City of Marion

Walking and Cycling Guidelines

A great place to *live*

CITY OF MARION

Document control

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1	August 2012	Mark Griffin Brett Grimm Elaine Delgado Oxigen	Walking and Cycling Strategy 2012-2017 endorsed by Council (GC280812R05)
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2.2	April to June 2024	Mathew Allen, Carl Lundborg Nathan Saxty Sara Hurditch	• Updates to shared path widening, walking and cycling amenities • Updates to the proposed walking and cycling routes, strategic plan updated, graphic and minor text edits.
2.3	October 2024	Sara Hurditch	Updates to incorporate Glossary, additional sections, references and maps.

Kaurna Acknowledgement

Ngadiu tampendi Kaurna meyunna yaitya mattanya yaintya yerta

This Kaurna Acknowledgement was prepared in consultation with traditional custodians.

Acknowledgement of Country

The City of Marion acknowledges we are situated on the traditional lands of the Kaurna people and recognises the Kaurna people as the traditional custodians of the land.

Contents

Walking and cycling in the City of Marion

City of Marion context

Like many Adelaide councils, the City of Marion is characterized by:

- A growing population and infill development
- High levels of car ownership and demand for parking
- A high proportion of families and an aging population
- Low incidence of cycling and walking for everyday trips

These present both challenges and opportunities for connecting our city sustainably and enhancing liveability across all segments of our community.

This means creating streets which are safe, comfortable and healthy for all users, not just motor vehicles, to encourage people to travel actively and reduce the need for some vehicle trips or even a second or third car.

The City of Marion is home to a range of different services, facilities, and attractions. We need to support our community to get to both existing and developing destinations easily, efficiently and actively if they choose to.

Our city

56.17kms² land area

28 suburbs

41,650 private dwellings

7373 local businesses

$4.8b Gross Regional Product

Our community

98,493 residents
(1% growth per year)

29.1% born overseas

39 years median age

28% residents live alone

1.3% Aboriginal and Torres Strait Islander population

**data derived from the ABS 2021, population data ABS Estimated Resident Population 2023*

Introduction

These Guidelines provide direction for the City of Marion's on going commitment to enhance our current walking and cycling network and create safe, people friendly and 'activated' streets.

Regular walking, cycling and other active travel modes (which include mobility scooters and other small wheeled devices) encourage healthy and active lifestyles, reduce traffic congestion, and support vibrant local economies and environmental sustainability.

The Guidelines inform and support the development of four year priority cycling network plans, and new and improved walking links, by exemplifying best practice techniques.

Expanding walking and cycling networks, designed in accordance with the Guidelines, will provide better connections for the city's growing population by encouraging our community to walk and cycle to destinations, transport hubs, and for fun.

Active travel infrastructure supports 'liveability' within cities as it helps people to move easily and efficiently between places and supports equitable access to services and facilities. Walking and cycling also helps connect people through a smile or a greeting.

This is becoming increasingly important as our community ages, and we aim to increase social inclusion.

The City of Marion has evaluated its road and path network, key destinations, and developments to identify a suitable hierarchy, or priority level, of pedestrian and cycling routes to connect people across the city.

The hierarchy is classified into Primary, Secondary and Local routes. Popular primary routes provide the most direct and highest level of service, where possible, for the community. Secondary routes also provide high quality facilities to key destinations and local routes link local streets to these paths.

Defining the hierarchy in this way helps the community to know what to expect along a particular route and guide the design of appropriate treatments.

This includes upgrading our facilities to better accommodate older people, those with mobility impairments and school children. Investing in better active travel facilities will encourage physical and mental health benefits for our community and improve the sustainability of our transport networks.

Why walk and cycle?

Active travel benefits all people and the community as a whole.

People who walk and cycle are rewarded through improved physical and mental health.

Places that offer good walking and cycling facilities are more 'vibrant' and 'liveable' urban areas and contribute to the revitalisation and sustainability of the local community.

The SA Walking Strategy wants:

- More people to make short trips by walking
- More people to access green open space for walking
- More people to improve their health and wellbeing through walking

The Cycling Strategy for SA wants:

- More people to cycle with the benefits being reduced health care costs, reduced traffic congestion and reduced emissions
- Cycling to be inclusive, accessible, integrated and enjoyable

Health

Improves general health and fitness

Lowers blood pressure and improves heart health.

Reduces weight and obesity levels.

Improves mental health and wellbeing.

Increases life expectancy by reducing the risk of heart disease and stroke through improving conditions like high blood pressure, high cholesterol and diabetes.

Reduces joint and muscular stiffness and pain.

Increases happiness by reducing stress.

Reduces depression.

Social

Increases social interaction.

Supports community life and more active and interesting streets.

Reduces crime through passive surveillance.

Increases road safety, with research showing increased street activity slows vehicles and increases driver alertness.

Reduces traffic congestion.

Enhances community pride through tactile experiences of place.

Environment

Are sustainable transport options.

Do not produce air pollutants, noise pollution or carbon emissions.

Increases local amenity by reducing the number of vehicles on our roads.

Associated infrastructure such as appropriate street trees provide shade, biodiversity and amenity.

Economy

Through urban areas attracts local retail trade and 'activates' community spaces.

Infrastructure can increase the value of adjacent residential and commercial properties.

Reduces economic costs related to poor health, including fewer sick days, and reduces pressure on public health services.

Reduces congestion for quicker travel times and the number of road accidents.

Improves urban quality.

Guideline Context:
City of Marion Strategic Plan 2024-2034

The City of Marion has now released the final Strategic Plan 2024–2034 following two months of community consultation seeking the community's aspirations for the what the City should be, Towards 2040.

The new Strategic Plan and Community Vision updates our city's views for a **liveable, sustainable community.**

The key strategic directions of the plan which are particularly relevant to the Walking and Cycling Guidelines are those centred around Liveability.

They include:

- improving accessibility to enable people to move around with ease.
- plan for future community infrastructure needs.
- creating destinations for people to live, work and play locally.
- Building more paths for walking and cycling, with safe crossing points.
- Promote sustainable living and design.

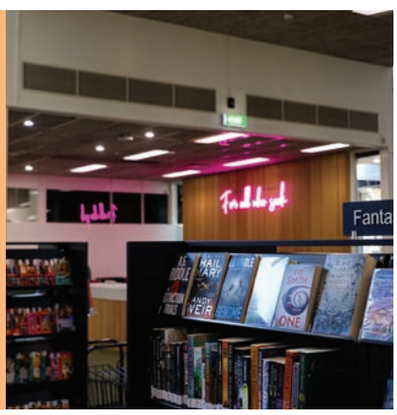
Key relevant priorities for incorporating active travel within the city include:

- Safe and active transport.
    - Develop innovative active transport pathways and safe crossing points to key amenities that connect roads, footpaths and public transport.
    - Design and maintain footpaths and streetscapes to allow safety and accessibility for all.
    - Consider smart lighting options in highly utilised areas to help the community to feel more safe.
- Accessibility, attractive, well maintained, multiuse, destination places.
    - Maintain and deliver community spaces, streetscapes and facilities that are intergenerational, vibrant, multiuse and welcoming.
    - Planning for future growth and changes to population.
- Sustainable design and living.

Community's vision

We will create and maintain safe, attractive, and accessible public places and facilities.

Liveable



Objectives

We want walking and cycling within the City of Marion to:

- Be a safe, comfortable option to travel for work, study, recreation and shopping trips.
- Become an easy, everyday activity in our city for people of all ages and mobilities.
- Improve the access people have to everyday, local shopping precincts and create 'vibrant' spaces.
- Actively connect people to public transport
- Reduce our reliance on motor vehicles and demand for parking.
- Support children to safely travel to school.
- Maximise people's opportunity to connect with nature.
- Provide opportunities for the community to improve their fitness, social interaction and mental well being.

To do this we need a quality, connected walking and cycling network. A network that:

- Is founded on good design principles to enhance walkability and liveability throughout the City.
- Is comprehensive and links to cycling and walking paths in other Councils.
- Connects the community to where they want to go as the City develops, without the need for a car trip.
- Has 'inclusive' infrastructure that enhances accessibility and improves safety for vulnerable road users, including on busy roads.
- Includes green infrastructure (trees and shade) where possible to encourage people to be outdoors and enhance the City's resilience to climate change.

And a focus on different trip types and destinations, including:

- Long range inter suburban trips that deliver us to regional centres.
- Intra suburban trips that connect us to destinations and major paths.
- Local connections which can offer lower traffic and speed environments and link to more major routes.

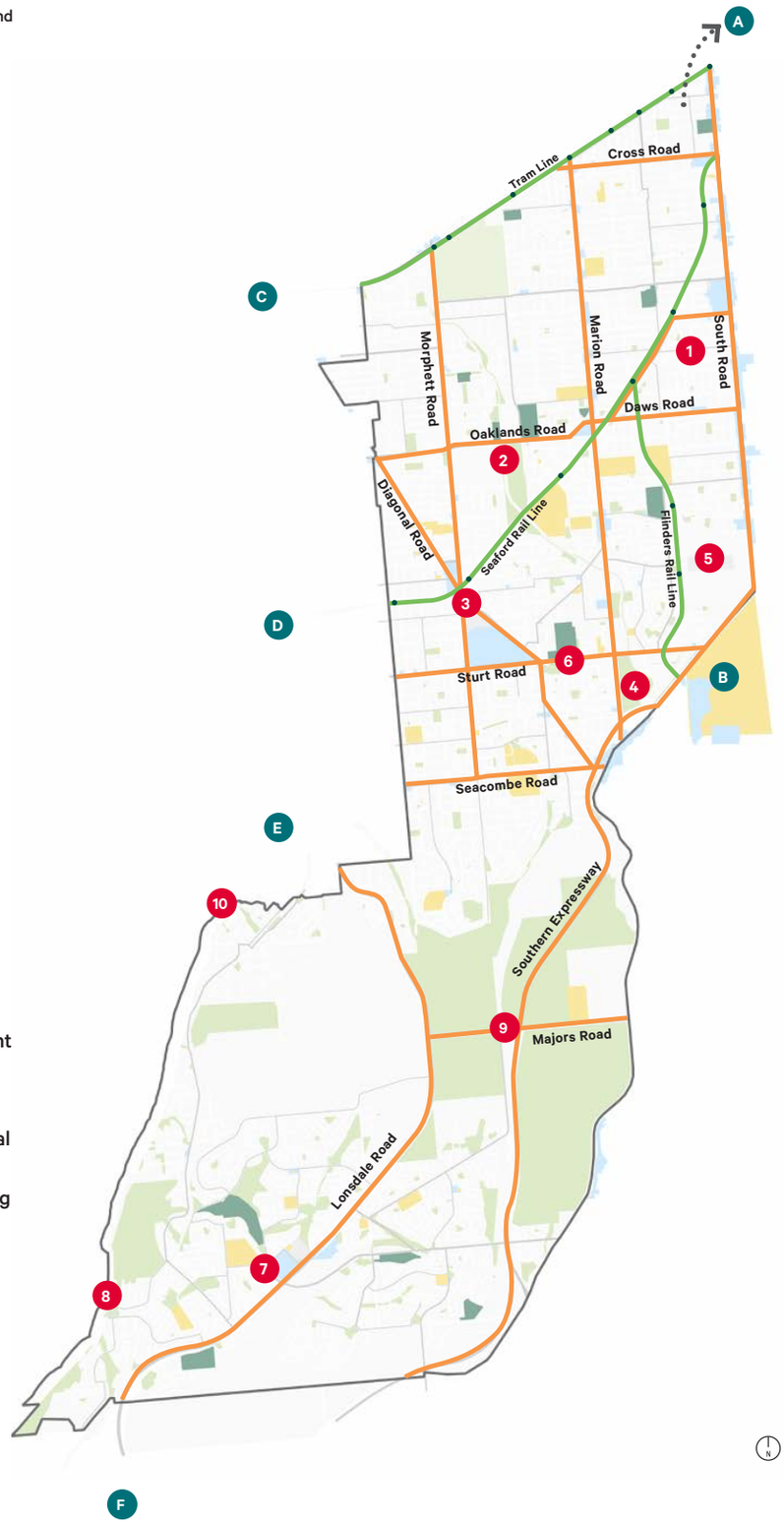
Key destinations and routes

Key destinations within the City of Marion include:

1. **Edwardstown Employment Precinct**
   - Castle Plaza Shopping Centre
   - Edwardstown Oval Soldiers Memorial Ground
2. **Oaklands Recreation Precinct**
   - Oaklands Wetland
   - Oakland Recreation Plaza
   - Marion Outdoor Swimming Centre
3. **Marion Cultural & Leisure Precinct**
   - State Aquatic and Leisure Centre
   - Marion Cultural Centre
   - Westfield Marion
4. **Warriparinga**
   - Living Kaurna Cultural Centre
   - Warriparinga Wetland
   - Marion Holiday Park
5. **Tonsley**
   - Tonsley Innovation District
   - Mitchell Park Sport and Community Centre
6. **Marion Precinct**
   - City of Marion Administration Centre
   - Cooinda Community Centre
   - Marion Sports and Community Club
7. **Hallett Cove Precinct**
   - Cove Civic Centre
   - Hallett Cove Shopping Centre
   - Cove Sport and Community Centre
8. **Hallett Cove Beach**
   - Coastal Walkway - Hallett Cove to Marino
   - Hallett Cove Conservation Park
   - Heron Way Reserve and Playground
9. **Majors Road**
   - O'Halloran Hill Mountain Bike Trails
   - Sam Willoughby International BMX Facility
   - Southern Soccer Facility
   - Glenthorne National Park
   - Riding for the Disabled Facility
10. **Marino, Marino Rocks**
    - Adelaide Coast Park
    - Bandon Terrace Reserve
    - Marino Conservation Park
    - Coastal Walkway - Marino to Hallett Cove

While located outside the City of Marion, the following destinations also influence movement patterns:

- **A** Adelaide CBD
- **B** Flinders University and Flinders Medical Centre
- **C** Glenelg Beach and Jetty Road Shopping Precinct
- **D** Brighton Beach and Jetty
- **E** Seacliff Beach and Brighton Caravan Park
- **F** Lonsdale Industrial Precinct



- Regional Centers
- Schools and child care facilities
- Key reserves / open spaces
- Key sport and recreation
- Arterial Roads

Image courtesy of Oxigene

Major projects and developments

1. North South Corridor Upgrade (State and Commonwealth Government)
2. Oaklands Green Housing Development
3. Tonsley Innovation District and Tonsley Village
4. Marion Basketball Stadium Redevelopment
5. Marion/Cross Road Level Crossing Removal
6. Marion Cultural Centre Plaza, Warracowie Way
7. Morphettville Racecourse Redevelopment
8. Cove Sports Netball and Lower Oval Redevelopment
9. Majors Road/ Southern Expressway Interchange
10. Glenthorne National Park
11. Marino Community Hall Redevelopment
12. Seacliff Village Housing Development
13. Cove Point Housing Development
14. Coastal Walkway Redevelopment (Kurnabinna Tce)
15. Coastal Walkway Redevelopment (Grey Rd Gully)

Key existing walking and cycling routes

The City of Marion has an established Walking and Cycling Network that can be expanded upon and enhanced with investment in maintenance and asset upgrades. The following routes form the 'backbone' of the Walking and Cycling Network and from which future investment in active travel infrastructure will be built upon.

1. Mike Turtur Bikeway
2. Sturt River Linear Park
3. Marino Rocks Greenway
4. Adelaide Coast Park
5. Coast to Vines Rail Trail
6. Patrick Jonker Veloway
7. Coastal Walkway (including Hallett Cove Boardwalk)
8. Tonsley Loop Path
9. Flinders Greenway (Stage 1)

Existing walking and cycle routes:

- Primary walking
- Primary
- Secondary

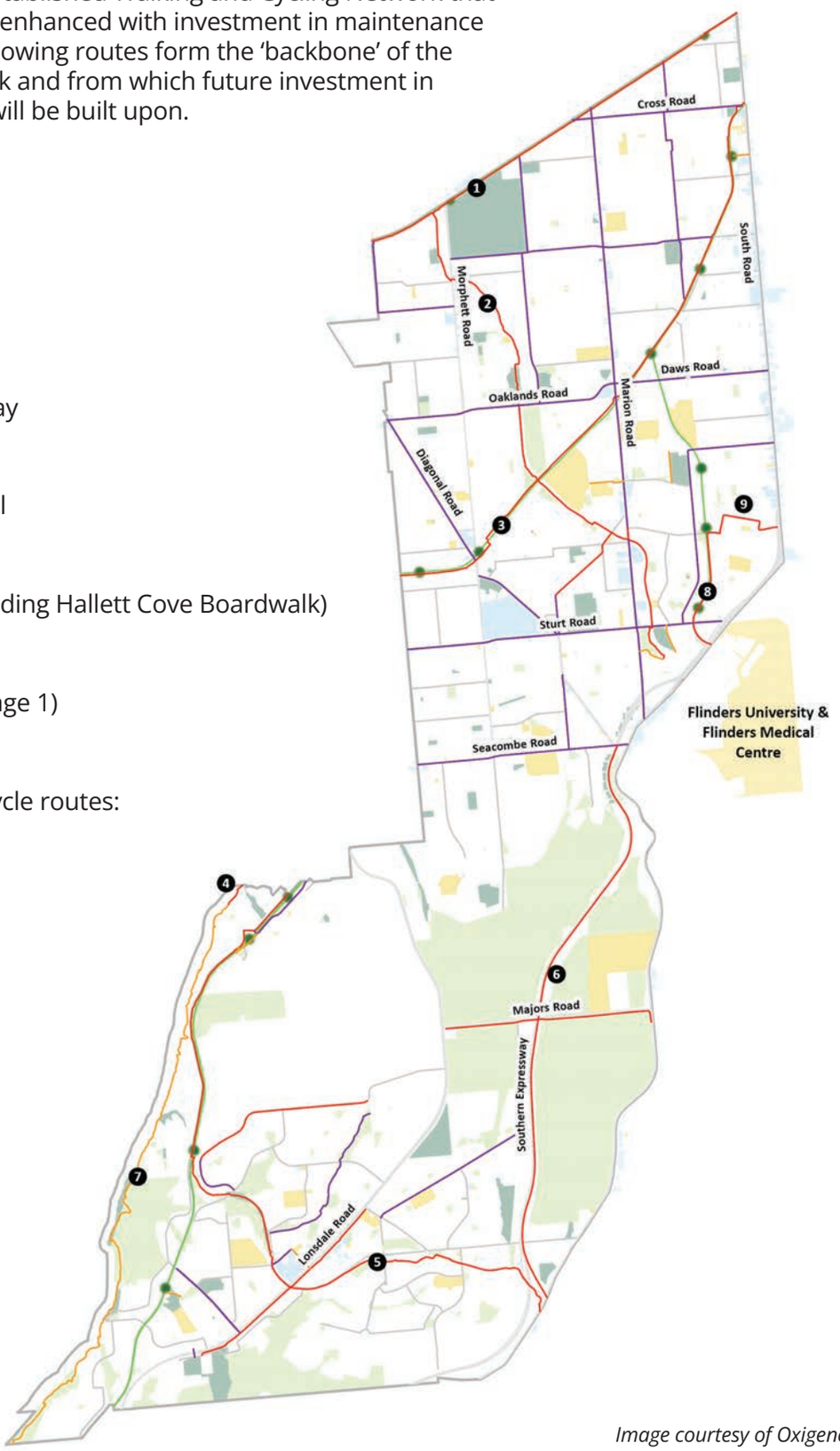


Image courtesy of Oxigene

New walking and cycling hierarchy

Like the existing network, the proposed walking and cycling network reflects a hierarchy of different service levels – or priority – given to active travelers through the City of Marion. The proposed network is divided into Primary, Secondary and Local routes to:

- Establish the purpose of the route from a strategic city wide perspective.
- Indicate to users what level of service they can expect (– eg bike lane, shared path or sharrows).
- Help guide the level of planning and investment which may be needed at various locations.

The network of Primary, Secondary and Local routes to be implemented over the next 20 years has been designed to:

- Expand upon the existing network to infill and extend north south and east west travel connections.
- Connect up new residential, commercial and open space developments.
- Connect streetscape projects and major transport corridors (T2D and Flinders Bikeway).
- Enhance the safety of vulnerable users through higher traffic areas where possible.
- Improve access to public transport and activity centres (e.g. shops).
- Improve access to schools and public places (e.g. parks).

Primary routes

High demand corridors that connect to major destinations. They will typically provide high quality, safe, convenient (and where possible uninterrupted) routes that form the spine of the Walking and Cycling Network. These routes are conducive to medium or long distance commuting/utility, recreational, training and tourism trips.

Secondary routes

A lower demand than primary routes but provides high quality, safety and convenience. These routes provide connections between primary routes and major activity centres such as shopping precincts, industrial areas or major health, education, sporting and civic facilities. The walkability of these routes should be to a high standard.

Local routes

Generally lower demand local street routes, predominantly located in local residential areas. They connect to secondary and primary routes, local amenities and recreational spaces. These can, but don't have to, include traffic calming treatments which help to deflect traffic and manage their volumes

Existing and proposed routes

1. Mike Turtur Bikeway
2. Sturt River Linear Park
3. Marino Rocks Greenway
4. Adelaide Coast Park
5. Coast to Vines Rail Trail
6. Patrick Jonker Veloway
7. Coastal Walkway (including Hallett Cove Boardwalk)
8. Tonsley Loop Path
9. Flinders Greenway (Stage 1)

Existing walking and cycle routes:

- Primary walking
- Primary
- Secondary

Proposed walking and cycle routes:

- Primary
- Secondary
- Local

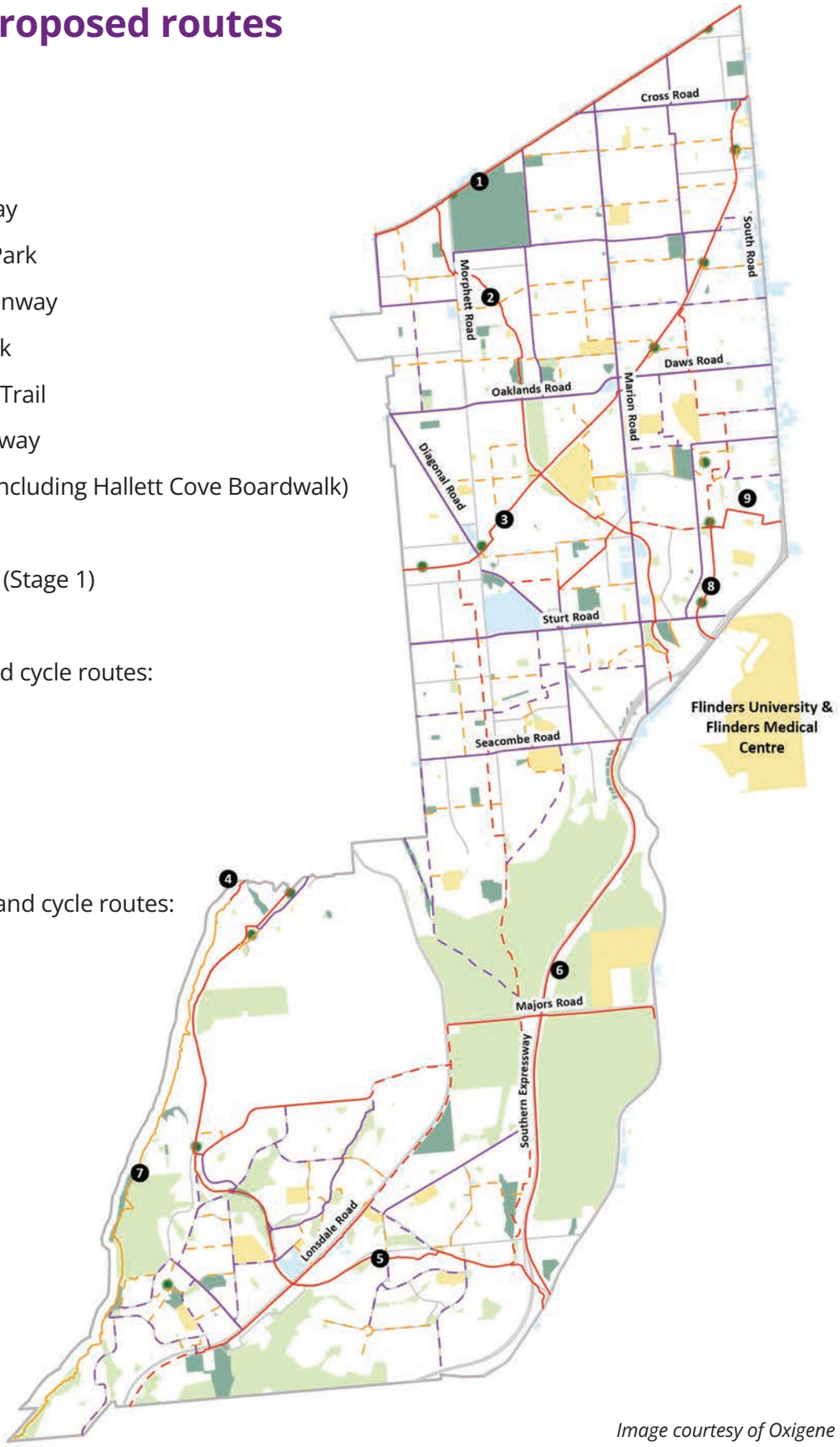


Image courtesy of Oxigene

Treatment and typologies

There are a variety of different walking and cycling treatments and service level classifications (typologies) which can be applied across the network to encourage people to travel actively.

Different treatments provide different levels of priority for walkers and cyclists which subsequently prescribe the application of primary, secondary and local routes.

Path infrastructure

- Shared use paths
- Wide footpaths
- On road cycle lanes
- Separated bikeways
- Shared spaces
- Local streets/bike boulevards

Crossing and intersection infrastructure

- Pedestrian and bicycle/pedestrian activated crossings
- Wombat crossing
- Emu crossings
- Koala crossings
- Zebra crossings
- Mid block refuges
- Kerb ramps
- Protected roundabouts

Traffic control devices

- Horizontal displacement (driveway links, slow points, pavement marking layouts)
- Vertical deflections (raised platforms, road cushions)
- Kerb and corner extensions
- Street or suburb wide speed reductions

Walking and cycling amenities

- Bike parking
- Water fountains
- Cycle repair stations
- Wayfinding and path user etiquette signage
- Destination signage
- Lighting
- Seating
- Unobstructed footpaths

Path infrastructure

Shared use paths

Shared paths are where pedestrians and cyclists use the same infrastructure. They tend to be separated from the road through road reserves, adjacent rail corridors or through linear parks. The width of shared paths should reflect the recommendations in Austroads Guidelines.

These are generally PRIMARY cycling and walking routes. They provide a high level of service for users and generally link many suburbs towards key urban centres.

Similar to the road, centre line markings should be used to encourage people to travel to the left of the direction they are travelling.

Signage to direct users where to go, and how to be considerate of slower path users can be critical in some popular locations, or where issues are already known.

Advantages

- Efficient in providing both cycle and pedestrian access together.
- Improves cyclist safety and comfort compared to on road lanes, particularly for roads with higher speeds and vehicle volumes, encouraging less confident people to travel actively.
- 'Sharing' the path is generally well understood by the community.

Disadvantages

- Finding room within or adjacent road and rail corridors can be challenging.
- Locations servicing very high pedestrian and cyclist numbers should aim to separate the two users as much as possible, or increase the width of the path.

Footpaths

Paths up to 1.8m wide are appropriate for high foot trafficked areas, otherwise upgrades to footpaths are typically 1.5m paved environments in line with council standards.

Bicycle riders of all ages can also use the footpath unless a 'no bicycles' sign is present. Footpath infrastructure varies between LOCAL and PRIMARY walking and cycling routes, unless located in areas of high pedestrian traffic (– eg within or adjacent to activity centres).

Advantages

- If designed to suit the urban setting of their location, and are linked to key destinations, walking trips will be encouraged within the community and higher community activity levels will result.
- Their level of service can be enhanced with shady trees and shrubs, seating and lighting.

Disadvantages

- Does not provide dedicated provision for cyclists.
- It can be challenging to fit sufficiently wide footpaths (greater than 1.2m) between property boundaries and the road, particularly in older suburbs.
- Obstructions in footpaths such as light poles, stobbe poles, signs and overhanging trees need to be addressed.

On road cycle lanes

On road bicycle lanes are marked lanes on roadways for exclusive use by cyclists. Green treatments within lanes particularly across intersections can be applied to highlight road space for cyclists. Minimum lane width should be 1.2m, and increase according to the posted speed limit of the road.

Increasing the gap between bicycles, parked cars and traffic can also be achieved through a wide line marked chevron 'buffer' zone.

These are SECONDARY cycling treatments unless it is the only facility that can fit within the street network along a PRIMARY route.

Bike lanes can be full-time or part time to reflect peak hour flows.

Advantages

- Cost effective for existing streets over 8.5m wide, with line marking.
- Generally, well understood by the community (although not always respected).
- Buffered lanes provide extra clearance from adjacent parked cars and traffic lanes and should be installed where possible.

Disadvantages

- Full time bike lanes can be opposed by residents due to the impact on parking.
- Can be an uncomfortable cycling environment for less confident bike riders when there are higher vehicle volumes and speeds, particularly if the lanes are only part time.
- A high level of service may be defined as the 'quality' of the facility in terms of convenience, comfort, amenity and volumes which can be catered for.

Separated bikeways

These are paths adjacent to a roadway but are separated from pedestrians and vehicles and protected by a kerb or other barrier. Separated bikeways can include contraflow lanes where a single bicycle path allows for multi directional travel.

This treatment type is suited to PRIMARY cycling infrastructure routes.

Image courtesy of cityofadelaide.com.au

Advantages

- Provides a physically separated facility that offers increased safety and comfort for cyclists.
- The separation provides extra protection for cyclists compared to on road cycle lanes and can notably increase cycling participation.
- Is an excellent facility through areas with concentrated traffic.

Disadvantages

- In order to provide sufficient road width, a redesign of the street is generally required, changing the parking and traffic conditions.
- Difficult to integrate where intersections are closely spaced.
- Can create potential conflict points at intersections, particularly with left turning vehicles.

Shared spaces

Where road space is shared between pedestrians, cyclists, vehicles and other road users. This may be full time or part time. It is a way of activating city spaces, attracting higher levels of foot and cycle traffic and creating areas suited to multiple uses, including city events.

Depending on the street design/ cycling priority, treatments can be implemented across a range of route types.

The inclusion of art and amenity items should be considered as part of these projects.

Advantages

- This is a slow speed environment that makes streets places for people, not just for vehicles.
- Creates vibrancy, encourages outdoor dining and personal interaction.
- Supports local economic activity.
- Improves amenity and reduces through traffic.

Disadvantages

- Perceived increase in vehicle travel times.
- Can require significant investment and complete street re-design.
- Will need to be integrated with traffic calming and accessibility principles, such as flush road and footpath pavements and crossings.

Local streets and bike boulevards

Pavement markings such as sharrows indicate to drivers that bike riders have priority through the local streets, with other facilities also provided through traffic calmed 'boulevards'.

Pedestrian amenity is improved through raised platforms through the street, raised intersections, road narrowing and green infrastructure (trees and plants). The objective is to give priority to cyclists through these streets.

Bicycle boulevards are higher scale investments and tend to be PRIMARY bicycle routes.

Sharrows and signage placed in isolation tend to indicate LOCAL or even SECONDARY route linkages and are quite suitable for low traffic environments.

Image courtesy of unley.sa.gov.au

Advantages

- Higher scale investments promote lower vehicle volumes and speeds creating direct, comfortable and safe routes for less confident riders.
- Pavement markings and signage are low cost treatments for local and secondary routes.
- Street trees and plantings provide an attractive and comfortable route for pedestrians and assist in stormwater management.

Disadvantages

- Local resident opposition to slower speed cyclists prioritising their street.
- Perception of cyclists having control of the street and potential conflict.

Crossing and intersection infrastructure

Road crossing infrastructure should be designed and constructed appropriate to the traffic conditions and volume of individuals crossing. Safe road crossings provide 'permeability' of the street network for walkers and riders, encouraging them to actively travel to places and minimise the likelihood of unsafe crossing behaviours.

Consideration should be given to:

- Providing high levels of service across roads where traffic volumes are medium to high, such as Pedestrian and/or Bicycle Activated Crossings (PAC/BPAC) and signalized or unsignalized raised platform crossings (e.g. Wombat Crossings).
- Aligning road mid-block and unsignalised crossings with existing and new path connections to provide more seamless links through the City.
- Designing crossings to adequately cater for higher volumes around key trip generators (shops, recreation areas) and vulnerable users such as school children, the elderly and people with mobility impairments.
- Separating cyclists and pedestrians from vehicles ahead of potential conflict zones, such as roundabouts.
- Considering appropriate application of innovative 'protected' intersections for pedestrians and cyclists.
- Working with State Government to provide strategically placed mid block crossings and better cycling/pedestrian intersection facilities through arterial roads.
- Where applicable, modifying road speeds in higher volume pedestrian areas and in conjunction with crossing treatments.

Emu crossing in City of Marion

Koala crossing

Koala crossings are dedicated school crossings with red and white posts and two yellow alternate flashing lights to draw the attention of drivers.

These crossings should be applied to busier roads, but not main roads, where a signalised crossing would be appropriate.

Advantages

- Increases compliance with speed restrictions near schools as they incorporate flashing lights indicating 25km/h.
- Good for busy and/or higher speed roads where the chance of speed non-compliance is higher.

Disadvantages

- Electrical connection requirements make them more costly to install.
- Requires signal maintenance.

Zebra crossing

Zebras are as the name suggests, white parallel stripe crossings with signage or flashing lights often installed within busy mixed use and urban streets. This crossing type must meet minimum vehicle and pedestrian crossing volumes to be applicable and are not suited to main roads or slip lanes.

Depending on street design/walking and cycling priority, these may be SECONDARY or LOCAL walking and cycling routes.

Image courtesy of unley.sa.gov.au

Advantages

- Zebra crossings are well recognised traffic control devices which indicate to drivers that pedestrians have the right of way.
- They are cheap and easy to install and effective in popular pedestrian areas with low speed traffic conditions.

Disadvantages

- They are not suitable in areas with higher speeds and need to meet DIT requirements. Wombat crossings are preferred where feasible as the raised platform helps constrain vehicle speed.

Mid Block Pedestrian/ Cycling Refuges and Kerb Ramps

Mid-block refuges provide protected crossing opportunities over roads where there are extended distances between signals.

Standard kerb ramps provide a steady slope between the footpath and the road, with tactiles to indicate to the vision impaired the location of the road edge and minimise the chance of slipping.

Minimum 1.2m wide landings are required behind kerb ramps to ensure footpath users can pass. Shared path connections should apply T6 kerb ramps for crossings to provide room for different users to safely pass each other.

Advantages

- Mid block refuges and kerb ramp crossings make the street network more 'permeable' and easier to navigate.
- They significantly enhance the accessibility of the path network as DDA compliant ramps allow safe movement of prams, wheeled devices, people with mobility impairments and the elderly.
- Cycle only and shared use crossing points and kerb ramps limit conflict between cyclists and pedestrians at busy locations.

Disadvantages

- Maintenance of infrastructure. Retro fitting kerb ramps in isolation can be costly and crossing locations needs to meet DIT requirements.
- Retro-fitting compliant kerb ramps to older infrastructure can be challenging in some locations and the designs / road conditions may need to be modified to suit.
- Crossings through State roads need to meet criteria and be approved by the Department for Infrastructure and Transport.

Protected signalised intersections

These intersections dedicate room for pedestrians and cyclists to cross, either together or independently, through busy signalised intersections. Kerb protuberances are strategically placed to prevent turning vehicles crossing into the travel paths of crossing pedestrians and cyclists.

Infrastructure suited to PRIMARY or SECONDARY cycling infrastructure routes.

Advantages

- These treatments lead to significant safety improvement where medium to high volumes of vulnerable users navigate busy or high risk intersections.
- They significantly slow the turning movements of traffic reducing the risk of crashes.
- Excellent option for improving connections through Primary bike routes, around regional centres schools and public transport.
- They accommodate bus routes.

Disadvantages

- Depending on the scope of the project, these treatments can be expensive.
- The community may initially be reluctant to adopt these treatments due to the perceived traffic impacts, so additional engagement and education would be required.

Infrastructure for Local Area Traffic Management

Local Area Traffic Management (LATM) infrastructure involves the application of devices and treatments through streets to manage vehicle speeds, behaviours and volumes.

Some traffic control devices are also suited to collector and semi arterial roads to highlight the presence of pedestrian and cyclists and reduce vehicle speeds, making for a safer environment. Modifications to high conflict areas, such as roundabouts and intersections, can provide significant safety benefits for all users.

Consideration needs to be given to:

- The type of traffic calming device or treatment according to the operation of the street - there are many different types, changes in street speed limits to chicanes, road narrowing, raised intersections or platforms and slow points. They tend to involve vertical or horizontal 'deflections' of vehicle movements.
- The Austroads Guidelines and the Department for Infrastructure and Transports' Code of Technical Requirements, as well as supplementary documents for the 1742 AS/NZS standards series provides direction on the different devices and their applications.
- Traffic calming is particularly important for use along key pedestrian and cyclist routes as it improves the safety of these vulnerable users.
- Previously employed treatments which have worked successfully within the City of Marion include complete streetscape upgrades which narrow the road and enhance amenity, kerb build outs, road closures, line marked corners with rumble bars, green treatments within bike lanes, driveway links, separation of users at roundabouts, wombat crossings and other raised platforms and road cushions.

Road cushions

Used to manage the speed of vehicles. Can be installed with cyclist bypasses to separate vehicles and cyclists. Infrastructure generally suited to PRIMARY cycling infrastructure routes.

Advantages

- Proven to slow traffic along popular bike routes to enhance the safety of users.
- Used in conjunction with pavement markings and signage, they provide a high level of driver awareness as to the presence of cyclists and other active travellers.

Disadvantages

- Potential noise impacts. Will require the removal of parking adjacent the cushions. Very low set vehicles may bottom out over the cushions.

Driveway link/slow point

Permitting the entry of only one vehicle at a time, this device forces traffic to slow and give way and increase driver awareness of others using the road space.

Where relevant, this is infrastructure suited to PRIMARY or SECONDARY cycling routes.

Advantages

- Proven to slow traffic along popular bike routes to enhance the safety of users.
- Is effective in diverting cut through, hoon and rat running behaviours when used in conjunction with other on-road treatments.

Disadvantages

- Can be expensive to construct.
- Will require the removal of parking adjacent to and on the approaches to the device.

Kerb or line marked protuberances

When layout allows can be either constructed with concrete islands/ kerbs or line marked to reduce the size of the corner radius to force a lower speed.

Infrastructure suited to SECONDARY or LOCAL cycling infrastructure routes.

Image courtesy of osu.edu

Advantages

- Causes drivers to significantly reduce their speed through an intersection, reducing the stopping time required in the event of an interaction with another vehicle or vulnerable user.
- Can be a cheap and easy risk mitigation measure.
- It can also reduce the crossing distance for pedestrians and other users, reducing their exposure to traffic.
- Effective on local roads connecting to roads with cycle ways and at popular pedestrian and cyclist crossings.

Disadvantages

- Unlikely to be effective if linemarking is not incorporated with raised pavement bars to deter vehicles crossing over the lines.

Protected roundabouts

With a prioritised and separated crossing point for pedestrians and cyclists (which can include a raised crossing), these roundabouts provide a high level of protection at these common conflict points.

Infrastructure suited to PRIMARY or SECONDARY cycling infrastructure routes.

Image courtesy of portadbug.org

Advantages

- Constantly moving traffic through roundabouts make them quite challenging for cyclists and pedestrians to navigate. Separating, highlighting through colour contrasting and even staging the movements of each user type substantially improves the safety of vulnerable users at these junctions.
- Where there is limited room or feasibility for larger scale upgrades, cyclist safety can be enhanced by connecting them to the verge ahead of the intersection, effectively removing them from the road.

Disadvantages

- Depending on the scope of the project, these treatments can be expensive.
- The community may initially be reluctant to adopt these treatments due to the perceived traffic impacts, so additional engagement and education and would be required.

Walking and cycling amenities

Bike parking at shops, parks, workplaces, and education centres encourage people to ride where it is a little too far to walk. Bike parking at public transport stations and hubs also provide a 'last mile' connection between home and work or study places that can replace the need for a vehicle trip. Work and study places can further support active travel commutes by providing change room facilities.

Unobstructed footpaths, lighting, seats are also important for encouraging people of all ages and abilities to walk to public transport, the shops and recreational facilities.

Water fountains and bike repair stations are facilities important along major routes to support riding for work/study commutes and longer weekend rides.

Bike parking

Typically provided at or in parks, shops and open space destinations.

The most secure facilities are bike rails bolted to or inset within concrete.

Infrastructure suited to PRIMARY and sometimes SECONDARY cycling infrastructure routes.

Advantages

- Cheap and easy to install.
- Indicates the area is welcoming to cyclists.
- Encourages people to ride as there is somewhere to secure their bikes to while shopping or visiting places.
- Can be made to look interesting and artistic, adding to the amenity of the area.

Disadvantages

- Non standard bike parking may not be particularly secure.
- Not as secure as bike cages or bike boxes.
- Need sufficient pavement space to install safely.

Water fountains and toilet facilities

Typically, in destination areas combined with other amenity facilities. Requires available nearby connection to mains water to be feasible.

Infrastructure suited to PRIMARY and some SECONDARY walking and cycling destinations.

Advantages

- Encourages active travelers and park visitors to spend more time in a place, as there are amenities which increase their level of comfort.
- Offers the opportunity for long commute and recreational riders to refill their water bottles and go to the toilet along their journey.

Disadvantages

- Can be costly to install.
- Needs to be within close proximity to water mains.

Bike repair stations

Contains tools to assist with changing tyres, adjust seats, handlebars and fix broken parts. Infrastructure suited to PRIMARY cycling infrastructure routes.

Advantages

- Suitable for popular shared paths where the likelihood of a blown tyre or other issue is higher.
- Gives everyday riders who do not generally carry bike repair kits, or even those who do not have bike repair kits at all, the opportunity to repair their cycle and get on their way.

Disadvantages

- May be vulnerable to vandalism if not placed in well lit, high traffic areas.
- Needs to be maintained.

Mobility and social inclusion

With Liveability as a key community vision of the new 2024-2034 Strategic Plan which supported the development of safe active travel paths and crossings and accessible infrastructure, the design, construction and maintenance of our active travel networks and facilities need to incorporate principles of safe and inclusive design.

This can be achieved by supporting improvements to paths, crossings and other amenity infrastructure that promote inclusion and enhance accessibility between vulnerable communities such as those within social housing, aged care and retirement villages and public transport, shops and recreational facilities.

Identifying potential issues with wheeling and walking connections to key community facilities will be the first step in delivering on this vision, particularly in key locations, and in doing so will support the broader walking and cycling goals of the Guidelines.

Factors such as the slope and surface type of paths and kerb ramps, pedestrian refuges, handrails, shade, seating, tactiles, contrasting pavements and signage are all elements that need to be considered in the development of projects. Additionally, where there is room and budget, the option of separating pedestrians and cyclists should be factored in, or alternatively, incorporate signage to promote good etiquette between those using wheeled devices and those not.

Movement and Place

Release of the Department of Infrastructure and Transport's Active Travel Design Guide in September 2024 also prescribes state-recognised best practice applications for enhancing the walking, wheeling and amenity of streets and regions, to achieve 'liveability'.

The Guide's classification of street type and function through a 'Movement and Place' methodology provides the foundation for selecting a suitable treatment through an area. Through assessment of the context of a location, this methodology guides the right mix of efficient 'movement-focussed' treatments and people-centred 'place' treatments to be applied along a transport corridor.

In consideration of active travel treatments, the City of Marion's Walking and Cycling Guidelines and Plan will ensure consistency in application of the best practices within the Active Travel Design Guide and refer to Movement and Place Matrix principals in the context of Primary, Secondary and Local routes already adopted by council.

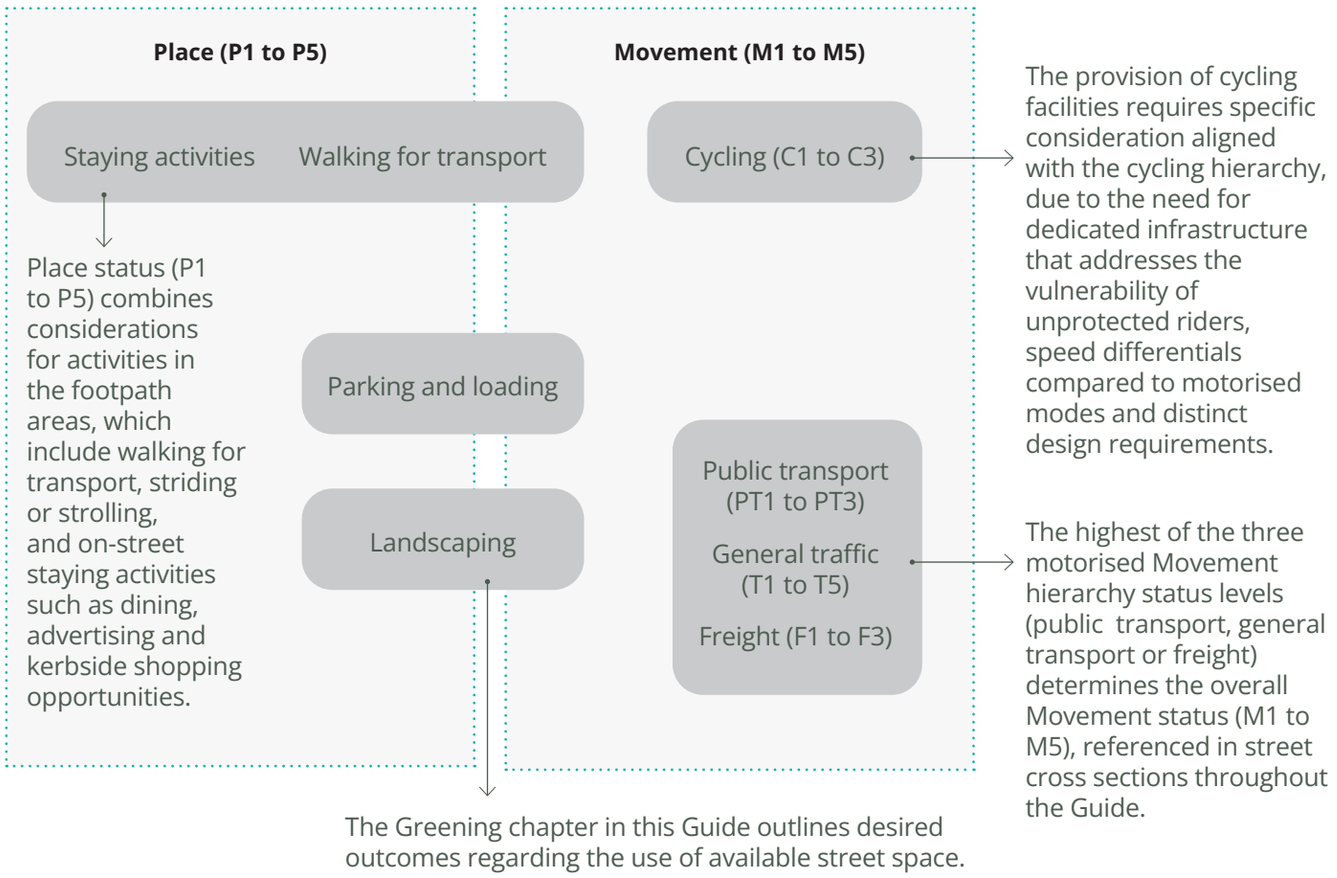
Movement and place considerations for active travel within the City of Marion

Place category	Description	Movement category	Description (For walking, cycling, wheeling)
P1	Place of State / National significance (eg North Terrace, Rundle Mall).	M1	High volume movements for cycling / walking / wheeling – to strategic locations (primary routes that call for higher investment).
P2	Place of metropolitan significance (Westfield Marion, Tonsley Innovation District, Coast Park).	M2	Popular paths / routes to key metro locations and public transport (primary or secondary routes).
P3	Place of local government significance (Marion Cultural Centre, Heron Reserve).	M3	Well utilised or anticipated growth routes for walking / cycling and wheeling (secondary routes) to locally significant areas.
P4	Places of neighbourhood significance (Hendrie Reserve, Finniss St).	M4	Connections through neighbourhoods to popular places and higher volume active travel paths.
P5	Places of local significance (residential areas).	M5	Local street linkages to connect people to more popular routes / bus stops / locations.

Understanding street type references

The Active Travel Design Guide also presents a Street Type Reference for the design of interfaces between locations of Place and Movement – refer below for detail.

Street type references for movement and place



Best practice application

Walking and cycling solutions are influenced by circumstances such as vehicle speed and volumes, movement hierarchy and physical constraints.

Low vehicle speed and less busy streets are generally more suited to mixed traffic solutions. Higher vehicle speeds and busier streets are more suited to off road separated paths wherever possible.

Best practice examples provide a 'tool box' of walking and cycling solutions that may be applied within the City of Marion. The various techniques are by no means definitive. Other solutions may be explored to ensure appropriate practical outcomes for specific sites.

The selection of appropriate cycling and pedestrian friendly infrastructure for a location should consider a number of factors, including, but not restricted to:

Meeting the required standards (minimum widths, lengths and other evidence for a treatment) as set out in Australian Standards and Austroad Guidelines documentation.

- The purpose of the facility (if it provides a 'link' or a 'place')
- The primary users, particularly children and older persons
- Proximity to railway stations, bus interchanges, public transport corridors
- Pedestrian and wheeled device volumes
- Traffic volumes
- On road speeds and crossing options
- Available widths of roads, medians and footpaths
- Road hierarchy (– eg transit corridor, neighborhood street)

These aspects will inform the level of service and specific treatments needed for that link (a street designed for users to pass through as quickly and conveniently as possible) or place (a street that is the destination, where people are encouraged to spend time).

Suggested treatment applications

Primary
Secondary
Local

Path

Shared use path	●		
Footpaths			●
On road bicycle lanes	●	●	
Separated bikeways	●		
Shared spaces		●	●
Local streets and bike boulevards	●	●	●

Crossing and intersection

Bike/pedestrian activated crossing (BPAC/PAC)	●	●	
Wombat crossing	●	●	
Emu crossing		●	●
Koala crossing		●	●
Zebra crossing		●	●
Mid block pedestrian/cycling refuges and kerb ramps	●	●	●

Traffic control devices

Road cushions	●	●	
Driveway link/slow point	●	●	
Kerb/line marked protuberances	●	●	
Posted speed reduction	●	●	
Raised platforms	●	●	
Sharrows	●	●	●

Amenities

Bike parking	●	●	
Water fountains	●	●	
Cycle repair stations	●		
Wayfinding and path user etiquette signage	●	●	●
Destination signage	●	●	
Lighting	●	●	●
Seating	●	●	●
Unobstructed footpaths	●	●	●

Design and construction techniques

This section describes some of the techniques that can be used to achieve a well connected and safe network for walking and cycling.

Technique one - Shared use paths

Design guidance

1. Width

The width of shared use paths must be able to accommodate pedestrians and cyclists comfortably and safely in accordance with Austroads Guidelines and relevant DIT standards.

A minimum 0.5m clearance from fixed objects on both sides of the path should be designed wherever feasible.

2. Surface

Asphalt (AC7) tends to be a suitable surface treatment for popular and priority cycling routes. It uses a small aggregate to provide a smooth and consistent surface for walking and cycling. It will require maintenance from cracking and tree root damage.

Block paving is more appropriate for local path connections to encourage slower speed environments popular with pedestrians.

Permeable paving may be particularly suited to areas at risk of tree root damage or poor drainage.

Concrete may be a suitable option for wide footpaths.

3. Line marking

Provide centreline marking to pathways with higher volumes of pedestrians and cyclists (as per Australian Standards). Line marking may not be required for less busy routes (– eg local parks) not connected to broader cycling / walking networks.

4. Planting and trees

Use tree and groundcover planting adjacent path ways to assist in water management and provide shade and amenity.

Ensure resilience to urban heat through the use of tree plantings and green spaces adjacent walking and cycling paths to improve climate resilience of the infrastructure and help the community adapt to any future temperature increases.

5. Intersections and cross overs

DDA compliant kerb ramps and paths (maximum 2.5% fall), with a wider shared facility should be adopted as a priority where they connect to all key destinations, schools, community centres, shopping precincts and recreation grounds.

Shared use paths to be designed away from driveway crossovers where possible.

Well planned, wide, bicycle and pedestrian refuges should be provided across busy roads where possible, or with bicycle and pedestrian activated crossings at major intersections.

6. Lighting

A minimum P3 LED lighting should be provided adjacent popular pedestrian and cycle ways, particularly on approach to intersections. Adequate lighting enhances the real and/or perceived safety of active travel through the street and path network and can support higher use.

Useful references:

- Department of Infrastructure and Transports' Active Travel Design Guide
- Austroads Guidelines
- Australian and New Zealand Standards (1742 series)
- City of Marion Standard Drawings and Technical Specifications
- Towards Safe System infrastructure: a compendium of current knowledge (Austroads)

Case study - Sturt River Linear Path

The Sturt River Linear Path provides a 6.2km long Shared Use Path between the Patrick Jonker Veloway in Darlington and the Mike Turtur Bikeway in Morphettville.

The City of Marion staged construction of the Sturt River Linear Path from 2013-2014 within the open space adjacent the Sturt River.

The 3 metre wide linear path provides the community with a high standard shared use facility for pedestrians, cyclists and small wheeled mobility devices. It is a 'Primary' classified path which supports both weekday commuters as well as recreational and fitness seekers.

The path provides connections to parks and other open space facilities such as fitness parks, playgrounds, water fountains, toilet amenities and public art.

Technique 2 - Footpaths and access improvements

Design guidance

1. Width

Provide footpaths of sufficient width to allow comfortable pedestrian movement and clear access for all (e.g. pram or wheelchair). Provide wider paths around activity areas such as shops and schools.

For local streets, 1.5m is the preferred width (allows two wheelchairs to pass simultaneously), although the following should be considered:

- 1.8m for high trafficable routes.
- Consider full width paving (kerb to property boundary) where appropriate.

2. Surface

Provided surface needs to be flat, even and slip resistant in accordance with Australian Standards.

Councils' current standard is block paving, with permeable paving to be considered where applicable to maximize stormwater runoff and amenity.

3. Planting and trees

Large street trees can provide a walking and cycling environment. Plant trees with suitable tree species that provide shade and amenity.

4. Intersections and cross overs

DDA compliant kerb ramps and paths (maximum 2.5% fall) should be installed as a priority where they connect to all key destinations, schools, community centres, shopping precincts and recreation grounds.

Well planned, wide, bicycle and pedestrian refuges should be provided across busy roads where possible, or with bicycle and pedestrian activated crossings at major intersections. Align paths and kerb ramps to provide direct routes for crossing intersections.

5. Layout

Give priority to footpaths over driveways and minor streets. Provide suitable paving at driveway crossovers to allow vehicle movement.

Provide adequate sight distance for pedestrians and approaching vehicles at crossing points.

Keep footpaths, kerb lines and medians straight where possible.

Ensure footpath crossfall slope is less than 1 in 40 (2.5%). Incorporate access for people with disabilities.

Avoid the use of barricades and bollards.

Locate objects (street furniture, shop signage) in consistent locations along footpaths to provide a clear and predictable pedestrian walkway.

Useful references:

- Department for Infrastructure and Transport Active Travel Design Guide
- Austroads Guide to Road Design Series
- City of Marion Standard Drawings and Technical Specifications
- Towards Safe System infrastructure: a compendium of current knowledge (Austroads)

Technique 3 - On road bicycle lanes

Design guidance

1. Width

Provide on road bicycle lanes of appropriate width (Austroads, 2017: Cycling Aspects of Austroads) Guides.

- 60km/h 1.5m (preferred)
- 1.2 - 2.5m (acceptable range)
- 80km/h 2.0m (preferred)
- 1.8 - 2.7m (acceptable range)

2. Buffers

Buffers provide 'cushion space' between cyclists and vehicles in the travel lane and parked cars. Where space allows, provide buffers (line marked or solid separation space) to:

- Parallel parking areas adjacent bike lanes for door opening clearance.
- Vehicle travel lanes.

Buffers are important where there are higher vehicle speeds and volumes. Austroads Guidelines recommend a 'buffer' width of 0.4-1.0m to parallel parking (widths vary for angle on street parking). Where space prohibits a full buffer, an extra thick white edge line to the travel lane can also be effective.

3. Surface

Provide smooth surfaces for comfortable and safe travel without obstacles. Bikes have narrower tyres than vehicles and are more vulnerable to rough surfaces.

4. Colouring

Provide green coloured surface treatment at busy intersections and conflict points (– eg across intersections) to promote cyclist safety. Green coloured treatments are used to distinguish the bicycle lane and alert drivers and cyclists of conflict area.

The Cycling Aspects of the Austroads Guide states that green coloured surface treatments 'should be used sparingly to maintain effectiveness'. Its presence highlights priority for cyclists on roads with higher volumes of traffic and cyclists.

5. Intersections

Provide exclusive space for cyclists at intersections. Ensure bicycle lane continuity at intersections ensuring they do not 'disappear'. Or allow cyclists to mount the kerb ahead of intersections and roundabouts to separate them from traffic where necessary.

Bike lanes crossing intersections where they have right of way, or on the approach to major intersections, should be evaluated for potential green treatments to emphasise cyclist priority.

6. Maintenance

Provide regular maintenance for a smooth cycling surface.

7. Part Time / Full Time

Bicycle lanes may be 'full time' (24/7) or 'part time' to cover peak hour periods (7-9am and 3-6pm).

Part time lanes allow on street parking outside labelled bike lane times. An assessment of requirements for cyclists and residents/ communities and safety and risk will be required to determine the appropriate selection.

Useful references:

- Department for Infrastructure and Transport Active Travel Design Guide
- Austroads Guidelines
- City of Marion Standard Drawings and Technical Specifications
- Towards Safe System infrastructure: a compendium of current knowledge (Austroads)

Technique 4 - Separated bikeways

Design guidance

1. Extent

Implement over a reasonable length to provide a useful link.

2. Width

Provide adequate width (refer Austroad Guides).

Provide a buffer that is sufficiently wide to allow bicycles to safely pass open car doors on the passenger's side and allow room for passengers to disembark or unload.

3. Kerb

Consider whether to use full kerb, semi mountable kerb or flush kerb.

4. Planting

Provide trees and plantings for amenity and shade, and to define the separated bicycle path areas.

Include WSUD planting adjacent paths where possible.

5. Intersections

Give priority to cyclists at intersections with minor streets and driveways.

Restrict parking at main intersections and convert the raised bicycle paths to cycle lanes to increase visibility of cyclist for motorists.

Consider priority signal phases for cyclists.

6. Colouring

Provide green surface treatment at intersections to differentiate the bicycle lane from other roadway and footpath features.

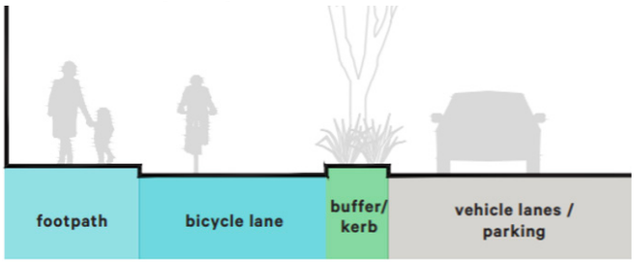
Useful references:

- Department for Infrastructure and Transport Active Travel Design Guide
- Austroads Guide to Road Design Series
- City of Marion Standard Drawings and Technical Specifications

7. Types of Separated Bikeways

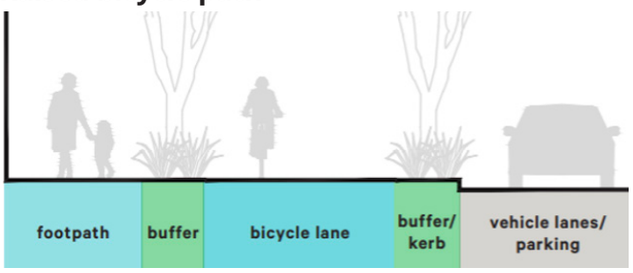
Determining whether to use a channel, raised or parking protected path depends on existing site conditions such as width of road reserve, footpath condition and location of stormwater infrastructure.

Channel bicycle path



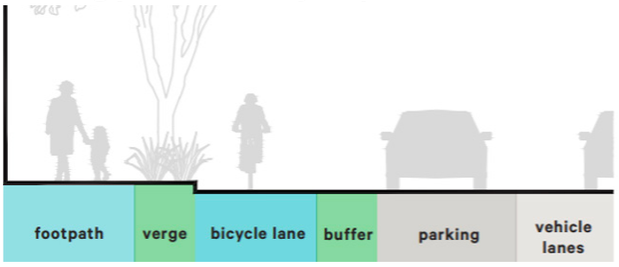
Channel paths use existing road paving and stormwater infrastructure but add a wide kerb separating the bicycle lane from vehicles. The bicycle lane is a 'channel' between the footpath and new kerb.

Raised bicycle path



A raised path is located on footpath level and provides an exclusive bicycle path clearly distinguished from a walkway for pedestrians.

Parking protected bicycle path



Parking protected bicycle paths are exclusive bicycle lanes located against the kerb and separated from the vehicle travel lane by a parallel parking lane.

Technique 5 - Shared space

Design guidance

1. Layout and Design

Design shared spaces with people in mind.

Do not 'over design' streets with clutter and infrastructure.

Increase the level of ambiguity for drivers so they drive slowly and understand pedestrians and cyclist have priority.

Allow access for loading and emergency vehicles.

Integrate tree planting to improve amenity and assist circulation.

Incorporate street furniture that enhances pedestrian priority and amenity.

Integrate a variety of interesting features and artwork to enhance amenity and local character of the area.

2. Surface

Use different paving styles, colours and markings to help define shared spaces as a pedestrian focused environment.

Consider a single surface (ie. no kerb and gutters) that allows free flow of pedestrian movement and water sensitive urban design opportunities and improves accessibility.

3. Vehicle speeds and volumes

Use traffic control/calming devices and speed limits to control and lower observed speed limits.

Reduce trafficable space to one lane/one way to discourage vehicles from using the street.

4. Lighting

Ensure shared spaces are well lit, exceeding the minimum standards where possible, to enhance the safety of vulnerable users both mixing with traffic and feeling safe to travel actively.

Useful references:

- Department of Infrastructure and Transports' Active Travel Design Guide
- Austroads Guide to Road Design Series
- City of Marion Standard Drawings and Technical Specifications
- Towards Safe System infrastructure: a compendium of current knowledge (Austroads)

Case study - Ragamuffin Drive

Ragamuffin Drive in Hallett Cove demonstrates a local approach to a 'Shared Space by Design' for pedestrians, cyclists and motorists.

The single surface design (no kerbs or gutters) through much of the area allows ease of access between the Hallett Cove Library, Hallett Cove Baptist Church and the Good Shepherd Lutheran Church.

Traffic calming has been applied through variable surface treatments (paving, concrete and asphalt), rubber road cushions and horizontal road deflections.

The street integrates Water Sensitive Urban Design initiatives, including raingardens, to capture and filter stormwater runoff. Cycle visitors are catered for via cycle parking.

85th percentile vehicle speed:

- Before upgrade: 42km/h
- After upgrade: 28km/h

Technique 6 - Local streets/bike boulevards

Design guidance

1. Traffic calming

Where appropriate, reduce vehicle speeds to 40km/h (or below) using traffic calming methods and speed limits.

Reduce the width of streets where appropriate, plant street trees in parallel parking areas and narrow entrance and exit points to promote pedestrian and cycle priority.

Widen footpaths and emphasise pedestrian and cyclist crossing points.

2. Reduce traffic

Undertake Local Area Traffic Management to divert through traffic and reduce vehicle volumes. This may include vertical and horizontal deflections (slow points and raised treatments).

Preference is for less than 500 vehicles per day.

Consider strategic 'dead ends' for vehicle traffic and creation of pocket parks. Ensure pedestrian and cycle access is maintained.

Encourage local only traffic access.

3. Brand the street

Provide a distinctive look recognisable to motorists, cyclists and pedestrians.

Use large cycle pavement signs (sharrows) and wayfinding to direct cycle traffic.

4. Prioritise

Undertake Local Area Traffic Management to adjust give ways/stops allowing to have priority for travel and reducing disruptions for bicycle riders.

5. Intersections

Provide safe crossing of major roads to link neighbourhood streets. The higher the traffic volume, the higher the level of service required for pedestrians and cyclists.

Apply warning signage for traffic ahead of popular pedestrian and cyclist crossing points.

Slow traffic navigating corners by building out kerb lines using line marking with traffic control devices.

6. Pedestrian amenity

Enhance pedestrian amenity through suitable paving, large street trees and planting to assist in stormwater management.

Useful references:

- DIT Guide to Bikeway Pavement Design, Construction and Maintenance for South Australia
- Austroads Guide to Road Design Series
- City of Marion Standard Drawings and Technical Specifications
- Towards Safe System infrastructure: a compendium of current knowledge (Austroads)

Image courtesy of npsp.sa.gov.au

Case study - Rugby Porter Bikeway

The Rugby Porter Bikeway provides a 'Primary' level on street cycling route between Mitcham Square and the Adelaide City parklands.

The Bikeway offers a slower, safer, more comfortable alternative to cycling on main arterial roads, such as Unley Road.

Located in the Unley Council area with broad 40km/hr speed limits, traffic is further managed with a series of road closures incorporating pavement markings (such as green treatments and sharrows) and wayfinding to highlight the priority of cyclists.

The Bikeway has become a popular bike route connecting children to schools and commuters, students and visitors to the city via the local street network.

Other bikeways, such as the Beulah Bikeway in Norwood, apply more traffic control devices including raised platforms, angled slow points, and roundabout treatments.

Greening active travel facilities

Greening of paths, streets and spaces through trees, shrubs, ground covers and permeable surfaces are important not just to lift local amenity values, but also for:

- providing shade for people
- reducing the heat of the surrounding area
- managing rainfall and stormwater loads
- supporting local biodiversity objectives
- encouraging more people to get outside and exercise, socialise and travel actively to places as it's a more pleasant experience.

The selection of appropriate greening treatments for a given location is critical to the long-term amenity outcomes of active travel links. It is necessary to consider the risks or relative impacts of leaf litter, raised pavements (from tree roots), sign visibility, pruning and water requirements, falling branches, heights (and power lines), species longevity and the long-term prospect of shade.

Plant and tree selection and design through our path and street networks also need to be conscious of local stormwater management requirements and biodiversity objectives and priorities.

An example may be when considering traffic calming measures through streets. The application of Water Sensitive Urban Design or kerb inlet structures can help to not only reduce road widths and vehicle speeds, but also manage stormwater loads and irrigate plants with high local biodiversity values. These sorts of treatments can help to support 'ecological connectivity' alongside active travel connectivity.

Importantly, budget availability is a strong determinant of what a project can achieve. Sufficient funding and the planning and collaboration of projects and priorities across council divisions will be crucial for aligning greening and active travel upgrades.

Verges and Buffers

The Department for Infrastructure and Transport's Active Travel Design Guide provides direction on greening streets with varying available verge and buffer space. The table below demonstrates different verge and buffer treatments applicable to different widths of verges and buffers, which are relevant to Council streets.

Green infrastructure options in relation to space constraints

Treatments	Available width							
	V - Verges, kerb extensions and other green spaces not in road reserves				B - Buffers separating cycle lanes or paths and other green spaces in road reserves			
	<0.6m	0.6 to 1m	1m to 2m	2m +	<0.6m	0.6 to 1m	1m to 2m	2m +
Tree	✗	✓	✓	✓	✗	✗	✓	✓
Small understory plants up to 0.5 metres mature height and width	✓	✓	✓	✓	✗	✓	✓	✓
Other understorey planting up to 1 metre mature height	✗	✓	✓	✓	✗	✗	✓	✓
Larger shrubs	✗	✗	✓	✓	✗	✗	✗	✗
Climbers with vertical support	✗	✓	✓	✓	✗	✗	✗	✗
Planter boxes	✓	✓	✓	✓	✗	✓	✓	✓
Lawn	✗	✓	✓	✓	✗	✗	✗	✓
Aggregates	✓	✓	✓	✓	✓	✓	✓	✓
Paved, including permeable pavement	✓	✓	✓	✓	✓	✓	✓	✓

✗ = Recommended | ✓ = Permitted in some circumstances | ✓ = Permitted in some circumstances

Greening applications

The Active Travel Design Guide also prescribes the conditions and application of different greening options across various street and place types, and how to optimise the health of tree species within urban settings. These details will be referenced during the planning and design of projects.

Conclusion

The City of Marion is aiming to build a network of walking and cycling routes through a series of projects to connect residents and visitors to key destinations both within the City, and to other councils where they may work, study, or travel for recreation.

The infrastructure types and techniques in this document are intended to guide the application of facility upgrades for both walkers and cyclists to make for a more safe and more accessible environment for for active travellers.

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