational linkages is to provide 3 metre wide off-road shared pathways where possible, but the detailed design phase will determine particular site constraints in key locations where it may not be possible to maintain this pathway width and the costs will therefore alter accordingly.

10.2 Strategic Shared Pathways (Priorities)

Route Name	Route Description	Route Length	Trail Type	Total Est. Cost
Emu Plains (Russell Street) to St Marys (Queen Street) *NSW Bike Plan (Dependant on State Funding)* *All Council Wards*	*Stage 1* – St Marys (Queen Street) to Gipps Street along the Great Western Highway	1.8km	3m off-road shared path	$756,000
	Stage 2 – Gipps Street to UWS over pass	1.2km	3m off-road shared path	$504,000
	Stage 3 – UWS overpass to Kingswood Station	2.1km	3m off-road shared path	$882,000
	Stage 4 – Kingswood Station to Evan Street	1.8km	3m off-road shared path	$756,000
	Stage 5 – Evan Street via Penrith Station to Castlereagh Street	1.3km	3m off-road shared path	$546,000
	Stage 6 – Castlereagh Street to Russell Street	3.6km	3m off-road shared path	$1,512,000

Cranebrook to Penrith CBD *GTA Study* *North Ward*	*Stage 1* - Along Andromeda Drive Hindmarsh Street Laycock Street and Greygums Road between Laycock Street and McHenry Road and along Middleton Avenue and Callisto Drive between Hindmarsh Street and Borrowdale Way	3.95km	Bicycle shoulder lanes	$115,290
	Stage 2 – Greygums Oval to Coreen Avenue and Borrowdale Way to Mchenry Street	4.95km	2.5m off-road shared path	$288,560
Cranebrook to Penrith Lakes *North Ward*	Along Andrews Road from the Northern Road to Cranebrook Road	2.2km	3m off-road shared path	$924,000
	Nepean Street between Cranebrook Road and Camelot Drive	655m	2.5m off-road shared path	$229,250
	Laycock Street to Nepean Street	170m	Bicycle shoulder lanes	$1,000
St Marys to St Clair *GTA Study* *East Ward*	*Stage 1* – Chapel Street between Queen Street and Glossop Street + Adelaide Street between Glossop Street and Woodland Avenue	1.88km	On road mixed traffic	$141,750
	Stage 2 – Bennett Road from Great Western Hwy to Shepherd Street	1.65km	Bicycle shoulder lanes	$125,380
	Stage 3 – Great Western Hwy between Woodland Avenue and Bennett Road (includes intersection of Great Western Highway and Bennett Road Woodland Avenue between Adelaide Street and Great Western Highway and Glossop Street between Chapel Street and Adelaide Street	620m	3m off-road shared path	$276,140

	Stage 4 – Bennett Road from Shepherd Street to Botany Lane and Mark Leece Reserve from Bennett Road to St Clair Avenue to Endeavour Avenue / Botany Lane	1.59km	3m off-road shared path	$190,160
St Clair to Erskine Park *GTA Study* *East Ward*	*Stage 1* – Bennett Road from Botany Lane to Erskine Park Road	1.4km	Bicycle shoulder lanes	$51,260
	Stage 2 – Crossing Erskine Park Road, Reserve path from Erskine Park Road to Chameleon Drive and Endeavour Avenue Bennett Road to Botany Lane (south side)	850m	3m off-road shared path	$181,250
	Stage 3 - Endeavour Avenue Botany Lane to Banks Drive and Lukes Lane Reserve from Banks Drive to Cook Parade	1.85km	3m off-road shared path	$145,274
	Stage 4 – Reserve Cook Parade to Paroo Close and Reserve Bennett Road / Endeavour Avenue to Erskine Park Road	5.2km	3m off-road shared path	$239,220
Werrington Road *North Ward*	Werrington Road from the Great Western Highway to the overpass near Railway Street	1km	3m off-road shared path	$420,000
Jamison Road *South Ward*	York Road to Tench Reserve	1.9km	2.5m off-road shared path	$665,000
	Mulgoa Road to York Road upgrade	500m	Widen existing 1.5m path to 2.5m off-road shared path	$70,000
Fragar Road *South Ward*	Along the open space drainage easement to Jamison Park	1.6km	2.5m off-road shared path	$560,000
TOTAL				**$9,579,534**

Strategic Shared Pathways

Route Name	Route Description	Route Length	Trail Type	Total Est. Cost
Mulgoa Road *RTA State Plan (Dependant on State Funding)* *South Ward*	Mulgoa Road from Jane Street to The Glenmore Parkway	6.5km	3m off-road shared path	$4,500,000
Castlereagh Road Penrith Lakes *North Ward*	Castlereagh Road from Gate A Penrith Lakes entrance to Cranebrook Road roundabout	2.3km	3m off-road shared path	$966,000
Castlereagh Road *North Ward*	Castlereagh Road from Henry Street to Peachtree Road	623m	Widen existing 2m path to 3 m off-road path	$87,220
	Castlereagh Road from Peachtree Road to Mullins Road	267m	3m off-road shared path	$112,140
	Castlereagh Road from Mullins Road to Jack Williams Drive	475m	3m off-road shared path	$199,500
	Castlereagh Road from Jack Williams Drive to Lugard Street	450 m	3m off-road shared path	$189,000
	Castlereagh Road from Lugard Street to Andrews Road round about	500m	3m off-road shared path	$210,000
Cranebrook Road Penrith Lakes *North Ward*	Cranebrook Road (west side) from Andrews Road to Nepean Street (cross intersection to access existing shared path)	1.05km	3m off-road shared path	$441,000
Great Western Highway *East Ward*	Great Western Highway from Queen Street to Ropes Creek	2.9km	3m off-road shared path	$1,218,000
Forrester Road *East Ward*	Forrester Road from St Marys Railway Station to Ropes Creek / entrance into St Marys Release Area	2.5km	3m off-road shared path	$1,050,000

The Northern Road *North Ward*	The Northern Road from Dunheved Road to Andrews Road	800m	3m off-road shared path	$336,000
Dunheved Road *North Ward*	Dunheved Road from The Northern Road to Werrington Road	4.15km	3m off-road shared path	$1,743,000
Werrington Road *North Ward*	Werrington Road from Dunheved Road to the rail overpass near Railway Street	1.1km	3m off-road shared path	$462,000
York Road and Woodriff Street *GTA Study* *South Ward*	M4 Motorway at Kiaka Cresent along York Road to Jamison Road Woodriff Street to Derby Street	3km	3m off-road shared path	$890,970
Alston Creek and Surveyors Creek Road *South Ward*	Upgrade existing path along Alston Creek and Surveyors Creek Road	1.5km	Upgrade of existing 2m to 3m off-road shared path	$210,000
Link from Blue Hills Wetland to Glenmore Park Stage 2 *South Ward*	Blue Hills Wetland through open space corridor to Glenmore Park Stage 2	535m	Upgrade existing 1.5m(385m) path to 3m off-road shared path +150m of 3m off-road shared path	$143,850
Gipps Street site (part of Werrington arterial) *East Ward*	Gipps Street from M4 to Great Western Highway	1.75km	3m off-road shared path	$735,000
Railway corridor link *RTA State Plan (Dependant on State Funding)* *East Ward + North Ward*	Railway corridor link from Ropes Creek to Victoria Street and Park Avenue	6km	3m off-road shared path	$2,520,000
TOTAL				**$16,013,680**

10.3 Local Shared Pathway Priorities

Werrington Creek corridor *North Ward*	Werrington Creek corridor from Victoria Street to Dunheved Road	2km	2.5m off - road shared path	$700,000
Victoria Street to The Crescent *GTA Study* *North Ward*	Victoria Street at Lethbridge Avenue to The Crescent at Evan Street	5.06km	2.5m off - road shared path (widen existing paths)	$884,170
Erskine Park Road *East Ward*	Erskine Park Road to Roper Road north of Carlisle Avenue	2.6km	2.5m off - road shared path	$910,000
Ropes Creek corridor *East Ward*	Open space Ropes Creek corridor from eastern end of Lenore Drive to St Marys Release Area entrance near Forrester Road	9.85km	2.5m off - road shared path	$3,447,500
South Creek corridor *North Ward*	Open space South Creek corridor from The Kingsway to Christie Street	2.15km	2.5m off - road shared path	$752,500
South Creek corridor *East Ward*	Open space South Creek corridor from the M4 to the Great Western Highway	2km	2.5m off - road shared path	$700,000
River Road *South Ward*	Open space corridor on eastern side of River Road from Parklands Avenue to the M4	1.3km	2.5m off - road shared path	$455,000
Nepean River Recreational Path *GTA Study* *South Ward*	Leland Street to Bellevue Road	5.2km	2.5m off - road shared path	$1,527,380
Evan Street *GTA Study* *South Ward*	Evan Street between York Road and Jane Street	5.56km	2.5m shared path and bicycle shoulder lanes	$543,380

Station Street *GTA Study* *South Ward*	Penrith Park to Penrith CBD and station	2.8km	2.5m shared path, bicycle shoulder lanes and on-road mixed traffic	$284,750
Derby Street and Second Avenue *GTA Study* *South Ward*	University of Western Sydney to Penrith CBD along Derby Street and Second Avenue	4.9km	2.5m shared path	$821,380
Southlands Oval open space corridor *South Ward*	Open space corridor from Mulgoa Road through Southlands Oval to Timaru Grove	3km	Upgrade 1.5m path to a 2.5 m off - road shared path	$420,000
Timaru Grove to the Northern Road *South Ward*	Open space corridor from Timaru Grove to the Northern Road	280m	2.5m off - road shared path	$98,000
Wentworth Road *South Ward*	Wentworth Road from The Northern Road to the Penrith Anglican College	650m	2.5m off - road shared path	$227,500
Total (Local)				**$11,771,560**

10.4 Summary of Proposed Priority Pathway Works by Council Ward (Excludes release area pathway works developed through subdivision implementation)

Council Ward	Length of Proposed Pathways (Rounded)	Estimated Cost (Rounded)
North	37 km	$10,321,000
South	39 km	$11,418,000
East	39 km	$10,671,000
All Wards (Emu Plains to St Marys shared pathway link)	12 km	$4,956,000
TOTALS	**127 km**	**$37,366,000**

Attached to this Strategy is Appendix A which contains relevant extracts from the technical standards within the NSW Bicycle Guidelines and the Austroads 2009 Guide to Traffic Management and Road Design. Appendix B is the PATHS Maps which details the proposed priority District and Local pathway routes with a particular focus on developing quality off-road shared path connections between major City Centres and key trip generators while the network will also include some on-road links within the road shoulder and some mixed traffic zones. Appendix B includes a City wide map as well as quadrant enlargements of the key sectors.

11. PROPOSED CRITERIA FOR ESTABLISHING PRIORITIES FOR THE PATHS PROJECT WORKS

As mentioned previously, this strategy does not seek to replace existing priorities that have already been established, for example, under the existing Pathways Improvement Program that has established criteria for assessing priorities for localised pathway developments. Nor is it the intention of this Strategy to offer definitive priorities for all of the proposed pathway works as it is acknowledged that there will be a range of internal and external influences which will alter the timing and priorities for pathway development in the future. However, the following criteria are proposed as a guideline to assist future negotiations and decisions about priorities for future PATHS project works and when they are to be delivered.

PATHS project works will have priority if it can be demonstrated that;

- There is a particular demonstrated existing safety hazard that should be addressed as an urgent matter by the appropriate designated authority who is responsible (ie Victoria Bridge currently being investigated in collaboration between Local and State Government Authorities)

- ❖ Funding from external sources that is to be used to deliver pathways have attached funding guidelines that mandate timeframes for their delivery and/or specific locations where they are to be constructed
- ❖ The proposed works provide links between existing communities, facilities and destinations that will take priority over pathway links to serve future release area communities and facilities yet to be constructed
- ❖ The proposed works focus on delivering the staged development of designated links within the PATHS project "spine" as the major district level connections, with the emphasis on completing one route at a time. For example, the Penrith to St Marys route is a district link that is recommended as an initial priority for the City

The GTA Bike Audit (2009) included details of a works priority evaluation matrix (Table 6.1 on p.59) and suggested priorities for the key routes (p.60) that can be used as a guide for the future implementation of some of the major strategic routes that have been incorporated into this PATHS Strategy. The prioritised works will need to be negotiated following the completion of this Strategy and it is recognised that the decisions regarding the most immediate priorities can alter due to a variety of factors, all of which cannot be foreseen at the time of completing this Report. However, as an initial guide, the Penrith Bike Audit (2009) lists the following key priority routes for their development;

Route No.	**Route Description**	**Funding Responsibility**	**Priority**
KR 01	South Penrith to Penrith CBD	Council / Central Government	1
KR 02	Cranebrook to Penrith CBD	Council / Central Government	1
KR 03	St Clair to St Marys	Council / Central Government	1
KR 04	Nepean River Recreational Path	Council / RTA	2
KR 05	University of Western Sydney to Penrith CBD	Council / RTA / Ministry of Transport / UWS / TAFE	2
KR 06	Werrington to Penrith CBD	Council	3
KR 07	Emu Plains to Penrith CBD	Council / RTA	4
KR 08	Glenmore Park to Penrith CBD	Council	5
Kr 09	Penrith Park to Penrith CBD	Council	6

Some localised pathway links have been identified and although the local bicycle network links are not specifically identified or mapped as part of the PATH Strategy, they are still an important element of the overall network and they have been identified in the GTA Bike Audit (2009) and their suggested priority listed in table 6.5 on p.63 for future consideration.

12. MAINTENANCE CONSIDERATIONS

It is important to note that ongoing and regular maintenance of the pathways routes that are proposed is required in order to sustain their quality, accessibility and usability over time. With this in mind, the current advice from Penrith City Council's City Works Department is that an estimated 4% per annum of the project budget to deliver pathways should be set aside in a restricted asset account to enable the maintenance of the pathways to be conducted as required.

Traditionally, funding for pathway or cycleway development from the RTA for district or regionally significant routes has always been accompanied by funding guidelines that restricts the use of funds received for capital works only and the attached guidelines do not allow Local Government Authorities to utilise grant funding to maintain that asset to a quality standard.

If the RTA designate particular pathway routes along roads that fall within their responsibility, as being of wider regional significance in relation to their connectivity within the broader Sydney metropolitan area, and funding is allocated for their development, it is proposed that either it is agreed that the costs for the regular and ongoing maintenance of these RTA regionally significant routes is the responsibility of the RTA (State funded), or that Penrith City Council request that 4% of the grant funding allocated be set aside in a restricted asset account for the required maintenance. Otherwise, a situation could arise where local, district and regional pathways are constructed without consideration to plan ahead for adequate funds to ensure their maintenance, so that they can be sustained as quality public infrastructure in the future without becoming an increasing cost burden for Local Government.

13. FUNDING OPTIONS

The development of the PATHS network is a long term vision which can be delivered in stages as funding becomes available. Some of the potential sources of funding that can be used to contribute to the PATHS network include;

- State and Federal Government sources (e.g. NSW Bike Plan, Metropolitan Green Space Program)
- Development contributions
- Special rate variation
- Healthy Communities and other grant funding opportunities

APPENDIX A

LITERATURE REVIEW

Social Inclusion, Universal Design & Universal Access Promoting Access For All People With Diverse Abilities

"Universal Design is the design of products and environments to be useable by all people, to the greatest extent possible, without the need for adaptation or specialised design. It is a design philosophy that recognises, respects, values and attempts to accommodate the broadest possible spectrum of human ability in the design of all products, environments and information systems." [2] It requires sensitivity to, and awareness of, people of all ages and as our abilities change throughout our lives.

Sometimes referred to as 'lifespan design' or 'trans-generational design' universal design encompasses - and goes beyond - the accessible, adaptable and barrier-free design concepts of the past. It helps eliminate the need for special features and spaces which, for some people, can be stigmatising and different looking, and are often more expensive. Universal design represents a more sustainable and cost effective approach to planning outdoor and urban environments for all people with diverse abilities and as our abilities change over time.

Social inclusion is a philosophy that emphasises the need to accommodate and value people regardless of race, religion, ability, culture or gender within social structures and community functions.

Currently about 13% of the Australian population are over 65 years. Between now and 2050 the number of older people (65 to 84 years) is expected to more than double, and very old people (85 and over) is expected to more than quadruple, from 0.4 million people today to 1.8 million in 2050. [3] "While the proportion of older people within the City of Penrith is currently well below the state and national averages, the population of Penrith is rapidly ageing. In 2006 14,103 Penrith residents, or just over 8% of Penrith's population, were aged over 65 years. By 2021, the number of Penrith residents aged over 65 years will nearly double to 24,128 people, or 11.5% of Penrith's population. While Penrith City does not face a crisis concerning population ageing now, there is nevertheless a clear requirement for long term planning." (Planning for an Ageing Community Strategy, Penrith City Council, 2010)

As the City's population grows older, there will be more people with mobility difficulties and disabling conditions, and the need for accessible services and facilities will increase. 'Inclusive' planning and design is more sustainable, and reduces the need for potential retrofitting costs. Instead of planning just for the traditional "walking and cycling", it is proposed in this Trails Strategy that we plan for effective and sustainable mobility choice for all people with diverse abilities and not just people who are capable of walking on the pathways.

Universal design advocates argue that the entire spectrum of human ability (from people experiencing a range of disabling conditions through to those who are fit and athletic) should be considered in developing any design, to reach a more inclusive solution. This approach aims to avoid design responses that separate one user group from another.

What is universal access?

[2] *The Centre for Universal Design, NC State University, USA 1997*
[3] *Intergenerational Report, 2010*

Universal access is the goal of enabling all citizens to reach every destination served by their public street and pathway system. Universal access is not limited to access by persons using cars. Travel by bicycle, walking, wheelchair, electric mobility scooter or parents with children in prams should be accommodated, to the greatest extent possible, in order to achieve greater transportation equity, to maximise independence, and to improve the "liveability" of our communities and cities. Wherever possible, facilities should be designed to allow safe travel by young, old, and all people with diverse abilities who may have diminished perceptual or ambulatory abilities. By using design to maximise the proportion of the population who can travel independently, it becomes much more affordable for society to provide specialist services to the remainder with particular ambulatory special needs.

Where did the universal access paradigm originate?

The phrase "universal design" was formulated by the late Ron Mace from the Centre for Universal Design at the North Carolina State University in the USA who was a well respected and internationally recognised industrial designer, educator and architect.

"Universal access is a synthesis of universal design, good traffic engineering practices and constitutional law. The right to travel is one of the most highly valued rights in the civilized world and is protected under US and state constitutions." (Project Universal Access, USA, 2010)

"Freedom of movement is the very essence of our free society ... once the right to travel is curtailed, all other rights suffer." (Justice William Douglas, U.S. Supreme Court)

Similar rights for equal access for all people, irrespective of varied levels of ability are embodied in the Disability Discrimination Act of 1993 here in Australia with the base Australian accessibility standards 1428 for access and mobility (see - http://infostore.saiglobal.com/store/Details.aspx?ProductID=1407487) providing more detailed requirements for the built environment and public rights for access.

Access to employment, goods, and services is essential for survival in modern society, and must be protected for all people using public modes of transport, including personal mobility along pathways. At various stages in life and due to the ageing population in the Australian and global community, a growing proportion of people are not able to operate a car, or may need other modes of personal mobility like electric motor scooters or wheelchairs to travel safely along the public pathway network. Ethical traffic engineering practices requires the reasonable accommodation of cyclists and pedestrians in the design and regulation of public access ways. "Universal access is the explicit condition that this connectivity be preserved to every destination served by the publically owned transportation system." (Project Universal Access, USA, 2010)

Is universal access anti-car?

No, not at all. "Universal access is about preserving choices, and motor vehicles are a very popular choice extending access over a wide geographic area. Universal access ensures that access is also extended across a wide demographic. Access by motoring and non-motorized modes can coexist through proper design and regulation of the transportation system." (Project Universal Access, USA, 2010)

What are the implications of universal access for street and intersection design and regulation?

Universal access requires that cyclists and pedestrians be reasonably accommodated wherever they are allowed to travel. This requires safe accommodation on every street and across every intersection. Good engineering guidelines exist for accessible pathways, signals, medians and curb configurations for pedestrians.

Practical bicycle transportation typically involves travel on roadways where there is a dedicated and clearly marked cycle lane or on off road shared pathways that are designed to accommodate both cyclists and pedestrians.

How is universal access different from past approaches to providing for pedestrians and cyclists?

"For centuries, pedestrian access was considered to be a given in any urban street network. Toward the end of the nineteenth century bicycle travel became popular using the same street networks. But during the latter half of the twentieth century, the design of many new roads and destinations was based almost exclusively on automobile access. Access by walking or bicycling was often discouraged by policy or even endangered by the speed and volume of motor travel. Policies for provision of safe sidewalks for pedestrians often required the warrant of substantial existing pedestrian volume, which was often missing due to the danger, discomfort, and inconvenience created by the existing conditions.

By contrast, under the universal access paradigm the warrant for safe sidewalks is determined by the speed and volume of motor traffic. A similar approach is used for cyclists; under universal access the warrant for more road space to enable more comfortable (and probably safer) overtaking of cyclists by motorists is determined by the speed and volume of motor travel. In general, pedestrian and bicyclist travel must be assumed rather than dismissed or ignored when designing facilities. Universal access incorporates the accommodation of cycling, walking and wheelchair use into the design and regulation of every street facility by default rather than as an optional feature or afterthought." (Project Universal Access, USA, 2010)

Sydney Metropolitan – Regional Recreation Trails Framework

HASSELL was commissioned in March 2004 by the Department of Infrastructure, Planning and Natural Resources (DIPNR) now known as the Department of Planning (DoP) and their Metropolitan Open Space Team (MOST) to undertake the Regional Recreation Trails Project, with the report completed in 2005. In order to meet the recreation needs of Sydney, the Metropolitan Open Space Team, under the umbrella of DIPNR Land Management branch, completed a number of projects including an Open Space Inventory covering the entire metropolitan area and Regional Recreation Demand Studies. Following on from this, and part of the DoP's metropolitan planning strategy, the department joined with other key agencies to prepare an inventory of trails and identified a regional network of corridors for a system of trails to link and provide access to Sydney green space.

A network of trails was mapped according to the various regions of Sydney and priorities established in each of the 4 Sydney regions (Central Coast, Southern Sydney, Northern Sydney, Western Sydney). The North West to the Great River Walk (East-West link) was allocated a higher short term priority (up to 5 years) with the non-urban links allocated the medium (5-15 years) to longer term (15 + years) priorities. The

Ropes to South Creek and South Creek to the Great River Walk links were allocated a medium term priority within the strategy.

Penrith Bike Audit (2009)

GTA Consultants were commissioned by Penrith City Council in 2008 to prepare a bike audit and plan that updated the previous bike plan completed in 1996. The other major objectives were to assess existing bike routes in the City against the current NSW bicycle design guidelines, network gaps and links to adjoining LGA's, and to identify funding opportunities to assist Council with the future implementation phase. A series of strategic routes were identified, prioritised and costed which Council could use to allocate available resources and RTA funding to develop.

This study highlighted that there were minimal on-road cycling facilities and those which had been implemented as part of the 1996 Bicycle Plan did not meet the requirements of the current NSW bicycle design guidelines. "The most notable deficiencies are the lack of bicycle logos and signage as well as there being no C4 lines marked between parked cars and the outer parking edge lines which are requirements of the RTA's Bicycle Design Guidelines" (Penrith Bike Plan 2009 p.35)

Nine strategic routes were proposed that included the following –

- South Penrith to Penrith CBD
- Cranebrook to Penrith CBD
- St Clair to St Marys
- Nepean River Recreational Path
- UWS to Penrith CBD
- Werrington to Penrith CBD
- Emu Plains to Penrith CBD
- Glenmore Park to Penrith CBD
- Penrith Park to Penrith CBD

A series of fourteen RTA routes were also proposed with a primary focus on the development of quality off-road, two way shared paths with three proposed major infrastructure items required to assist with key links along these major routes. The plan also included priorities for future bicycle parking facilities at key trip attractors, which can be used as an implementation guide when funding becomes available, along with other bike parking facility recommendations as deemed appropriate by Council's Traffic Engineering and Transport Planning team. Implementation costs were divided into the five categories including the 9 strategic routes, the 144 local links, 68 off road routes, the major infrastructure works and the bicycle parking facilities. The combined total works were estimated to cost $26,197,390. Proposed funding sources were listed and a detailed schedule of works attached to the report.

Penrith Integrated Transport and Land Use Strategy 2008 (PITLUS)

This strategy was a joint initiative between Penrith City Council and the NSW Department of Planning and was undertaken between 2007 and 2008. This strategy served to provide the context for the development of Penrith Council's new City-wide Local Plan, informs State infrastructure provision plans as they relate to Penrith City beyond 2016 and recognises the regional City status conferred on Penrith in 2007 with the associated implications for land use development and the growing demands on transport needs within the region. This strategy aimed to integrate land use planning with the co-ordination and alignment of the transport strategies across the LGA.

This strategy also highlighted the need for Penrith LGA to provide attractive alternatives to private motorised vehicle use by means of improving public transport options, enhancing safe pathway access throughout the City for cyclists and other users with the focus on the shorter trips between growing residential areas and the key trip attractors within the City.

Department of Planning Guidelines for Walking and Cycling (2004)

This report was commissioned by the Department of Infrastructure, Planning and Natural Resources (DIPNR) now known as the Department of Planning (DoP) in from 2003 to 2004. This was in response to the growing recognition within the NSW Government regarding the growing importance of "walking and cycling" in the creation of sustainable neighbourhoods and cities.

The guidelines were established to assist land-use planners and related professionals to integrate more effective planning for cyclists and other users of pathways as a safe, attractive, efficient alternative to private vehicle use and for healthy passive recreation. The intention is to create more opportunities for people to live in places with easy walking and cycling access to urban services and public transport. The guidelines were designed to provide a "walking and cycling" focus to the NSW Government's Integrated land Use and Transport Planning Policy and to compliment the RTA's facilities focused policies and actions.

The rationale for improving practice is to create "walkable and cycleable" cities as an important part of creating a sustainable City, one that is equitable, liveable, cost-effective, healthy, environmentally sound and safe.

The guidelines included the need to plan for greater access to key City services and facilities including the need for accessibility zoning around core facilities like railway stations. Some key recommendations include –

- Footpaths should generally be provided on both sides of all streets within a 400m catchment of accessible centres and major trip generators such as schools
- Footpaths should be provided on both sides of streets that serve as key routes between trip generators

In terms of recommended pathway standards, the following is proposed –

- A minimum of 1.5m is suggested, 2m may be appropriate in some instances
- All pathways should be
    - Continuous – providing a physically and visually continuous surface without gaps, including points where footpaths cross driveways
    - Level – providing a consistently level surface at all times, including points where footpaths cross driveways to avoid cross slope problems
    - Unobstructed – sealed or ground surface and its envelope free of obstructions such as signposts, trees and street furniture

In addition, the following supporting infrastructure is recommended –

- Upright kerbs should be generally used to ensure cars are parked on the road, not on the footpath
- In instances where stormwater management objectives require the use of alternatives to upright kerbs, another means of preventing parking on footpaths should be used and could include the use of bollards or landscaping as a barrier

- Kerb ramps should be provided at all corners, through road closures and wherever there is significant pedestrian traffic across the road.

With regards to planning for effective walking and cycling in release areas –

- Walking and cycling networks should be provided in their entirety as early as possible
- Footpaths should not be constructed prior to the completion of houses and installation of driveways, and driveways should yield to footpaths to ensure the latter has physical and visual priority

In relation to the Council provision of pathways, "Councils rated building of off-road cycleways as the most effective strategy to improving cycling, ahead of on-road treatments, promotion of cycling and end-of-trip facilities." (Planning Guidelines for Walking and Cycling, DIPNR 2004 p.52)

Penrith Sustainability Blueprint (2005)

Given that the guiding principle of sustainability is central to Penrith Council's vision for the future "..a sustainable and prosperous region with a harmony of urban and rural qualities and a strong commitment to environment protection and enhancement", it is imperative that more sustainable personal mobility choices are integrated into the future planning for the City. The blueprint makes reference to the sustainability criteria for the Metropolitan Strategy where DIPNR developed 8 criteria for application to new land release areas in order to reduce the City's ecological footprint, enhance the environment and improve quality of life.

The blueprint outlines 10 guiding principles with an emphasis on environmental protection and support for the need to create communities, not just housing estates. The need to incorporate universal design in the provision of and access to infrastructure, facilities and services is incorporated in the section that discusses social infrastructure. The provision of easy accessibility for walking and cycling and pathways that are clearly defined is highlighted and the development of a road system and cycleway/pedestrian network that links with existing and new infrastructure, public transport services, shopping centres, schools, community facilities and recreational areas. The planning for the public domain must include the development of footpaths on both sides of every street in order to promote more effective and safer personal mobility choice within the City.

Penrith PLANS 2004 (People's Lifestyle Aspirations and Needs Study)

The PLANS (People's Lifestyle Aspirations and Needs Study) aspirational research indicated clear community priorities regarding the relative importance of improvements to recreational facilities. The following table shows the top five priorities for improvement to the City's recreation facilities –

1.	Nature reserves and waterways	49%
2.	Playgrounds	43%
3.	Parks	43%
4.	Walking and cycle paths	41%
5.	Aquatic Centres / Pools	30%

The PLANS (People's Lifestyle Aspirations and Needs Study) research identified the need to improve the quality of the City's open space and facilities. This requires a focus on –

- quality (rather than just on the quantity) through larger open space areas that provide a range of experiences for different age groups and interests, and
- incorporating the principles of social inclusion and universal (accessible and inclusive) design into the planning and design of open space areas, infrastructure, facilities and services to better reflect and meet the needs and abilities of the City's communities.

While the City's population in general is ageing, there are also substantial numbers of younger families with children, particularly within the newer urban areas of the City. Quality passive recreation spaces are needed to meet the needs of the City's diverse communities, and also recognise the increasing accessibility needs of our ageing population.

The PLANS research indicated a current and future growth in the demand for quality passive recreational facilities and opportunities, including improvements to our natural areas, waterways, parks and playgrounds. The consultation revealed high demand for footpaths and cycleways as passive recreation facilities. It notes high demand for direct, safe and pleasant pedestrian links between major commercial, social and recreation facilities as well as between residences and district commercial, social and recreation facilities. Along with the passive needs, the PLANS report highlights that active open space is also needed to encourage health through physical activity and to cater for the growth in identified sports.

In relation to enhancing cycleways and pathways the PLANS strategies included the proposal to "to develop an integrated pedestrian network linking major and district shopping facilities as well as major recreation facilities and services across the LGA" (PLANS, 2004 p.140)

Metropolitan Transport Plan – Connecting the City of Cities (2010)

In February 2010 the NSW State Government released the Metropolitan Transport Plan to set the vision for how the City of Sydney will be in the future. The intention is to integrate this plan with the Metropolitan Strategy to deliver a working, connected and sustainable City towards 2036. As part of this vision, there is the determination to improve pedestrian and cycle links to support local centres, reduce local road congestion and to encourage healthier lifestyles. Work is set to begin on the highest-priority projects set out in the NSW Bike Plan 2010.

In relation to the new approach to transport and land use planning in relation to the City of Penrith, the State Government will seek to work with Local Government to increase private sector investment and help to expand Penrith as an administrative centre following the opening of NSW and Australian Government office sites. The plan also states that the connections between the Nepean River and the City centre will be improved as part of the wider support for walking, pedestrian and bus links.

Penrith Inclusion Plan - People with Disability 2009-2013

The *Penrith Inclusion Plan - People with Disability 2009-2013* builds on the work already undertaken over many years by Council with its residents and community

partners in seeking to make Penrith City a better place for those who live, work and play here,

The Plan has been prepared in response to the particular needs and interests of people with disability. It envisions an inclusive and engaging City that facilitates the participation of all its members. It will deliver outcomes that benefit a broad cross-section of the local community - by making it easier for everyone to move around town; use Council services; obtain information about what's happening in the City; and find a job that suits their needs.

The *Penrith Inclusion Plan* is aligned with the Council's commitment to the *Penrith Principles for a Sustainable City,* and is based specifically on the following four principles:

- *Provide a long-term vision for Penrith, based on sustainability: intergenerational, social, economic and political equity and their individuality*
- *Achieve long-term economic and social security*
- *Empower people and foster participation, and*
- *Expand and enable co-operative networks to work towards a common, sustainable future.*

Penrith Planning for an Ageing Community Strategy 2010+

The Ageing Community Strategy outlines the challenges of a growing ageing population and Council's commitment to supporting and developing an age-friendly city for current and future generations of older people. This Strategy will enable Council to develop an approach which recognises the changing needs of the City of Penrith and which directs actions and resources appropriately to ensure that the diverse needs of older people will be met within the City. The Strategy will help ensure that Council can deliver suitable infrastructure and services over which it has direct control or influence, and that it develops integrated responses on issues where Council may lead or partner with other agencies and organisations. The focus of the Strategy is on identifying priorities, achievable actions and Council's role in implementing the actions, so that a clear pathway is established to anticipate and address ageing issues within the City. The five main priority themes that are proposed in this Strategy include;

1. Encouraging participation in social, leisure and cultural activities
2. Encouraging healthy lifestyles and access to health care and support services
3. Supporting older people to "age in place"
4. Creating local communities that support active ageing
5. Encouraging participation and contribution to community life

All of these major five themes are relevant to the development of a more inclusive pathway network that incorporates universal design and will serve to support the needs of all people with diverse abilities and as our abilities change over time.

Penrith City Health Strategy (2010)

One of the community outcomes in Council's Strategic Plan is 'A City that Promotes Health and Well Being'. This Vision is the basis for Council's Health Strategy. Although Council is not a direct provider of health services, many programs and services contribute to health and well being.

The purpose of the strategy is to highlight the various factors that influence the health of our communities and provide direction to improve health. The strategy can also be used to guide the allocation of resources and advocate for health.

The strategy identifies seven health challenges for Penrith. The first six are based on the World Health Organisation's Social Determinants of Health. Poor access or experiences in one or more of these conditions contributes to people getting sick- more so than genetics and behaviour.

- Transport
- Work and income
- Housing
- Food and nutrition
- Social interaction and
- Childhood.

The seventh concept for Council to consider is partnerships.

Council has identified strategic responses for each of the challenges. Although some challenges are more relevant for Penrith actions have been identified for each one as a way to deliver on the health strategy.

Critical Analysis & Consistent Themes Emerging from the Literature

The common themes emerging from the key list of reports described here are;

- sustainable communities require a safe, efficient and effective pathway and cycleway network

- to provide an attractive and viable alternative to vehicular transport, particularly for shorter trips to major trip generators and for passive recreation and for positive exercise and health related benefits for residents and visitors

- the current standard of provision of pathways and cycleways in relation to safety, connectivity, connectedness and coherence is not adequate, not acceptable and the standards must be raised if we are serious about creating more sustainable communities

- the responsibility for improved pathway development lies within the developers within early planning stages and that we must get back to basics and plan for the minimum 1.5m wide paths on both sides of all streets where the pathway takes priority as a clear, level (ie not intersected by sloping driveways) and continuous essential infrastructure item. A network of integrated off road shared paths and cycleways is also required and must be planned to link in with existing and planned services outside of the release area

If we are to more effectively meet the needs of our changing population and for the diverse range of abilities, then it is no longer acceptable to merely plan for 'walking and cycling' but that Penrith City Council can lead the way in planning for greater personal mobility choice for all abilities and users of our pathways.

APPENDIX B

NSW Bicycle Guidelines 2005, Austroads 2009 *Guide to Traffic Management* and *Guide to Road Design*

These extracts are taken from RTA *NSW Bicycle Guidelines (NSWBG),* and Austroads 2009 *Guide to Traffic Management,* Austroads 2009 *Guide to Road Design.*

This section forms a summary of the minimum requirements for *shared cycle and pedestrian paths*, together with *on-road cycle lanes* that may be constructed in Penrith LGA as part of the PATHS project. The extracts are to be read in conjunction with the full documents as well as *Australian Standard AS 1742.9.2000 – Manual of Uniform Traffic Control Devices, Part 9 Bicycle Facilities.* **Where there are differences between the various guidelines, the advice in the Austroads 2009 will prevail.** A consolidating guide is *Cycling Aspects of Austroads Guides*.

On-Road Facilities

On-Road Lane Widths – (Austroads 2009 Part 3 Geometric Design p60-75)

Exclusive Bicycle Lane
The width of the on-road bicycle lane is dependent on the road speed.

	Lane Width (m)		
Road Speed km/hr	60	80	100
Desirable	1.5	2.0	2.5
Acceptable range	1.2-2.5	1.8-2.7	2.0-3.0

See footnotes to this table in Pt 3 Austroads 2009 p68

Bicycle/car parking lane dimensions (parallel parking)

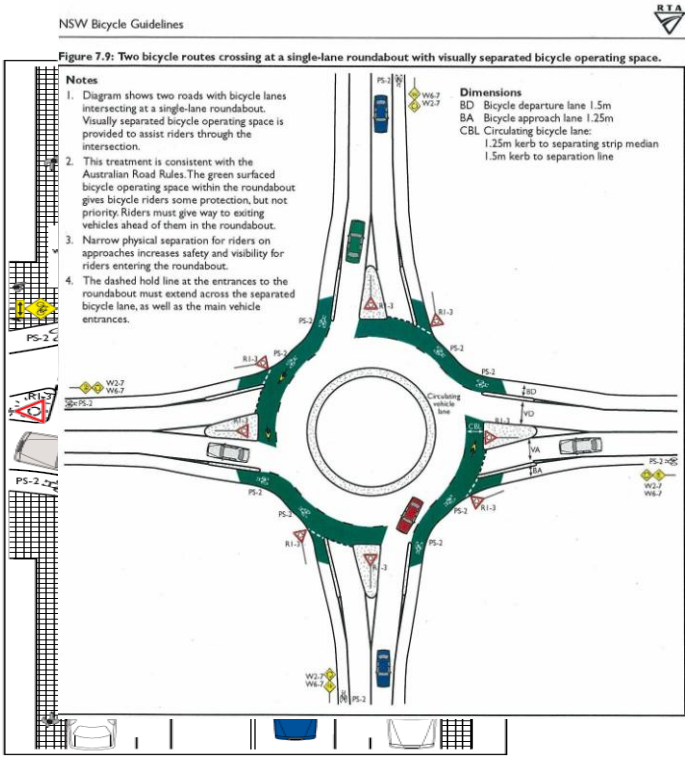
	Overall facility width (m)	
Road Speed km/hr	60	80
Desirable	4.0	4.5
Acceptable range	3.7-4.5	4.0-4.7

See footnotes to this table in Pt 3 Austroads 2009 p72

Bicycle route at small single lane roundabout *(Fig 7.8 NSWBG*)

Bicycle lanes should be marked up to and beyond unsignalised intersections. Where bicycle lanes are marked along a street, for safety and continuity, they should be marked continuously across the mouth of any intersecting minor side street. The operating requirements of bicycle riders should always be considered in the design of roundabouts. To provide bicycle network route continuity and safety passage for riders through roundabouts, bicycle lanes should be marked up to the roundabout and recommence on the other side.

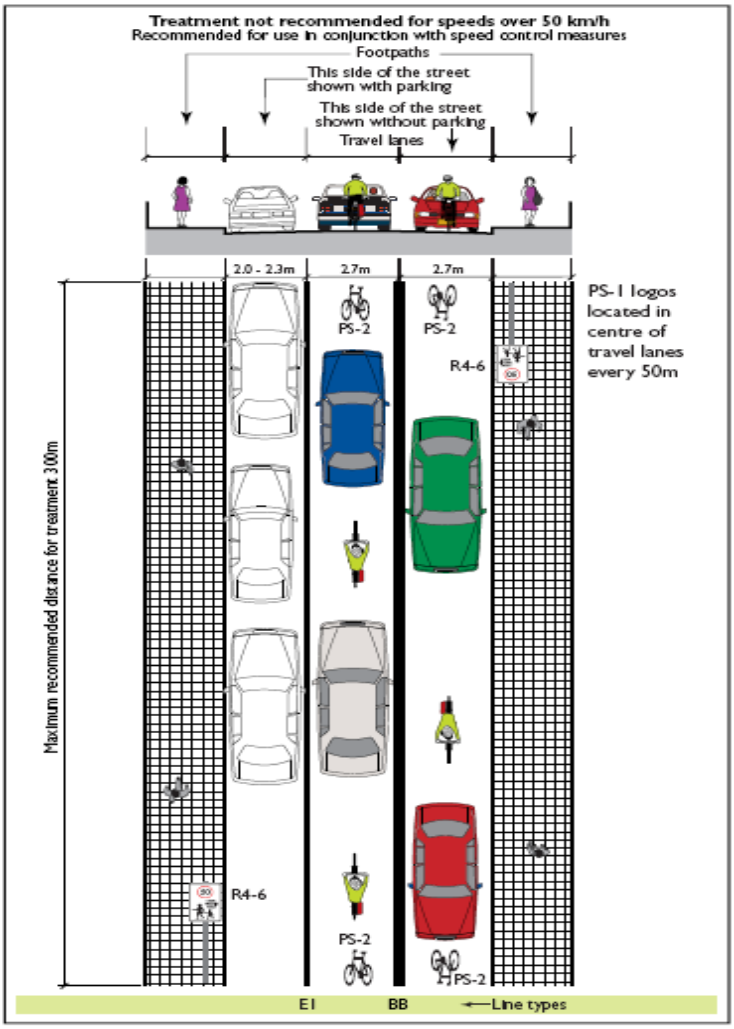
"In a number of situations, a bicycle lane may not provide sufficient levels of safety, particularly in areas of potential conflict between different modes, such as intersections or when lanes merge. Painting the road surface at intersections and even along a bicycle lane has proven to be an effective method of increasing awareness of the bicycle lanes presence, thereby increasing safety. It is suggested that a green painted surface be considered for implementation at intersecting side streets on bicycle routes, particularly where there are medium to high traffic volumes." (GTA 2009)



For district level PATHS routes, the use of green line marking within the roundabout is recommended as shown in the diagram above and in the picture on p.13

Mixed traffic street – low speed environments (*Fig 4.7 NSWBG*)

Function: Shared (with moving motor vehicles), unmarked.
Operating space for riders on minor roads and residential streets. To provide bicycle access across the road network. Suitable in low-speed (less than 50km/hr), low-volume environments.
Design: Riders share vehicle lanes which are designed tight enough so that it is not possible to pass riders. NB shared road lanes with a tight profile are not recommended on major roads (above two lanes).
Comments: Riders' full freedom of and access to the road network is preserved; safety at intersections with similar roads is increased; riders are less well protected than on separated or shared spacious-profile facilities; tight profile encourages lower speeds; physical methods to further reduce motor vehicle speeds are often necessary (LATM treatments); car parking in these streets can be a hindrance; the risk of illegal parking is high; motorists cannot pass riders and may pressure them to move faster or into lateral obstructions.



Off-Road Facilities

Off-Road Path Widths – (Austroads 2009 Guide to Road Design Part 6A: Pedestrian and Cyclist Paths pp 43-44)

Shared Path (Bicycles, Pedestrians)

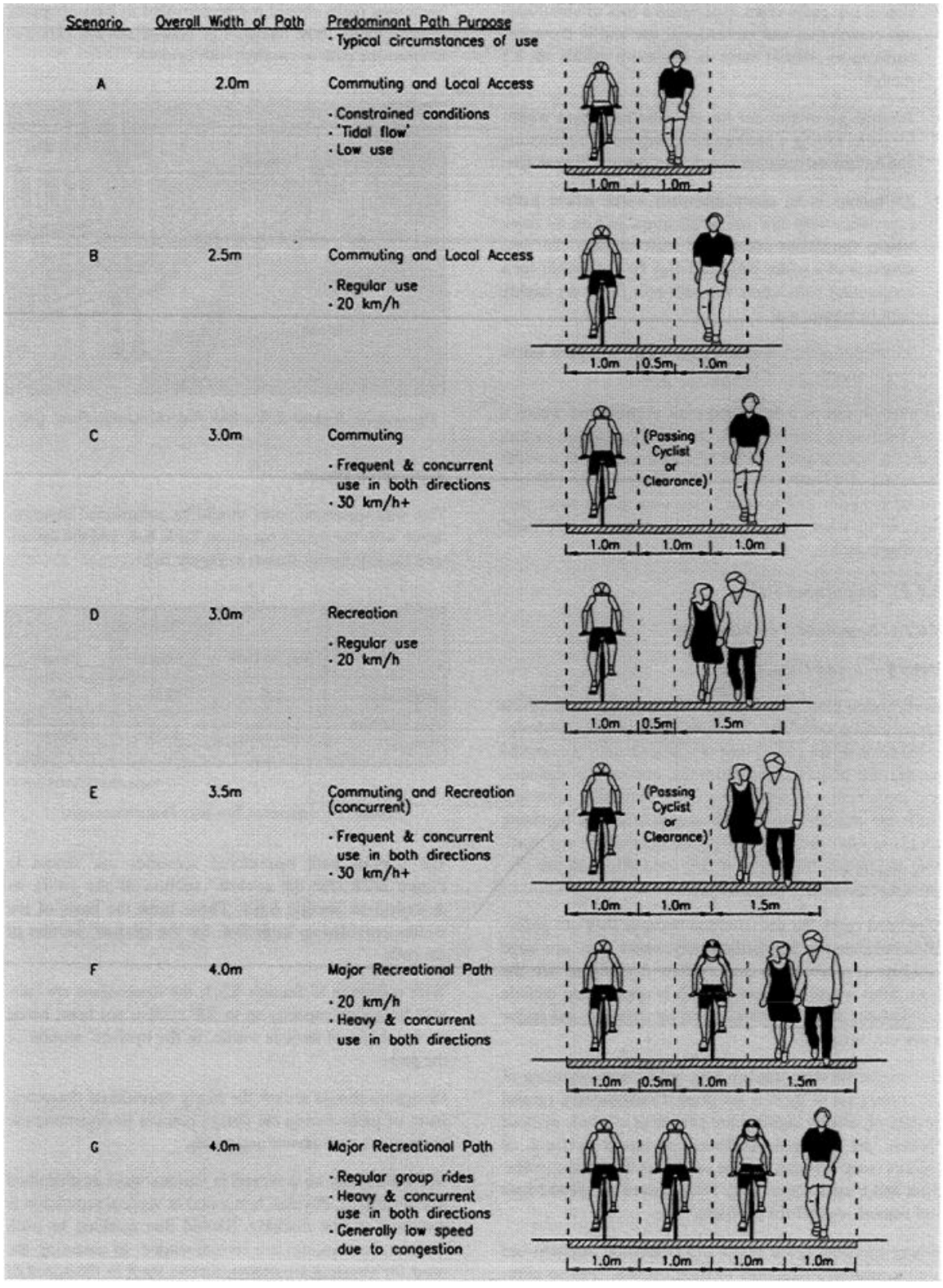
	Path Width (m)		
	Local Access	Commuter	Recreational
Desirable min width	2.5	3.0	3.5
Acceptable width – typical maximum	2.5[1]-3.0[2]	2.5[1]-4.0[2]	3.0[1]-4.0[2]

1. A lesser width should only be adopted where cyclist volumes and operational speeds will remain low.
2. A greater width may be required where the number of cyclists and pedestrians are very high or there is a high probability of conflict between users (eg people walking dogs, roller bladders and skaters etc)

Exclusive Bicycle Path

	Path Width (m)	
	Local Access Path	Major Path
Desirable min width	2.5	3.0
Acceptable width – typical maximum	2.5[1]-3.0[2]	2.5[1]-4.0[2]

1. A lesser width should only be adopted where cyclist volumes and operational speeds will remain low.
2. A greater width may be required where the number of cyclists is very high.



Shared Use Path Operation – (Austroads 2009 Guide to Road Design Part 6A: Pedestrian and Cyclist Paths p84)

Examples of signs, linemarking and pavement symbols

For cyclists/pedestrians

R8-2

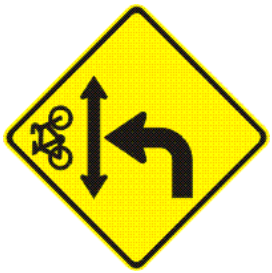
R7-4

G9-259-1

For vehicles

W6-9

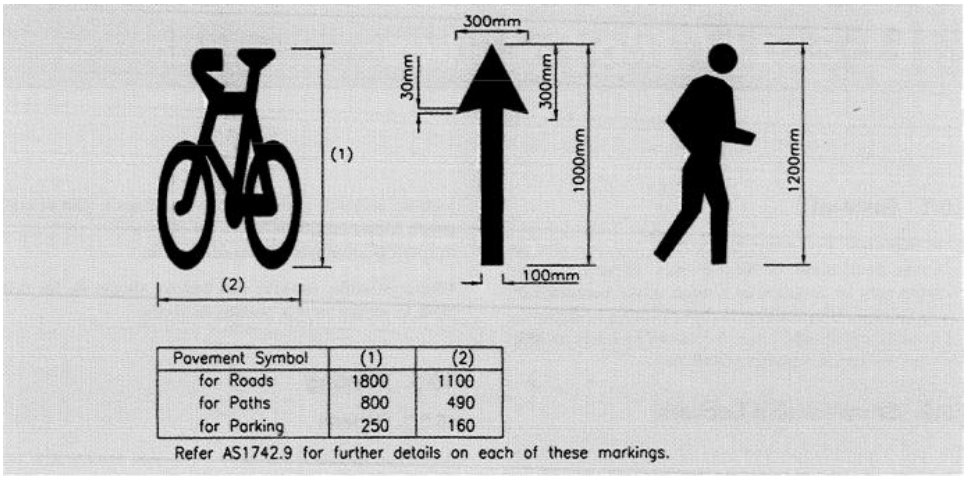
W8-23



W8-200

For other signs refer NSWBG (Part 9, pp 70, 71) *and behavioural signage types p39.*

Bicycle, Pedestrian and Arrow Pavement Symbols – AS1742.9-2000
Also refer NSWBG (Part 3, p14 & Part 8, p66) for logo identifiers/size.



Pavement Symbol	(1)	(2)
for Roads	1800	1100
for Paths	800	490
for Parking	250	160

Refer AS1742.9 for further details on each of these markings.

PS-3 off rd **PS-2 on rd**	**PA-1**	**PS-4**

Design speed of off-road bicycle paths – NSWBG (Part 6, p35)

Design element	***Example values for 30km/h design speed***
Operating speed	30km/h
Horizontal curvature	25m minimum path radius
Bicycle path width	1.5m one way 2.5m two way
Shared path width	2.5-4.0m
Clearances	0.5-1.0m to walls and fences
Gradient	5% maximum
Sight and stopping distance	35-40m 8m sight clearance on min 25m radius curves
Super elevation	2% for minimum radius of 25m

Path speed limiting devices – NSWBG (Part 6, p36)

Device	***Recommended***	***Comments***
Speed humps	No	Can destabilize riders and increase hazards
Path narrowing	Yes	Minimum one-way width 1.4m, warning signage and adequate line marking required
Path deflection	Yes	Maximum deflection angle 10 degrees for high speed path and 20 degrees for low speed path
Path terminal deflection rails	No	Can destabilise riders and increase hazards if used as speed limiting device. Used only to prevent unauthorized vehicle entry.
Rumble strips	No	Used only as a warning device to alert riders to changed conditions ahead
Warning signage	Yes	Used to warn of approaching hazard and to advise of need to reduce speed. Used in conjunction with other methods.
Holding rails	No	Not recommended at all by these guidelines
Bollards no	No	Not recommended as a speed control device. Only used to prevent unauthorized vehicle entry.
Alternative paving	Yes	Use different materials and colours

Checklist for "standard" shared use path

Consistency in treatments for bicycle infrastructure is important for all users and vehicle drivers alike. Consistent treatments minimise risk and accidents, conflict between users, and improve safety. However, this does not mean that every shared use path must have, for example, logos every 100m. A common sense approach should be applied to each path design, given the constraints or features of the path locality, the frequency of use, the nature of key users (families, recreational or commuters). Alternating use of signs and logos can reduce the clutter.

The following is a list of commonly used shared use path treatments

- GIVE WAY signs (R1-1) on shared path at both sides road crossing point, facing direction of travel
- SHARED PATH signs (R8-2) back to back mounting not more than 500m or after each road crossing
- END sign (R7-4) at path end
- KEEP LEFT sign (G9-259-1) facing direction of travel every 200m (also G9-259-2, G9-259-3, G9-259-4)
- PARALLEL BICYCLE PATH TURN WARNING (W8-200) at intersection approaches
- Logos PS-3 and PS-4 (800 x 490mm) facing direction of travel at spacings of up to 200m
- Arrow PA-1 facing direction of travel every 100m
- S5 dashed separation line on straight path sections
- S4 solid line used on curves, steep gradients or where visibility is restricted.
- E7 edge line throughout
- Pram ramps at road crossings.

Way finding/directional signage may also be suitable.

***Avoid use of bollards**. Bollards are potentially hazardous to cyclists and walkers. If they must be used to prevent vehicle access, they must be properly marked with reflective tape and supported with unbroken centrelines to provide clearance. Bollards should never be used in the path travel lane!*
See Figure 6.3 of NSWBG for details of compliant bollards.

***Avoid use of holding rails** at road crossings. Holding rails are not recommended as they are often destabilizing for the rider and encourage poor bike handling practice, especially on take off manoeuvres.*
They can be a hazard more than a help!

Bollards should only be placed in shared-use paths <u>when there is an evident problem</u> with vehicles driving or parking on the path (which can only be determined after the path opening). They are not installed to warn path users of a road or driveway crossing.

A reassessment of the need for the bollards can be made after opening of the path, if there is a reported problem with vehicles on the path.

The purpose of holding rails (or U-rails) is to assist a rider who has pedal straps or clips to balance at a road crossing. However, the use of holdings rails is not recommended by the Guidelines as the rails

(a) require a hand to come off the brake when slowing to the intersection to grab the rail, so the rail is often used as a brake instead, and this move can be hazardous;
(b) are often used to push-off from, rather than using body power, which can also be hazardous;

and they encourage the 'balancing act', rather than placing feet on the ground at the intersection which is safer.

Holding rails are often poorly located, either on the wrong side of the path (considering path users travel on the left), or distant from the stopping point at the intersection.

Holding rails are required at pedestrian refuges in accordance with RMS TDT 2001/01.

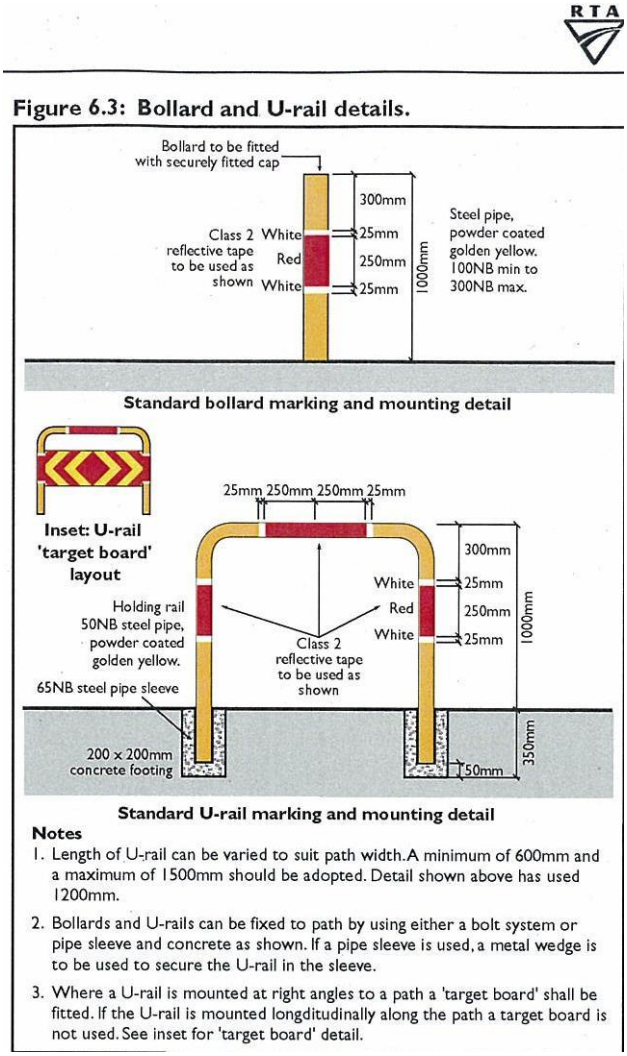
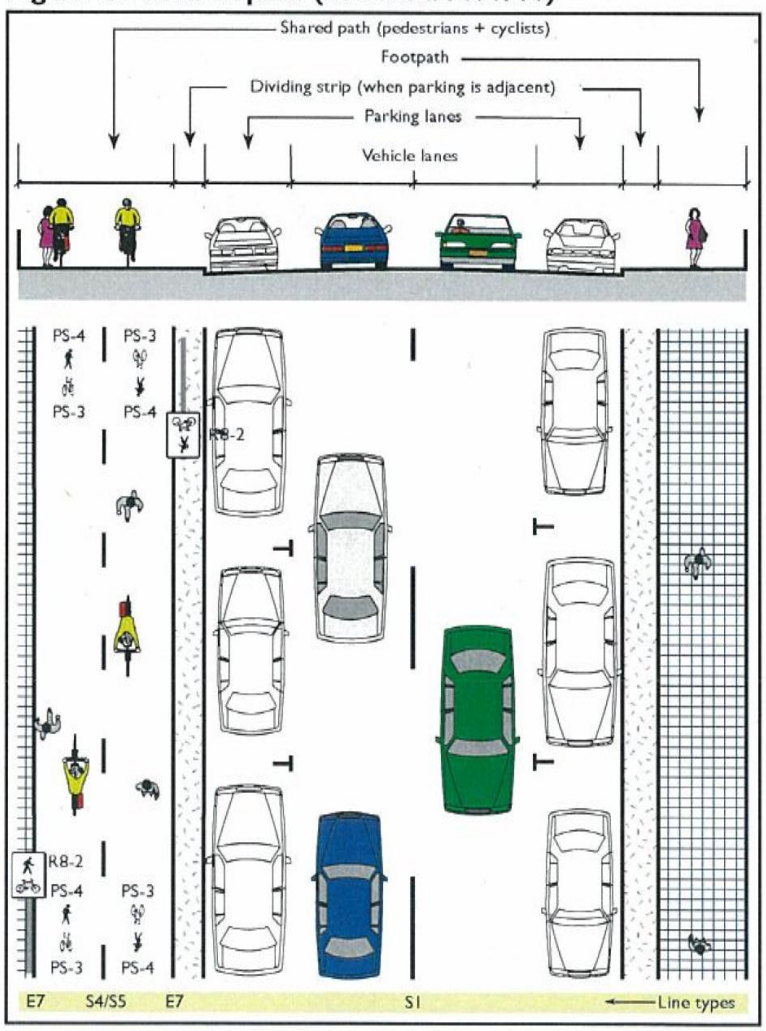


Figure 6.3 (p37): Bollard and U-rail details (RMS Bicycle Guidelines)

Shared path in a road reserve (*Fig 4.4 NSWBG*)

Function: Shared (with pedestrians) operating space for riders in road related areas. Suitable for regional and local bicycle network routes.
Design: Physical separation from motor vehicles by means of a verge, median strip or kerb. No separation from pedestrian traffic. Additional separation recommended between parking lane and edge of shared path to allow for car door opening (recommended 1m).
Comments: Riders are better protected than in a shared on-road environment but less well protected than on a separate facility such as a bicycle path; motorists are clearly separated from cyclists and can easily pass riders; cycling is more comfortable unless large numbers of pedestrians are present; maximum visibility for bicycle network routes; riders and pedestrians sometimes do not respect each other's use of the facility; physical preventative measures are often needed to avoid illegal parking of motor vehicles or the placement of garbage bins and debris on the bicycle paths; road crossings need to be carefully planned; shared paths require a greater use of space – adequate width is critical; access by unauthorised motor vehicles may damage the surface.

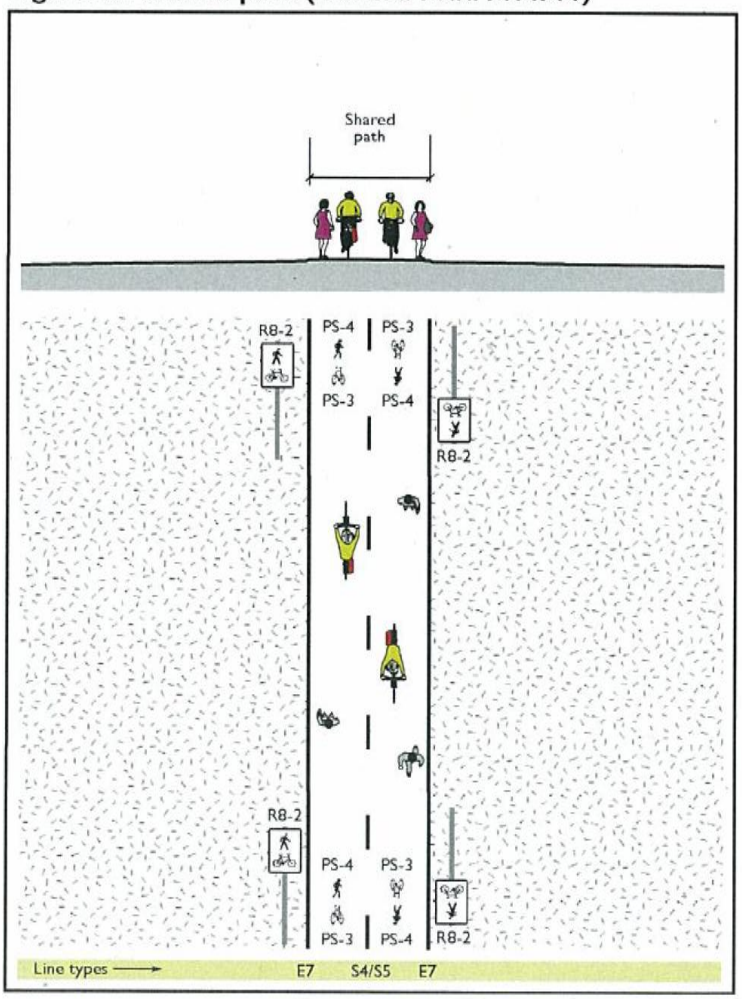
Figure 4.4 Shared path (in a road reserve)

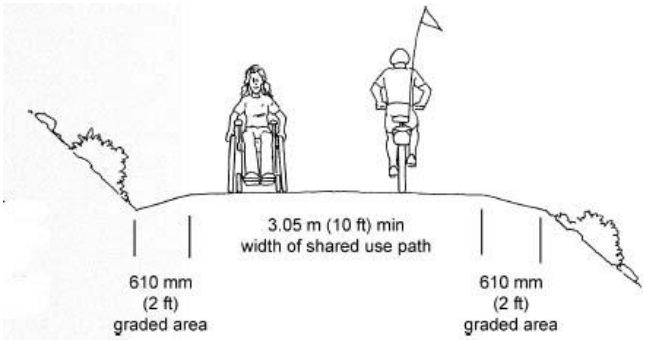


Shared path (not in a road reserve) (*Fig 4.5 NSWBG*)

Function: Shared operating space for riders and pedestrians on off-road areas. Suitable for regional and local bicycle network routes.
Design: This facility is located outside the road reserve in areas such as parks, drainage easements or reserves. Indicated by regulatory sign R8-2.
Comments: riders are less protected than by visual or physical separation; cycling is less comfortable when large numbers of pedestrians are present; maximum visibility for bicycle network routes; freedom of movement around the road network is decreased; physical preventative measures are often needed to avoid illegal parking or motor vehicles or the placement of garbage bins and debris on bicycle paths; road crossings need to be carefully planned; shared paths require a greater use of space – adequate width is critical; pedestrians and riders may not respect each other's use of the facility; access by unauthorised motor vehicles may damage the surface; special lighting may need to be installed in locations remote from the street system.

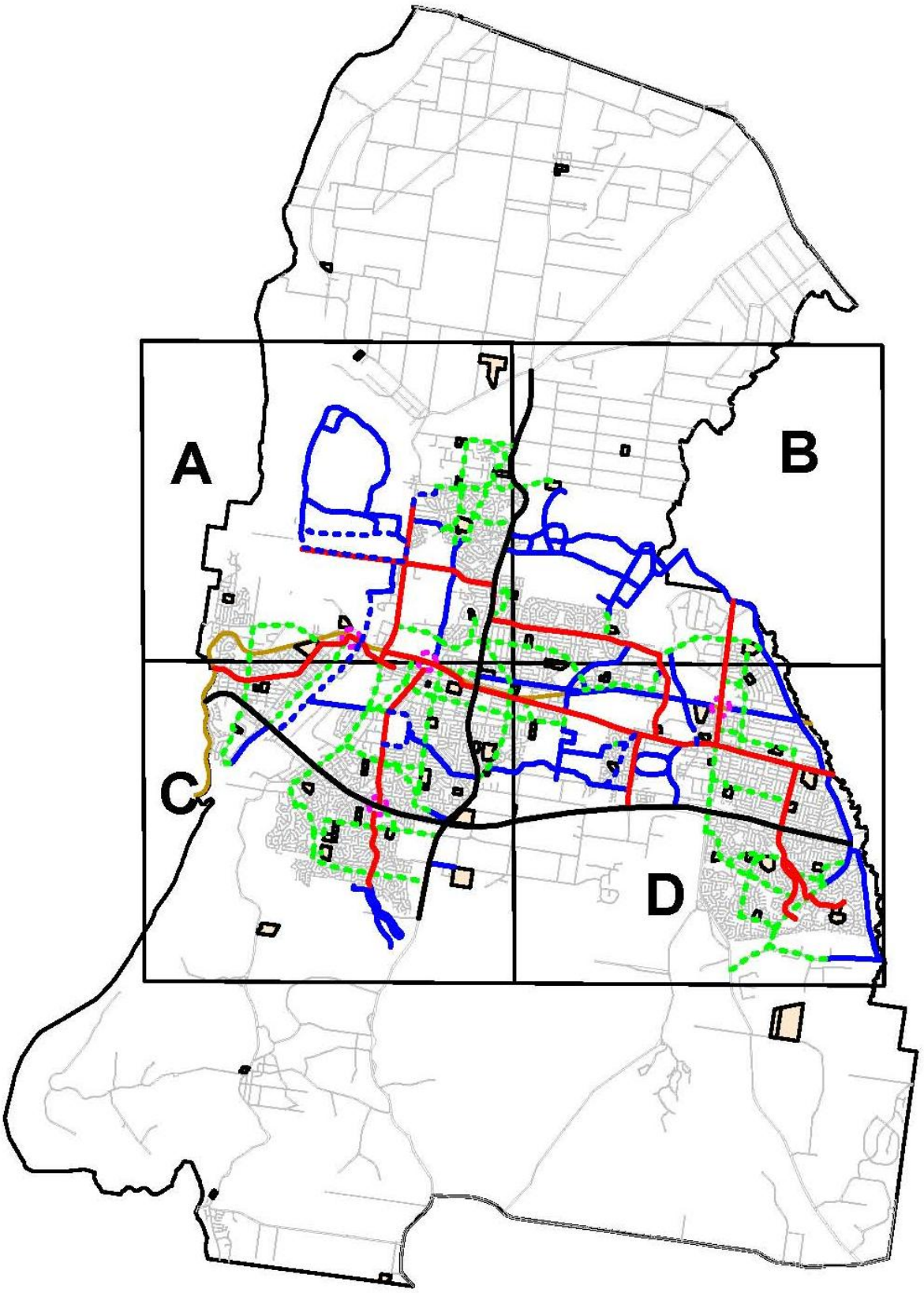
Figure 4.5 Shared path (not in a road reserve)





Optimal min. width (3m) for a shared use path that incorporates universal design (inclusive for all abilities) for all major district routes

APPENDIX C



Date: 26.05.2011

Penrith Accessible Trails Hierarchy Strategy

Every care has been taken to ensure the information contained on this map is correct, however Council accepts no liability for error or misinterpretation of the information shown on this map.

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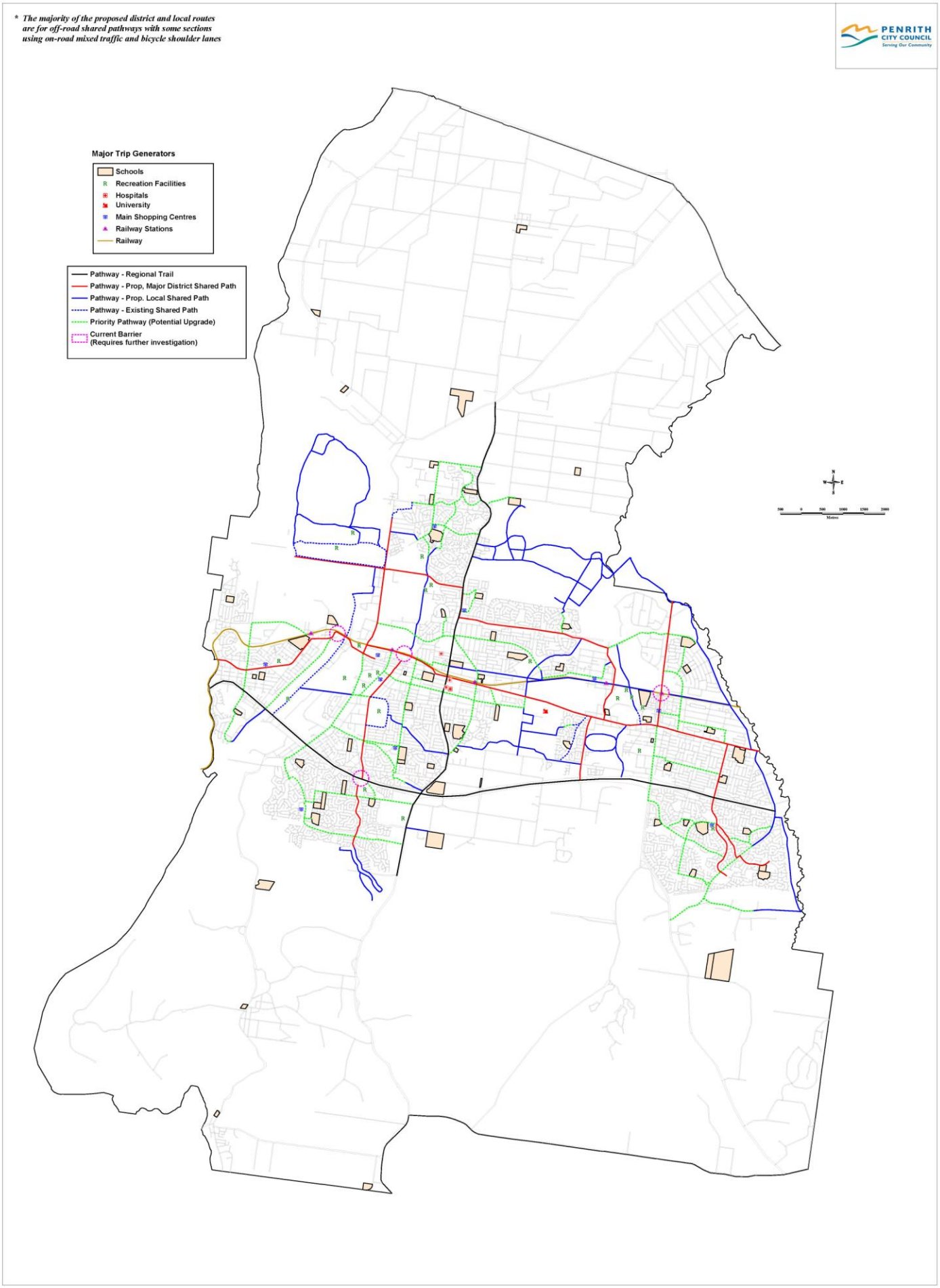
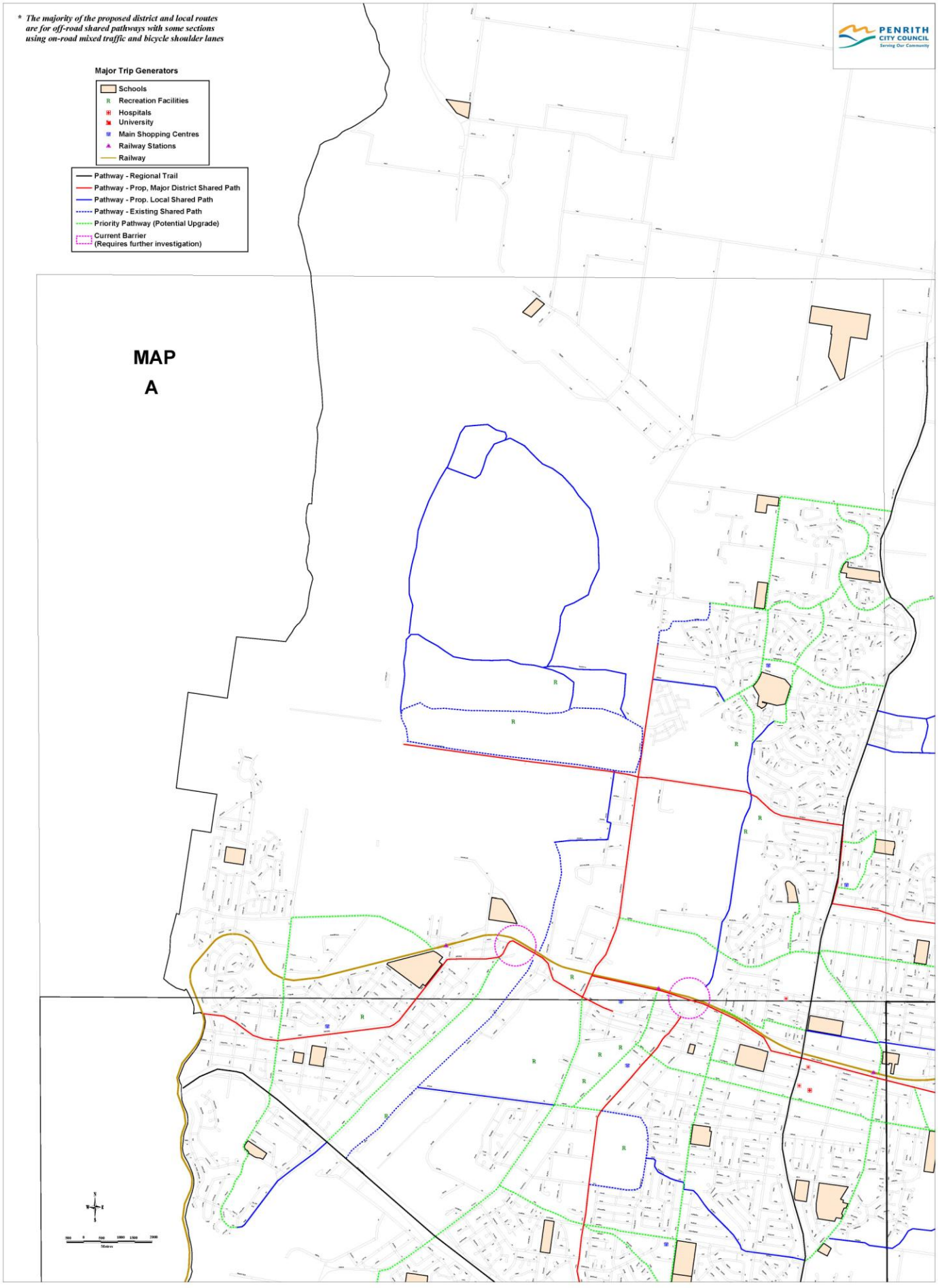
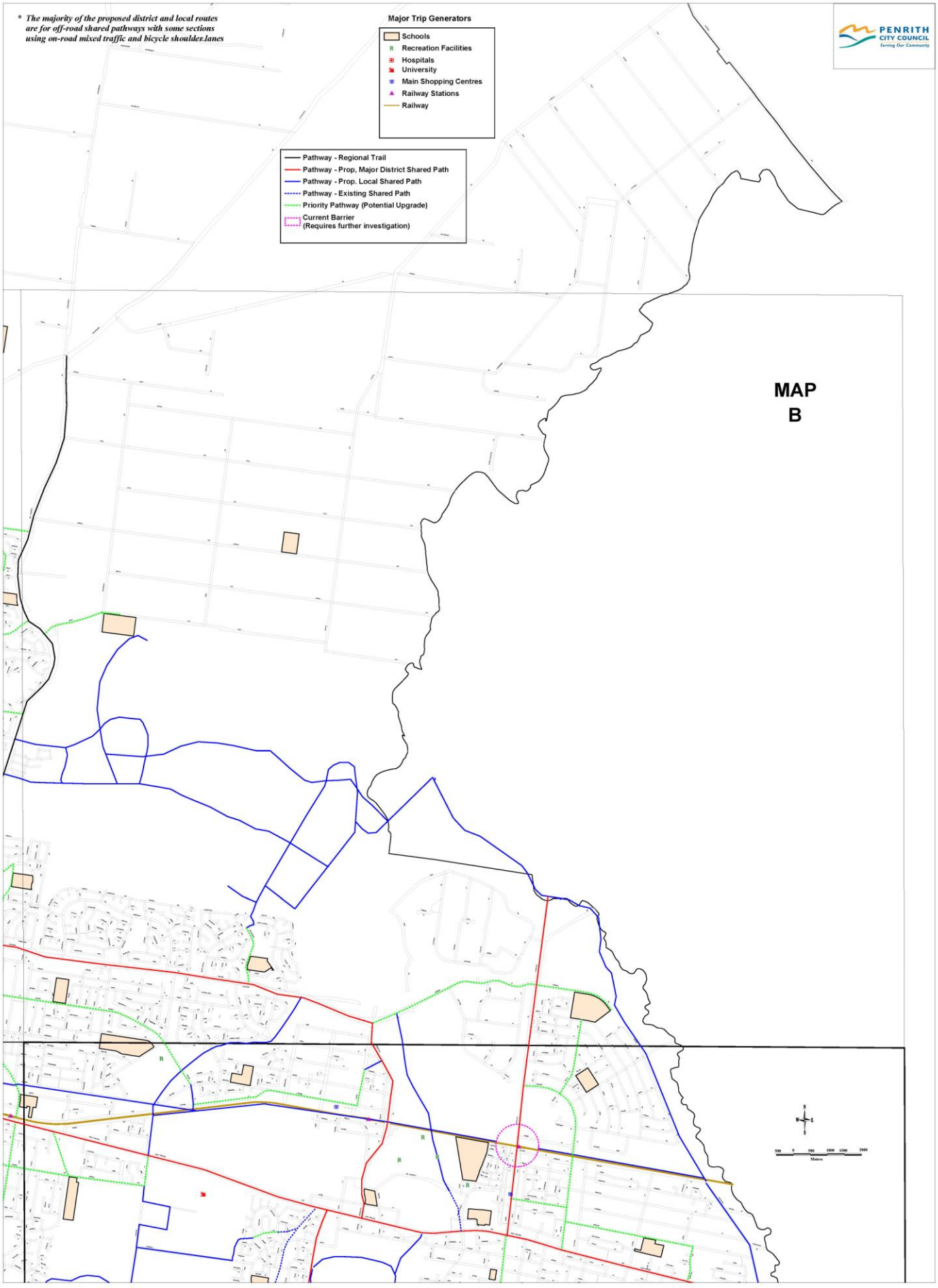

* The majority of the proposed district and local routes are for off-road shared pathways with some sections using on-road mixed traffic and bicycle shoulder lanes
PENRITH CITY COUNCIL
Serving Our Community
Major Trip Generators
Schools
Recreation Facilities
Hospitals
University
Main Shopping Centres
Railway Stations
Railway
Pathway - Regional Trail
Pathway - Prop. Major District Shared Path
Pathway - Prop. Local Shared Path
Pathway - Existing Shared Path
Priority Pathway (Potential Upgrade)
Current Barrier
(Requires further investigation)
Prepared : 5th April 2011
Penrith Accessible Trails Hierarchy Strategy



Penrith Accessible Trails Hierarchy Strategy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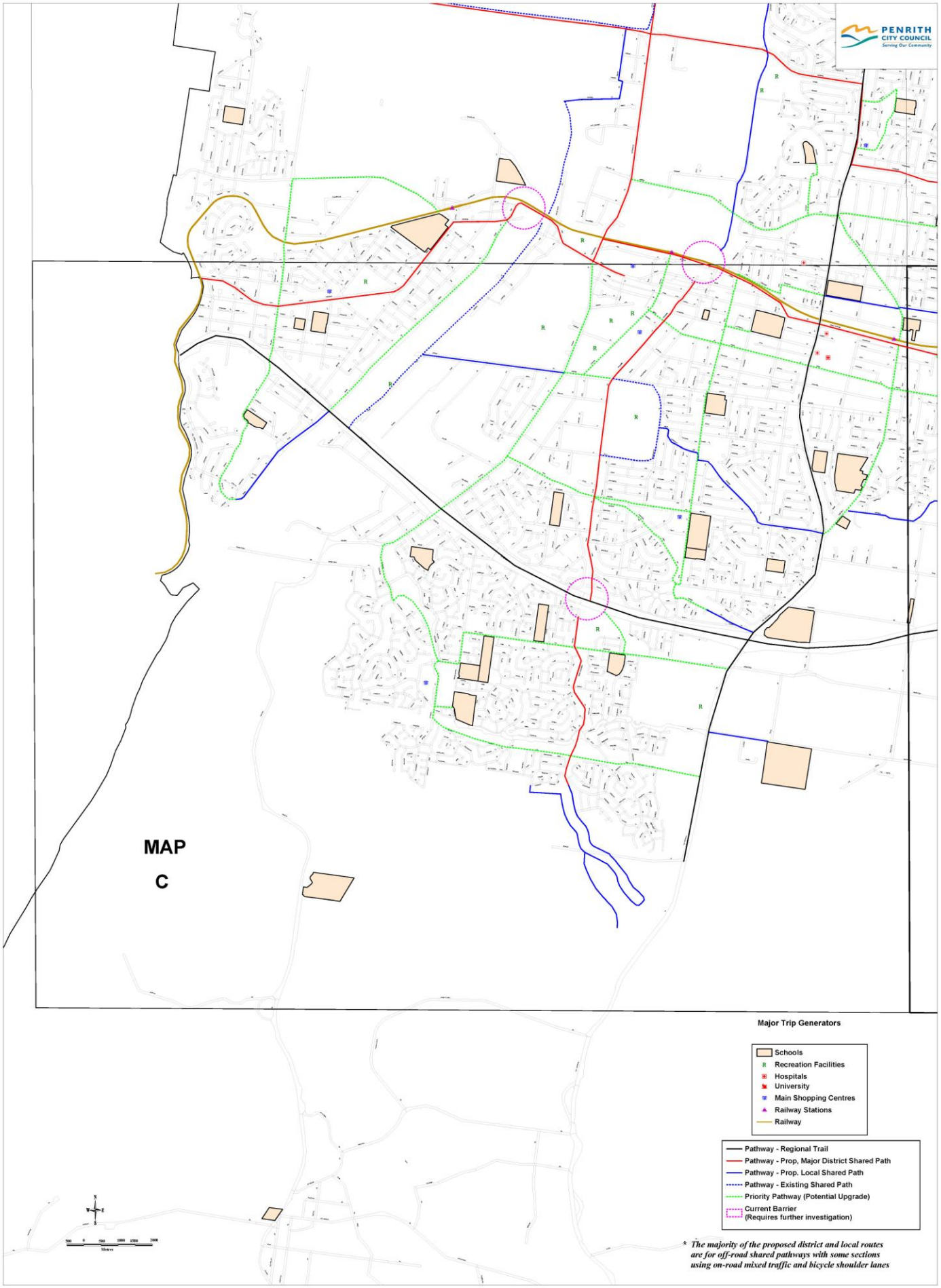
(Requires further investigation)
PENRITH CITY COUNCIL
Serving Our Community
MAP B
Prepared : 26.05.2011
Penrith Accessible Trails Hierarchy Strategy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Major Trip Generators
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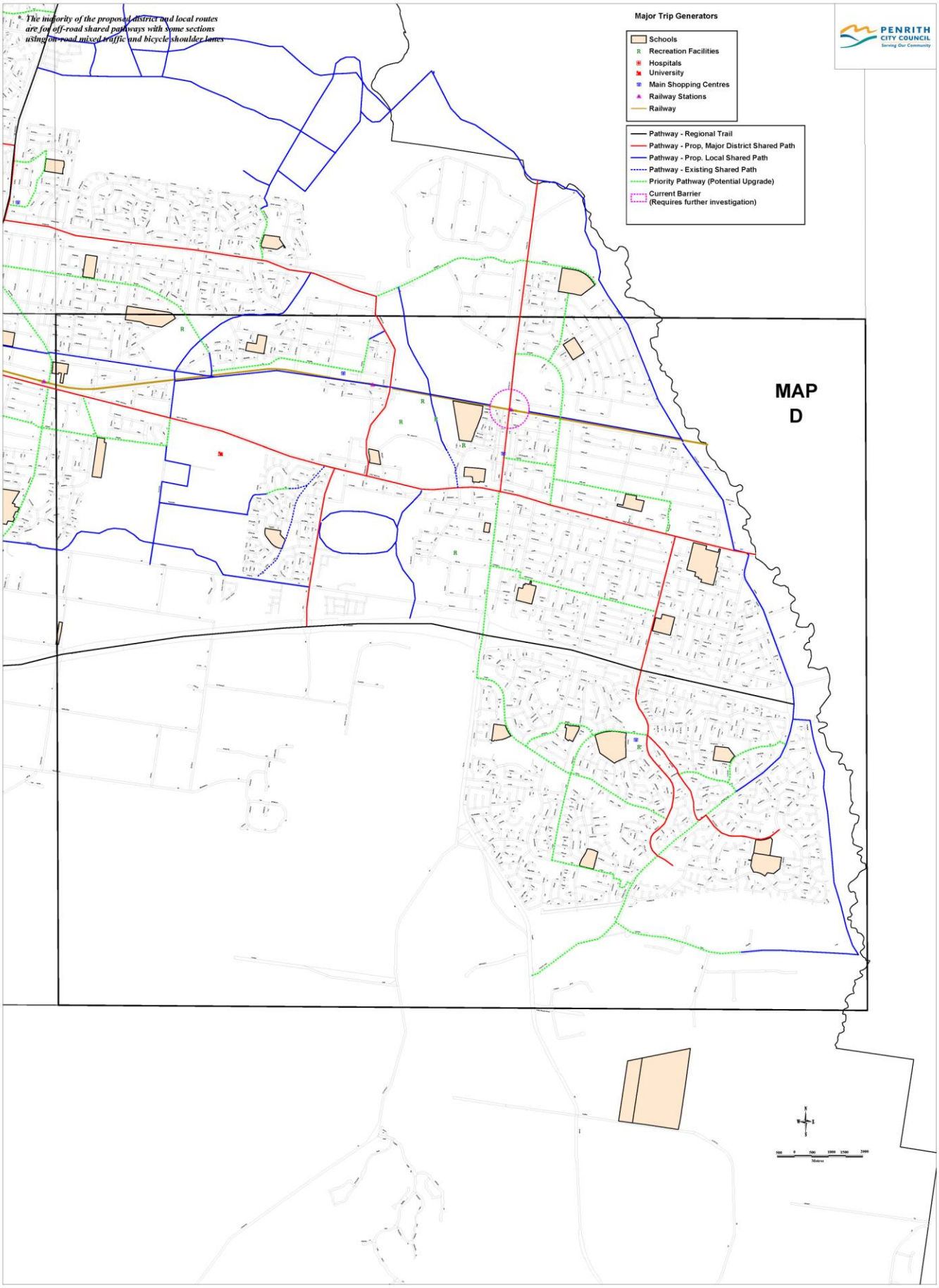
Prepared : 26.05.2011
Penrith Accessible Trails Hierarchy Strategy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(Requires further investigation)
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MAP D
Prepared : 26.05.2011
Penrith Accessible Trails Hierarchy Strategy