

City of Cockburn

BICYCLE AND WALKING

NETWORK PLAN

2016-2021

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City of Cockburn

Bicycle and Walking Network Plan Executive Summary

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Foreword

The Bicycle and Walking Network Plan aligns with the strategic aspirations, reflects the priorities of the community and help facilitate safe, efficient, connected and sustainable movement around the City.

Without an investment in sustainable and active transport modes, congestion will increase and there will be an increase in travel times, travel delays and fuel consumption; less efficient vehicle operation; poorer air quality and increased health related issues associated with a sedentary population. As our City grows, more congestion is noticeable. We are keen to encourage greater pedestrianisation and cycling as well as other modes of transport to improve the ability of moving around our City.

Promoting cycling as a mainstream and viable transport alternative is part of the solution. The Bicycle and Walking Network Plan outlines our plan to encourage more people (particularly women and people aged from 8 to 80) to ride bicycles as part of their everyday trips. We want to take cycling from being primarily a recreational or sporting activity to being an integral part of everyday life. We want the City of Cockburn to be seen as a cycle friendly city and an example of best practice.

Walking is a key element as every trip you take requires people to be a pedestrian at some stage in the journey, though this is often overlooked. Pedestrians form the largest single road-user group and are the most vulnerable, including those using wheelchairs or mobility aids, families with prams and children. We have an aging population and the percentage of residents with disability is rising, so it is important to have connected paths with universal accessibility.

Legislation has changed recently to support the increased number of people walking and riding and allowed bicycle riders and pedestrians to legally share all paths and implemented additional laws so drivers need to take more care on the roads and give 1 or 1.5 metres space to people riding bicycles on our roads.

There are a lot of positives to cycling and walking:

- Choosing active transport is good for your waist and your wallet.
- Good for business as people on bicycles or walking tend to shop regularly and locally.
- Getting people out of cars encourages engagement with others in their local community that they see when they walk or ride.
- Cities around the world are changing as more people realise that cycling and walking is good for cities and helps reduce traffic congestion.
- Cycling in particular is a viable transport alternative for all ages, when safe connected paths are available.
- Everybody benefits when there are more people walking and riding as the extra 'eyes on the street' help with passive surveillance and looking out for one another.

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ES 1. Introduction

This new plan seeks to provide a clear strategic direction for the development of cycling in City of Cockburn. The new plan will address new priorities and incorporate contemporary best practice for the continued design and implementation of bicycle infrastructure as well as a pedestrian network across the City to accommodate the demand for those between 8 to 80 and where they want to walk and ride.

As a tool, the network plan will contribute to the development of safe, connected and attractive cycling network, available for all, and providing not only a viable alternative transport mode, but also recreational, tourism and health opportunities for the community.



ES 1.1 Why do we need to encourage people to become more active?

The promotion of cycling and walking is important to encourage the population to become more active. To provide a safe and connected cycling and pedestrian network is to provide infrastructure to ensure cycling and walking is a viable form of transport and suitable for those aged from 8 to 80.

The promotion of active transport provides many benefits for individuals, the community, the economy and the environment

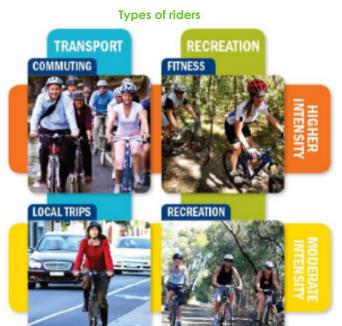


ES 1.1.1 Network Plan Principles

Facilities will vary depending on adjacent land use and whether the route is through an inner-urban area or a suburb area context. Facilities will also need to match the intended user type and destination.

The plan follows a two-tier system, that has further hierarchies of routes. The two tiers being

- 1. On-Road Cycling Routes
- 2. Community Routes (which encompass)
 - Main Community Routes (off-Road Shared Use Routes along higher order roads)
 - II. Local Community Routes (off-Road Shared Use Routes along lower order roads / shared spaces / bike boulevards) and Access Paths (all-purpose access paths).



ES 1.2 Strategic Guidance

Local Government: The various local government reports have a common theme with each one noting the requirement for the City to provide a **highly connected** and **safe** network for cyclists and pedestrians. As well as promoting the provision of **end of trip facilities**. Ensuring safe intersection treatment and prioritising cycling and walking in high activity areas.

State Government: The common theme through the documents released by State Government is the importance of encouraging cycling and waking to build a more active and healthy community, specifically identifying connections to schools and stations and providing the right infrastructure for the right end user. The Perth Transport Plan has identified various road proposals as well as new cycle links that have been considered as part of the long-term network. The WABN notes specific infrastructure actions to which the City of Cockburn Bicycle and Walking Network Plan (the plan) needs to respond to.

Federal Government: Federally released documents require state and local governments to improve accessibility within their jurisdiction in order to reduce the dependence on private motor vehicles and reduce social isolation. The active transport networks should be continuous, convenient and connected providing a safe environment for pedestrians and cyclists.



ES 1.3 Proposed Vision and Objectives

With the preceding strategies in mind, the proposed Vision and Objectives for this bike plan have been developed.

Vision

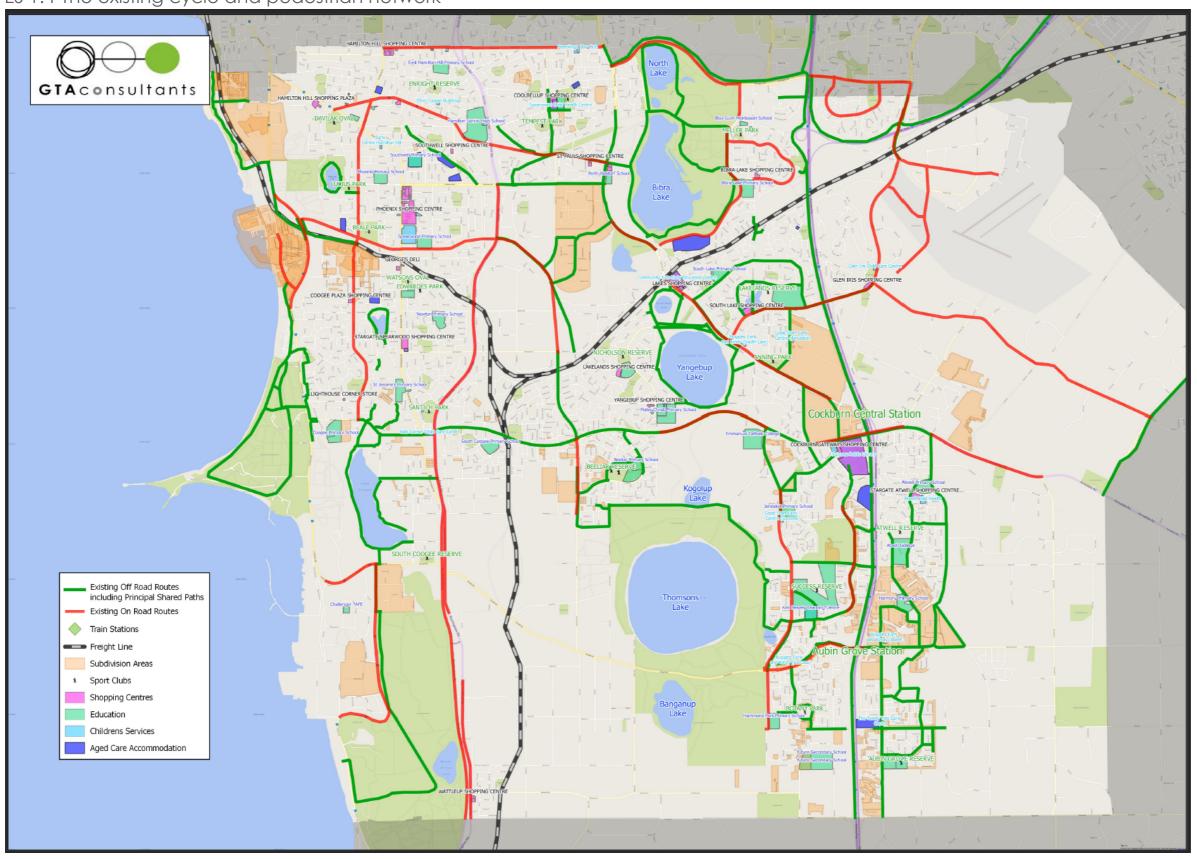
With the ongoing and increasing economic, environmental and health issues with the country's population this is a 'call to action' for the City of Cockburn

'To make Active Travel safer and more accessible for people of all ages and abilities'.

Objectives	Key Initiatives	
To have an interconnected continuous and well maintained bicycle network that cyclists and pedestrians of all abilities feel comfortable using	Plan and deliver a connected network of 'Community Routes' that achieves: o a safer route to school's program o improved access to stations o connects people to shops and community facilities o reduces car parking issues and congestion as people change their mode of travel	
To be a city where walking and cycling is the first choice for transport (for all ages) for short to medium trips (1 - 5 km)	Plan and deliver a connected network of 'Community and On-Road Routes' that are flexible in nature to provide for different users at different times of day/week	
To have a flexible cycling and pedestrian network that can provide for different users at different times of the day/days of the week	On-street bicycle parking to be increased as well as more trip end and during trip facilities	
To be a city where the community appreciates that cycling provides social, health and economic benefits along with improved environmental outcomes from reduced pollution, noise and congestion on the roads	The city to assess the possibility of additional bicycle racks and/or bicycle maintenance stations at key locations within the city	
For council staff to continue to be a strong role model leading the way in promoting cycling and walking as realistic modes of transport for travel to work.	Working to reduce the number of cyclists or pedestrians killed or seriously injured within the City through improved crossing facilities and protected and off road cycle infrastructure	
	The city to assess the possibility of a local planning policy that requires all developers to provide a travel plan for their development	
	Develop a checklist to assist what cycling and walking infrastructure is to be provided within new developments for council use	



ES 1.4 The existing cycle and pedestrian network



ES 1.5 Community Engagement

Community and stakeholder engagement with current and potential future users of the network is critical since these people use or deal with the network daily and know it more intimately than the outputs of any desktop exercise will produce. The value of community and stakeholder input cannot be overestimated and as such the consultation consisted of two key engagement streams, to ensure these inputs could be received.

Online engagement,
using CrowdSpot
using face-to-face meetings, workshops and desktop research

Figure 1.1: Summary of Crowd Spot cycle issues

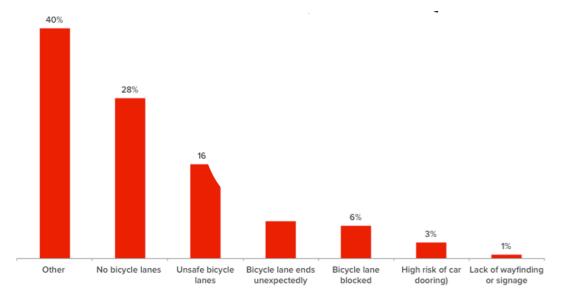
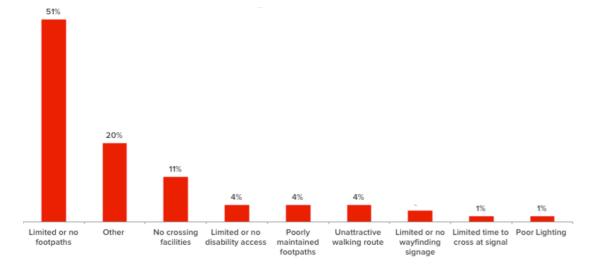


Figure 1.2: Summary of Crowd Spot pedestrian issues



Examples of existing infrastructure that respondents like include:

- Kwinana Freeway PSP (Community connections).
- The Bench that is situated along costal path near dog beach (during trip facilities).
- Bibra Lake shared use path (Recreational connections).

The 'ideas element' of the engagement process was certainly where respondents were most enthused to provide input with the following key items identified for consideration:

- Addition of new key links, tailored to user type for example a Community Route along Healy Road as an alternative to Rockingham Road.
- Local connections to the Freeway PSP and across the main segregators in City of Cockburn such as the freight rail line and the Freeway
- Improve intersection treatments and crossings to make it easier for the more vulnerable road users to pass through safely.



ES 2. A Strategy to get more people cycling and walking

The success of a strategy is reliant on its appeal to the City of Cockburn residents and the accessibility and safety of the infrastructure and policies it recommends. This appeal needs to be wide-ranging and consider all types of potential user and their requirements from the cycling network.

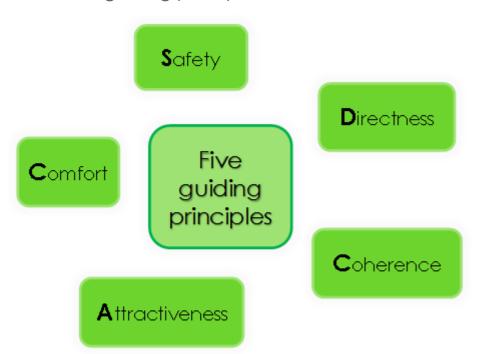
Figure 2.1: Four types of cyclists in Portland by proportion of population



The above graphic presents the results of research carried out in Portland, which groups cyclists into four distinct groups. At a high level, this suggests 67% of people are potential bicycle users. As part of this section of the plan, it is therefore essential to understand the types of cyclist and the different types of walking and cycling infrastructure they would like to use, allowing targeted infrastructure to be provided and/or prioritised for delivery.

Figure 2.2: Developing a new strategy

ES 2.1 Five guiding principles



ES 2.2 Delivering a safe and connected network

Developing a Long-Term Network - Cycling

While we have identified an increasingly segmented market of cyclists (Commuter, Neighbourhood, Recreational and Sports), for network planning purposes the cyclist types can also be classified within their level of confidence, experience and desired travel speed. In this regard, cyclists have been considered as follows:

Table 2.1: Cyclists categories

Cyclists Type	Category	Level of Experience	Confidence	Desired Travel Speed / Traffic Speed	Preferred Infrastructure
А	Commuter / Sport	High to Medium	Strong and Fearless Adults / Enthused and Confident Adults	Travel Speed >30km/h Road Speed >50km/h	On-Road / PSP / RSP
В	Commuter / Neighbourhood / Recreational	Medium	Enthused and Confident Adults / Interested but Concerned Adults / high School Children	Travel Speed >15km/h to 30km/h Road Speed 50km/h or less	On Road (minor roads only) / shared paths / Bike Boulevards
С	Neighbourhood / Recreational	Medium to Low	Interested but concerned Adults and Younger Children	Travel Speed <15km/h Road Speed 30km/h or less	Shared Paths / Bike Boulevards / Footpaths / Shared Spaces

Linking people and jobs – a network of on-road routes

To ensure those commuters who wish to cycle can adequately access their employment (either within or outside of the City of Cockburn) it is essential that the existing on-road cycle network consists of a connected network of on-road lanes that are, at a minimum, protected from the nearest trafficable lane, and continue to and through an intersection. These routes may also be used by recreational and local cyclists during quieter times of the day for smaller local trips.

Linking people and places – a network of Community Routes – (Main Community Routes)

For those less confident, or those who wish to ride at a slower speed, this plan has recommended a network of Main Community Routes that form the spine of the shared-use network. During the development of the long-term network, a key element was to not be constrained by the existing road network, utilise existing parks and reserves and utilise 'Lazy Assets'. Lazy Assets being land already in the public ownership and, where possible is reserved land, such as a power line easement.

Linking People and Places – a network of Community Routes (Local Community Routes)

Local community routes are to provide the connection between a journey's start and end (if a local trip), or to provide a connection between a journey start or end to the Main Community Route or on-road route network and have been planned to accommodate for the less experienced, less confident cyclists, to accommodate for shorter travel distances and to provide safer road environments for cyclists and pedestrians.

Linking people and recreation – a network of Recreational Community Routes

A key element for this plan is the identification and planning of the key recreational routes within the City of Cockburn. While there are various parks and reserves throughout the City that have been utilised where needed, it is evident that the coastal route and the network of lakes running north-south through the City boundary is the major recreational attractor for cyclists and pedestrians.



Figure 2.3: Proposed on-road cycle network

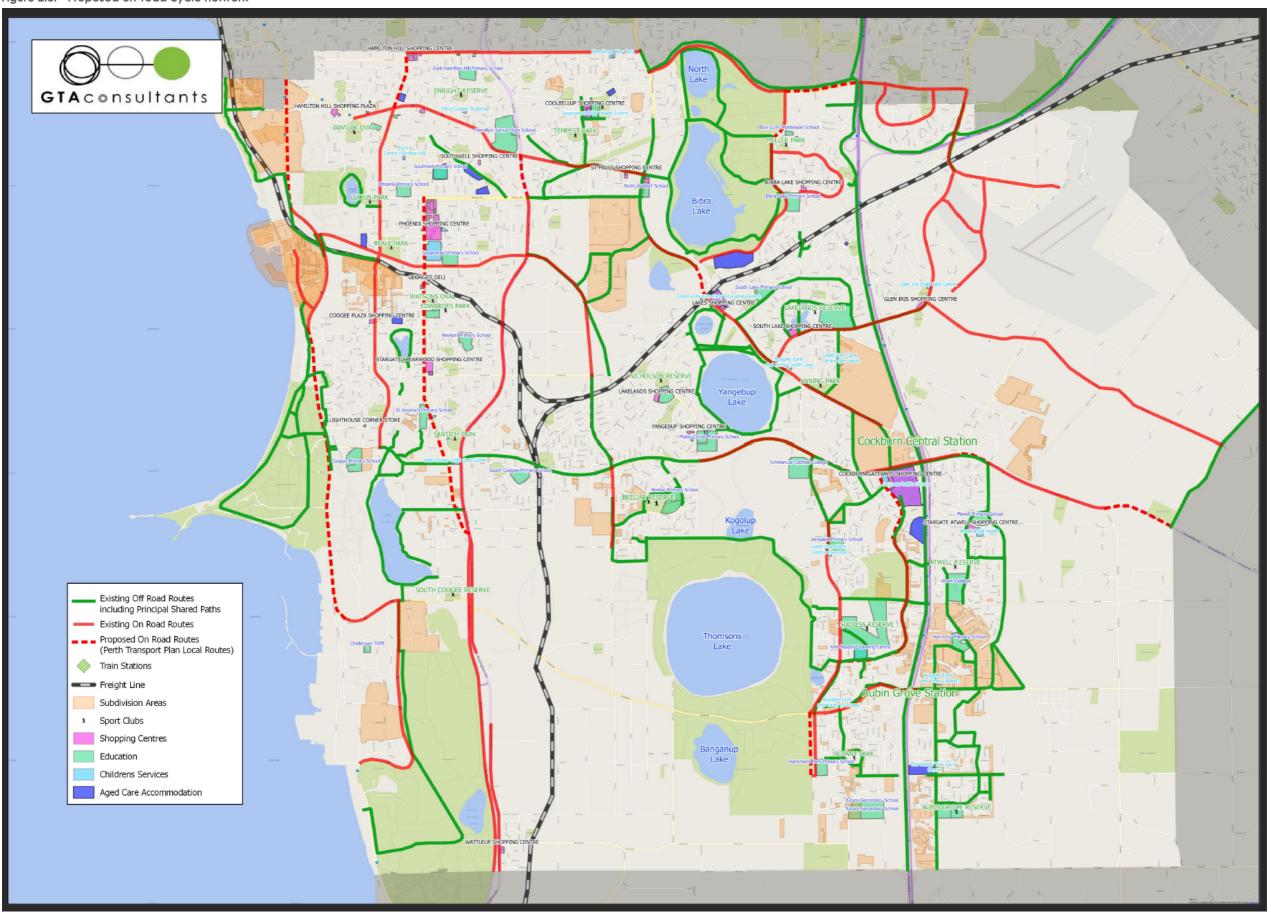


Figure 2.4: Proposed Main Community Route **GTA**consultants Bibra. Lake Existing Off Road Routes including Principal Shared Paths Existing On Road Routes Proposed On Road Routes (Perth Transport Plan Local Routes) Proposed Main Community Routes (Perth Transport Plan Strategic Routes) Proposed Main Community Routes
(Perth Transport Plan Principal Shared Paths) Train Stations Freight Line Subdivision Areas § Sport Clubs Shopping Centres Education Childrens Services

GTA consultants

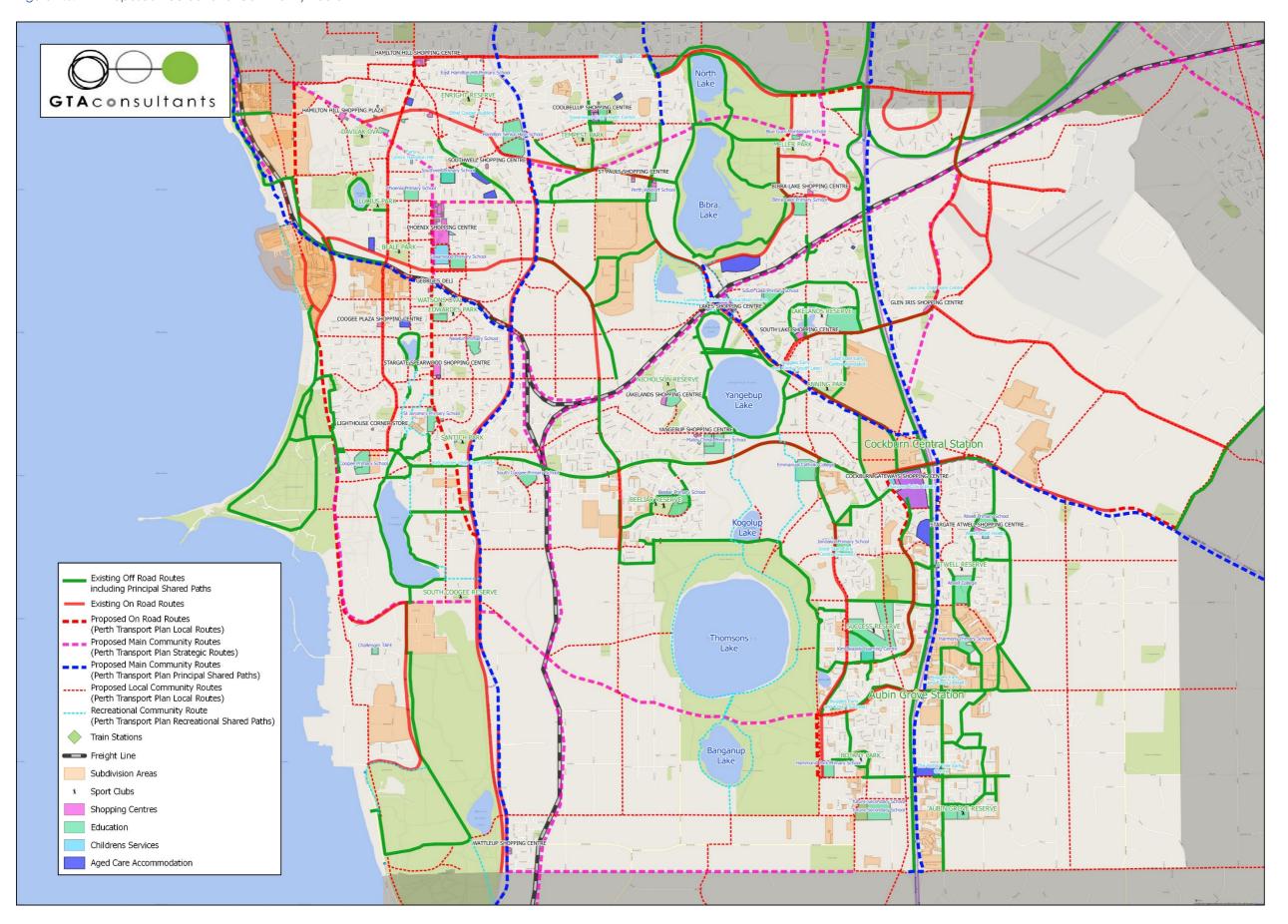
Aged Care Accommodation

Figure 2.5: Proposed Local Community Route **GTA**consultants Bibra. Lake Existing Off Road Routes including Principal Shared Paths Existing On Road Routes Proposed On Road Routes (Perth Transport Plan Local Routes) nallenger T/ Proposed Main Community Routes
(Perth Transport Plan Strategic Routes) Proposed Main Community Routes (Perth Transport Plan Principal Shared Paths) Proposed Local Community Routes (Perth Transport Plan Local Routes) Train Stations Freight Line Subdivision Areas Sport Clubs Shopping Centres Education Childrens Services Aged Care Accommodation

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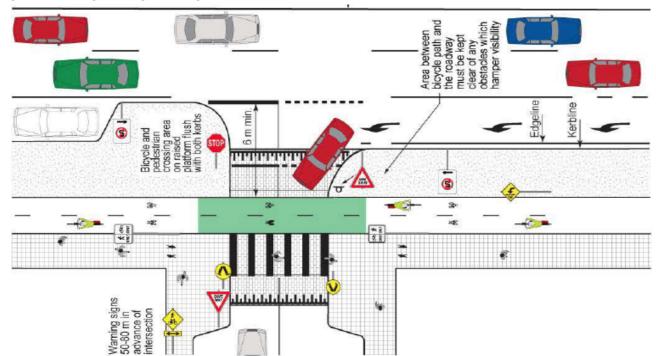
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Figure 2.6: Proposed Recreational Community Route



Safer Intersection Treatments

Figure 2.6: Straight through crossing



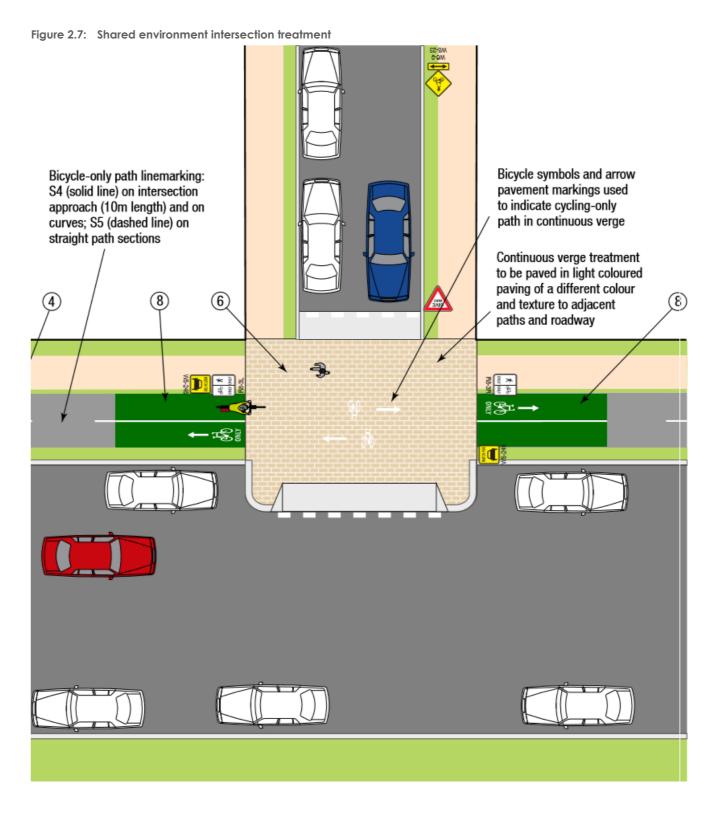




Figure 2.8: Bend-Out intersection treatment

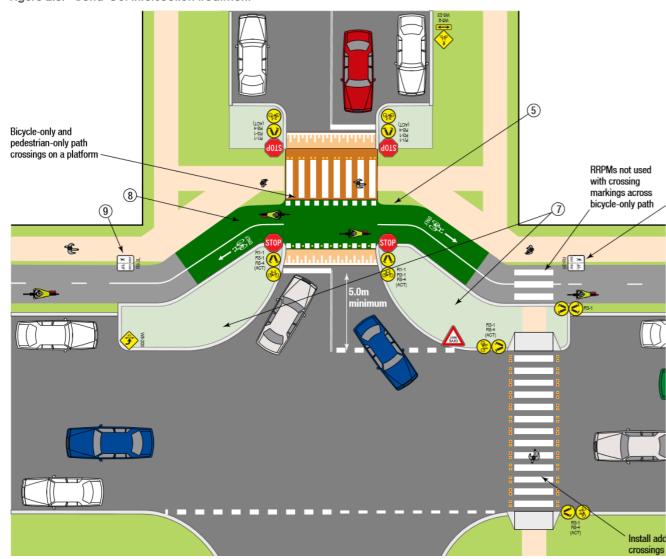


Figure 2.9: Separated bicycle facilities at Roundabouts

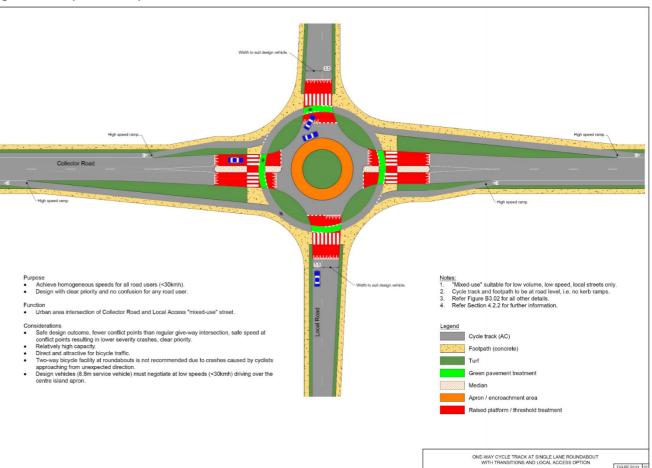


Figure 2.10: Radial Roundabout design

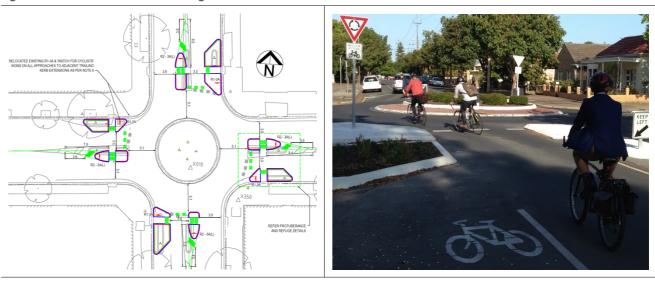


Figure 2.11: Separated bicycle facilities at intersections Signal **Approach Operations Taper** Setback **Pedestrian Bicycle** Safety Crossing Island ~€ C 800 Corner **Forward** Safety **Stop Bar** Island Corner Yield to Apron **Pedestrians**

End-of-Trip and Mid-Trip Facilities

In accordance with the National Cycling Strategy, the Western Australia Bicycle Network Strategy and the City's Integrated Transport Plan and policy documents, the provision of trip-end facilities is a key component of ensuring a connected network and a way of accommodating and increasing the uptake of cycling as a mode of transport and for recreation.





Developing a long-term network – Pedestrians

A key part of the development of this plan is to ensure the two key user groups that are most vulnerable, children and the elderly are adequately provided for. This can be undertaken through the implementation of a Safer Routes to School program and planning and design for Accessible Pedestrian Routes.

Safer Routes to School

It is widely acknowledged that increased car use decreases physical activity and increases obesity levels in adults and children. Supporting active travel in children from a young age is an opportunity to establish life long active habits. One of the best ways to achieve this and ensure a more active and healthier population is to educate the children of the benefits of active travel and encourage the children to speak with and encourage adults to also undertake active travel.



Accessible Pedestrian Routes

Accessible Pedestrian Routes are defined routes for visually impaired and mobility impaired people in town, group and local centres. The routes connect to destinations such as bus stops, shops, offices, parks and community facilities and provide the alignments along which Disability Discrimination Act (DDA) requirements, Tactile Ground Surface Indicators and shore lining/crossing facilities are to be provided in a consistent and systematic way and maintained to the required standards. These routes provide a benefit to all users but are designed for easier access by visually impaired and mobility impaired people.

People aged over 70 make up roughly one-tenth of the population but almost one-third of the pedestrian road toll. According to a recent Austroads report 'pedestrians aged 65 and over are more than twice as likely as those aged 16 to 64 to be killed when hit by a vehicle'. This is in part due to their fragility.

ES 2.3 Innovation – utilising technology

Figure 2.12: Active lighting in Spindlers Park



Figure 2.13: Solar pavement, Krommenie, The Netherlands



Figure 2.14: Moon Deck treatment in Gosford, New South Wales



ES 3. Making It Happen

ES 3.1 Budget and Cost Estimates

To assist with implementation priorities this plan is to be a five-year plan. An implementation schedule is provided highlighting the key routes to be implemented over the next five years and beyond.

The City have a budget which is committed to for a ten-year period, split over the next ten years as follows:

Table 3.1: City of Cockburn cycle funding profile

Year	Funding
2015/16	\$100,000
2016/17	\$750,000
2017/18	\$750,000
2018/19	\$750,000
2019/20	\$750,000
2020/21	\$750,000
2021/22	\$750,000
2022/23	\$750,000
2023/24	\$750,000
2024/25	\$750,000
10 Year Total	\$6,850,000

Table 3.2: Cost Estimates

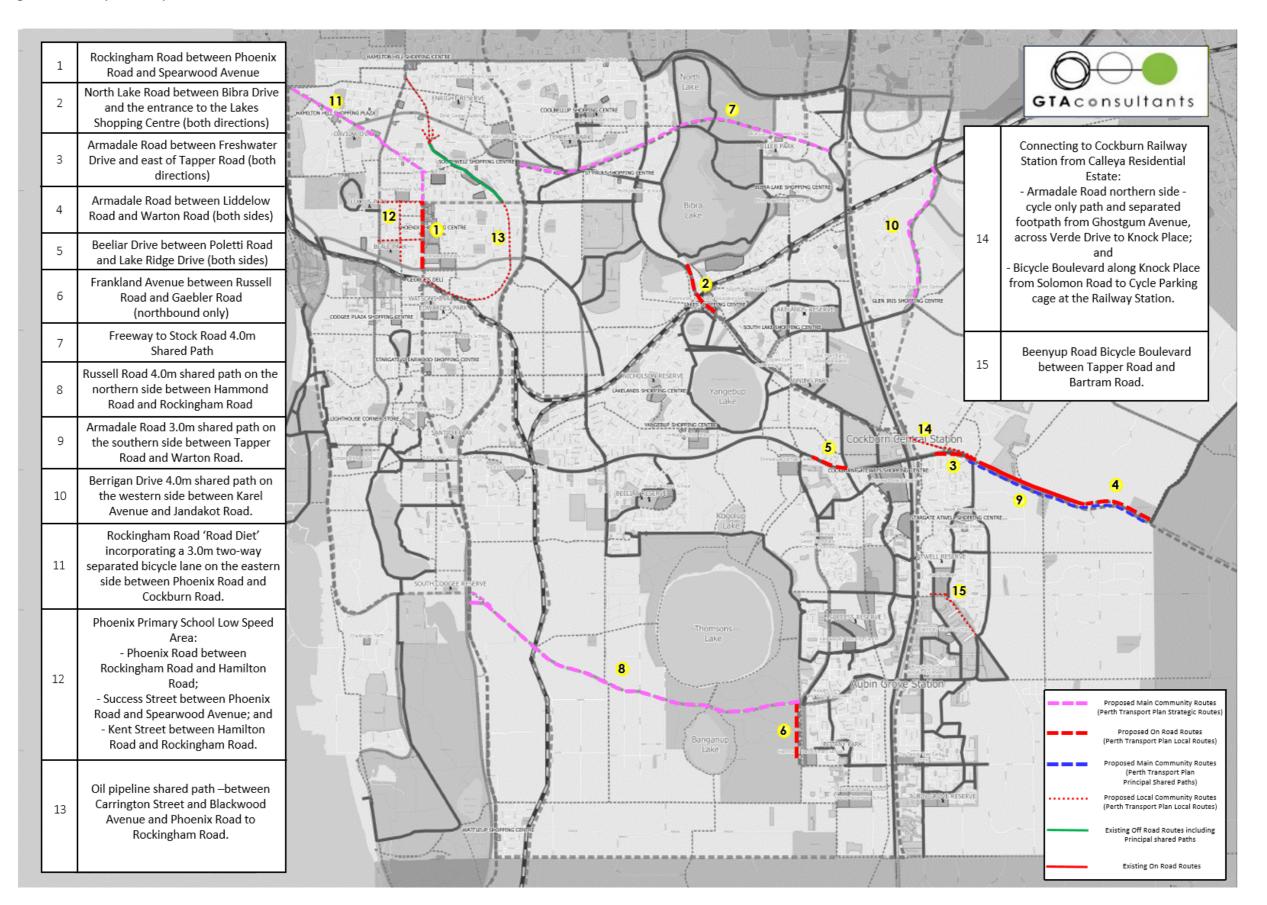
Proposed Routes	Proposed Concept and specifics	Cost Estimate	Cost Estimate (40% Contingency)
On-Road Priority ¹			
Rockingham Road (Phoenix to Spearwood)	Buffered (1.5m/1.8m) on-road cycle lanes. High volume, need to reduce speed, high pedestrian volumes requires cycle / pedestrian separation	Funding committed by the City	-
North Lake Road (Bibra Dr to Lakes Shopping Centre entrance)	Buffered (1.5m/1.8m) on-road cycle lanes connecting from existing lanes north of Bibra Drive, through roundabout to existing lanes south of shopping centre entrance (both directions).	\$114,750	\$160,650
Armadale Road (Freshwater Dr to Tapper Rd)	Buffered (1.5m/1.8m) on-road cycle lanes connecting from existing lanes at Freshwater Drive through to existing lanes east of Tapper Road (both directions).	\$94,500	\$132,300
Armadale Road (Liddelow Rd and Warton Rd)	Upgrading existing sealed shoulder to buffered (1.5m/1.8m) on-road cycle lane from existing lanes at Liddelow Rd through to existing lanes at Warton Road. Noting only sections need upgrading (both directions).	\$137,025	\$191,835
Beeliar Drive (Poletti Rd and Lake Ridge Dr)	Buffered (1.5m/1.8m) on-road cycle from existing lanes west of Lake Ridge Drive through to existing lanes east of Poletti Road (both directions).	\$62,100	\$86,950
Frankland Avenue (Russell Rd and Gaebler Rd)	Northbound only buffered (1.5m/1.8m) on-road cycling from Frankland Avenue to Gaebler Road)	\$60,075	\$84,105
Main Community Routes			
Freeway to Stock Road	4.0m shared between Kwinana Freeway and Stock Road	\$900.000	\$1,260,000

^{1.5}m wide on-road cycle lanes are assumed for the purpose of undertaking the broad level construction costings

Proposed Routes	Proposed Concept and specifics	Cost Estimate	Cost Estimate (40% Contingency)
Russell Road (Hammond Rd and Rockingham, Rd)	4.0m shared path (continuous across all side roads and driveways) on the northern side to link into future Local Community Road along Russell Road west of Rockingham Road as well as future Local community facility east of Hammond Road potentially utilising local subdivision roads. Note 4.0m allows for future separation with pedestrians and high speed cycling as subdivision occurs).	\$981,000	\$1,373,400
Armadale Road (Tapper Rd and Warton Rd)	3.0m shared path (continuous across all side roads and driveways) on the southern side connecting into existing shared path west of Tapper Road and the City boundary.	\$384,750	\$538,650
Berrigan Drive (Karel Ave and Jandakot Rd)	4.0m shared path linking into existing shared path on the western side at Karel Avenue roundabout to the existing shared path on the north-western side at the Jandakot Road Roundabout. Note 4.0m allows for future separation with pedestrians and high speed cycling as subdivision occurs).	\$369,000	\$516,600
Rockingham Road (Phoenix Rd and Cockburn Rd)	3.0m separated two-way cycle route. Implement a road diet reducing Rockingham Road from two lanes to one lane in both directions while allowing protected right turn lanes at major side roads and at intersections. Transition across Cockburn Road will require upgrade to the Rockingham Road / Cockburn Road intersection to allow for all movement pedestrian/cycle crossing. Transition into Rockingham Road proposed on-road routes south of Phoenix Road.	\$384,750	\$538,650
Local Community Routes			
Phoenix Primary School Low Speed Area	Bicycle Boulevard Concepts on Phoenix Road between Rockingham and Hamilton. Due to higher volumes (mostly school traffic) and high pedestrian movement outside of the school, appropriate transition will be required. Success Street between Phoenix Road and Spearwood Avenue Street ensuring appropriate intersection treatment at Phoenix Road. Kent Street between Hamilton Road and Rockingham Road creating a left in/left out only intersection treatment at Kent and Success Street providing filtered permeability for cyclists. Further the intersection treatment with the proposed Rockingham Road upgrade will need to be considered.	\$500,000	\$700,000
Oil Pipeline (Carrington St and Blackwood Ave and from Phoenix Rd to Rockingham Rd)	3.0m shared path linking from Carrington Road at the Hamilton Hill Shopping Centre through to Blackwood Avenue utilising the exiting Oil Pipeline Easement and connecting into the existing shared path south of		\$1,162,000
Connecting to Cockburn Station from Calleya Residential Estate.	 4.0m cycle only path and 2.0m separated footpath from Ghostgum Avenue, across Verde Drive to Knock Place on the northern side of Armadale Road continuous across side roads. Bicycle Boulevard along Knock Place from Solomon Road to Cycle Parking cage at the Railway Station. The transition from shared path to Bicycle Boulevard will need to be carefully considered and incorporated into the MRWA North Lake Road deviation proposal. 	\$708,750	\$992,250
Beenyup Road (Tapper Rd and Bartram Rd)	A bicycle boulevard connecting from the existing shared path on Beenyup Road south of Tapper Road and the existing shared use wide footpath on Tapper Road to the existing shared use wide footpath on Bartram. To link appropriately to Atwell College entry points the City will need to work with the college.	\$500,000	\$700,000
Total		\$5,826,700	\$8,157,390



Figure 3.1: Priority Route Implementation



ES 3.2 Other funding opportunities

State Government grants – PBN, Black Spot, Lotterywest, Road Safety Commission	Reinstatement Works
Private Development	Business Improvement Districts
Advertising	Asset Owner Funding
Cycle Infrastructure provided as part of every project.	

ES 3.3 Way Finding Signage

Signage is a critical part of an accessible, safe and connected cycle network. Signage improves the efficiency of the network and thus enhances the utility of cycling and walking as a transport option. Without clear and legible signage, those who are unfamiliar with the network may feel unsafe or unsure, and are less likely to cycle or walk as a transport option.

ES 3.4 Key Recommendations

Implementation of several the recommendations within this plan will also ensure a safer cycling and pedestrian network for the community.

Table 3.3: Key Cycling and Walking Network Plan Recommendations

Recommendations			
Infrastructure Recommendations	Planning and Policy Recommendations		
Coloured surfacing for on-road cycling. Providing Green at conflict points as a minimum. Use the cycle symbol pavement marking on all on-road routes.	The suggested recreational routes have been identified, but need further detailed planning.		
Provide a buffer for on-road cycle routes to general traffic. As a minimum, this should be done via a wider line marking buffer.	Where new routes are to be provided then the City should ensure that appropriate end of trip facilities are implemented at the destination facility as a condition of the route. Where the City of Cockburn isn't the owner of the destination (such as a school or college, a retail or mixed use centre or other community facility (such as a railway station) then the facility should be agreed to in principle. Further, the City should enact development policy that end of trip facilities and Travel Plans are provided as a condition of planning approval.		
Provide a buffer for on-road cycle routes to denote a 'Dooring Zone'. As a minimum, this should be done via a wider line marking buffer or wider on-street parking bays.	Speak with the RAC to assess the feasibility of extended break down cover to include cyclists.		

Recommendations			
Infrastructure Recommendations	Planning and Policy Recommendations		
Ensure all off road Main Community Routes continue to and, where required, through intersections and have appropriately designed transition areas.	Implement a policy that ensures the City must provide a footpath on at least one side of every road. Undertake a pedestrian route audit to plan the network of paths identifying which side of the roads they should be on.		
Ensure all Local Community Routes have adequate crossing facilities incorporated as required at the end of each route for ease of access. Ensure low speeds are achieved.	Develop an active transport behaviour change policy and strategy.		
Ensure appropriate and safe intersection design is applied to all existing and new cycle routes within the City.	Develop a counting and monitoring strategy for cyclist and pedestrians		
	Implement Behaviour Change Initiatives and Wayfinding Signage Strategy including around Railway Stations.		
	Develop policy to include pedestrian and cycle infrastructure as part of major projects or road upgrades		

Complimentary Recommendations

Downgrade Beeliar Drive to a 'boulevard' through Cockburn Central along with undertaking a Cockburn Central pedestrian strategy.

Investigate the possibility of implementing 30km/h permanent speed limits around schools.

Undertake an Accessible Pedestrian Routes assessment for the identified aged care facilities and for retirement villages and in communities where there is a large proportion of older residents.

Investigate the feasibility and routing options for potential cycle or walking tours.

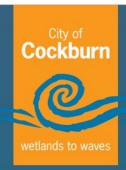
Work with the Department of Transport to ensure the Active Travel guides are kept up to date and remove the sealed shoulder terminology, especially for those routes where the sealed shoulder is not an appropriate riding environment.

Undertake annual crash investigation study for key hotspot cycle pedestrian crash areas to understand causality making cycling/pedestrian safer.

Work with the South West Group to investigate an E-Bike Route.

Develop the draft Development Approval active travel checklist to ensure it is applicable to the City's needs





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