

Shire of Capel

Local Bike Plan
CW925400



Prepared for
Shire of Capel

6 May 2016

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Document Information

Prepared for Shire of Capel
Project Name Local Bike Plan
File Reference CW925400-TR-R001-B-
Capel Bike Plan
Job Reference CW925400
Date 6 May 2016

Revision B

Effective Date 6 May 2015

Date Approved: 6 May 2015

Document History

Version	Effective Date	Description of Revision	Prepared by:	Reviewed by:
A	February 2016	For Issue	Kathy Stirling Edmond Hoang	Jacob Martin
B	May 2016	For Issue	Edmond Hoang	Jacob Martin

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Executive Summary

Cardno was commissioned by the Shire of Capel (Capel) to prepare a local Bike Plan. Capel has identified the need to develop a local Bike Plan which would consist of an overview of existing cycling infrastructure and opportunities to improve and encourage cycling. This requires the development of a planning and action plan framework identifying opportunities and constraints associated with the existing infrastructure network and proposed expansion of this network in the future.

This framework would be complemented by a detailed implementation program and associated order of magnitude cost estimates. The Bike Plan would also include strategies to encourage the take-up of, or greater participation in, cycling within Capel.

This Bike Plan has been developed in accordance with the *Department of Transport's Guidelines for Developing a Bicycle Plan 2014*.

The main purpose of the plan is to

1. Develop a coordinated and strategic approach to delivering cycling infrastructure in order to maximise funding opportunities.
2. Provide connections to key attractors within Capel.
3. Ensure safe connections and routes to schools.
4. Maximise the potential of cycle tourism.

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1 Introduction

1.1 Background

Cardno was engaged by the Shire of Capel (Capel) to prepare a local Bike Plan. Capel is located in Western Australia's South West Region. The Bike Plan has been prepared in accordance with the *Department of Transport's Guidelines for Developing a Bicycle Plan (May 2015)*.

This Bike Plan seeks to develop a comprehensive and attractive network of routes along with behaviour change initiatives to encourage cycling by providing for safer and more convenient routes.

1.2 Need for the Study

Capel is keen to increase cycling and promote this type of active travel. In recent years, there has been significant growth in the number of people using a bicycle as their primary mode of transport for daily commuting trips. The reasons for this growth in cycle use are varied but include health, economic and environmental benefits.

Capel has commissioned a Local Bike Plan that will cover and provide connection to the following localities within the Shire of Capel:

- > Dalyellup.
- > Gelorup.
- > Boyanup.
- > Capel.
- > Peppermint Grove Beach.
- > Stratham.

The plan provides direction for the management and development of bike paths across the Shire. To this end, Cardno has investigated the existing and future requirements for upgrade or expansion of path infrastructure and on-road bicycle facilities within the above localities, as well as identifying the possibilities of connection north to the City of Bunbury and south to the City of Busselton. As part of the Bike Plan the following documentation has been reviewed.

- > Shire of Capel Sport and Recreation Strategic Plan.
- > Shire of Capel Heritage Interpretation Plan.
- > Shire of Capel – Capel Townsite Strategy.
- > Shire of Capel – Boyanup Townsite Strategy.
- > Shire of Capel Records relating to land tenure i.e. crown reserves and private land holdings
- > Shire of Capel Dual Use Path Strategy.
- > The Greater Bunbury Regional Bicycle Master Plan.
- > Shire of Capel – Trails Master Plan.

1.3 Context

The Shire of Capel is located 180 kilometres south of Perth in the heart of the south west between the regional centres of Bunbury and Busselton. It is situated on the Indian Ocean coast and within the Geographe Wine Region. The distances of each townsite from the Perth CBD, Bunbury and Busselton have been provided in **Table 1-1**.

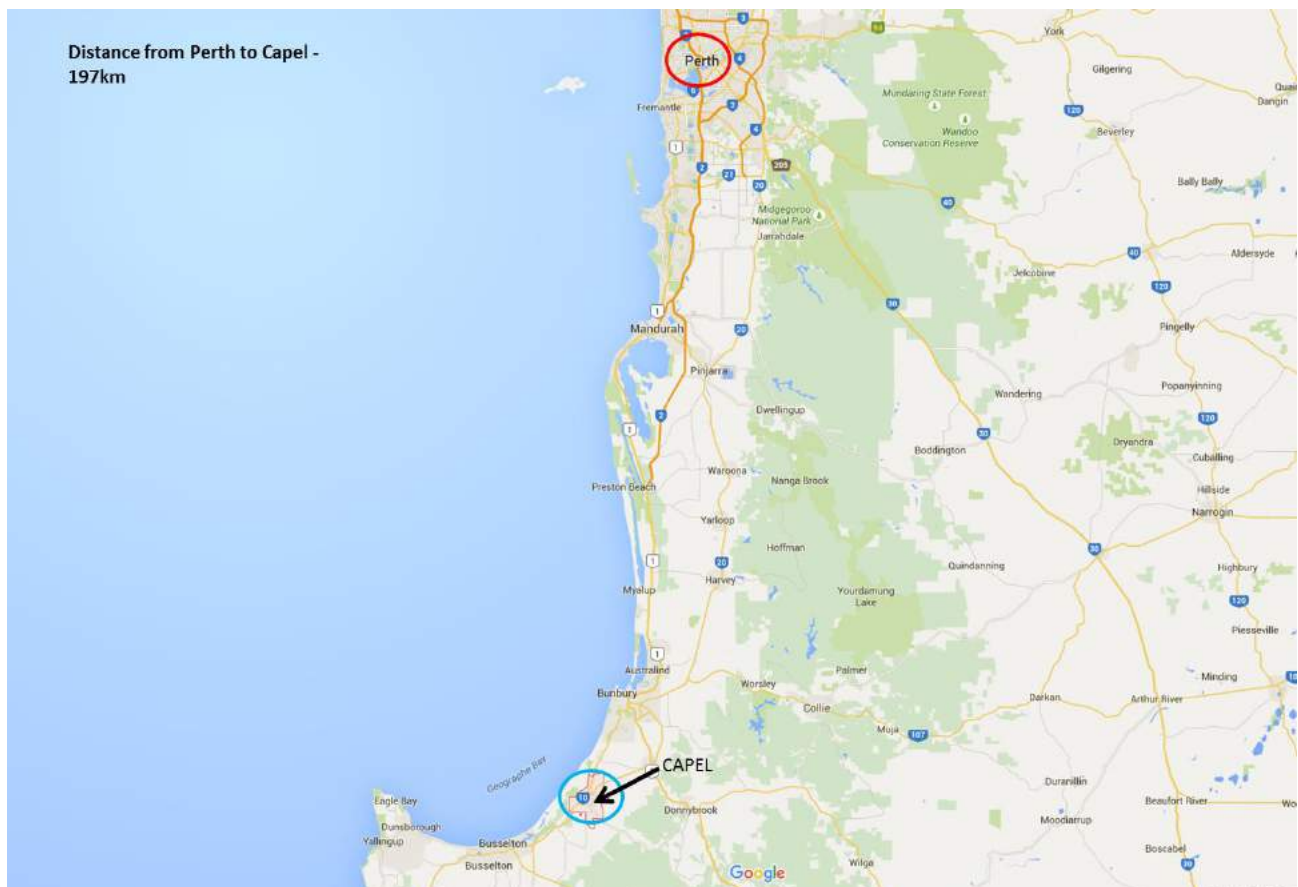
Table 1-1 Townsite distances from Perth CBD, Bunbury and Busselton

Townsite	Distance From Perth CBD	Distance From Bunbury	Distance From Busselton
Capel	200 km	26 km	26 km
Gelorup	180 km	10 km	45 km
Dalyellup	180 km	10 km	45 km
Boyanup	195 km	18 km	45 km
Peppermint Grove Beach	201 km	33 km	26 km
Stratham	187 km	18 km	36 km

Capel has a vibrant community with a growing population. Its population in 2014 was an estimated 17,061 with an average annual growth rate of 6.1%.

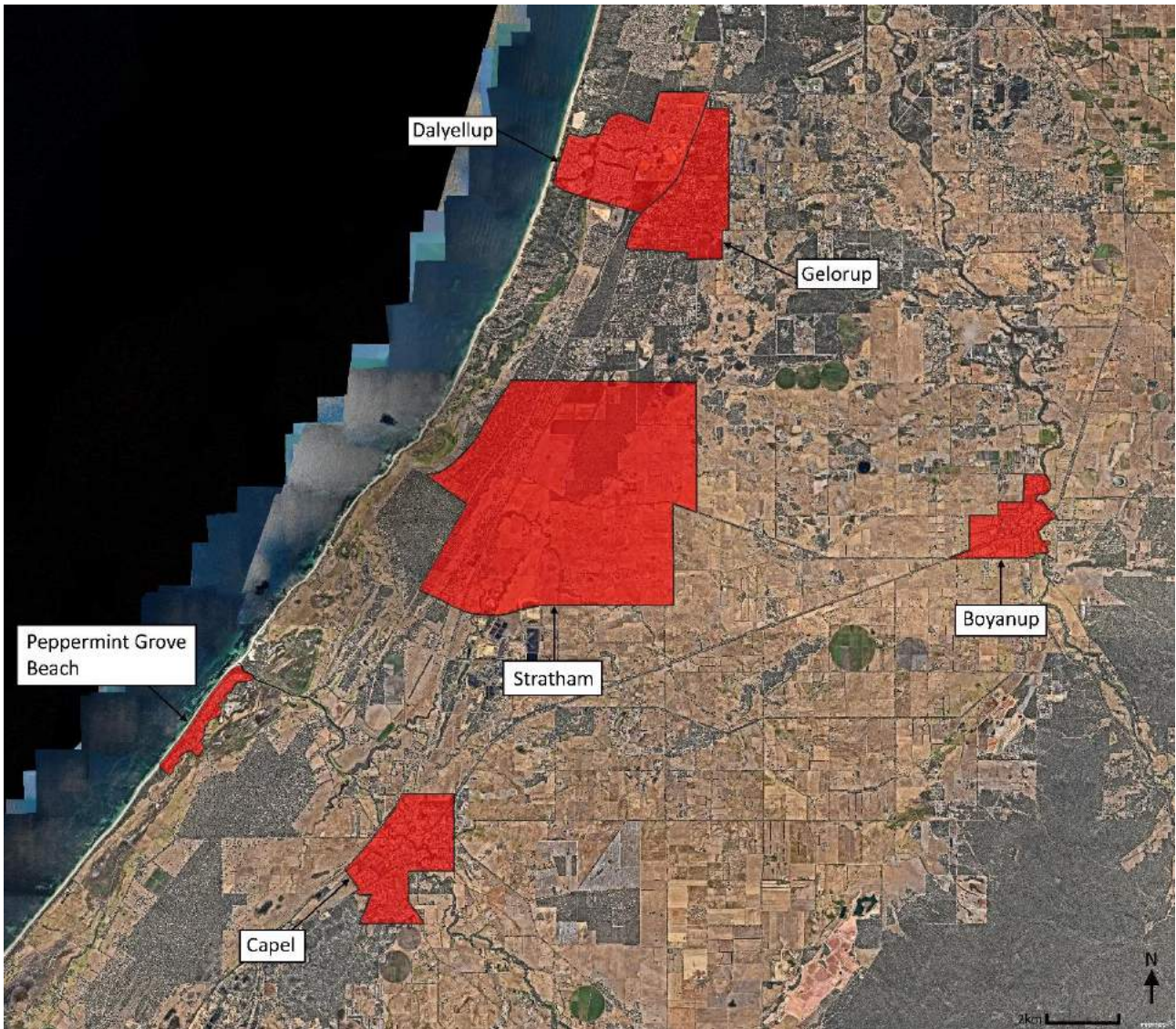
Details of these areas are shown in context in **Figure 1-1** through to **Figure 1-8**.

Figure 1-1 Location Map - Shire of Capel



Source: Google maps (2015)

Figure 1-2 Townsite Location Map



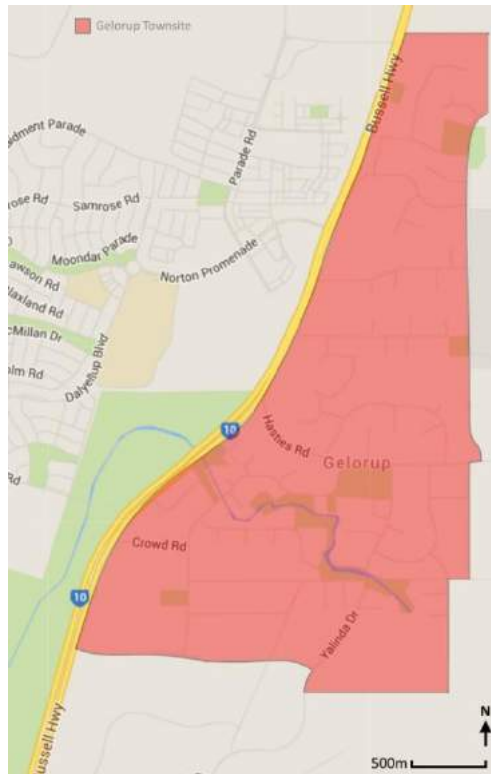
Source: Nearmap (2016)

Figure 1-3 Capel Townsite



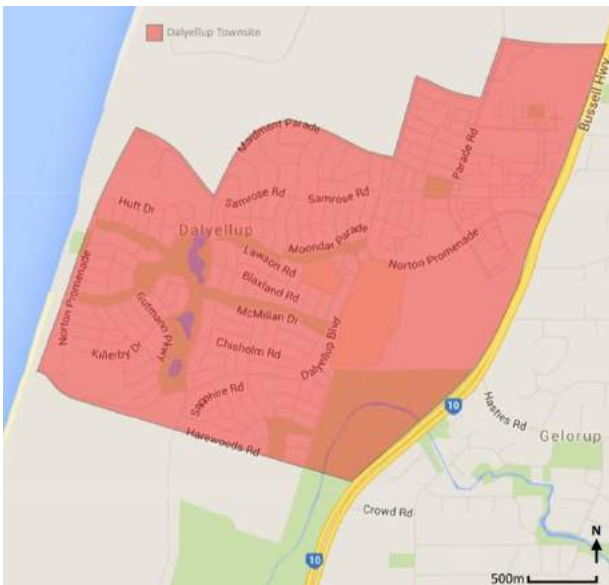
Source: Nearmap (2015)

Figure 1-4 Gelorup Townsite



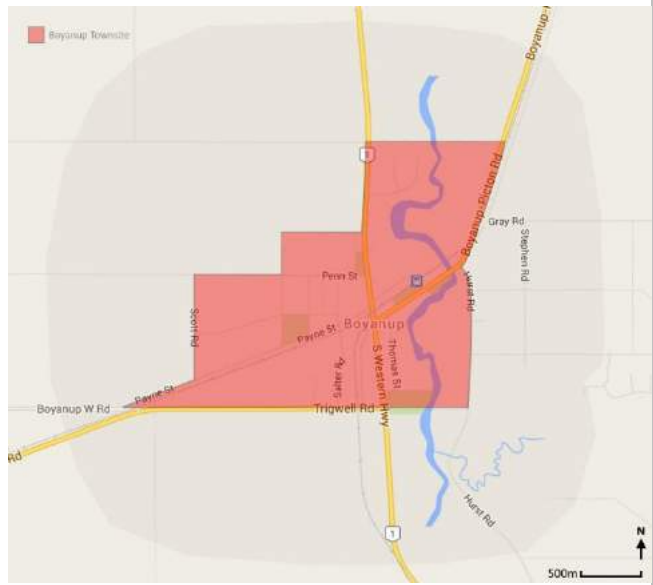
Source: Nearmap (2015)

Figure 1-5 Dalvellup Townsite



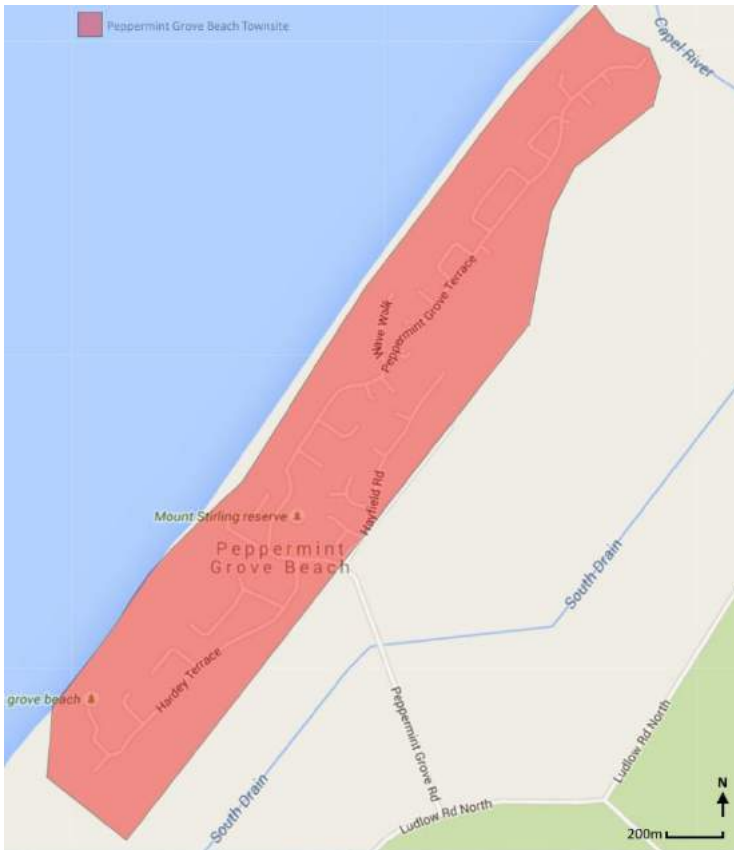
Source: Nearmap (2015)

Figure 1-6 Boyanup Townsite



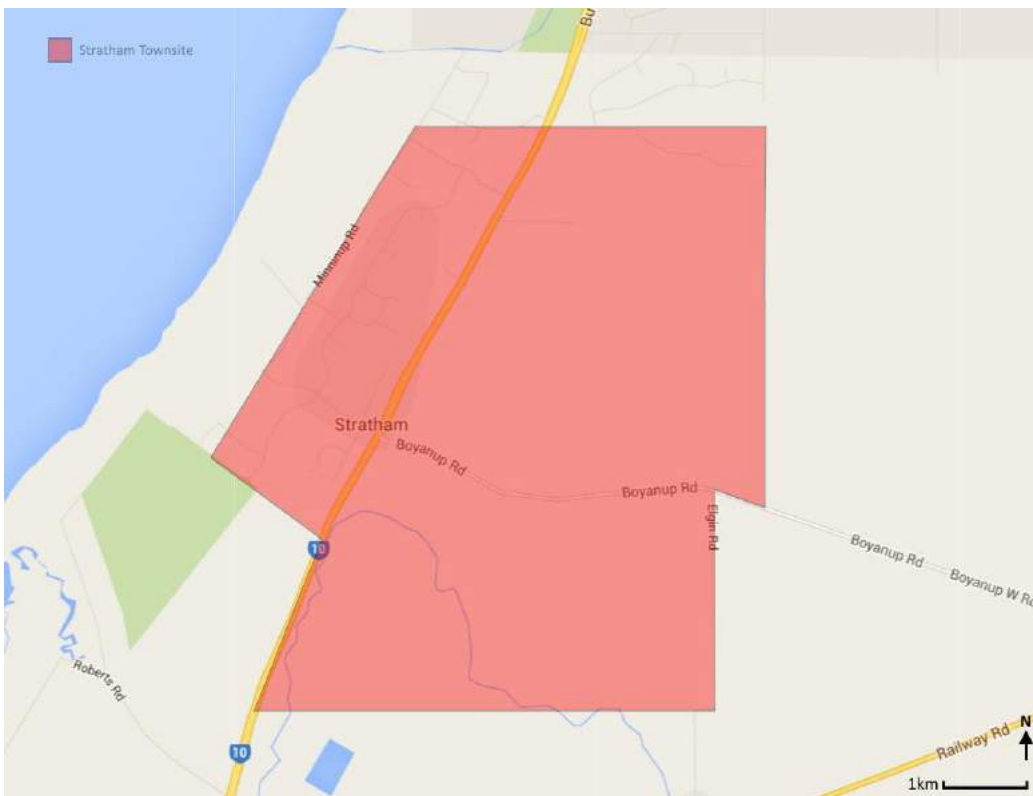
Source: Nearmap (2015)

Figure 1-7 Peppermint Grove Beach Townsite



Source: Nearmap (2015)

Figure 1-8 Stratham Townsite



Source: Nearmap (2015)

1.4 Objectives

The Capel Bike Plan has been developed in accordance with the following:

- > Regional Bicycle Network Grants
- > Department of Transport (DoT) guidelines to assist in the orderly planning of the walking and cycling network and assist the Shire to access Regional Bicycle Network (RBN) grants
- > Austroads Standards
- > Western Australian Bicycle Network Plan 2014-2031
- > National Cycling Strategy

The purpose of the Bike Plan is to guide development of a safe, comfortable, attractive, direct and integrated route network connecting activity centres and regional attractions within Capel.

A specific focus of the Bike Plan is to consider current Regional Bicycle Network (RBN) programs including connection to schools, transport nodes and activity centres, as well as generating cycle tourism and constructing End of Trip (EoT) facilities.

The Bike Plan will also provide directions for future network expansions and potential connections to community and sports facilities such as the sporting ovals, and educational facilities in addition to the promotion and development of cycling tourism opportunities/activities/destinations. Capel also has significant natural environmental assets, with trails such as the Ironstone Gully Falls.

Capel also has a series of previous plans and visions for their local footpath and shared path networks. These plans focus on serving their local community needs. Where synergies exist between the existing planning and the Bike Plan, these paths have been incorporated into recommendations.

The Bike Plan addresses the following areas and key objectives for Capel:

- > Providing safer routes to school
- > Providing safer routes to local sporting, recreational and shopping facilities
- > Connecting communities
- > Encouraging a more active population through recreational walking and cycling options
- > Enhancing and promoting 'Cycle Tourism'
- > Provision of a sufficient level of EoT facilities, located in key areas around the townsite
- > Defining gaps in service and plans for future growth corridors
- > Enhancing connections to the recreational and tourism tracks and trails

In addition, the Bike Plan also explores the following:

- > Cycling issues, opportunities and recommendations
- > Potential and existing tourist routes
- > Cyclist safety issues
- > Encouragement and promotion of cycling
- > Best practice examples and cycling initiatives

An Implementation Program (**Appendix B**) has also been developed to help prioritise the implementation of the projects identified in this Bike Plan.

1.5 Methodology

Capel has identified the need to develop a local Bike Plan which would consist of an overview of existing cycling infrastructure and opportunities to improve the network throughout the townsite. This requires the development of a planning and action plan framework identifying opportunities and constraints associated with the existing infrastructure network and proposed expansion of this network in the future.

This framework is complemented by a detailed implementation program and associated order of magnitude cost estimates. The Bike Plan also includes strategies to encourage the take-up of, or greater participation in, cycling within Capel and connectivity to adjacent attractors.

To assist in identifying feasible, cost effective solutions for Capel, Cardno completed a saddle survey of each townsite, as well as nearby attractors and generators. This site-based review of the existing cycling infrastructure is designed to identify potential routes for improvement, assess the feasibility of potential route alignments and upgrade recommendations and assess the likely increase in cycling demand expected to eventuate following improvements.

The following Bike Plan tasks have been completed as part of this process:

- > Assess Local Government policies
- > Liaise with the Shire of Capel and relevant stakeholders
- > Evaluate the potential infrastructure requirements and provision for cycling facilities in Capel
- > Prepare a summary of recommendations

1.6 Vision and Objectives

The promotion of cycling can greatly assist and contribute to Capel's outcome of being a connected and cohesive community with strategies to ensure place requirements are integrated into planning processes. This Bike Plan provides a mechanism for achieving the Shire of Capel's Vision and sets the policy direction for cycle infrastructure provision to encourage cycling as a transport mode in Capel.

The Bike Plan will take into consideration the objectives and vision of the *Strategic Community Plan June 2013 (Table 1-2)*. The vision for Capel is to become:

***“A community of diverse lifestyle experiences
accommodating progressive growth, sharing in prosperity,
and valuing the unique environment.”***

The main objectives of the Bike Plan are to develop a coordinated and strategic approach to delivering cycling infrastructure in order to maximise funding opportunities.

- > To provide connections to key attractors within Capel.
- > Ensure safe connections and routes to schools.
- > Maximise the potential of cycle tourism.
- > Enhance Capel as a cycle tourism destination.

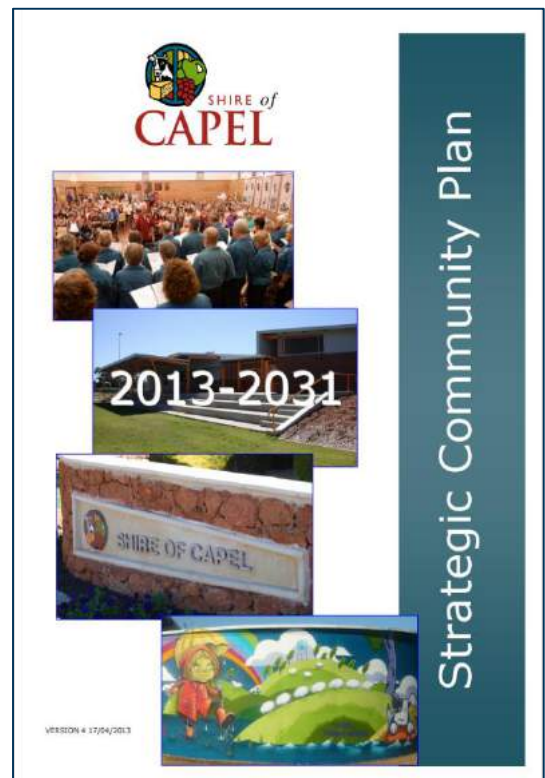


Table 1-2 Goals and Objectives - Shire of Capel Community Plan 2013

No.	Objective	
1	Leadership	Ensure open, transparent, effective good governance and communication within the organisation and the community.
2	Community	Provide facilities and services which recognise the diverse needs of the community and strive to make the Shire a safe place to live, work and visit.
3	Environment	To preserve and enhance the natural and built environment to ensure it is liveable, sustainable and adapts to our communities' needs and expectations.
4	Economic	Foster and support responsible and progressive economic development opportunities within the Shire.
5	Infrastructure	Plan and facilitate safe, sustainable and efficient infrastructure and transport networks to meet the needs of the community.

Source: Strategic Community Plan for the Shire of Capel 2013

Cycling is a key component to achieving Capel's vision. The objectives of the Bike Plan closely align with the Vision defined by the Shire's *Community Plan*.

The Bike Plan achieves these goals through various methods which include:

- > Provision of new cycling paths and links;
- > Promoting cycling as a viable mode of transport and encouraging locals and tourists to cycling;
- > Improvements to the existing network to enhance safety for cyclist and pedestrians; and
- > Provision of new infrastructure including end of trip facilities to cater for cyclist mobility.

These elements

- > Support the needs of the Community, increasing mobility and independence for young people, assisting to create recreational opportunities for residents and improving the safety and attractiveness of cycling as a viable and healthy transport mode.
- > Improve the environmental outcomes of the Shire by reducing the need for private vehicle modes and by creating sustainable alternatives for transport and recreation.
- > Create and expand opportunities for recreation and tourism in the region, both from external visitors and within the Shire. These opportunities will make Capel a more attractive place to visit and live.
- > Reconstruct ageing infrastructure to improve function and safety, and expand this infrastructure to better serve the greater community.

1.7 Policy Context

Planning for cycling in Capel takes place within the context of a number of national, state and local strategies and policies aimed at encouraging cycling as set out below (Refer **Table 1-3**). These have an impact in the formulation of the Bike Plan. To maximise the potential of the Bike Plan many of its initiatives follow the direction and ideals set out by these policies. For further information refer to **Appendix A**.

Table 1-3 Policies relevant to the Bike Plan

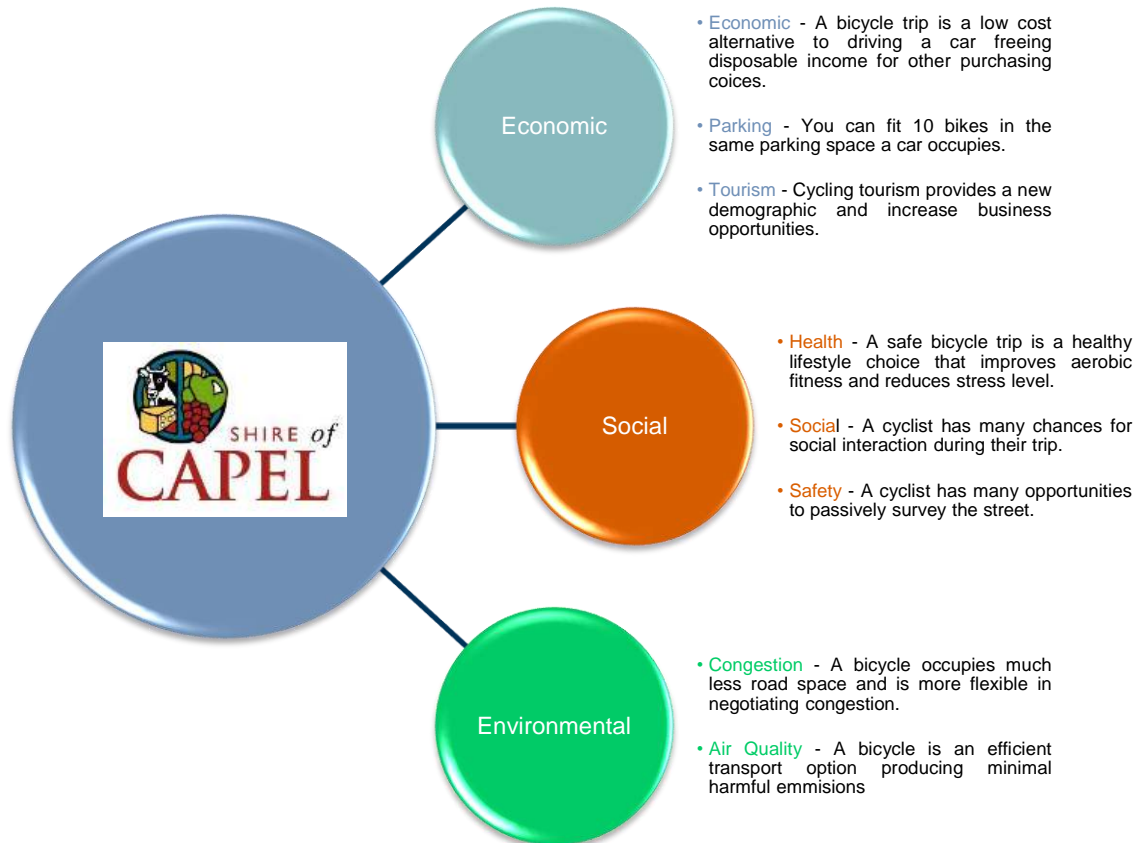
No.	Policy	Federal	State	Local
1	National Urban Policy: Our Cities, Our Future (2011)	X		
2	Moving Australia 2030 (2013)	X		
3	National Cycling Strategy (2010)	X		
4	Walking, Riding and Access to Public Transport (2013)	X		
5	Western Australian Bicycle Network (WABN) Plan 2014-2031		X	
6	West Australian Planning Commission Development Control Policy 1.5 – Bicycle Planning (1998)		X	
7	Liveable Neighbourhoods (2009)		X	
8	South West Mountain Bike Master Plan		X	
9	Out Bike Path 2014-2020		X	
10	Shire of Capel Town Planning Scheme No. 3 and No.7			X
11	Capel Townsite Transport Strategy			X
12	Shire of Capel Strategic Community Plan 2013			X
13	Capel Disability Access and Inclusion Plan			X
14	Capel Path Strategy Report 2013-2018			X
15	Shire of Capel Sport and Recreation Strategic Plan.			X
16	Shire of Capel Heritage Interpretation Plan.			X
17	Shire of Capel Townsite Strategy.			X
18	Shire of Capel – Boyanup Townsite Strategy.			X
19	Shire of Capel Records relating to land tenure i.e. crown reserves and private land holdings			X
20	Shire of Capel Dual Use Path Strategy.			X
21	The Greater Bunbury Regional Bicycle Master Plan.			X
22	Shire of Capel Trails Master Plan 2009.			X

2 Planning for Pedestrians and Cyclists

2.1 Benefits of Cycling

Cycling is undertaken for both commuting and recreational purposes in Capel. Given the many benefits of cycling, there is considerable potential to increase the uptake of active transport modes particularly as a viable commuter transport choice. Recreational cycling also has potential to increase tourism with the increasing popularity of cycling tourism. The benefits are shown in **Figure 2-1**.

Figure 2-1 Benefits of Cycling



2.2 Types of Cyclists and their Requirements

Bicycle mode choice is dependent upon a number of factors including population demographics, topography of the region, weather effects and available cycling infrastructure. Cycling is increasingly becoming a viable alternative to other transport modes for all purposes, with increases in commuting, recreational and other general purpose trips for all ages.

However, cycling infrastructure must be provided to facilitate cycling activities by all. For this reason, infrastructure should be designed to cater for the requirements of a number of types of cyclist. For the purposes of this bicycle plan, cyclists have been broadly categorised into three main groups shown in **Table 2-1**.

Table 2-1 Types of Cyclists and their Requirements

Cyclist Type	Cycling Profile
Casual Cyclists	Casual cyclists predominantly consist of family groups and young / inexperienced cyclists who tend to use the off-street path network to minimise conflict with motor vehicles. It is likely that casual cyclists will not travel a great distance, but rather tend to cycle for errands and other specific tasks, as well as for fitness and recreation.
Commuter Cyclist	Commuters have a different and well defined set of needs, tending to travel within the roadway, sharing the road with vehicular modes in preference on off-street cycling infrastructure. Commuters tend to be habitual riders with experience and confidence in road riding. Travel speed is generally higher than what casual cyclists achieve which makes them more suited to riding along the roadway, rather than along the pedestrian network.
Recreational Cyclists	Recreational cyclists comprise of those who ride for fitness and as part of social riding groups. These cyclists tend to be relatively confident riders capable of reaching speeds approaching the posted limit. Recreational riders can also constitute casual riders accessing recreational paths with friends and family, for recreation or fitness purposes. Cycling speeds tend to be very slow with cyclists preferring high quality off-street paths.

2.3 Types of Facilities

2.3.1 Off Street Facilities

2.3.1.1 **Shared Path**

The formal definition of a shared path from the *WA Road Traffic Code 2000* is as follows:

“shared path” means an area open to the public (except a separated footpath) that is designated for, or has as one of its main uses, use by both the riders of bicycles and pedestrians, and includes a length of path beginning at a “shared path” sign or “shared path” road marking and ending at the nearest of the following:

- (a) an “end shared path” sign or “end shared path” road marking;
- (b) a “no bicycles” sign, or a “no bicycles” road marking;
- (c) a “bicycle path” sign;
- (d) a carriageway;
- (e) the end of the path;”¹

It is considered standard practice to denote a shared path by linemarking instead of shared path signage, for the following reasons:

- > Linemarking is more durable than signage.
- > Linemarking is more economical to install and maintain.
- > Signage is prone to vandalism, damage and theft – resulting in an illegible network.

For the purpose of designating a shared path, linemarking is considered to satisfy the intent of the Australian Road Rules while maintaining the best outcomes for cyclists and the Local Government.

¹ *WA Road Traffic Code 2000, Regulation 3*

It is noted that as of April 27, 2016, cyclists are now permitted to ride on any shared path or footpath unless specifically signed otherwise. This does not diminish the need for an effective cycling network of higher quality shared paths and on-road cycling facilities.

Figure 2-2 Shared Path – Shire of Capel WA



The acceptable range for shared path width is presented in **Table 2-2**. It is acknowledged that there may be locations where this is not achievable, and that this should not exclude a vital, narrower path from the shared path network. However, every effort should be made so that new paths are constructed to the recommended standard.

Refer to *Austrroads Guide to Road Design 6A* for more details regarding path widths or *Cycling Aspects of Austrroads Guides 2014* for a summary of all Austrroads guidelines related to cycling.

Table 2-2 Shared Path Widths

	Path width (m)		
	Local access path	Commuter path	Recreational path
Desirable minimum width	2.5	3.0	3.5
Minimum width – typical maximum	2.5 – 3.0	2.5 – 4.0	3.0 – 4.0

2.3.1.2 Footpath

These provide path infrastructure for pedestrians and cyclists under the age of 12 and are considered suitable for this purpose. In Western Australia, adults supervising children are not permitted to ride on footpaths under the *Road Traffic Code 2000*. However, it may be considered unsafe or impractical for adults to ride on the road while supervising children. (E.g. paths provided only on the right-hand side of the road). In this case it is good practice to ride alongside children along the footpath.

Similarly, if a cyclist perceives that riding on the street is not safe enough for them they are likely to use the parallel path, regardless of whether it is designated as a footpath or shared path. As of April 27, 2016 the State Government has amended the *Road Traffic Code* to permit cyclists of all ages to ride on footpaths.

Accordingly, the design of new or upgrade footpaths needs to take into account the likely use by cyclists. It is recommended that all new footpaths be constructed and designated as shared paths. Refer to **Figure 2-3**.

Figure 2-3 Footpath - Shire of Capel WA


2.3.2 On Street Facilities

2.3.2.1 Cycle Lanes

Dedicated on-street cycling infrastructure is primarily provided in the form of a cycle lane, in which a sealed shoulder and edge-line is installed to separate cycling and vehicular traffic. In these circumstances, bicycle symbols are marked to indicate the purpose of the lanes.

A cycle lane denoted by a bicycle lane sign is provided for the exclusive use of cyclists and drivers may not drive, stop or park within that lane. An on-street facility without such signage is a sealed shoulder and there are no restrictions on driving, stopping or parking within that shoulder, beyond the limitations placed by other appropriate signage (e.g. 'no standing', 'no parking' etc.) Refer to **Figure 2-4**.


Figure 2-4 Standard Cycle Lanes - Curtin Avenue, City of Fremantle WA


The desirable width of cycle lanes depends on the speed limit of the street. For roads with speed limit of 60km/h or less, the desired width is 1.5m. The acceptable range for cycle lane widths is summarised in **Table 2-3**.

Refer to *Austrroads Guide to Road Design Part 3* or *Cycling Aspects of Austrroads Guides 2014* for summary of all Austrroads guidelines related to cycling.

Table 2-3 Cycle Lane Widths

Speed limit (km/h)	Cycle lane width (m)		
	60	80	100
Desirable width	1.5	2.0	2.5
Acceptable range	1.2 – 2.5	1.8 – 2.7	2.0 – 3.0

The overall road width needed for cycle lanes on both side of the street will depend on the characteristic of the road itself. Depending whether the road would be used predominantly by passenger cars or trucks will dictate the required width of the traffic lane itself. *Austrroads Guide to Road Design Part 3* recommended standard lane width of 3.5m to allow for larger vehicles and buses to comfortably pass through the road. Traffic lane may be reduced to 3.3m subject to approval relevant road authority.

Table 2-4 provides guidance on traffic lane widths on urban arterial roads. Therefore, with standard traffic lane width of 3.5m and minimum acceptable width of 1.2m for cycle lanes, the minimum total road width required is 9.4m.

Table 2-4 Urban Arterial Road Width

Element	Lane width (m)	Comments
General traffic	3.3 – 3.5	General traffic lane widths to be used for all roads
	3.0 – 3.3	For use on low speed roads with low truck volumes
Service road lane	3.4 – 5.5	Range of lane widths on service roads (refer to <i>Austrroads Guide to Road Design Part 3</i> Section 4.11)
Wide kerbside lane	4.2	Locations where there are high truck volumes (additional width provided for trucks)
	4.2 – 4.5	Locations where motorists and cyclists use the same lane (refer <i>Austrroads Guide to Road Design Part 3</i> Section 4.8.11 and Commentary 7)
High Occupancy Vehicles (HOV) lane	3.5 – 4.5	Bus lane (refer <i>Austrroads Guide to Road Design Part 3</i> Section 4.9.2)
	3.3	Tram/light rail vehicle lane (refer <i>Austrroads Guide to Road Design Part 3</i> Section 4.9.3)
Minimum width between kerb and channel (to provide for passing of broken down vehicles)	5.0	Width of a single lane suitable for use in a left turn slip lane, or two lane, two way divided road with a raised median
	2 × 4.0 (8.0)	Width of two lanes that provide for two lines of traffic to (slowly) pass a broken down vehicle

2.3.2.2 Sealed Shoulders

Sealed shoulders are similar to cycle lanes but without the necessary regulatory signage. The main difference for cyclists is that parking is not prohibited in sealed shoulders, unless otherwise signed. In areas with demand for on-street parking, this results in a facility with poor safety for cyclists as they must move into the traffic lane frequently to pass parked vehicles (Refer to **Figure 2-5**). However, a sealed shoulder may be preferable in areas without significant parking demand due to their capacity for use as a breakdown lane.

Figure 2-5 Sealed Shoulder – Coode Street, City of Bayswater, WA



2.3.2.1 On-street mixed traffic cycling

On-street mixed routes include riding environments that are used by more experienced, higher-speed cyclists that are comfortable without the presence of cycling facilities on the road. Mixed traffic environments also include low traffic, low speed streets suitable for riders of a wide range of confidence levels. Linemarking and signage designating a mixed-traffic facility is recommended where the route is incorporated into the cycling network, (refer to **Figure 2-6**).

Figure 2-6 On-Street Mixed Traffic Cycling Signage and Linemarking



2.4 Road Hierarchy

Road classifications are defined in the Main Roads Functional Hierarchy as follows:

- > **Primary Distributors:** These provide for major regional and inter-regional traffic movement and carry large volumes of generally fast moving traffic. Some are strategic freight routes and all are National or State roads. They are managed by Main Roads WA.
- > **District Distributor A:** These carry traffic between industrial, commercial and residential areas and generally connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining property. They are managed by Local Government.
- > **District Distributor B:** Perform a similar function to 'District Distributor A' but with reduced capacity due to flow restrictions from access to and roadside parking alongside adjoining property. These are often older roads with a traffic demand in excess of that originally intended. District Distributor A and B roads run between Land-use cells and generally not through them, forming a grid which would ideally space them around 1.5 Kilometres apart. They are managed by Local Government.
- > **Local Distributors:** Carry traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the

grid of District Distributors only carries traffic belonging to or serving the area. These roads should accommodate buses but discourage trucks. They are managed by Local Government.

- > **Access Roads:** Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. They are managed by Local Government.

Even though most of the local roads within the townsite are designated as Access Road, some roads experience more traffic than others and Main Roads does not differentiate different type of Access Roads regardless of the traffic volume.

In general Access Road can be divided into two categories below:

1. **Collector Street:** Provide connection of residential streets with traffic carrying roads and provide access to grouped or commercial properties and community facilities as well adjacent properties. This type of road can also accommodate local cycle and pedestrian movement.
2. **Local Street:** Provides access to adjacent properties as well as local area. It can also accommodate pedestrian and local cycle movement.

The Main Roads WA Functional Hierarchy for the six (6) townsites within the Shire of Capel are shown in **Table 2-5** to **Table 2-10**.

Table 2-5 Capel Road Hierarchy










Road	Hierarchy	Key
Stirling Road	Regional Distributor	
Capel Drive	Regional Distributor	
Capel Drive	Distributor B	
Goodwood Road	Distributor B	
Forrest Road	Distributor B	
Hutton Road	Distributor B	
Galvins Road	Distributor B	
Railway Road	Distributor B	
Galvins Road	Local Distributor	

Table 2-6 Gelorup Road Hierarchy



Road	Hierarchy	Key
Bussell Highway	Primary Distributor	
Hasties Road	Regional Distributor	

Table 2-7 Dalyellup Road Hierarchy







Road	Hierarchy	Key
Bussell Highway	Primary Distributor	
Norton Promenade	Local Distributor	
Dalyellup Boulevard	Local Distributor	
Harewoods Road	Local Distributor	
Maidment Parade	Local Distributor	
Parade Road	Local Distributor	

Table 2-8 Boyanup Road Hierarchy








Road	Hierarchy	Key
South Western Highway	Primary Distributor	
Bridge Street	Primary Distributor	
Trigwell Road	Primary Distributor	
Armstrong Road	Local Distributor	
Hurst Road	Local Distributor	

Table 2-9 Peppermint Grove Beach Road Hierarchy

Road	Hierarchy	Key
Peppermint Grove Road	Regional Distributor	

Table 2-10 Stratham Road Hierarchy









Road	Hierarchy	Key
Bussell Highway	Primary Distributor	
Boyanup West Road	Regional Distributor	

2.5 Traffic Speeds

Austrroads Guidelines states that where the difference between bicycle and motor traffic speeds is less than 20km/h, full integration may be acceptable and bicycles and motor traffic can usually share the road pavement without any special provision being required.

Austrroads states that segregation is desirable where the difference between bicycle and motor traffic speed exceeds 40 km/h. The Guidelines also indicates that 85th percentile speeds of people cycling under free flow conditions can be expected to be in the order of 30 km/h. This is potentially representative of confident riders on flat terrain, but speeds are likely to be lower in hilly areas or for casual cyclists. Traffic speed limits for Capel based on the Main Roads WA's Metropolitan Functional Road Hierarchy (MFRH) database are shown in **Table 2-11** through to **Table 2-16**.

Table 2-11 Capel Traffic Speed Limits

Road	Traffic Speed (km/h)	Key
Stirling Road	50	
Capel Drive	60	
Goodwood Road	60	
Forrest Road	60	
Hutton Road	50	
Galvins Road	60	
	80	
Railway Road	60	

Note that the speed limits listed above are for roads within the Capel Townsite

Table 2-12 Gelorup Traffic Speed Limits






Road	Traffic Speed (km/h)	Key
Bussell Highway	110	
	90	
	80	
Hasties Road	80	
	60	

Table 2-13 Dalyellup Traffic Speed Limits








Road	Traffic Speed (km/h)	Key
Bussell Hwy	90	
	80	
Norton Promenade	60	
Dalyellup Boulevard	50	
Harewoods Road	50	
Maidment Parade	50	
Parade Road	50	

Table 2-14 Boyanup Traffic Speed Limits












Road	Traffic Speed (km/h)	Key
South Western Highway	110	
	80	
	60	
Bridge Street	110	
	80	
	60	
Trigwell Road	110	
	80	
	60	
Armstrong Road	50	
Hurst Road	50	

Table 2-15 Peppermint Grove Beach Traffic Speeds




Road	Traffic Speed (km/h)	Key
Peppermint Grove Road	50	

Table 2-16 Stratham Traffic Speed Limits

Road	Traffic Speed (km/h)	Key
Bussell Highway	110	
Boyanup West Road	50	

The maps below detail the road hierarchy and speed limits of the roads within each townsite, as described by Main Roads WA information.

Figure 2-7 Capel Road Hierarchy

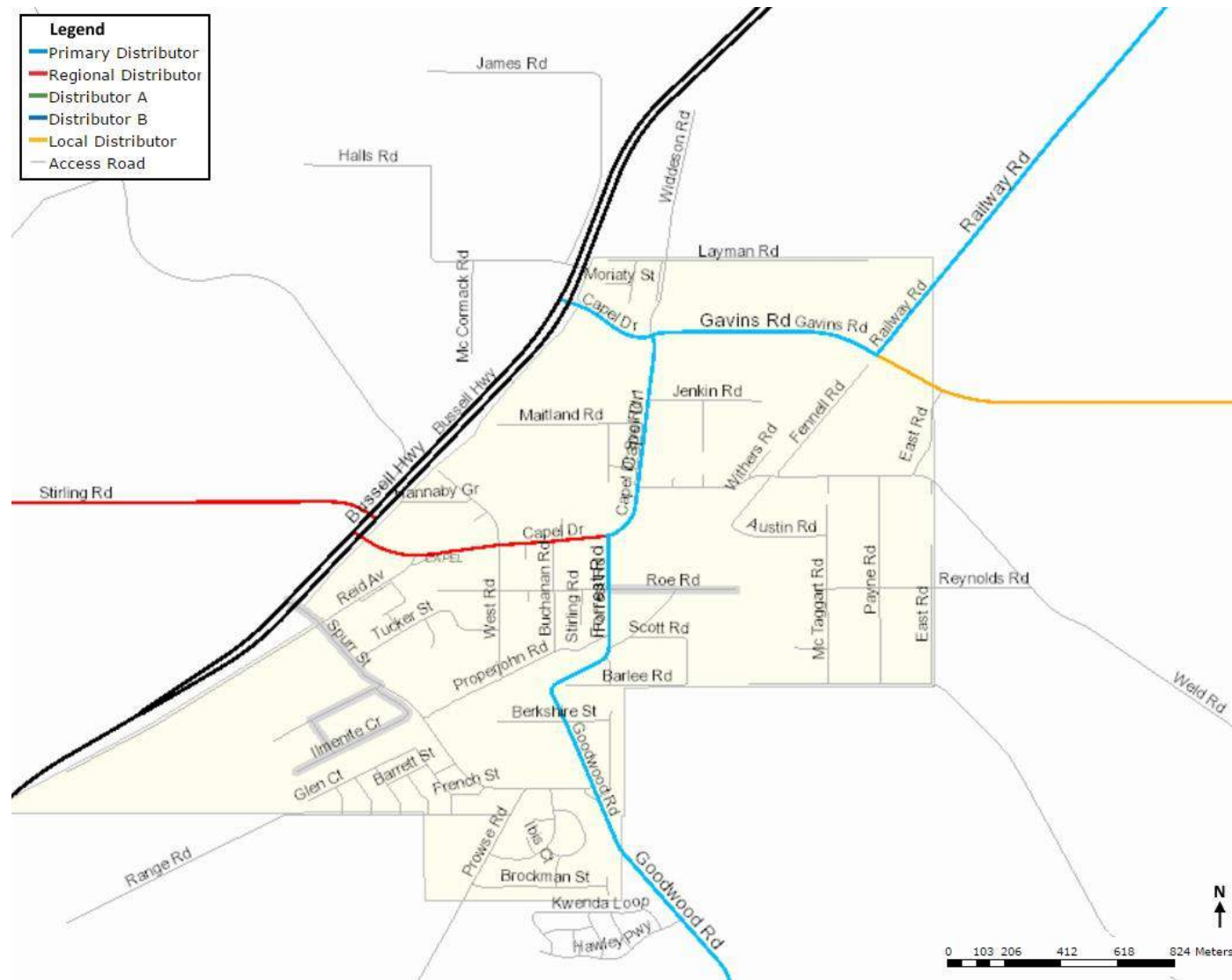


Figure 2-8 Capel Traffic Speed Limits

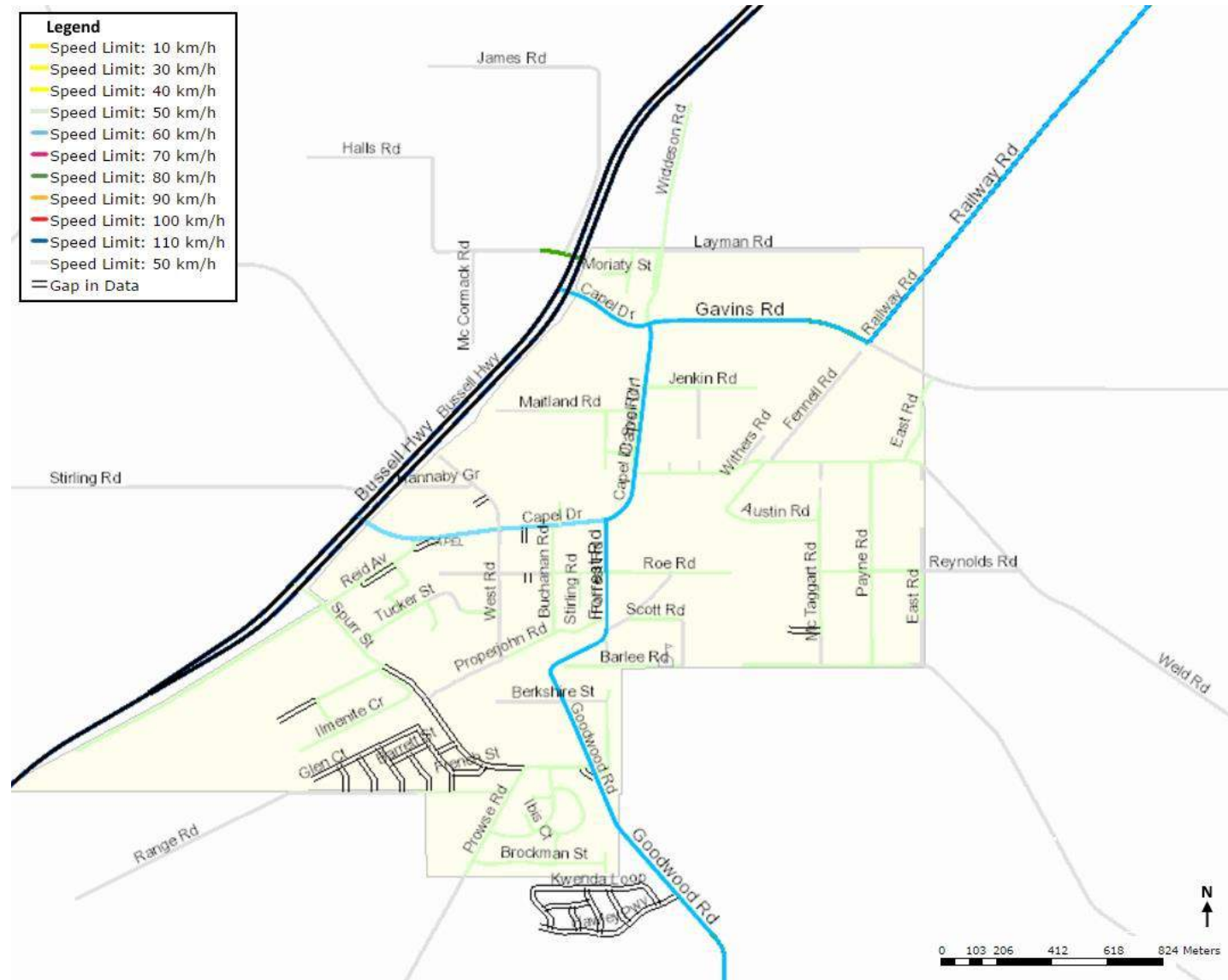


Figure 2-9 Gelorup Road Hierarchy

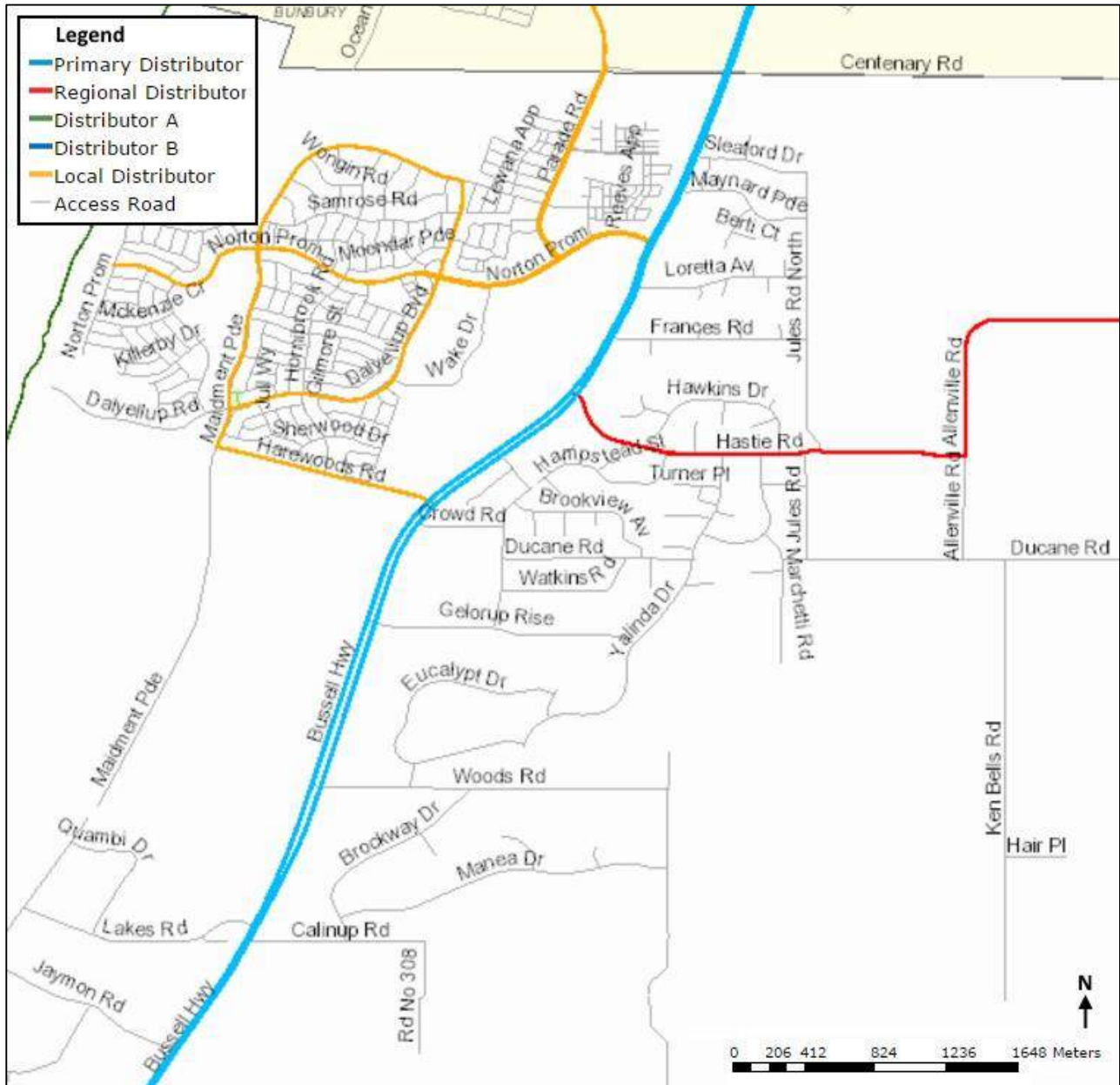


Figure 2-10 Gelorup Traffic Speed Limits

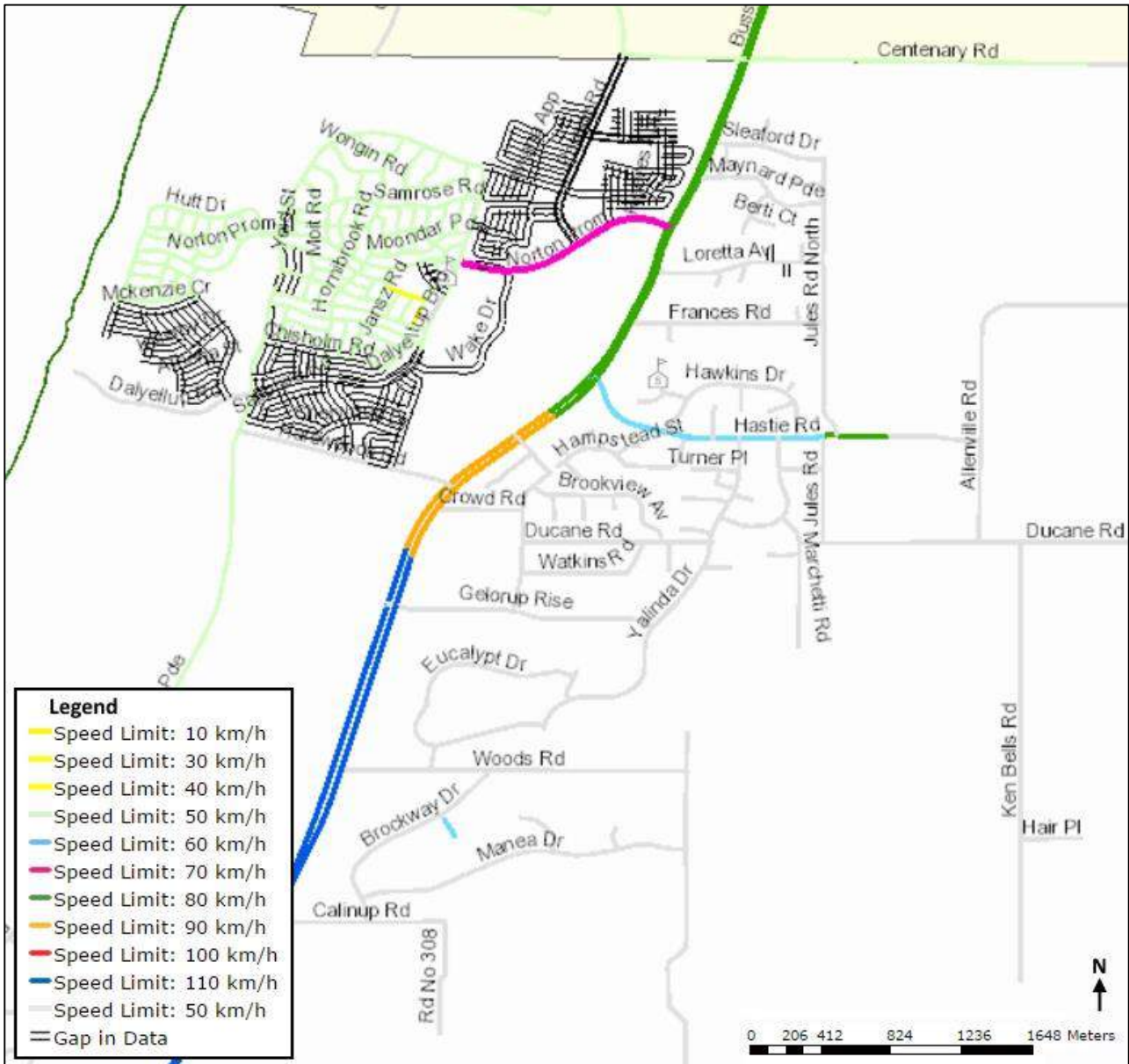


Figure 2-11 Dalyellup Road Hierarchy

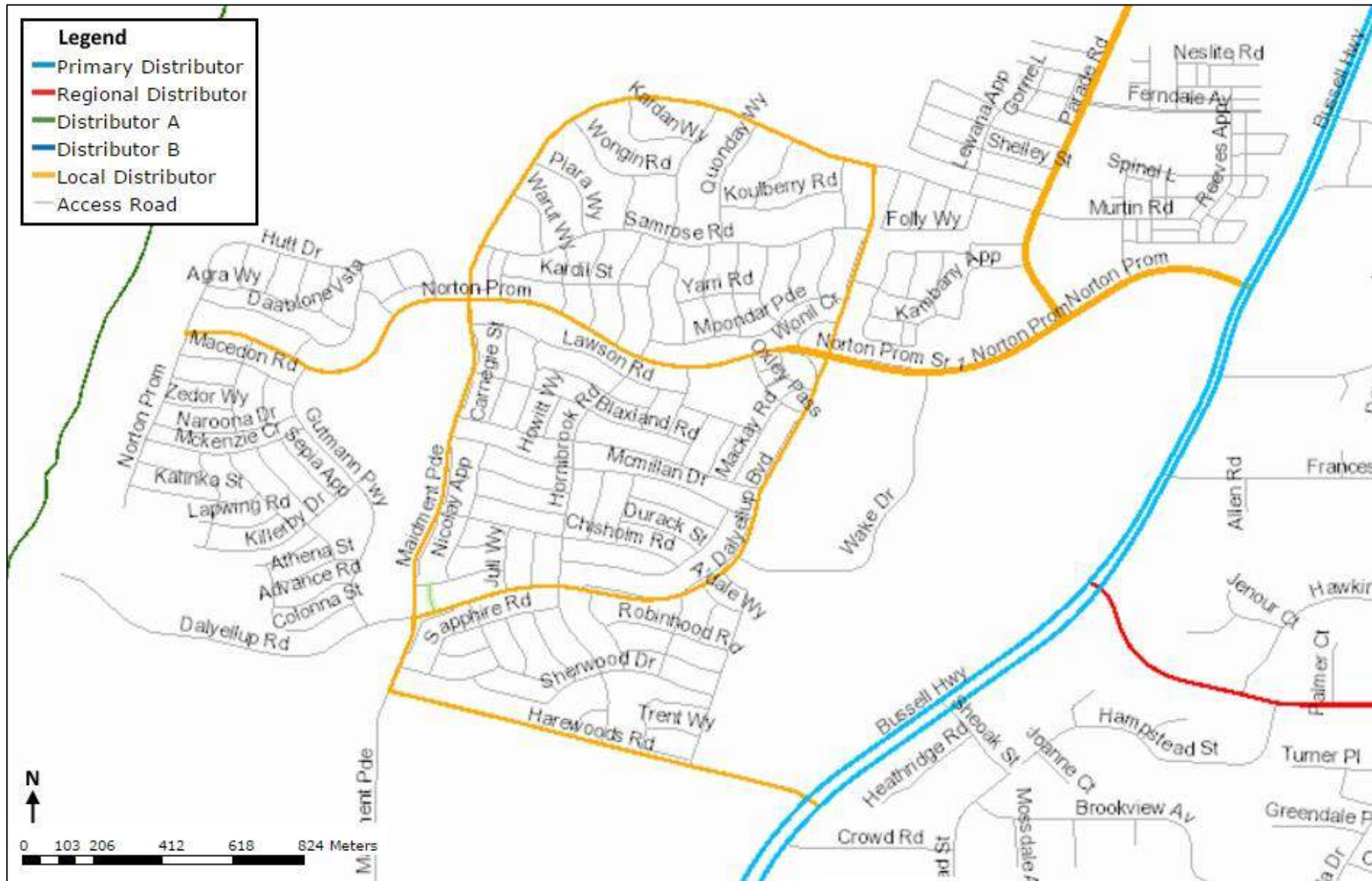


Figure 2-12 Dalyellup Traffic Speed Limits

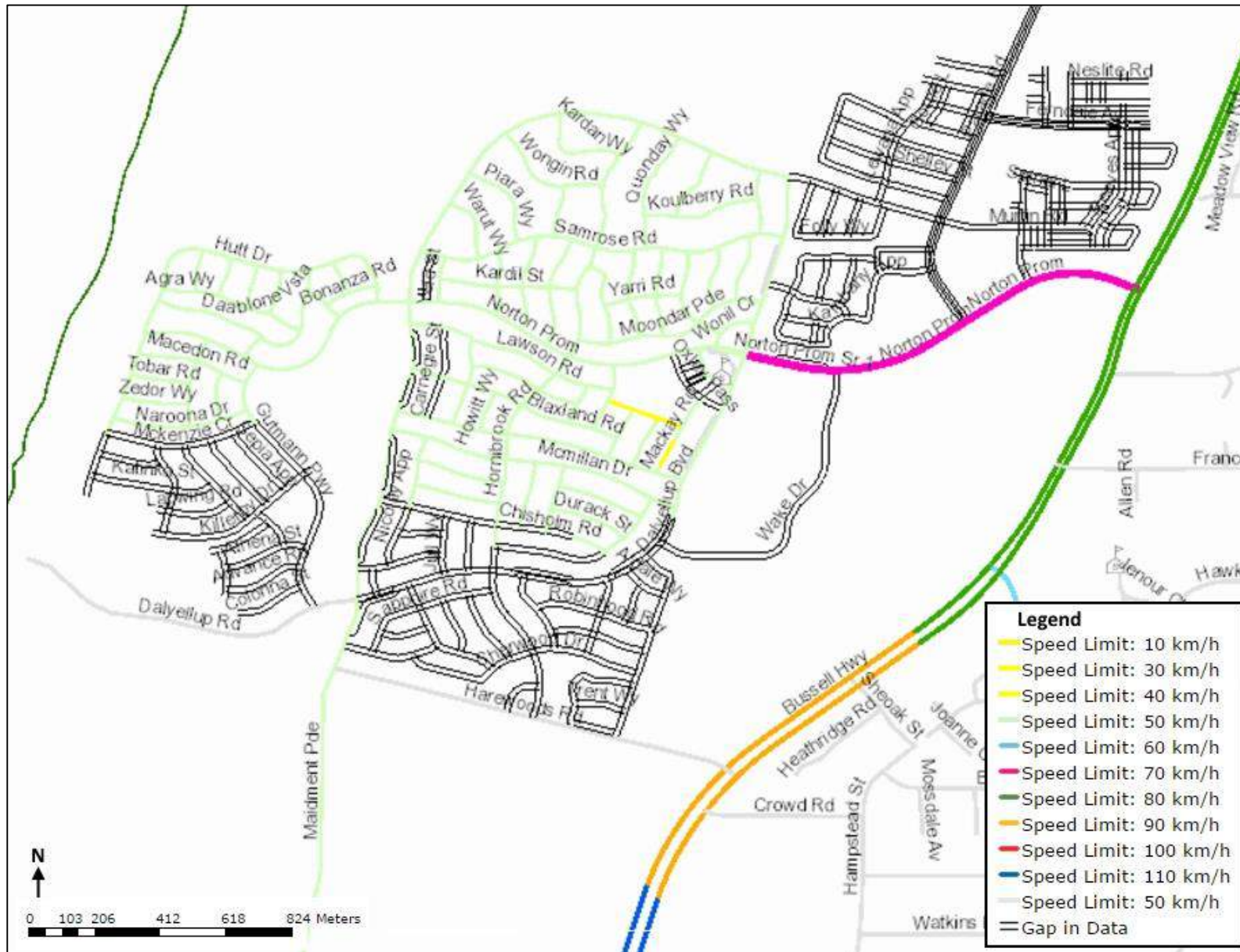


Figure 2-13 Boyanup Road Hierarchy



Figure 2-14 Boyanup Traffic Speed Limits

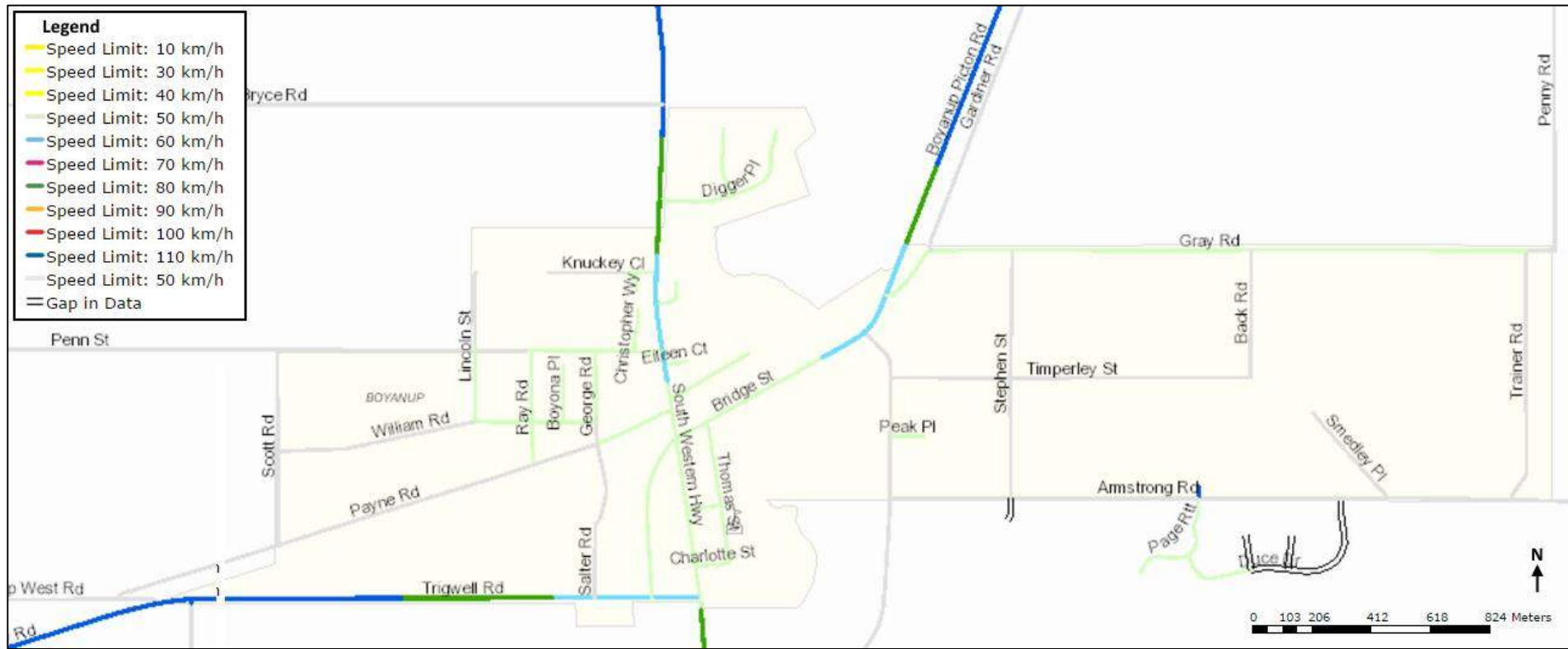


Figure 2-15 Peppermint Grove Beach Road Hierarchy

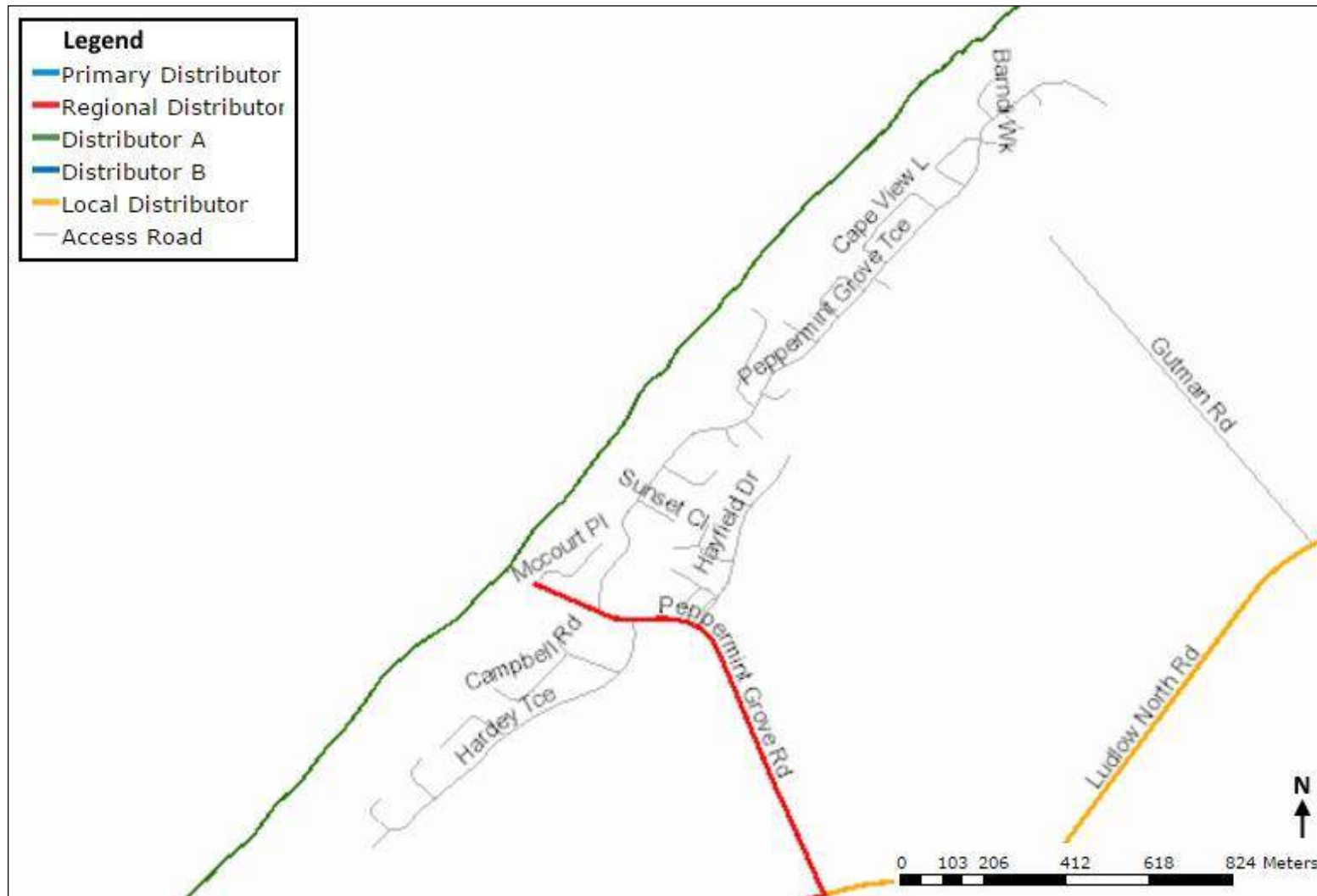
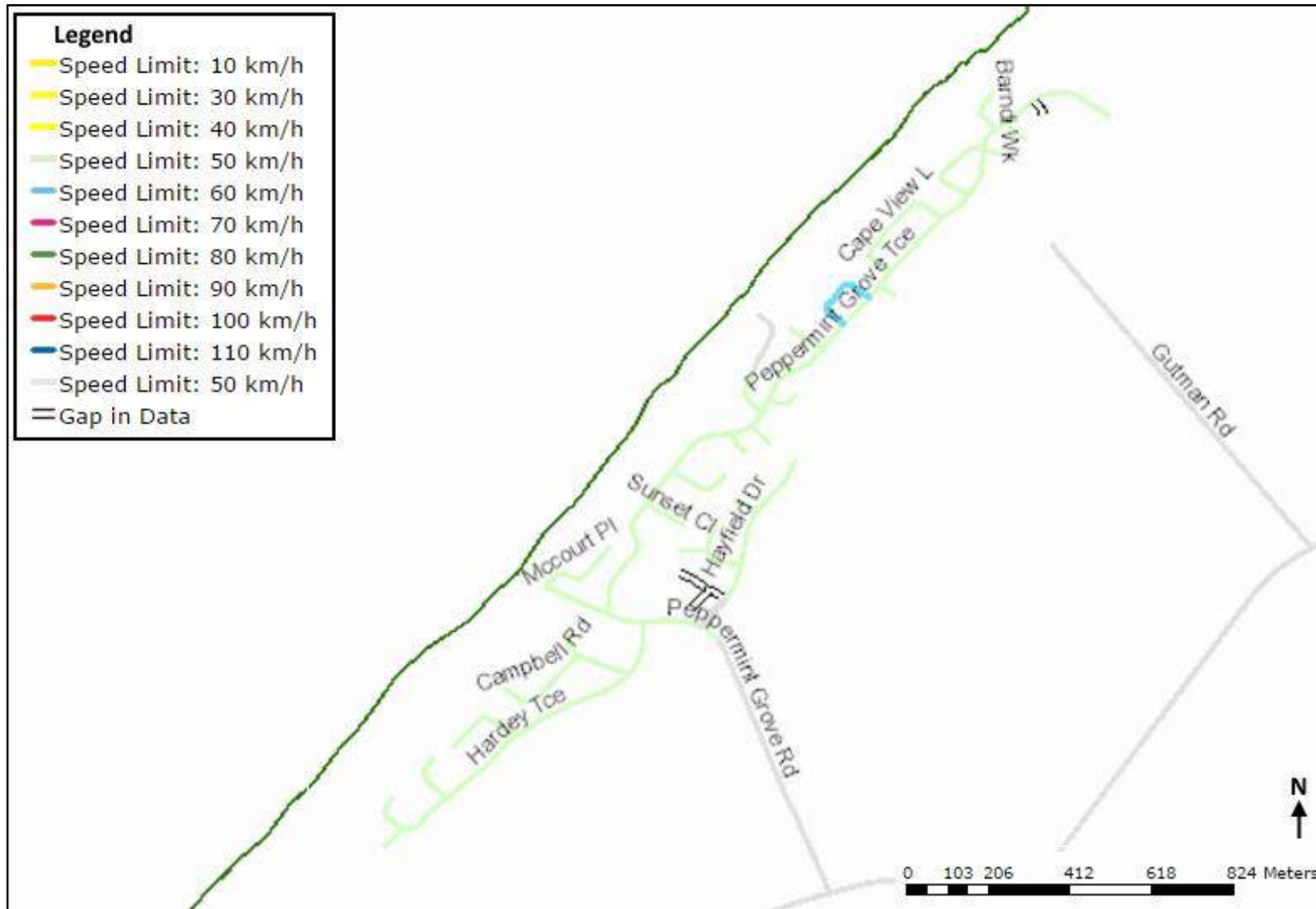


Figure 2-16 Peppermint Grove Beach Traffic Speed Limits



*The speed limit for Bay Crescent is not 60km/h as indicated on the map obtained from Main Roads. The Shire of Capel advises that this road is 50km/h.

Figure 2-17 Stratham Road Hierarchy

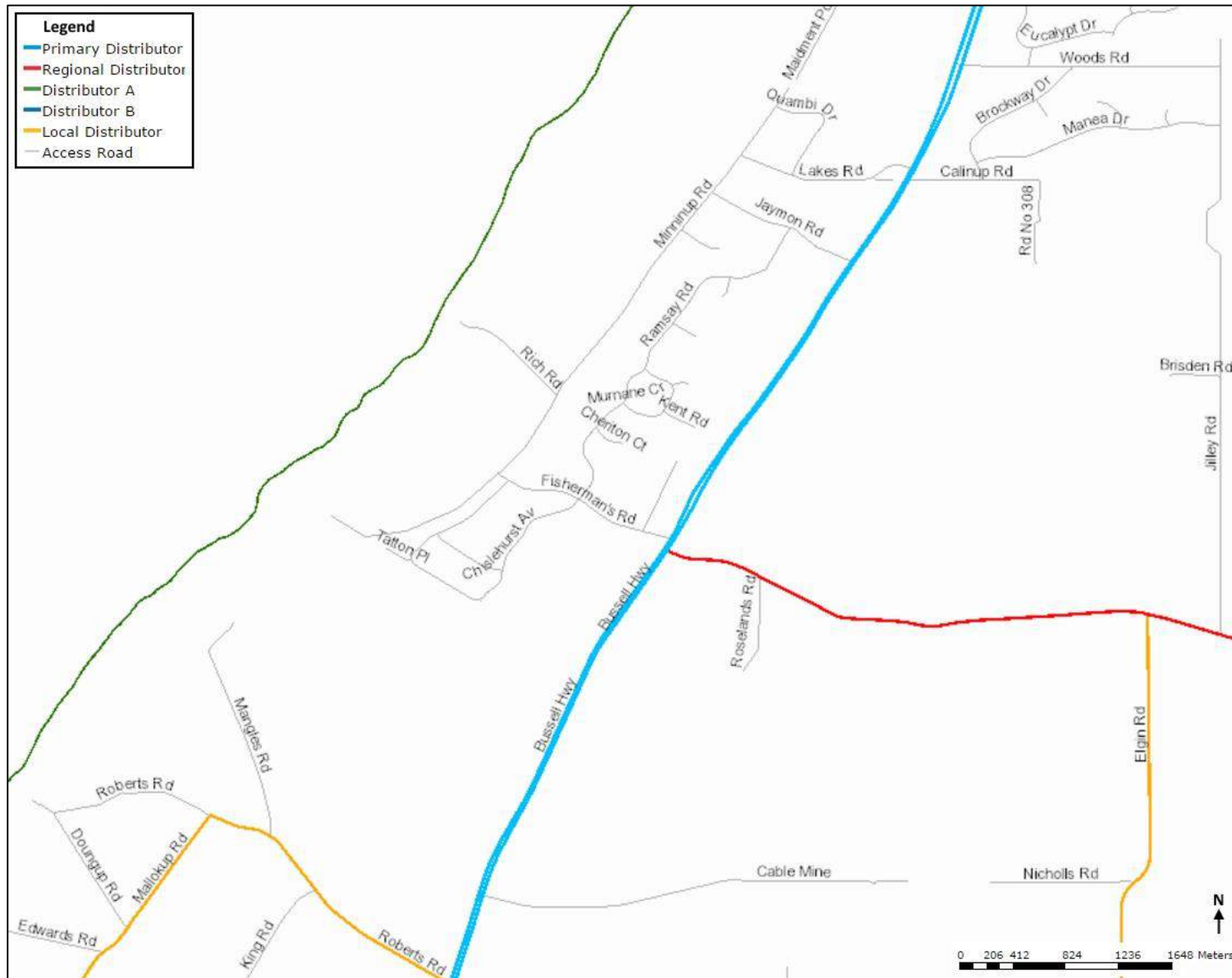
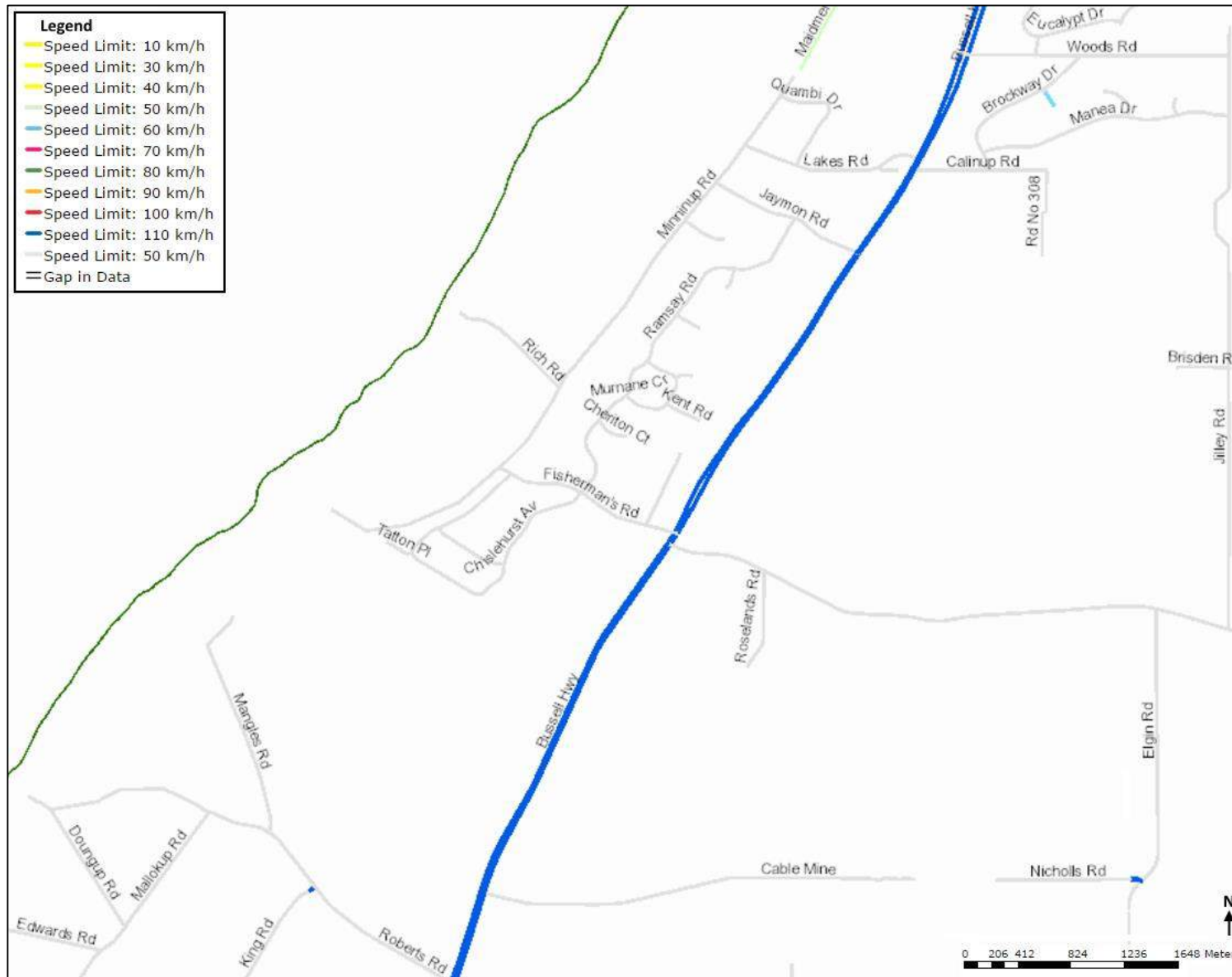


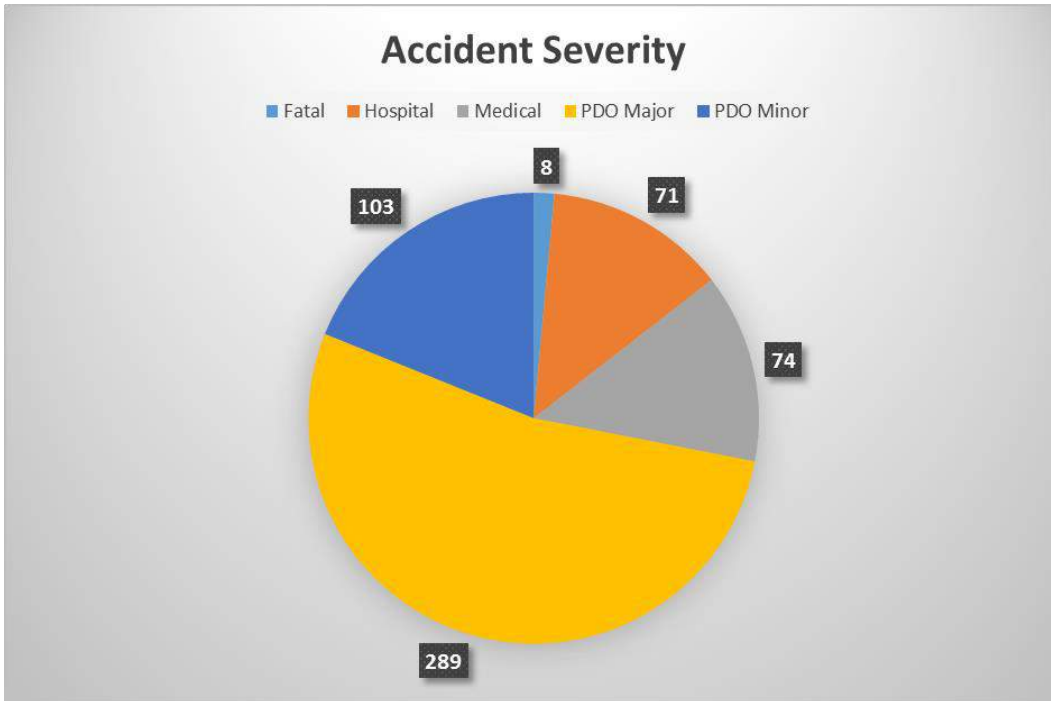
Figure 2-18 Stratham Traffic Speed Limits



2.6 Crash Data

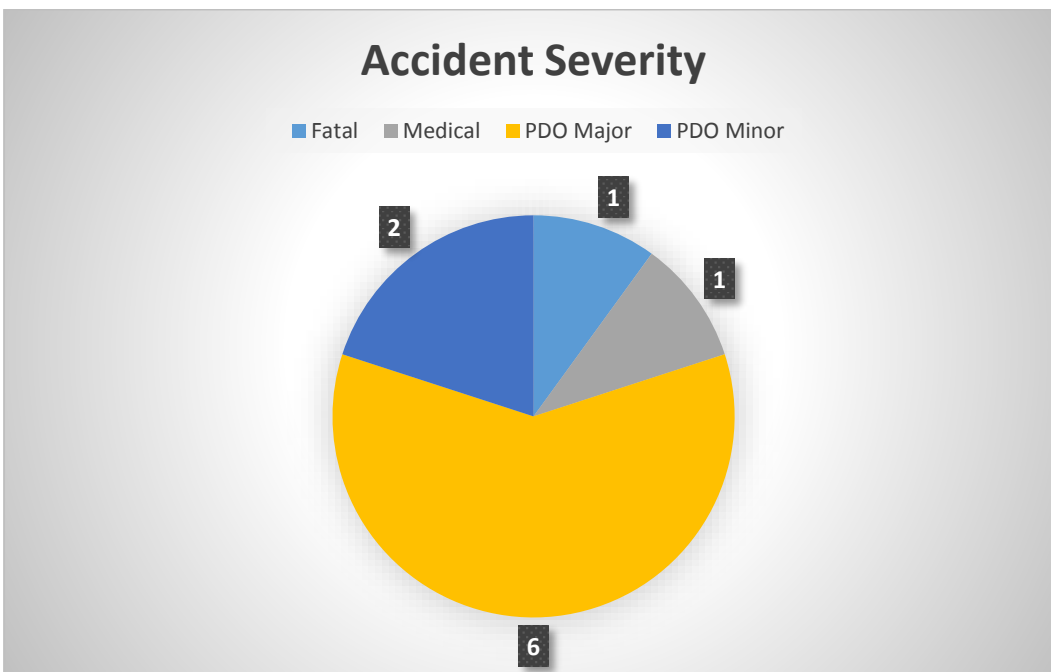
Safety is a very important factor in developing a successful Bike Plan. The availability and quality of existing cycle facilities is a good way of determining the level of safety and performance within an area. Main Roads Western Australia (MRWA) crash data was used to identify the level of safety and approximately 545 crashes have occurred within the Shire from 1 January 2010 to 31 December 2014. Crash data for Capel is shown in **Figure 2-19** and **Figure 2-20**.

Figure 2-19 Crash Data for Shire of Capel LGA



Source: Main Roads WA

Figure 2-20 Accident Severity of Crashes Involving Bicycles



Source: Main Roads WA

In summary, there was a total of 10 crashes involving cyclists over the 5-year period, with 1 of these crashes resulted in medical treatment and 1 of them resulting in fatality. As the crash data only contains reported crashes, it is very likely that many crashes involving minor property damage are not reported.

2.6.2 Crash Locations

As mentioned above, there were 10 crashes involving a bicycle within Capel from 1 January 2010 to 31 December 2014. According to the data provided by Main Roads WA, 5 of the crashes occurred at mid-blocks while the rest occurred at intersections. The location of these crashes is listed in **Table 2-17**. All crashes occurred during the day time and in dry conditions.

Table 2-17 Bicycle crash location listed by level of occurrence

Crash Location	Number of Crashes
Lowrie Road	1
Boyanup West Rd	2
No Reference	7

When assessing locations that result in high incidences of crashes, the causes of the crashes must first be identified before any engineering treatments can be implemented. A step by step process for identifying causes is provided in *Austrroads Guide to Road Safety: Part 8 - Treatment of Crash Locations*. The document also provides information on the factors that contribute towards a safe riding environment, as well as the facets that influence the risk of a serious injury resulting from a motor accident. The following information in relation to speed is pertinent in assessing crash locations:

- > Speed in urban areas greater than 5km/h above average doubles the risk of an injury crash.
- > Reductions as little as 1 to 2% in average speed result in substantially greater reductions in fatalities and serious injuries.
- > Chances of surviving a crash decrease markedly above certain speeds, depending on the type of crash i.e.:
 - Pedestrian struck by vehicle: 20 to 30 km/h.
 - Motorcyclist struck by vehicle (or falling off): 20 to 30km/h.
 - Side impact vehicle striking a pole or tree: 30 to 40km/h.
 - Side impact vehicle to vehicle crash: 50km/h.
 - Head-on vehicle to vehicle (equal mass) crash: 70km/h.

Source: Australian Transport Council (2006)

It should be noted that the majority of cycling crashes are solely not vehicle-bicycle crashes, but are instead a result of a variety of other factors. Surveys conducted internationally suggest that the most common sources of injury for cyclists are:

- > Car crash: 29%.
- > Falling from bicycle: 17%.
- > Poor path quality: 13%.
- > Rider error: 13%.
- > Collision with stationary object: 7%.
- > Crash while avoiding an animal: 4%.

These statistics show that while interactions between vehicles and cyclists is important, other factors including infrastructure quality and education are also important when considering how to reduce the risks of cycling.

3 Townsite Network Analysis

3.1 Land-uses Attractors and Generators

There are a number of key cycle trip attractors and generators in the Shire of Capel. The land uses and attractors have been used to determine the route destinations for cycling trips within Capel. Refer to the **Table 3-1** and **Figure 3-1** to **Figure 3-4** below.

It is important to note that the path network serves not only cycling trips, but also pedestrian movements and connectivity for mobility impaired, parents with prams and people with disabilities. This is particularly important when considering infrastructure provision near schools, medical facilities, community amenities and aged care facilities.

Table 3-1 Land Use and Attractors

Land-use	Capel	Gelorup	Dalyellup	Boyanup	Peppermint Grove Beach	Stratham
Health & Medical	<ul style="list-style-type: none"> > Capel Surgery > Elizabeth Cullam – Physiotherapist > Natalie Doyle – Psychologist > Child Health Clinic Capel 	N/A	<ul style="list-style-type: none"> > Dalyellup Pharmacy 	<ul style="list-style-type: none"> > Boyanup Pharmacy 	N/A	N/A
Education	<ul style="list-style-type: none"> > Capel Primary School > Capel Child Care > Shire of Capel Library 	<ul style="list-style-type: none"> > Bunbury Cathedral Grammar School > Safe Driving School 	<ul style="list-style-type: none"> > Dalyellup Primary School > Dalyellup College > Ocean Forest Lutheran College > Tuart Forest Primary School 	<ul style="list-style-type: none"> > Boyanup Primary School > Child Side School 	N/A	N/A
Senior Facilities	<ul style="list-style-type: none"> > Home and Community Care > Capel Community Centre 	N/A	<ul style="list-style-type: none"> > Dalyellup Community Centre > Bethanie Dalyellup Care Centre 	N/A	N/A	N/A
Youth Centre	<ul style="list-style-type: none"> > Capel Community Centre 	N/A	<ul style="list-style-type: none"> > Dalyellup Community Centre 	N/A	N/A	N/A
Recreation	<ul style="list-style-type: none"> > Capel Vale Winery > Capel Recreation Ground > Capel Skate Park > Capel Tavern 	<ul style="list-style-type: none"> > Sheoak Park Rest Area > Rotary Park > Capel Golf Club 	<ul style="list-style-type: none"> > Dalyellup Beach > Lake Lookout > Parkside Park > Lakeside Park > Seabrook Village Family Park 	<ul style="list-style-type: none"> > Boyanup National Park > Lions Park > Julian Sanders Park > Fettle Park > Boyanup Botanical 	<ul style="list-style-type: none"> > Peppermint Grove Beach > Mount Stirling Reserve 	N/A

Land-use	Capel	Gelorup	Dalyellup	Boyanup	Peppermint Grove Beach	Stratham
	<ul style="list-style-type: none"> > Forest, Peppermint Grove, Minninup and Dalyellup Beaches. > Ironstone Gully Falls. > Stirling Estate Equestrian Centre. 		<ul style="list-style-type: none"> > Dalyellup Shopping Centre 			
Civic Amenities	<ul style="list-style-type: none"> > Shire of Capel Library > Capel Australian Post Office 	<ul style="list-style-type: none"> > Gelorup Australia Post Office 	<ul style="list-style-type: none"> > Dalyellup Australian Post Office 	<ul style="list-style-type: none"> > Boyanup Newsagency and General Store > Boyanup Australia Post Office > Boyanup Cemetery 	N/A	N/A

Source: Shire of Capel

Figure 3-1 Land Uses in Capel

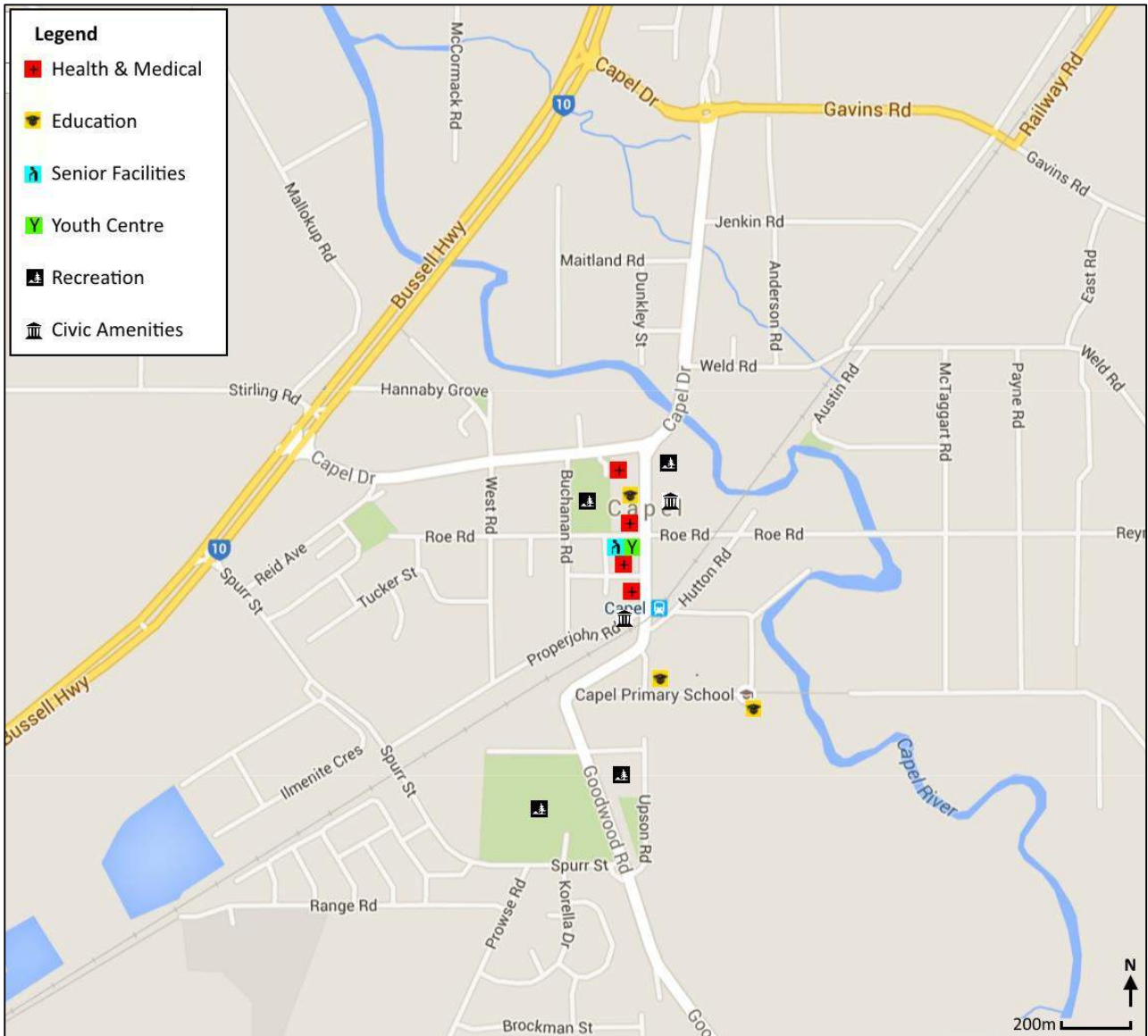


Figure 3-2 Land Uses in Gelorup

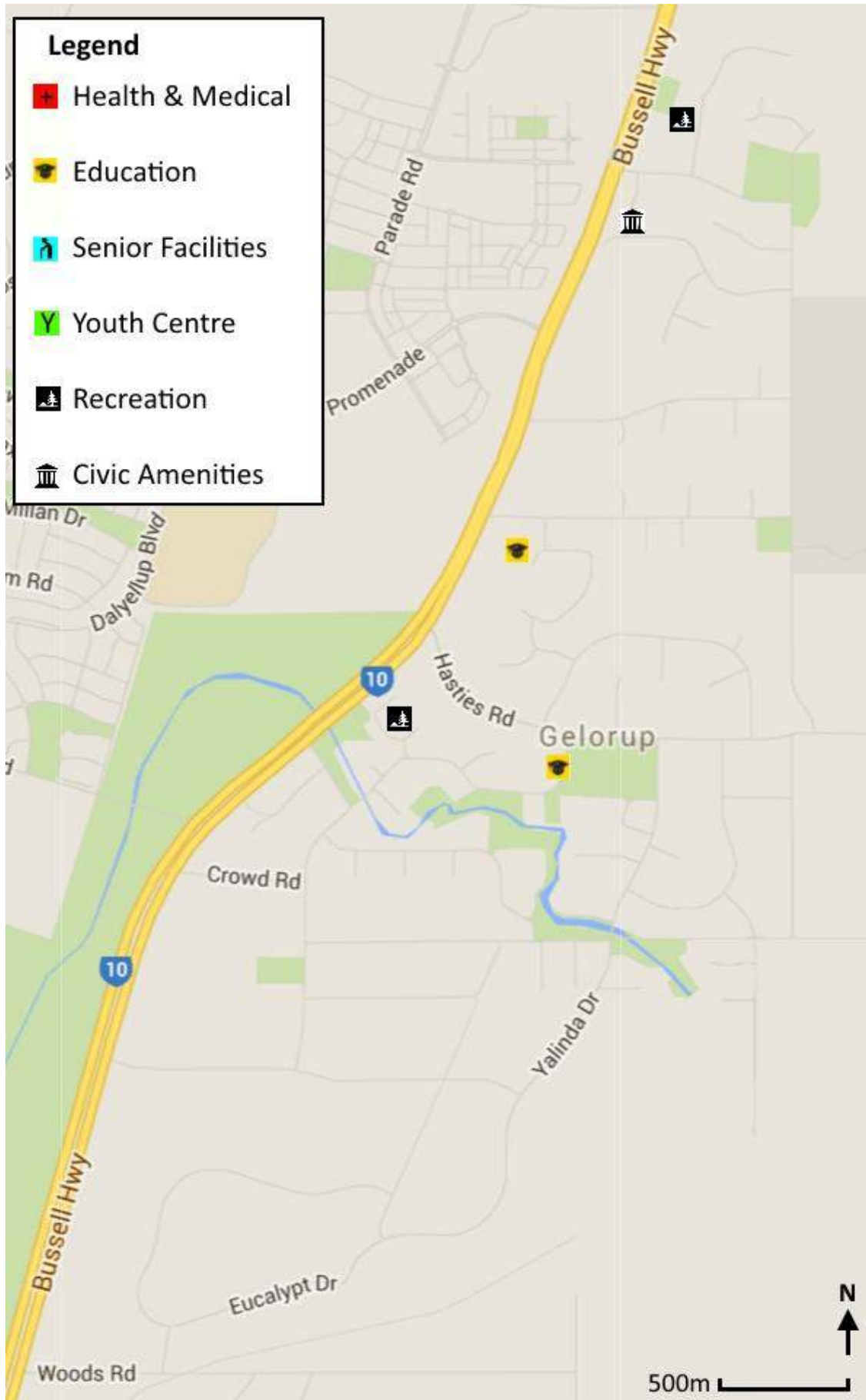


Figure 3-3 Land Uses in Dalyellup

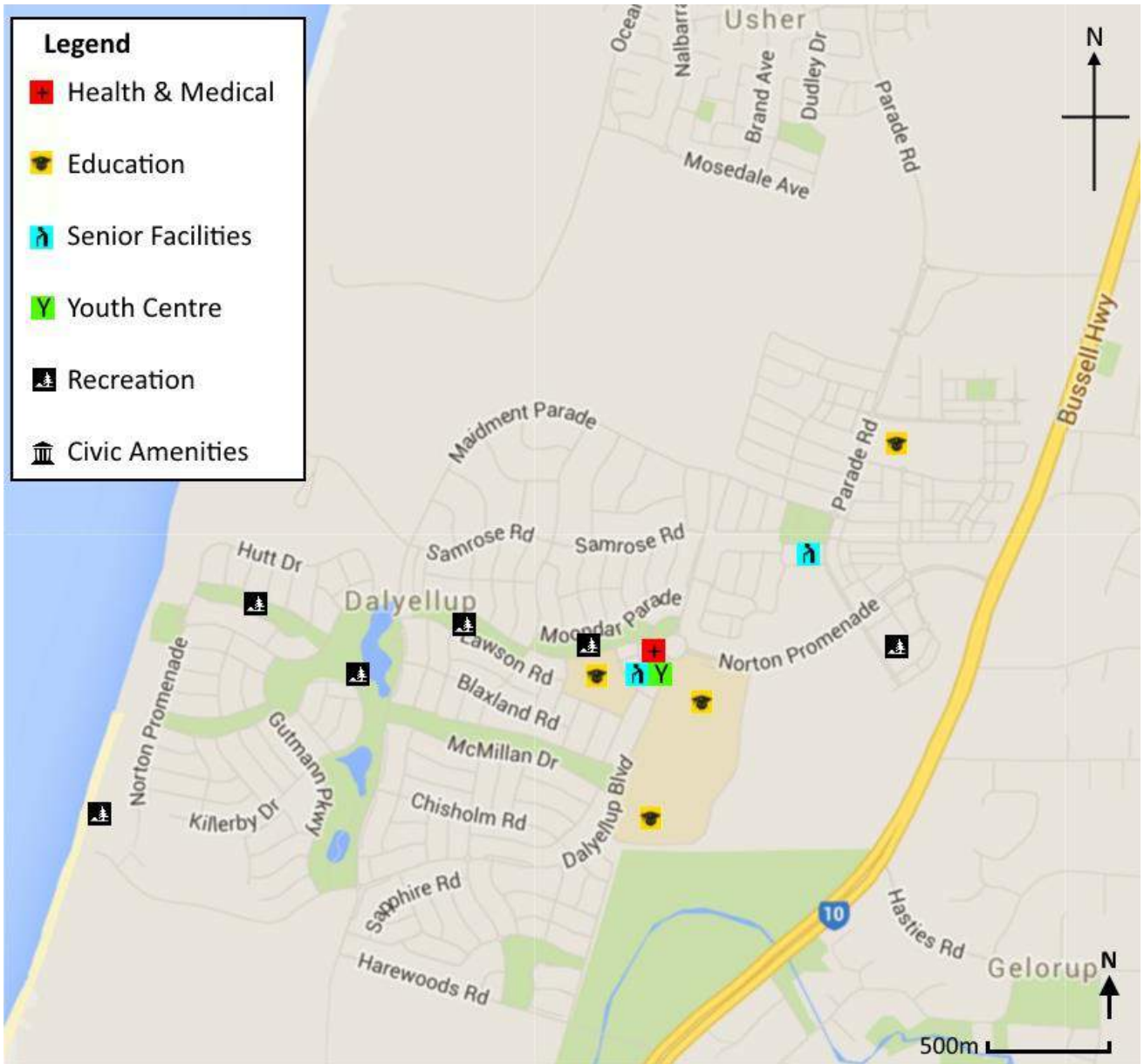
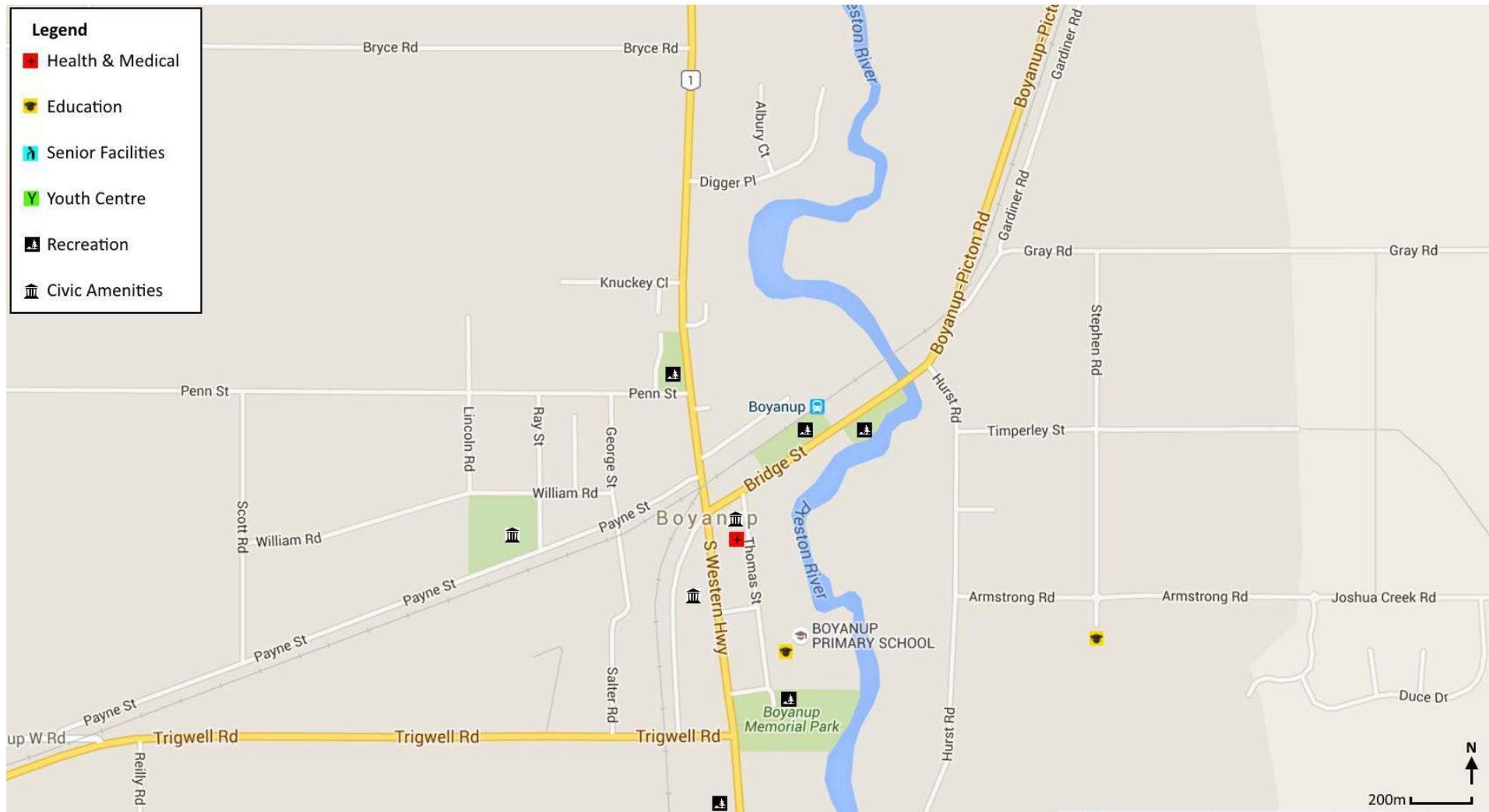


Figure 3-4 Land Uses in Boyanup



3.2 Existing Network

The Shire has created a Path Strategy Report in 2013-2018 which explains the existing network and also a proposed network for the Shire Capel and surrounding areas. The existing road and cycle network for the Shire is shown in the following Sections, along with some recommendations for improvement.

The cycling infrastructure may be separated into two general categories; townsite network and external connections. The following information pertains largely to access and connectivity within each townsite, see Sections as follows:

- > **Section 3.3 Capel**
- > **Section 3.4 Gelorup**
- > **Section 3.5 Dalyellup**
- > **Section 3.6 Boyanup**
- > **Section 3.7 Peppermint Grove Beach**
- > **Section 3.8 Stratham**

Critical connections between townsites are discussed in detail in **Section 3.9**.

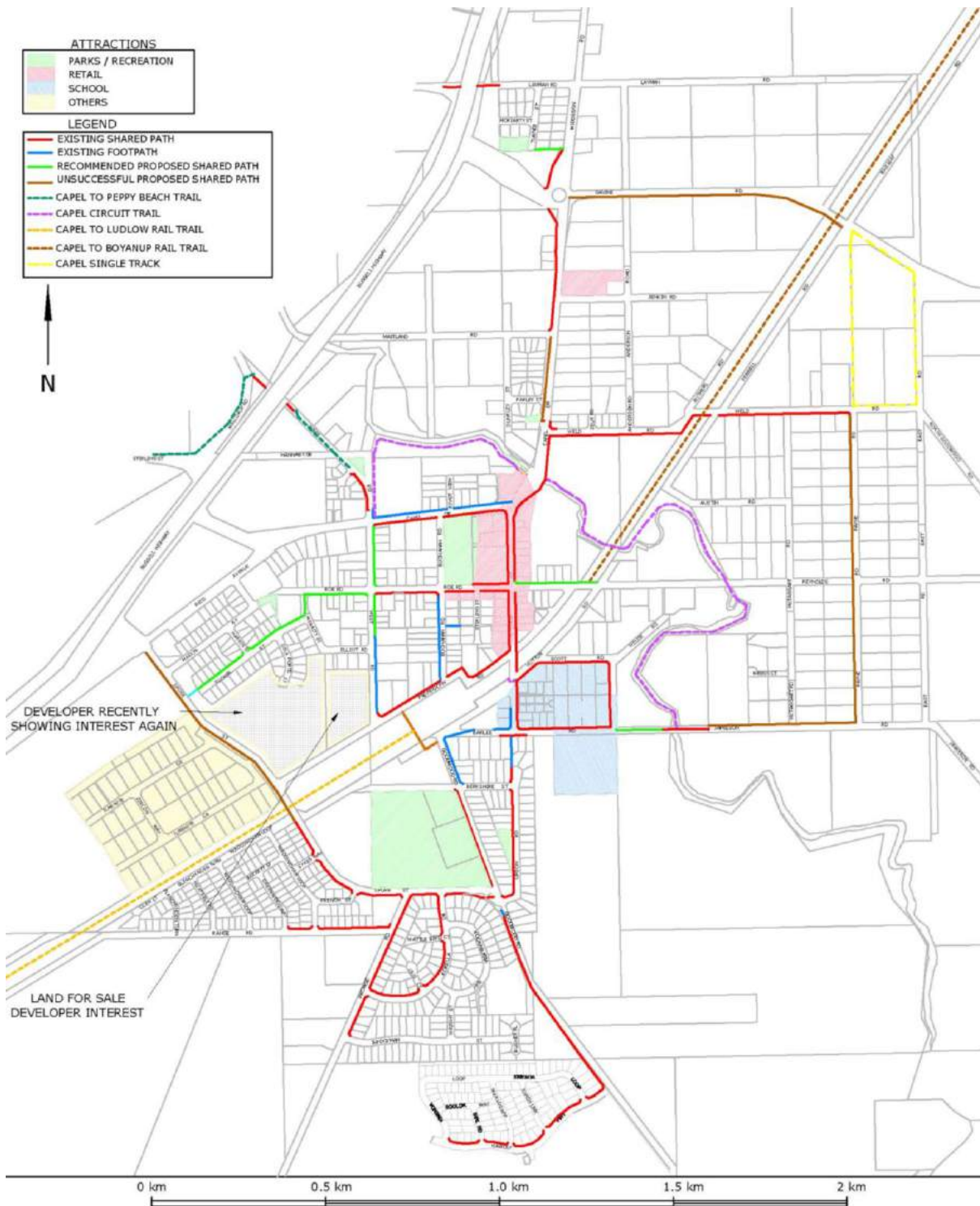
3.3 Capel

Figure 3-5 shows a map of existing and potential future paths in the Capel Townsite that are 1m wide or greater. The existing infrastructure in Capel provides a single central spine routes through the town centre along Capel Drive, Forrest Road/Upson Road and Spur Street. Some additional paths provide strategic connection to residential development, but there remain some gaps in these. The low density of residential development in Capel reduces the benefit of a dense network of shared paths.

In regards to the developer / land for sale land, The WAPC Development Control Policy 1.5 Bicycle Planning requires bicycle routes and paths in new subdivisions to be planned initially and ensure that developers provide these facilities. In addition, end of trip facilities are required for the following new developments:

- > Shopping Centres
- > Factories
- > Offices
- > Educational Establishments
- > Sport, Leisure and Entertainment Centres
- > Health Centres and Hospitals
- > Libraries and Other Public Buildings
- > Rail and Bus Stations
- > Major Places of Employment
- > Parks
- > Beaches and Recreation Venues
- > Tourist Attractions.

Recommendations for path improvements in Capel Townsite are described in detail in **Section 4** and **Section 5**.

Figure 3-5 Capel Land Uses and Existing Footpath Network


Source: Shire of Capel Path Strategy 2013-2018

3.3.2 Commercial Precinct

The main commercial precinct is situated along Capel Drive and Forrest Road. As the main retail destination within the townsite, adding and improving the cycling facilities within the precinct is likely to be very beneficial for local businesses.

3.3.2.1 Forrest Road

Forrest Road is the main road running through the Capel townsite with a number of cafés and restaurants located along the western frontage. Although it has been listed as a shared path, **Figure 3-7** shows that some

of the path is occupied by alfresco dining, making it awkward for cyclists and increasing the incidence of conflicts with pedestrians.

Figure 3-6 Forrest Road



Figure 3-7 Forrest Road Alfresco Dining



To ensure that the alfresco dining has minimal impact on the pedestrians and cyclists, it is recommended that a 2m path be maintained to provide a safe environment for both pedestrians and cyclist without severely impacting the streetscape or local businesses. Due to the prevalence of heavy vehicles along the main street, and the cross-section design which includes a central median and on-street parallel parking, street cycling is unlikely for less confident cyclists.

A number of bicycle racks are available for public use located adjacent to the Capel Community Centre and Capelberry Café as shown in **Figure 3-8**.

Figure 3-8 Bicycle Racks on Forrest Road



3.3.3 Recreational

3.3.3.1 *Capel Skate Park*

Capel Skate Park (see **Figure 3-9**) is located behind the Shire of Capel Offices and is accessible from Buchanan Road. The skate park is situated in the heart of the Capel Town centre, allowing easy access from the shared path along Forrest Road.

Figure 3-9 Capel Skate Park



3.3.3.2 *Capel Tavern*

Capel Tavern is located on the corner of Capel Drive and Forrest Road (see **Figure 3-10**). Its location allows for easy access from the existing shared path located along Forrest Road.

Figure 3-10 Capel Tavern



3.3.4 Recreational Walks

3.3.4.1 *Ironstone Gully Falls*

This trail is located 17km south east of Capel on Goodwood Road and it is currently listed as an unofficial trail. The Shire of Capel has proposed a circuit trail through the Ironstone Gully Falls Reserve which connects at two existing parking and picnic areas. The proposed trail would be approximately 1km long.

3.3.5 Education

3.3.5.1 *Capel Primary School*

Capel Primary School is situated on the corner of Barlee Road and House Road (see **Figure 3-11**). Shared paths are provided along the school frontage roads, connecting to the Capel-Donnybrook/Goodwood Road. A pedestrian footbridge across Capel River provides an attractive link to the eastern portion of the Capel Townsite. Due to its construction and width, the footbridge is appropriate only for low-speed cycling.

Bicycle racks are provided on the site as shown in **Figure 3-12**. The usage of these bike racks was excellent on the day of the saddle survey, due to Bike Week activities at the school. While this may be a 'one-off' experience, the volume of bikes shows the capacity for cycling if the infrastructure is available to support it.

Recommendations for Capel primary School include:

- > Applying for the TravelSmart for schools program
- > Applying for the Department of Transport's Connecting Schools Grant which allows for schools to apply for funds for end of trip facilities such as bike shelter/racks and bike skills training for students

Figure 3-11 Capel Primary School



Figure 3-12 Bicycle Parking at Capel Primary School



3.3.6 End of Trip Facilities

As part of the network planning, it is recommended that EoT facilities (bike racks, drinking fountains, etc.) are provided at strategic locations. EoT facilities encourage more people to cycle as it provides a safe, secure and convenience place to park for the cyclist.

Additional bike racks located at key attractors such as the Shire of Capel Offices, Australian Post and other tourist attractors such as shops and cafés are recommended to provide cyclists with conveniently located bicycle parking which provides more incentives for people to cycle.

Provision of storage lockers, showering facilities and bicycle pump and repair stations for staff and visitors (visitor usage is at the discretion of the property owner or manager) are strongly encouraged for local businesses and schools. These facilities may also be provided in other areas where cycling demand is high.

Recommended locations for additional public bike racks include:

- > Shire of Capel Offices – easily accessed from and visible to Forrest Road
- > Capel Country Club – easily accessed from and visible to Goodwood Road
- > Capel Recreation Ground – adjacent to tennis courts / cricket pavilion
- > Australia Post – easily accessed from and visible to Forrest Road

- > Capel IGA - easily accessed from and visible to Forrest Road
- > Capel Tavern – adjacent to the Tavern building or in the road reserve
- > Jameison Bridge – eastern embankment

3.3.7 Cycling Tourism

Cycling tourism has seen a recent increase in popularity as an alternative to regular sightseeing tours. Cycling tourism within Capel is worth considering and promoting.

Plans for promoting cycling tourism should be considered within the Capel as a long term objective. The following points should be considered in preparation (but not limited to):

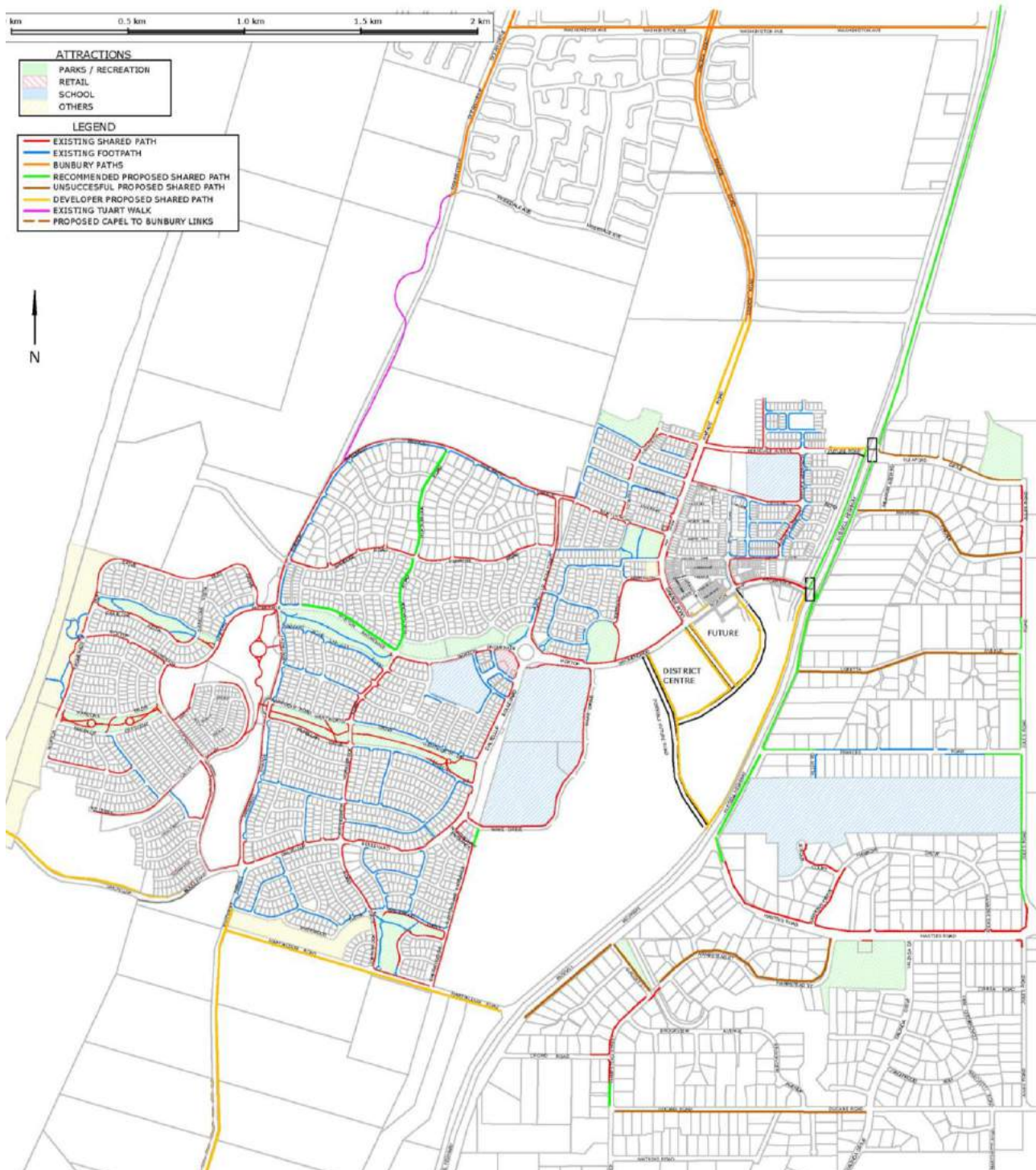
- > *Possible bicycle hire services or bicycle tour services*
- > *Provision of end of trip facilities such as bike racks, change facilities, etc at key tourists attractors*
- > *Promotional material (brochures, cycling and tourist attractions maps, social and traditional media, etc)*
- > *Feasibility study on a possible link from Capel to the Mudda Biddi Trail via the railway corridor (along Railway Road)*
- > *Connection to Camp Sites*

3.4 Gelorup

Figure 3-13 shows a map of existing and potential future paths in the Gelorup Townsite that are 1m wide or greater. Path infrastructure in Gelorup is minimal, restricted to footpaths along primary east-west roads and local shared paths adjacent to the Bunbury Cathedral Grammar School. The sparse road network in Gelorup and the dominance of Bussell Highway reduces the capacity for local connection within the Townsite. This increases the critical nature of infrastructure along and across Bussell Highway to access services in Dalyellup.

Recommendations for path improvements in the Gelorup Townsite are described in detail in Section 4 and Section 5.

Figure 3-13 Gelorup Land Uses and Existing Footpath Network



Source: Shire of Capel Path Strategy 2013-2018

3.4.2 Commercial Precinct

Gelorup does not have a commercial precinct as it consists primarily of residential dwellings. The nearest commercial area is the Dalyellup Shopping Centre located in Dalyellup. Established connections between Gelorup and Dalyellup would greatly benefit both townsites by providing greater accessibility between the two suburbs.

3.4.3 Education

3.4.3.1 **Bunbury Cathedral Grammar School**

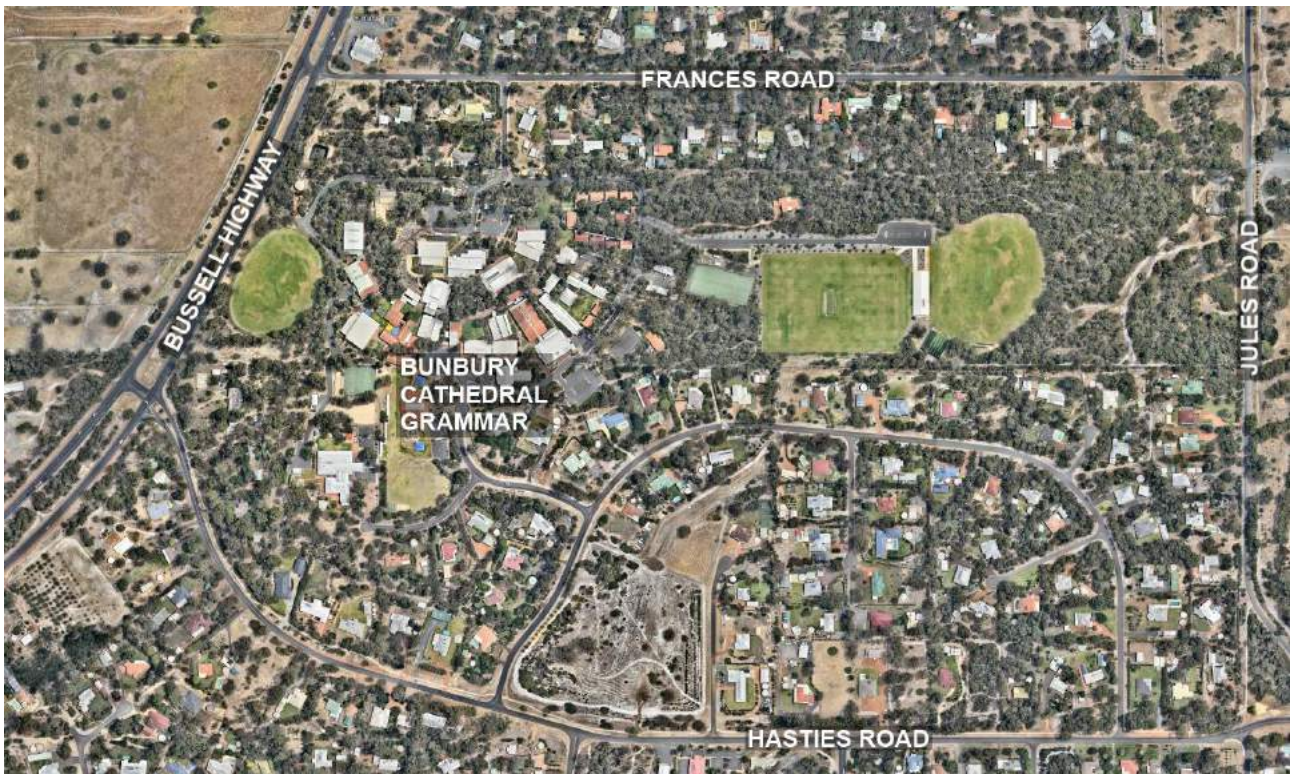
Bunbury Cathedral Grammar School is located along Allen Road. Access to the school is via Hawkins Drive and Frances Road. Existing facilities include a footpath connection along Hasties Road and Frances Road.

However, the Frances Road and Hasties Road paths terminate to the east of Bussell Highway, with no connection either along or across this regional road. Cycling to the school from properties in Gelorup, as well as other townsites, requires students to use the existing sealed shoulders on Bussell Highway, a daunting 110km/hr road. Students must also cross this Highway without the benefit of a formal pedestrian/cyclist crossing.

It is recommended that formal crossings for Bussell Highway be provided as part of strategic connections to Dalyellup. The location of crossings suitable for links to the school include Hasties Road and Frances Road. However, these should be provided in concert with associated off-street infrastructure connecting to the shared path to the south of the Dalyellup Shopping Centre.

Jules Road runs north-south on the eastern side of the Gelorup Townsite, forming a functional alternative to Bussell Highway for cyclists. It is recommended that the current off-street provision of shared paths be improved, creating a safe local spine route for cyclists.

Figure 3-14 Bunbury Cathedral Grammar School



3.4.4 Employment

A number of quarries are located to the east of Gelorup which include the Redmix Quarry, the Pioner Concrete Quarry and the Giacci Quarries. These quarries are accessed via relatively quiet roads with good visibility. However, traffic speeds are high, suggesting that only confident riders are likely to cycle to the site. This, combined with the potential requirement for workers to bring bulky tools and PPE suggests that the incidence of cycling is probably low.

3.4.5 End of Trip Facilities

As part of the network planning, it is recommended that EoT facilities are provided at strategic locations. EoT facilities encourage more people to cycle as it provides a safe, secure and convenience place to park for the cyclist.

It is recommended that additional bicycle racks be constructed at the sports pavilion to the east of Bunbury Cathedral Grammar School to encourage students and community members to cycle for training and matches.

Provision of storage lockers, showering facilities and bicycle pump and repair stations for staff and visitors (visitor usage is at the discretion of the property owner or manager) are strongly encouraged for local businesses and schools. These facilities may also be provided in other areas where cycling demand is high.

3.4.6 Cycling Tourism

Cycling tourism has seen a recent increase in popularity as an alternative to regular sightseeing tours. Cycling tourism within the Gelorup area is worth promoting due to the number of high quality cycling paths available along with numerous tourist attractors. Cycling tourism would be considered to be a long term outcome due to the ongoing development within these areas.

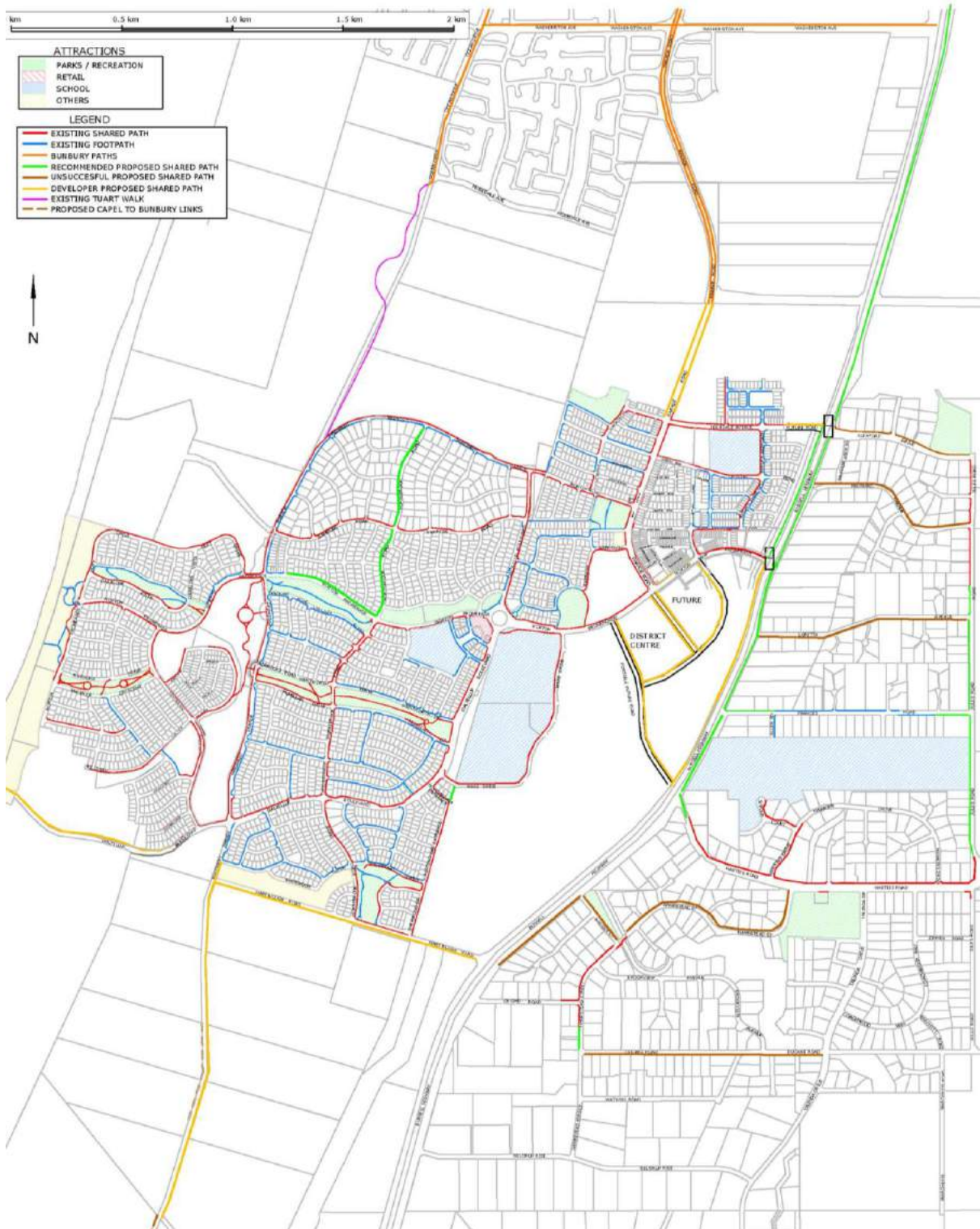
Plans for promoting cycling tourism should be considered within the areas of Gelorup as a long term objective. The following points should be considered in preparation (but not limited to):

- > *Possible bicycle hire services or bicycle tour services*
- > *Provision of end of trip facilities such as bike racks, change facilities, etc at key tourists attractors*
- > *Promotional material (brochures, cycling and tourist attractions maps, social and traditional media, etc)*
- > *Connection to Camp Sites*

3.5 Dalyellup

Figure 3-15 shows a map of existing and potential future paths in the Dalyellup Townsite that are 1m wide or greater. Dalyellup functions as a residential community for the Greater Bunbury area and includes relatively dense housing along with suburban retail and education land uses. As a result of this function, Dalyellup has a well-formed street network and adjacent path infrastructure. The few strategic gaps and recommended path improvements for the network that have been identified in this Bike Plan are described in detail in **Section 4** and **Section 5**.

Figure 3-15 Dalyellup Land Uses and Existing Footpath Network



Source: Shire of Capel Path Strategy 2013-2018

3.5.2 Commercial Precinct

The *Dalyellup Centre Outline Development Plan* provides an outline of the future developments within the Dalyellup District Centre. The plan aims to create a vibrant and sustainable activity centre with various mixed use developments for the Dalyellup Community. In regards to pedestrian and cyclist accessibility, the plan aims to provide high quality facilities such as paths, end of trip facilities and safe pedestrian crossings. A detailed pedestrian and cycling network is currently unavailable as all plans are still currently at the concept stage.

3.5.2.1 *Dalyellup Shopping Centre*

Dalyellup Shopping Centre (see is located on the intersection of Norton Promenade and Parade Road. As outlined in the *Dalyellup District Centre Outline Development Plan*, plans for a 'retail core' have been proposed within the surrounding area emphasising increased activity and intensity along the main road and public realm (Dalyellup District Centre).

Cycling provision in the vicinity of the centre includes sealed shoulders along Norton Promenade and Parade Road, as well as the Tiffany Centre extension, as well as shared paths on one or both sides of all nearby roads.

The primary gap in the on-street network is the poor connection between the sealed shoulder on the eastbound side of Norton Promenade and Bussell Highway. A clear transition between the on-street sealed shoulder and off-street path is recommended immediately prior to the left-turn pocket at Bussell Highway.

Future shared paths have been proposed on the surrounding arterial roads, to be constructed by the developer.

Figure 3-16 Dalyellup Shopping Centre



3.5.3 Recreational

3.5.3.1 *Dalyellup Beach*

Dalyellup Beach is located along the western coast of Dalyellup. Access to the beach itself is provided via two points, Hutt Drive and Zedor Way. A network of shared paths provide links to these beach accesses. These access areas also include toilets, showering facilities and sheltered tables and benches.

Recommendations for this area include the provision of end of trip facilities such as showers and bicycle racks and/or shelters if required. Desired locations of these facilities include the main beach access areas.

Figure 3-17 Dalyellup Beach



3.5.4 Education

3.5.4.1 **Dalyellup Primary School**

Dalyellup Primary School is bounded by Norton Promenade, Dampier Street and Oxley Pass. Existing cycling infrastructure includes the existing shared path located along Norton Promenade and footpaths along several of the remaining school frontages.

Recommendations include:

- > *Infrastructure upgrades in the vicinity of the school includes completion of the footpath along the southern road frontage (Hartog Road) and shared paths along two local strategic connections: Norton Promenade west of Hornibrook Road and Hornibrook Road north of Norton Promenade.*
- > *Investigating and applying for the Connecting Schools Grants for school end of trip facilities to promote/encourage school children to cycle.*

Figure 3-18 Dalyellup Primary School



3.5.4.2 **Dalyellup College/Ocean Forest Lutheran College**

Dalyellup College is co-located with Ocean Forest Lutheran College and bounded by Dalyellup Boulevard, Norton Promenade and Wake Drive. Access to Dalyellup College is only provided via Wake Drive while access to Ocean Forest Lutheran College is provided via either Norton Promenade or Wake Drive.

Cycling infrastructure surrounding the school is well developed with shared paths along the three road frontages surrounding the school site. However, these schools have a wide catchment that includes residents from the eastern side of Bussell Highway, Stratham and Bunbury. Strategic connections to these catchment areas are not well developed, and are the subject of the primary recommendations of this Bike Plan.

Recommendations for strategic connections include:

- > *Continuation of the path along the west side of Bussell Highway north to the Washington Avenue signalised crossing (in coordination with the City of Bunbury)*
- > *Connections to Gelorup at Frances Road and Hasties Road.*
- > *Investigating and applying for the Connecting Schools Grants for school end of trip facilities to promote/encourage school children to cycle.*

Figure 3-19 Dalyellup College/Ocean Forest Lutheran College



3.5.4.3 *Tuart Forest Primary School*

Tuart Forest Primary School is located 600 m north of the Dalyellup Shopping Centre. The school is bounded by Ferndale Road, Parade Road, Crystal Bend and Reeves Approach. Access to the site is via Ferndale Avenue or Crystal Bend. Shared paths along the school frontage provide key connections to Parade Road. A secure bicycle parking area and formal pedestrian crossing points improve cycling amenity.

The primary gap in infrastructure in the vicinity of the school is the lack of safe crossing opportunities between Gelorup and Dalyellup. The school catchment includes residents from east of Bussell Highway; but there are no formal crossing points in the vicinity of the school. A shared path runs alongside Bussell highway on the western side between Norton Promenade and Ferndale Avenue, but there is no corresponding crossing point.

The following is recommended to improve the connectivity in this area.

- > *Installation of a formalised crossing at or near Sleaford Drive connecting to the shared path at Ferndale Avenue. It is likely that this would be constructed when Ferndale Avenue is extended to Bussell Highway, however there is value in completing this link prior to the full build-out of that residential cell.*

Figure 3-20 Tuart Forest Primary School



3.5.5 Recreational Walks

3.5.5.1 *Tuart Walk*

The Tuart Walk is located in the Tuart Forest between Dalyellup (Shire of Capel) and Usher (City of Bunbury). The trail is 1.27km of high quality, flat asphalt path running between Maidment Parade in Dalyellup, and Ocean Drive in Usher. Minor improvements have been proposed in this Bike Plan to provide connections to the local street and path network.

3.5.5.2 *Dalyellup Lake Circuit*

Dalyellup Lake Circuit is located on Maidment Parade in Dalyellup. It consists of a 1 km concrete trail which loops around the main lake. Public amenities include toilets, shelters, picnic areas and barbecue areas. The circuit is popular in the local area, catering to a variety of user which include walkers, cyclists, children and parents pushing prams.

3.5.5.3 *Dalyellup Bushland Path*

The Dalyellup Bushland Path consists of a 1.27km wide concrete path which extends from the intersection of Dalyellup Boulevard and Wonil Crescent to the intersMASTER section of Maidment Parade and Madigan Road, with connection at Norton Promenade to the Dalyellup Lake Circuit. Various public amenities are available which include playgrounds, shelters, bench seats and picnic areas.

3.5.6 **End of Trip Facilities**

As part of the network planning, it is recommended that EoT facilities are provided at strategic locations. EoT facilities encourage more people to cycle as it provides a safe, secure and convenient place to park for the cyclist.

As part of the enhancement to the cycling network, bicycle racks are recommended to be added at the following locations, as required:

- > *Dalyellup Shopping Centre*
- > *Tuart Forest Primary School*
- > *Dalyellup College*
- > *Ocean Forrest Lutheran College*
- > *Dalyellup Primary School*
- > *Dalyellup Beach*
- > *Parkside Park*
- > *Lakeside Park*
- > *Dalyellup Lake Circuit (located near shelters, picnic and barbecue areas)*
- > *Tuart Walk (located near shelters)*
- > *Dalyellup Bushland Path (located near shelters, playgrounds and picnic areas)*

Provision of storage lockers, showering facilities and bicycle pump and repair stations for staff and visitors (visitor usage is at the discretion of the property owner or manager) are strongly encouraged for local businesses and schools. These facilities may also be provided in other areas where cycling demand is high.

3.5.7 **Cycling Tourism**

Cycling tourism has seen a recent increase in popularity as an alternative to regular sightseeing tours. Cycling tourism within the Dalyellup / Gelorup area is worth considering due to the number of high quality cycling paths available along with numerous tourist attractors. Cycling tourism would be promoted to be a long term outcome due to the ongoing development within these areas.

Plans for promoting cycling tourism should be considered within the areas of Dalyellup as a long term objective. The following points should be considered in preparation (but not limited to):

- > *Possible bicycle hire services or bicycle tour services*
- > *Provision of end of trip facilities such as bike racks, change facilities, etc at key tourists attractors*
- > *Promotional material (brochures, cycling and tourist attractions maps, social and traditional media, etc)*

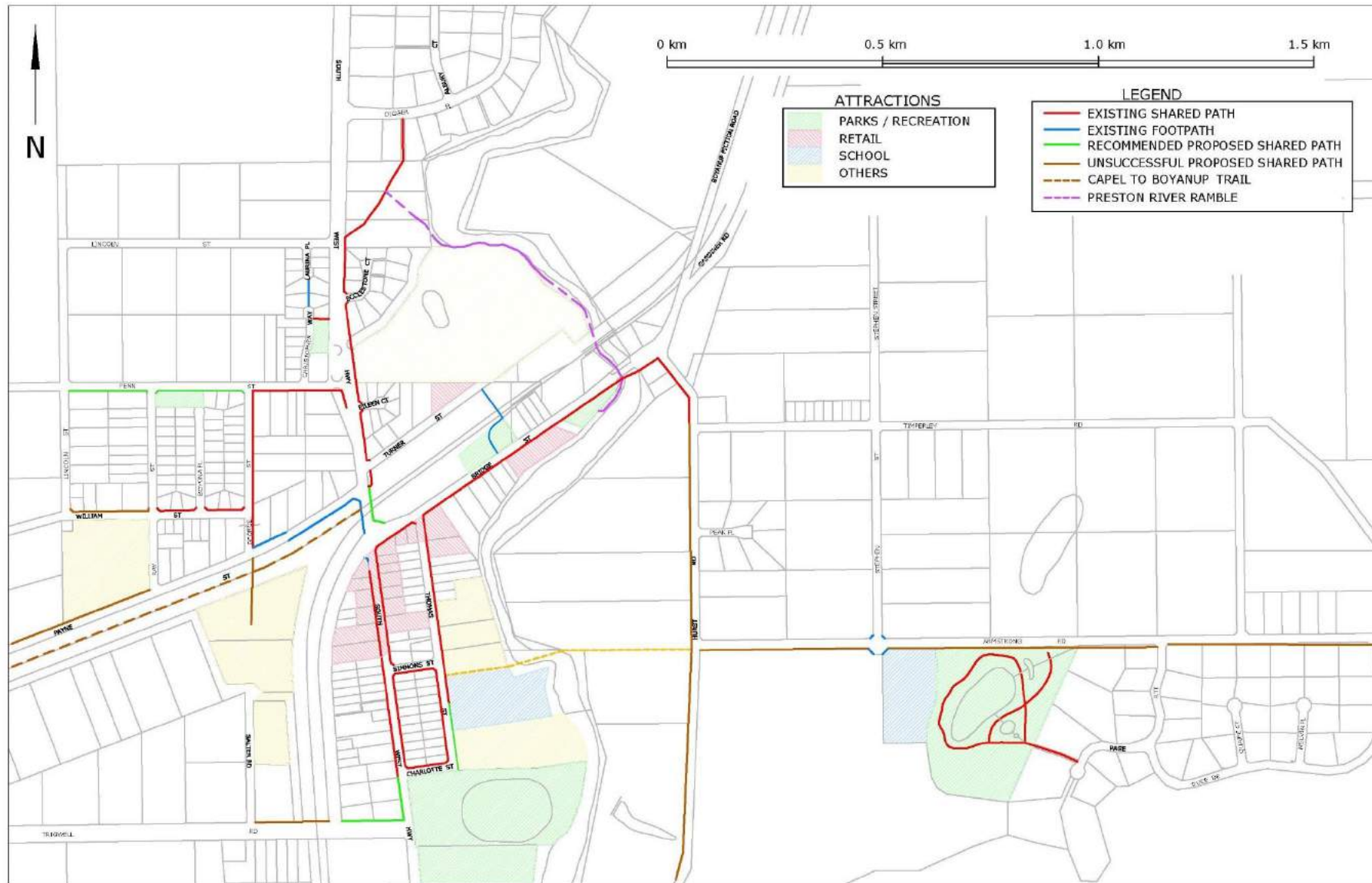
3.6 Boyanup

The Boyanup Townsite is located between 12km and 15km from Gelorup, Dalyellup and Capel. This distance reduces the capacity for strategic connections, suggesting that the focus of infrastructure provision should be on townsite paths and improvements. For links to other towns, the existing roads are generally lightly trafficked, through speeds are likely to be high and there is a high proportion of heavy vehicles.

Sealed shoulders have been provided alongside South Western Highway to allow some separation for cyclists, however it is expected that only confident riders will use this route.

Recommendations for path improvements in the Boyanup Townsite are described in detail in **Section 4** and **Section 5**.

Figure 3-21 Boyanup Land Uses and Existing Footpath Network



Source: Shire of Capel Path Strategy 2013-2018

3.6.2 Commercial Precinct

3.6.2.1 **South Western Highway**

The South Western Highway is the main road which runs through the Boyanup townsite as shown in **Figure 3-22**. A variety of shops area are located along this road including cafés, restaurants and a general store. Shared paths are available on both sides of the road, though the path quality is poor.

Repaving the shared paths along this main street is recommended to improve the walking/riding experience for pedestrians and cyclists as well as fixing any safety issues such as cracks and potholes.

Figure 3-22 South Western Highway



3.6.3 Recreational

3.6.3.1 **Boyanup Memorial Park**

Boyanup Memorial Park is located at the southern end of Thomas Street. Shared path connections from the main network to this site currently do not exist though the Shire of Capel has plans to provide these connections in the future.

The completion of this shared path is a recommendation of this Bike Plan.

Figure 3-23 Boyanup Memorial Park



3.6.4 Education

3.6.4.1 **Boyanup Primary School**

Boyanup Primary School is located on Thomas Street and is the only school in the Boyanup Townsite. In its current form, the existing shared path provides a reasonable level of connectivity to the surround areas. An area dedicated to bicycle parking has been provided at the school site as shown in **Figure 3-25**.

In this location it is recommended that a pram ramp be constructed at the school path crossing, and at a corresponding point on the north side of Thomas Street. This will better define movements for school children and parents and improve safety around the school.

Additional recommendations for Boyanup primary School include:

- > *Applying for the TravelSmart for schools program*
- > *Applying for the Department of Transport's Connecting Schools Grant which allows for schools to apply for funds for end of trip facilities such as bike shelter/racks and bike skills training for students*

Figure 3-24 Boyanup Primary School



Figure 3-25 Bicycle Parking at Boyanup Primary School



3.6.5 Recreational Trails

3.6.5.1 *Boyanup Heritage Trail*

The Boyanup Heritage Trail is an informal walking path which takes users to 46 notable locations within the Boyanup Townsite. The trail uses the existing footpath network throughout the town.

Improvements to the Boyanup Heritage Trail including updated wayfinding signage and information is recommended to provide new tourism and business opportunities.

3.6.5.2 *Joshua Brook Circuit*

Joshua Brook Circuit is located along Joshua Creek Road. The circuit features high quality, flat, concrete paths at 1.8 m wide. The loop is 1km long, with some other connecting paths.

3.6.5.3 *Munda Biddi Trail*

The Munda Biddi Trail is a 1000+ km off road cycling trail located between Mundaring and Albany. 8.5 km of this trail passes through the Shire of Capel via Joshua Brook Road, Armstrong Road and Hurst Road.

A proposed connection from Capel has been identified in previous planning documents which utilises the railway corridor between Boyanup and Capel. This proposal has merit for a long-term community project.

3.6.5.4 *Preston River Ramble*

Preston River Ramble is a 1.3 km flat trail located between Boyanup Lions Park and Diggers Reserve. The quality of the trail varies as surfaces differ between sections ranging from gravel, natural earth and grass.

3.6.6 End of Trip Facilities

As part of the network planning, it is recommended that EoT facilities are provided at strategic locations. EoT facilities encourage more people to cycle as it provides a safe, secure and convenience place to park for the cyclist.

As part of the enhancement to the cycling network, bicycle racks are recommended to be added at the following locations if required:

- > *Boyanup Primary School*
- > *Boyanup Memorial Park*

In addition to bike racks, provision of storage lockers, showering facilities and bicycle pump and repair stations for staff are strongly encouraged for local businesses and schools. These facilities may also be provided in other areas where cycling demand is high.

3.6.7 Cycling Tourism

Boyanup has the Boyanup Heritage Trail which is an informal walking path which takes users to 46 notable locations within the Boyanup Townsite.

It is recommended that a cycling tour based on this walking route be implemented. Bicycle racks should be provided but are not required at all sites due to the close proximity of several locations. Information signposts on the significance of each location should be provided for all 46 location.

3.7 Peppermint Grove Beach

Peppermint Grove Beach is a residential community with recreational and tourism activities for nearby townsites and the beyond. Peppermint Grove Beach can be accessed only via Peppermint Grove Road and lies approximately 7.5km from Bussell Highway along the local road network.

Peppermint Grove Beach is a popular local destination for trips from nearby Capel. While the local road network is very lightly trafficked, accessibility is poor due to the lack of a quality Bussell Highway crossing and the deviation required.

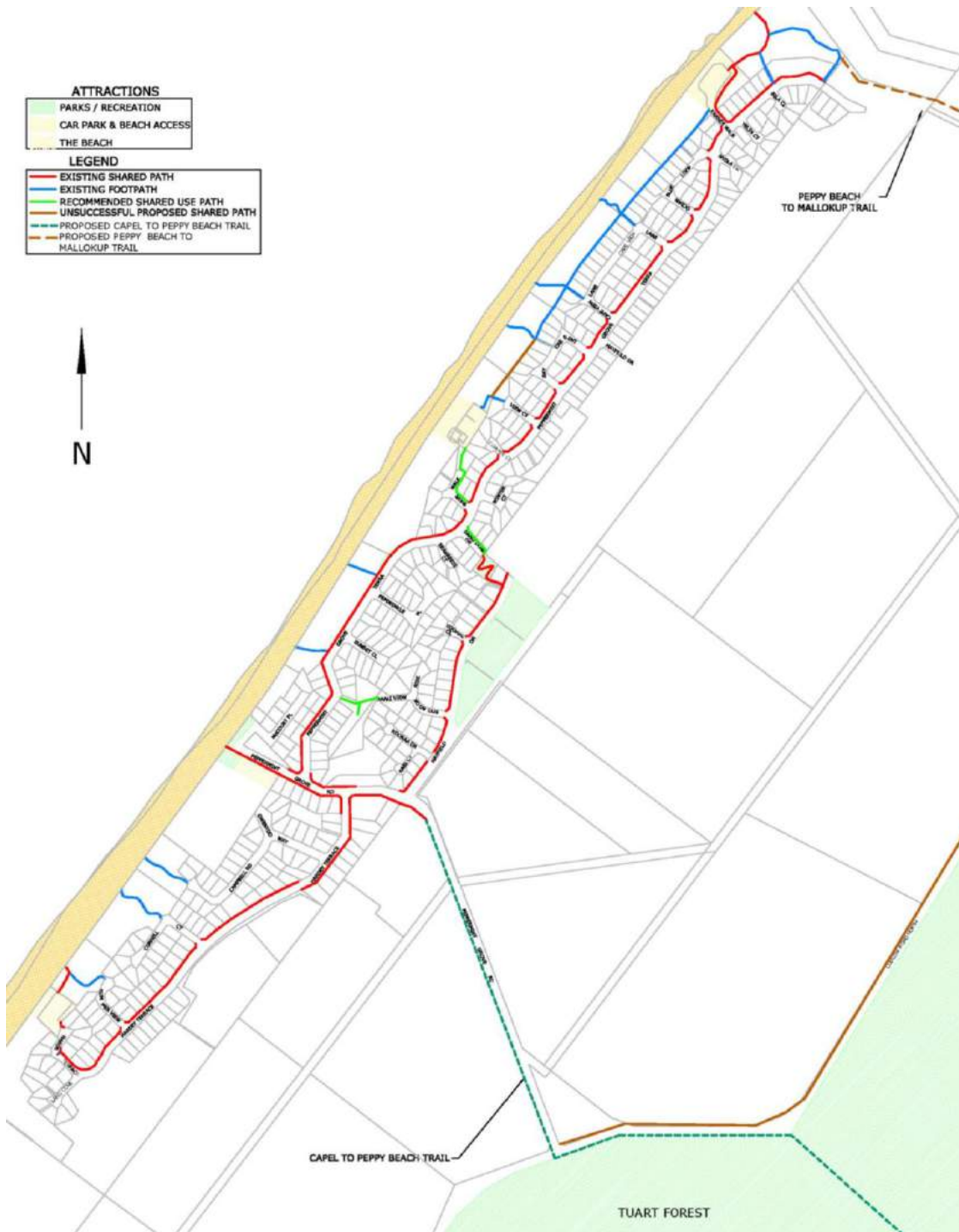
The existing beachfront path network provides an extremely attractive route for cyclists. Extension of this route is recommended where feasible to increase this connectivity.

One issue for Peppermint Grove Beach is that the dune system somewhat severs the coastal road from Hayfield Road. The new path between Peppermint Grove Terrace and Maall Rise is a great addition to the local network.

Minor modification to the zig-zag path (accessed via Sanddune Court) is recommended to allow access from larger prams, buggies etc, that are excluded by the bollard at the top and bottom. Given the grade and tightness of the bends, it is considered extremely unlikely that illegal use of this facility by vehicles would occur. Warning signs may be an adequate substitute for bollards in this location.

Recommendations for path improvements in the Peppermint Grove Beach are described in detail in **Section 4** and **Section 5**.

Figure 3-26 Peppermint Grove Beach Land Uses and Existing Footpath Network



Source: Shire of Capel Path Strategy 2013-2018

3.7.2 Recreational

3.7.2.1 *Peppermint Grove Beach*

Peppermint Grove Beach is located along the Indian Ocean coast as shown in **Figure 3-27**. Access to the beach is available via the two car parks, one located to the north and the other located to the south. In addition, various pedestrian paths access via Peppermint Grove Terrace provide links to the beach.

It is recommended that bicycle racks be installed at the northern and southern car parks of the beach to provide secure bicycle parking facilities for users the prefer to cycle to the beach.

Figure 3-27 Peppermint Grove Beach



The existing beachfront path network provides an extremely attractive route for cyclists. Extension of this route is recommended where feasible to increase this connectivity.

One issue for Peppermint Grove Beach is that the dune system somewhat severs the coastal road from Hayfield Road. The new path between Peppermint Grove Terrace and Maall Rise is a great addition to the local network.

Minor modification to the zig-zag path (accessed via Sanddune Court) is recommended to allow access from larger prams, buggies etc, that are excluded by the bollard at the top and bottom. Given the grade and tightness of the bends, it is considered extremely unlikely that illegal use of this facility by vehicles would occur. Warning signs may be an adequate substitute for bollards in this location.

3.7.3 Cycling Tourism

In regards to cycling tourism, Peppermint Grove Beach is an important key attractor for tourist. It is recommended that connections to this popular location be improved and serious consideration be given to long-term connections between Peppermint Grove Beach and Dalyellup via Stratham, as well as across Bussell Highway to Capel. These routes, once constructed should be promoted and marked by signage and other wayfinding markers, as well as prominently shown on local maps.

3.8 **Stratham**

Stratham sits between Peppermint Grove Beach and Dalyellup on the eastern side of Bussell Highway. The area of Stratham currently consists of residential dwellings and large areas of farmland. The low level of development suggests that traffic volumes are low and that existing roads are appropriate for cyclists of most confidence levels.

Residents of Stratham currently have no access to nearby townsites without utilising Bussell Highway. There is some potential for strategic connection to the south and north in the longer-term, as discussed below in **Section 5**.

3.9 Connections between Townsites

In its existing form, cycling and pedestrian connections between each of the townsites are generally poor or non-existent. The distance between each of the townsites is the major factor for this. **Table 3-2** shows the approximate distances between the townsites.

Table 3-2 Distances between townsites (in km).

Townsite	Capel	Gelorup	Dalyellup	Boyanup	Peppermint Grove Beach
Capel	-	17	17	18	6
Gelorup	17	-	1	22	24
Dalyellup	17	1	-	22	24
Boyanup	18	22	22	-	24
Peppermint Grove Beach	6	24	24	24	-

Based on the distance between townsites, emphasis has been placed on the Capel/Peppermint Grove Beach connection and Gelorup/Dalyellup connection. In addition, a connection from Peppermint Grove Beach through Stratham to Dalyellup can also be established with upgrades to the existing infrastructure.

3.9.2 Capel / Peppermint Grove Beach Connection

Peppermint Grove Beach is a popular attraction for residents living in Capel due to its proximity. Two routes are available; via Stirling Road and Ludlow Road North, and via Mallokup Road. Both of these routes are characterised by high-speed but low volume roads, but existing connections to Peppermint Grove Beach are provided only by Peppermint Grove Road, access to which requires a significant deviation of 2.5 – 3km.

Mallokup Road provides a link to the one-lane bridge over Capel River and passes by Capel Vale Winery and the Match Restaurant. There is an opportunity to connect Mallokup Road to the northern end of Peppermint Beach via the Water Corp levy access road (1.5km) and a 300m extension of the existing path at the end of Peppermint Grove Beach Terrace. This route would require approval from Water Corporation and some additional investment to establish, but would provide an attractive link for residents and tourists.

It is understood that there may be an issue with mosquitos in this area, and that this may prohibit use during certain months of the year.

Connection to this route would need to be formalised by a short off-street path from Capel Drive and a crossing point over Bussell Highway between Capel Drive and Stirling Road.

3.9.3 Gelorup / Dalyellup Connection

Bussell Highway is a major barrier in providing a connection between Dalyellup and Gelorup. Provision of formal crossings at several locations between Dalyellup and Gelorup would allow secondary school children and utility trips between the two townsites.

Recommended locations for crossings include:

- > *Frances Road*
- > *Hasties Road*
- > *Sleaford Drive*

The function of these crossings is predicated on the extension of existing shared path infrastructure on the western side of Bussell Highway, as well as continuation of paths along Frances Road and Hasties Road to a defined pedestrian/cycling crossing.

3.9.4 Peppermint Grove Beach / Stratham / Dalyellup Connection

Through the use of existing roads and minor road upgrades, a route can be established effectively connecting Dalyellup to Peppermint Grove Beach and Capel. The low traffic volumes along this route would make it relatively safe for cyclist to ride on the road.

However, there are a number of road connections that have not been built, and may be beyond the scope of this Bike Plan. To complete the route from Peppermint Grove Beach to Dalyellup would require the following:

- > Completion of Minninup Road from its existing termination point near Mangles Road near Peppermint Grove Beach through to Tatton Place, Stratham: **Distance 1.8km**. *An alternative link would run through to the existing Minninup Road alignment further to the north: **Distance 2.8km**.*
- > Completion of a separate section of Minninup Road from its existing termination point north of the drain crossing and Quambi Drive, Stratham through to Harewoods Road, Dalyellup: **Distance 2.6km**.

The cost of this infrastructure is high and unlikely to be completed if only to serve cyclists. However, there may be opportunities associated with development extending south from Dalyellup for a portion of the distance. There are also connectivity benefits for local residents if the route was created for general vehicle movements.

3.9.5 Other Connections

The following cycling connections are considered to be beneficial but not included in the network recommendations due to a number of foreseeable issues. These projects fall into the category of long term development considerations due to scope of these projects which may require a separate and comprehensive analysis.

3.9.5.1 *Boyanup / Capel Connection*

A cycling connection between Boyanup and Capel would consist of a 16km separated path aligning Railway Road and Trigwell Road. Additionally, this connection may also be extended to link up to the Mudda Biddi Trail. The major barriers of this connections include:

- > The indicative cost of the 16km route would exceed the allowable budget assigned to the Shire and would require external funding sources. An on road path would reduce the cost but is unfeasible due to the road width limitations.
- > Cycling demand between the two townsites may not be enough to justify the expenditure on the proposed route. A connection to the Mudda Biddi Trail via this link may increase cycling demand.

3.9.5.2 *Boyanup / Bunbury Connection*

Currently a sealed shoulder cycling lane exists along South Western Highway from Boyanup to Bunbury. The cycling lane presents some safety issues due to the high speed traffic traveling along the roads which may be intimidating to casual or recreational cyclists. Potential solutions include:

- > A separated cycling path – associated costs of this project would be unfeasibly without external funding
- > Separation kerb placed between the cycling path and road – the associated costs of this would be high and may require road width extensions along South Western Highway.

4 Cycle Network Issues, Opportunities and Recommendations

A saddle survey was conducted by Cardno on the 19 and 20 November 2015 for 5 of the townsites (Capel, Gelorup, Dalyellup, Peppermint Grove Beach and Boyanup). Members of the community were invited to participate, as well as council officers. This provided Cardno with valuable input and feedback for potential pedestrian and cycling infrastructure improvements, based on detailed local knowledge. Key observations that were highlighted include:

- > Missing cycling connections between townsites, the community generally felt that barriers such as Bussell Highway and safe riding routes discouraged cycling.
- > The community of Gelorup feel disconnected from Dalyellup as a result of Bussell Highway separating the two areas.
- > It was observed that a reasonable number of school children cycle to and from school. Additionally, the survey was completed during Bike Week activities, which showed that a high proportion of school children *could* cycle to school, if routes were improved.
- > The close proximity of Peppermint Grove Beach and Capel provides incentive for people to cycle to and from the beach but the lack of safe cycling routes discourages this.
- > Some “quality of life” improvements to increase local amenity at a relatively low cost. Examples include maintenance of trees and plants to prevent physical and sight obstruction and directional signage.

4.1 Issues and Opportunities

Cyclists need a smooth hazard-free riding environment and, where they share roads, they need sufficient space to operate safely along motor vehicles (*Cycling Aspects of Austroads Guidelines 2011*).

The *Greater Bunbury Bicycle Plan* identified the following within the Shire of Capel, based on the Shire's existing cycling network and infrastructure plans:

- > A need to separate traffic from cyclists on long haul commuter routes.
- > Potentially hazardous paths where routes pass through multiple driveway crossovers.



The primary focus of the Capel Bike Plan is to identify network deficiencies and provide remedial measures for these issues, in addition to recommending infrastructure upgrades to improve cyclist and pedestrian amenity.



Condition assessment of the existing path network has been embedded in the recommendations for proposed infrastructure, where deterioration of existing facilities creates an unattractive or dangerous link in the network. Detailed assessment of other, less critical paths is not considered essential when compared to the proposed increases in network connectivity. Therefore, rectification works beyond the proposed Implementation Schedule are expected to be outside of the Bike Plan delivery timeframe.




Table 4-1 through to **Table 4-5** highlights the observed network deficiencies identified during the saddle survey. References to recommended site-specific works implementation is given in brackets (e.g. refer to C1) which are described in **Section 5.1**.




4.2 Capel



Table 4-1 Observed Network Deficiencies for Capel




No.	Issue	Comments/Recommendations	Image	Location
1	Poor connections between paths along Goodwood Road	Install handrails and tactile paving at crossing points. Include signage to indicate end of cycling path and its continuation on the opposite side of the road.		Intersection of Berkshire Street and Goodwood Road
2	Alfresco dining furniture placed along shared path	Maintain a minimum available width adjacent to alfresco dining.		Intersection of Forrest Road and Roe Road



3	Poor condition of paths.	Repave footpaths that are in poor condition. (refer to C3)		Intersection of Spurr Street, Goodwood Road and Upson Road
4	Poor alignment of paths	Realignment of footpaths to improve safety and wayfinding (refer to C3)		Intersection of Spurr Street, Goodwood Road and Upson Road

5	Poor condition of paths.	Repave footpaths that are in poor condition (refer to C3)		Intersection of Spurr Street and Korella Drive
6	Shrub obstructing pedestrian and cyclist sidelines	Removal of shrub (refer to C3)		Intersection of Spurr Street and Korella Drive
7	Potential hazard due to placement of manholes	Modification of manholes to ensure it is uniform to footpath surface (refer to C3)		Intersection of Spurr Street and Korella Drive

				
8	End of cycling path, no continuation	Extension of the shared path to the intersection of Spurr Street and Tucker Street (refer to C1)		End of Spurr Street
9	Poor condition kerb ramp	Replace kerb ramp and remove grab rail barrier. Alignment of the path to be improved.		End of West Road

<p>10</p>	<p>Safety issues regarding the pedestrian and cyclist crossing at Bussell Highway.</p>	<p>Bussell Highway is a major arterial route with vehicle speeds of up to 110 km/h. While the safest option for pedestrian/cyclist movement across Bussell Highway grade separation via a tunnel underpass or bridge overpass, the cost of this is likely to be prohibitive.</p> <p>In the absence of significant grade separation, improvement of the crossing to provide gates at a minimum 3m spacing is recommended, removing the existing grabrail in the centre of the path (refer to C5)</p>		<p>Intersection of West Road and Bussell Highway</p>
<p>11</p>	<p>Tree obstructs cycling path</p>	<p>Remove vegetation obstruction.</p>		<p>Intersection of West Road and Bussell Highway</p>



12	Poor quality cycling connection between Barlee Road and Jamieson Road.	Proper maintenance of the path connecting the western end of the bridge to Barlee Road (clearing leaves, branches and other obstructions) and Jamieson Road intersection.		Intersection of Barlee Road and Jamieson Road
13	Gap within cycling route	Construction of a new path to connect to the two existing paths. (refer to C2)		West of Barlee Road
14	Sign indicates end of pedestrian/cycling path	Remove end shared path signs		Along Capel Drive north of the bridge



15	Poor condition kerb ramp	Replace kerb ramp, remove grab rail and improve surface and alignment of path.		Intersection of Mallokup Road and bicycle path.
16	Sign indicates pedestrian/cycling route but no formal path is provided	Pedestrian/cycling path extension along from the western cul-de-sac of Tucker Street to Spurr Street.		"Intersection" of Tucker Street and Spurr Street

4.3 Gelorup

Table 4-2 Observed Network Deficiencies for Gelorup



No.	Issue	Recommendation	Image	Location
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1	End of cycling path, no continuation	Extension of the cycling path from this point south to Hasties Road. (refer to G1)		Jules Road
2	Safety issues regarding cycling along Bussell Highway	It is recommended that a separated cycling path be constructed. A raised kerb or additional horizontal separation would be required between the road and cycling lane. (refer to D7)		Bussell Highway



<p>3</p>	<p>Safe access across Bussell Highway between Dalyellup and Gelorup</p>	<p>Areas for potential crossing include.</p> <ul style="list-style-type: none"> ▪ Bussell Highway/Hasties Road intersection (future roundabout proposed) ▪ Bussell Highway/Frances Road intersection (refer to G7) ▪ Bussell Highway/Harewoods Road intersection (future 4-way signalised intersection proposed) ▪ Bussell Highway/Sleaford Drive intersection 		<p>Bussell Highway</p>
<p>4</p>	<p>Broken section of footpath</p>	<p>Repave broken section</p>		<p>Jules Road</p>

4.4 Dalyellup

Table 4-3 Observed Network Deficiencies for Dalyellup




No.	Issue	Recommendation	Image	Location
1	Informal path leading from Nottingham Entrance to Wake Drive	Construction of a formal pedestrian/cycling path from Nottingham Entrance to Wake Drive. (refer to D2)		Between Nottingham Entrance and Wake Drive.
2	Poor alignment of path and access road.	Modify kerb ramp to reflect through movement. Painted edge line to reinforce direction to cyclists.		Intersection of Quealum Way and Norton Promenade





3	Uneven footpath section presents a tripping hazard	Repave uneven section.		Eastern section of Ferndale Avenue
4	End of cycling path, no continuation.	Signage indicating end of pedestrian/cycling path should be placed on this path. Consideration for further extension will depend on the local developers.		West from the intersection of Bussell Highway and Loretta Avenue
5	Gap in the network along Harewoods Road.	The steepness of the eastern section of this road may create additional challenges, but a shared path is recommended in coordination with works on Bussell Highway. (refer to D5)		Harewoods Road



6	N/A (pedestrian / cyclists network improvements)	Linkage of Sleaford Drive and Ferndale Avenue		Intersection of Sleaford Drive, Ferndale Avenue and Bussell Highway
7	Continuation of cycling path leads onto high speed turning traffic	Marked cycling lane (indicated in green) in addition to a second merge point (indicated in white) east of the intersection of Bluff Road and Norton Promenade. Refer to image. (refer to D9)		Intersection of Bluff Road and Norton Promenade

4.5 Boyanup

Table 4-4 Observed Network Deficiencies for Boyanup


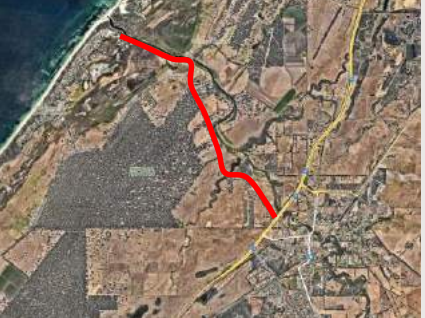
No.	Issue	Recommendation	Image	Location
1	Poor quality path	Repave this section of path (refer to B3)		Intersection of South Western Highway and Bridge Street
2	End of cycling path, no continuation.	Installation of signage to indicate end of path and wayfinding signage to direct cyclist to the pedestrian crossing on the intersection of Charlotte Street and South Western Highway Extension to Bridge Street (refer to B8)	 	Intersection of Trigwell Road and South Western Highway

4	Poor quality path	Repave this section of path		Section of Hurst Road between Bridge Street and Timperley Street
5	Poor alignment of path	Repave and realign the path to a straight-through formation (refer to B3)		Near the intersection of Payne Street and South Western Highway
6	End of cycling path	Replace existing footpath shared path on the southern side of Payne Street. Continue concrete path on the southern side of Payne Street to George Street. Create a new crossing point complete with kerb ramps (refer to B2)		Eastern Section of Payne Street
7	Evidence that cyclist are crossing the railway track via the dirt path	Improvement to the quality of nearby footpaths (South Western Highway and Payne Street) will discourage user from using the dirt path. (refer to B2 and B3)		Section of Payne Street between George Street and South Western Highway

8	<p>Poor quality and alignment of footpath</p>	<p>Upgraded crossing to include realigned and repaved footpath. This includes the installation of appropriate pedestrian and cyclist signage and linemarking. (refer to B3)</p>		<p>Section of South Western Highway between Payne Street and Bridge Street</p>
9	<p>Poor quality path</p>	<p>Repave this section of path, remove grab rails. Install shared path stencils. (refer to B1)</p>		<p>Bridge Street eastern section</p>

4.6 Peppermint Grove Beach

Table 4-5 Observed Network Deficiencies for Peppermint Grove Beach

No.	Issue	Recommendation	Image	Location
1	Cycling connection between Capel and Peppermint Grove Beach.	Construction of a bike trail aligning Capel River from Mallokup Road bridge to the northern beach of Peppermint Grove Beach. (refer to GN3)		Mallokup Road bridge
2	Cycling connection between Capel and Peppermint Grove Beach.	A sealed shoulder route along Peppermint Grove Road/Ludlow Beach/through Tuart Forest National Park/Stirling Road (refer to GN1 and GN2)		Along Peppermint Grove Road/Ludlow Beach/Tuart Forest National Park/Stirling Road

5 Implementation Programme

5.1 Infrastructure Works

The proposed infrastructure works have been separated into two sections, the first section addresses site specific recommendations for the 5 townsites.

No works are proposed for Stratham as the low level of development suggests that traffic volumes are low and that existing roads are appropriate for cyclists of most confidence levels.

The second section provides recommendations encompassing the greater network. This includes the townsite connections as well as connections to areas beyond the Shire of Capel. **Table 5-1** and **0** lists all proposed recommendation along with maps of the recommendation available in **Appendix A**.

Priorities have been calculated through the use of Multi Criteria Analysis (MCA). The criteria and weighting are as follows:

- > Connectivity – 30%
- > Economic – 25%
- > Safety – 25%
- > People and community – 20%

Order of costs estimates were determined using an internally developed spreadsheet with indicative costs for construction and infrastructure but exclude land acquisition costs, utilities, drainage and other external costs.

Priorities and costs estimates for the proposed bridges and signalised intersections have been excluded as the priorities and cost estimates are strictly cycling based and require a different methodology. Cost estimates for the greater network paths have also been excluded as accurate costings cannot be determined without additional information from feature surveys and concept designs.

Table 5-1 Site specific shared path recommendations

No.	Priority	Project Name	Project Description	Funding	Length (m)	Order of costs Estimate	Comments
Capel Townsite							
C1	5	Spurr Street Shared Path Extension	Construct 2m wide shared path on the southern side of Spurr Street from Berkshire Street to Tucker Street	Future developer funded	490	\$75,000	Long term
C2	1	Barlee Road Shared Path Connection	Construct a 2m wide connection on the north side of Barlee Road connecting Barlee Road to Goodwood Road	Shire of Capel funded	60	\$8,000	
C3	3	Spurr Street Shared Path Upgrade	Repave footpath between Prowse Road and Upson Road and improving alignment with existing paths.	Shire of Capel funded	140	\$30,000	Planned for 2017/2018
C4	8	Upson Road Shared Path Upgrade	Repave footpath between Goodwood Road and the northern end of Upson Road and improving alignment with existing paths.	Shire of Capel funded	400	\$47,000	

C5	2	Bussell Highway Pedestrian/ Cyclist Crossing Upgrade Option A	Realignment of the shared path to remove curved sections. Relocation of grab rails from centre of the path to the left of the direction of travel. Installation of u-rail gating at 3m separation in accordance with Austroads recommendations.	Shire of Capel funded	80	\$20,000	
C6	13	New Shared Path Connection	Construct a 2m wide shared path connecting the southern end of Turner Street running east to Widdeson Road.	Shire of Capel funded	80	\$13,000	
C7	4	Capel Drive Service Road Wayfinding	Install stencils and wayfinding signage to improve connectivity to shared path along Capel Drive.	Shire of Capel funded	250	\$5,000	
C8	12	West Road Shared Path	Construct a 2m wide shared path on the eastern side of West Road from Roe Road to Capel Drive.	Shire of Capel funded	310	\$40,000	
C9A	9	Tucker Street/Merritt Street/Roe Road Shared Path (Section A)	Construct a 2m wide shared path between Spurr Street and Harris Street along the north side of Tucker Street	Shire of Capel funded	210	\$35,000	Planned for 2018/2019
C9B	9	Tucker Street/Merritt Street/Roe Road Shared Path (Section B)	Construct a 2m wide shared path between Harris Street and Roe Road along the northern side of Tucker Street and along Merritt Street.	Shire of Capel funded	250	\$35,000	Planned for 2018/2019
C9C	9	Tucker Street/Merritt Street/Roe Road Shared Path (Section C)	Construct a 2m wide shared path between Merritt Street and West Road along the southern side of Roe Road.	Shire of Capel funded	190	\$25,000	Planned for 2018/2019
C10	6	Payne Road Shared Path	Construct a 2m wide shared path on the western side of Payne Road from Weld Road to Jamieson Road.	Shire of Capel funded	890	\$120,000	Dependent on future development
C11	7	Jamieson Road Shared Path	Construct a 2m wide shared path on the southern side of Jamieson Road from Payne Road to Barlee Road.	Shire of Capel funded	430	\$60,000	
Gelorup Townsite							

G1	6	Jules Road Shared Path Connection	Construct a 2m wide shared path on the western side of Jules Road from Hasties Road to the existing path near Loretta Road.	Shire of Capel funded	1230	\$170,000	Roadworks between Hasties Rd and Frances Rd scheduled for 2018/2019
G2	2	Sleaford Drive Shared Path	Construct a 2m wide shared path on the southern side of Sleaford Drive from Bussell Highway to Jules Road.	Shire of Capel funded	640	\$90,000	Long term
G3	3	Frances Road Shared Path (West)	Extend the existing 2m wide shared path on the northern side of Frances Road from Bussell Highway to Allen Road.	Shire of Capel funded	234	\$32,000	
G4	4	Hasties Road Shared Path	Extend the existing 2m wide shared path on the northern side of Hasties Road to Bussell Highway.	Shire of Capel funded	70	\$19,000	
G5	4	Frances Road Shared Path (East)	Extend the existing 2m wide shared path on the southern side of Frances Road from Strachan Court to Jules Road.	Shire of Capel funded	152	\$28,000	
G6	7	Hampstead Street Shared Path Extension	Extend the existing 2m wide shared path on the southern end of Hampstead road to Ducane Road	Shire of Capel funded	120	\$21,000	
G7	1	Bussell Highway/ Frances Road pedestrian/ cycle crossing	Pedestrian crossing and approach shared paths in the vicinity of Frances Road. Infrastructure to include median path, grab rails and installation of u-rail gating at 3m separation in accordance with Austroads recommendations.	Shire of Capel funded	100	\$20,000	
Dalyellup Townsite							
D1	9	Murton Road Shared Path Connection	Construct a 2.5m wide shared path on the southern side of Murton Road from Parade Road to Reeves Approach. (by Developers)	Future developer funded	230	\$35,000	
D2	5	Nottingham Entrance Share Path Connection	Construct a 2.5m wide shared path connecting Nottingham Entrance and Wake Drive.	Shire of Capel funded	80	\$12,000	
D3A	1	Hornibrook Road Shared Path (Section A)	Construct a 2.5m wide shared path on the western side of Hornibrook Road from Norton Promenade to Samrose Road.	Shire of Capel funded	420	\$75,000	Planned for 2016/2017 and 2018/2019
D3B	1	Hornibrook Road Shared	Construct a 2.5m wide shared path on the western side of Hornibrook Road	Shire of Capel funded	480	\$85,000	Planned for 2016/2017

		Path (Section B)	from Samrose Road to Maidment Parade.				and 2018/2019
D4	6	Wake Drive Shared Path	Construct a 2.5m wide shared path extending from Wake Drive to Bussell Highway. Timing may rely on adjacent subdivision (by Developers)	Future developer funded	680	\$90,000	
D5	11	Harewoods Road Shared Path	Extend 2.5m wide shared path on the northern side of Harewoods Road to Maidment Parade. Construct crossing of Harewoods Road including kerb ramps and new 2.5m wide shared path on the southern side of Harewoods Road to Bussell Highway.	Future developer funded	900	\$170,000	Long term
D6	7	Norton Promenade on-street bike lane improvement	Coloured surface treatment for bike lane at Bluff Road intersection crossing. 70 degree transition ramp east of Bluff Road to connect on-road cycle facility with existing shared path.	Shire of Capel funded	30	\$5,000	Completed
D7A	3	Bussell Highway Shared Path (Section A)	Construct a 2.5m wide path on the western side of Bussell Highway from Hareswood Road to Sheoak Street.	Shire of Capel funded	350	\$130,000	Long term
D7B	3	Bussell Highway Shared Path (Section B)	Construct a 2.5m wide path on the western side of Bussell Highway from Sheoak Street to Hasties Road.	Shire of Capel funded	600	\$180,000	Long term
D8	10	Dalyellup Boulevard Shared Path	Extend a 2m wide path on the northern side of Dalyellup Boulevard from Dalyellup Beach to Gutman Parkway. (by Developers)	Future developer funded	850	\$110,000	
D9	8	Norton Promenade Shared Path	Construct a 2.5m wide path on the northern side of Norton Promenade from Hornibrook Road to Maidment Parade.	Shire of Capel funded	550	\$75,000	Planned for 2017/2018
Boyanup Townsite							
B1	2	Bridge Street Shared Path Upgrade	Replace existing footpath with 2m wide concrete shared path on the southern side of Bridge Street between Preston River Bridge and The Bull & Bush Tavern. Remove grab rail in path.	Shire of Capel funded	220	\$35,000	
B2	5	Payne Street Path Upgrade	Replace existing footpath with 2m wide concrete shared path on the southern side of Payne	Shire of Capel funded	280	\$50,000	Completed

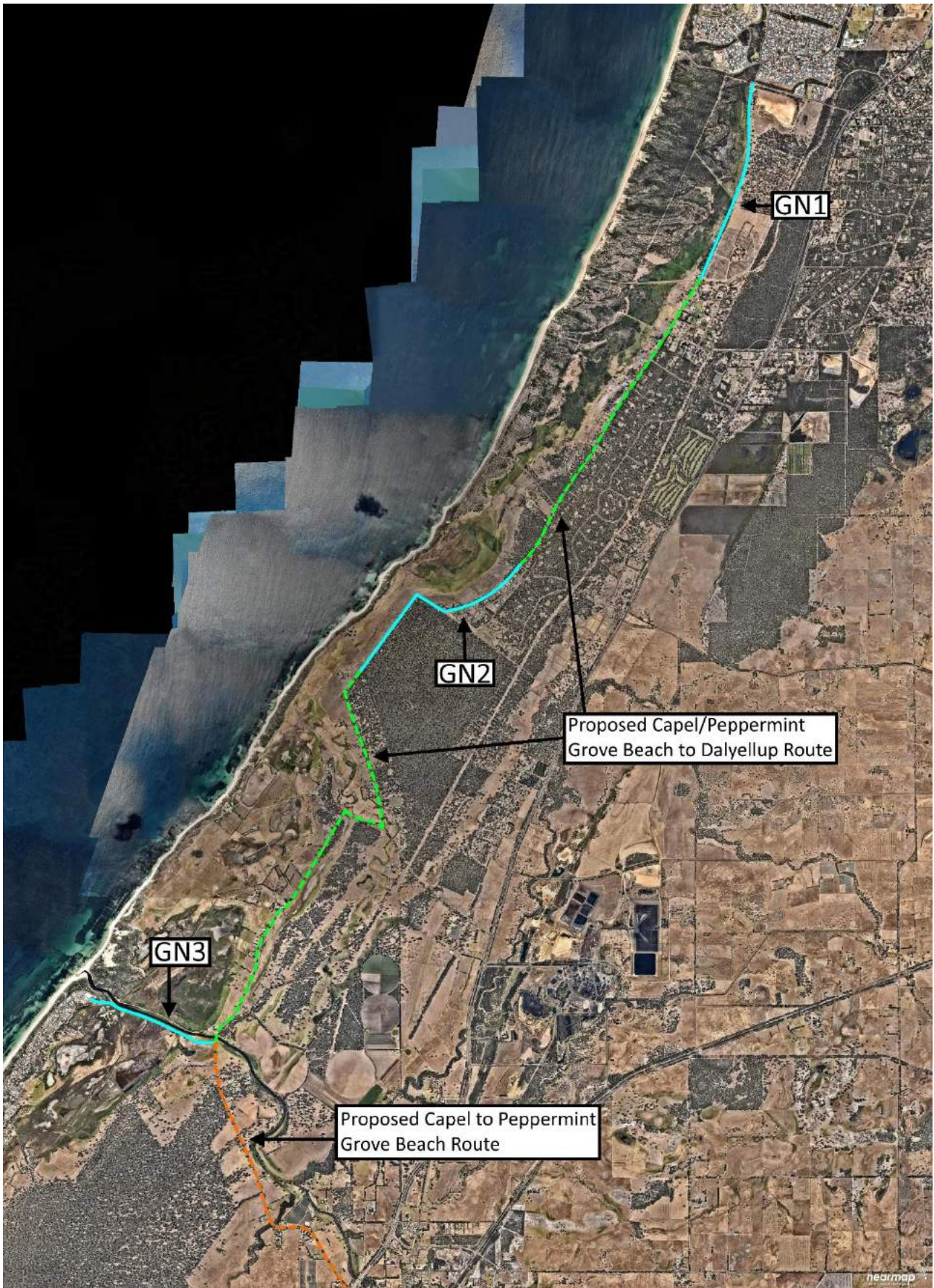
			Street. Continue concrete path on the southern side of Payne Street to George Street. Create a new crossing point complete with kerb ramps				
B3	4	South West Highway Path Upgrade	Replace existing footpath with 2m wide concrete shared path on South West Highway between Bridge Street and Payne Street.	Shire of Capel funded	75	\$17,000	Approved by PTA
B4	1	Thomas Street Shared Path	Construct a 2m wide path on the eastern side of Thomas Street connection Charlotte Street to the existing shared path in front of the Primary School. Design to include consideration for school parking.	Shire of Capel funded	160	\$20,000	Completed
B5	6	Lincoln Street Shared Path	Construct a 2m wide path on the western side of Lincoln Street from Penn Street to William Street.	Shire of Capel funded	280	\$35,000	
B6	6	William Street Shared Path	Construct a 2m wide path on the Northern side of William Street from Lincoln Street to Ray Street.	Shire of Capel funded	190	\$25,000	
B7	8	Penn Street Shared Path	Construct a 2m wide path on the southern side of Penn Street from Lincoln Street to George Street.	Shire of Capel funded	410	\$60,000	
B8	3	Trigwell Road South West Highway Shared Path Extension	Construct a 2m wide path on the western side of South West Highway extending to Trigwell Road.	Shire of Capel funded	250	\$35,000	Completed
Peppermint Grove Beach Townsite							
P1	2	Sand Dune Drive Zig-Zag path	Remove bollards at approaches and increase switchback radius to support disability access. Install wayfinding signage and linemarking on Sand Dune Drive.	Shire of Capel funded	80	\$12,000	
P2	1	Wave Walk Shared Path	Extend beachfront path to Wave Walk and install wayfinding signage and linemarking at Wave Walk/Peppermint Grove Terrace to identify scenic path.	Shire of Capel funded	250	\$60,000	Completed

Table 5-2 Greater network shared path recommendations

No.	Priority	Project Name	Project Description	Comments	Length (m)	Order of costs Estimate
GN1	2	Minninup Road Shared Path	Road extension of Minninup Road south of Dalyellup connecting onto the existing road.	Proposal was previously declined	~2.7	TBD
GN2	2	Minninup Road Shared Path	Road extension of Minninup Road north of Peppermint Grove Beach connecting onto the existing road.		~2.8	TBD
GN3	1	Capel/Peppermint Grove Beach Shared Path	A 2.5m shared path along Water Corporation Levy from the Mallokup Road one-lane bridge and including a new connection to Peppermint Grove Terrace at the eastern extent of Peppermint Grove Beach.		~1.8	TBD

The greater network paths aims to provide improved cycling accessibility between the townsites. The purpose of GN1 and GN2 is to provide a cycling route from Peppermint Grove Beach and Capel to Dalyellup. The route make use of existing low traffic roads along with GN1 and GN2 covering the areas without a paved roadway. GN3 provides a link from Capel to Peppermint Grove Beach passing along Mallokup Road Bridge which serves as the junction for the Peppermint Grove Beach/Capel to Dalyellup route. **Figure 5-1** provides a map of the network with a higher resolution map available in **Appendix A**.

Figure 5-1 Greater Network Paths



5.2 Encouraging Behaviour Change

While constructing new infrastructure is crucial to the promotion of cycling in Capel, it is imperative to engender usage of new infrastructure through encouraging behaviour change. The following sections outline a variety of factors that influence cycling behaviour. In addition, methods to stimulate cycling change by encouraging those who do not currently cycle to take up cycling, as well as ensuring that existing cyclists will continue to ride throughout, and to, Capel thereby promoting Capel as a cycling tourism destination.

5.3 School Programs

School children are a critically important component of the cycling community and the early exposure of children to cycling as an enjoyable way to spend their leisure time and to get to/from school has been proven to contribute significantly to children continuing to cycle into adulthood. The major opportunities for encouraging school children to ride bicycles include:

- > Cycling to/from school – the majority of children live within a comfortable cycling distance from their school.
- > Cycling lessons at school – teaching children the basics of riding a bicycle and safety on and around the roads.
- > Organised cycling sport, either at school or on weekends, ranging from simple leisurely rides, to road riding and mountain biking.

The Shire in conjunction with State Government agencies and community groups, could undertake programs to encourage school students to take up cycling. These initiatives should be continued at least once every two years, with different schemes targeting different age groups. A key focus should be children in the 10-14 age bracket, who are reaching the age where they may consider and are permitted by their parents to cycle to school.

Examples of bicycle programs implemented within Western Australian include:

- > TravelSmart Schools
- > West Cycle Bike Skills Program
- > Ride2School Program
- > National Ride2School Day
- > Bike Week Program
- > Bike education for schools

More information is available through the Department of Transport.

5.4 End of Trip Facilities

End of Trip (EoT) facilities are a critical component of the cycling network. Different trip purposes will have different needs when it comes to EoT facilities e.g.

- > **Commuter Cyclist:** Need a secure place to park their bicycle inside their workplace, and preferably showers and lockers.
- > **Utility Cyclist:** Need a secure short stay place to park their bicycle, conveniently located to their destination (e.g. shopping, library etc.)
- > **Recreational Cyclist:** May require a secure place to park their bicycle at an intermediate destination, such as a cafe or a park. Short stay EoT facilities should generally be in the form of simple U-rails or other design which facilitates the secure parking of a bicycle designed in accordance with Austroads guidelines.

5.5 Mountain Biking Opportunities

In examining mountain biking opportunities, it was observed that there are areas within the Shire which offer a great deal of scope for mountain biking. The general terrain and topography within the Shire is best suited

for novice mountain biking, mainly as an accessible activity for both tourists and locals. There are many types of mountain biking trails (from easy to difficult) to cater for the wide range in the skills of people cycling in off-road situations. Mountain biking user groups (as stated in the *South West Mountain Bike Master Plan*) are defined as follows:

- > Leisure - general cyclists of all ages and abilities. Typically they ride infrequently, often have limited appropriate skills and require very accessible trails.
- > Enthusiast - recreational mountain bikers with moderate skills, variable fitness and ride weekly.
- > Sport - Competitive mountain bikers, who ride regular routes multiple times a week and are members of mountain bike clubs.
- > Independent - Skilled outdoor enthusiasts who ride once a week and are technically proficient with good level of fitness.
- > Gravity - Highly skilled technical riders who seek very challenging trails, typically ride at least once a week and are often members of mountain bike clubs.

The mountain biking groups within the Shire are primarily leisure and enthusiast cyclists. Therefore it is recommended that mountain biking trails focus on these user groups.

The Shire of Capel *Trails Master Plan* identifies a series of potential trails where recreational off-road cycling could be promoted, depending on the surface eventually chosen for the trail. These trails include the Capel to Boyanup Trail, the Capel to Ludlow Rail Trail, the Ironstone Gully Trail, the Capel Single Track Course and the Tuart Forest Heritage Trail.

The *South West Mountain Bike Plan* identifies and priorities areas for trail development. Capel has been identified as a low priority area in regards to the provision of mountain biking infrastructure.

6 Funding Opportunities

There are a number of funding opportunities, for further information refer to **Table 6-1**.

Table 6-1 Funding Opportunities

Funding Opportunities	Description
Regional Bicycle Network Grants Program	<ul style="list-style-type: none"> > State funding initiative to assist local governments within Regional WA with the planning and implementation of the regional component of the Western Australian Bicycle Network (WABN). > Intention is to fund projects that deliver the greatest benefit for the community and reduce cycling barriers.
Connecting Schools Grant Program	<ul style="list-style-type: none"> > Grant program aimed at improving bicycle access and EoT facilities for schools. > To be eligible for the grant, schools must also employ complementary behaviour change techniques through the 'TravelSmart to School' program, to encourage increased cycling to school.
Bikeweek Grants	<ul style="list-style-type: none"> > Community groups, organisations and local governments can apply to share in \$30,000 in grants to support local cycling events and activities as part of Bikeweek.
Healthier Workplace WA	<ul style="list-style-type: none"> > Healthier Workplace WA offer small grants of up to \$10 000 for workplaces to implement projects that promote and support workers' health and wellbeing.
RAC Community Sponsorships	<ul style="list-style-type: none"> > The program has a range of sponsorship categories for community groups to access including Grass Roots, Project and Partnership categories.
Office of Road Safety Community Grants	<ul style="list-style-type: none"> > To encourage community groups to participate in road safety, the Road Safety Community Grant Program provides from \$50 to \$1000 in event grants.

7 Conclusion

The Capel Bike Plan satisfies the requirements of DoT's regional bicycle network grants and was developed using *DoT's Guidelines for Developing a Bicycle Plan*.

The main purpose of the plan is to develop a coordinated and strategic approach to delivering cycling infrastructure in order to maximise funding opportunities.

- > To provide connections to key attractors within the Shire of Capel townsites.
- > To provide greater cycling accessibility between townsites.
- > Ensure safe connections and routes to schools.
- > Maximise the potential of cycle tourism.

The Bicycle Network Plan provides the policy context through detailed descriptions of the national, state and local policies that underpin the recommendations.

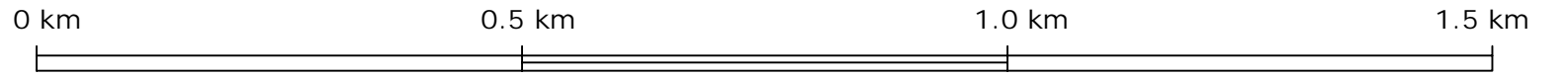
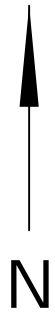
Consultation was carried out through a saddle survey, meetings with the Shire and community involvement. The local Bike Plan will be used to support future applications by the Shire for bicycle network funding from the Department of Transport, to be matched by Local Government funding on a project-specific basis.

Local Bike Plan

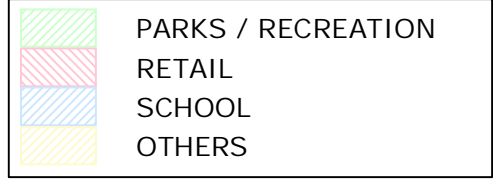
APPENDIX

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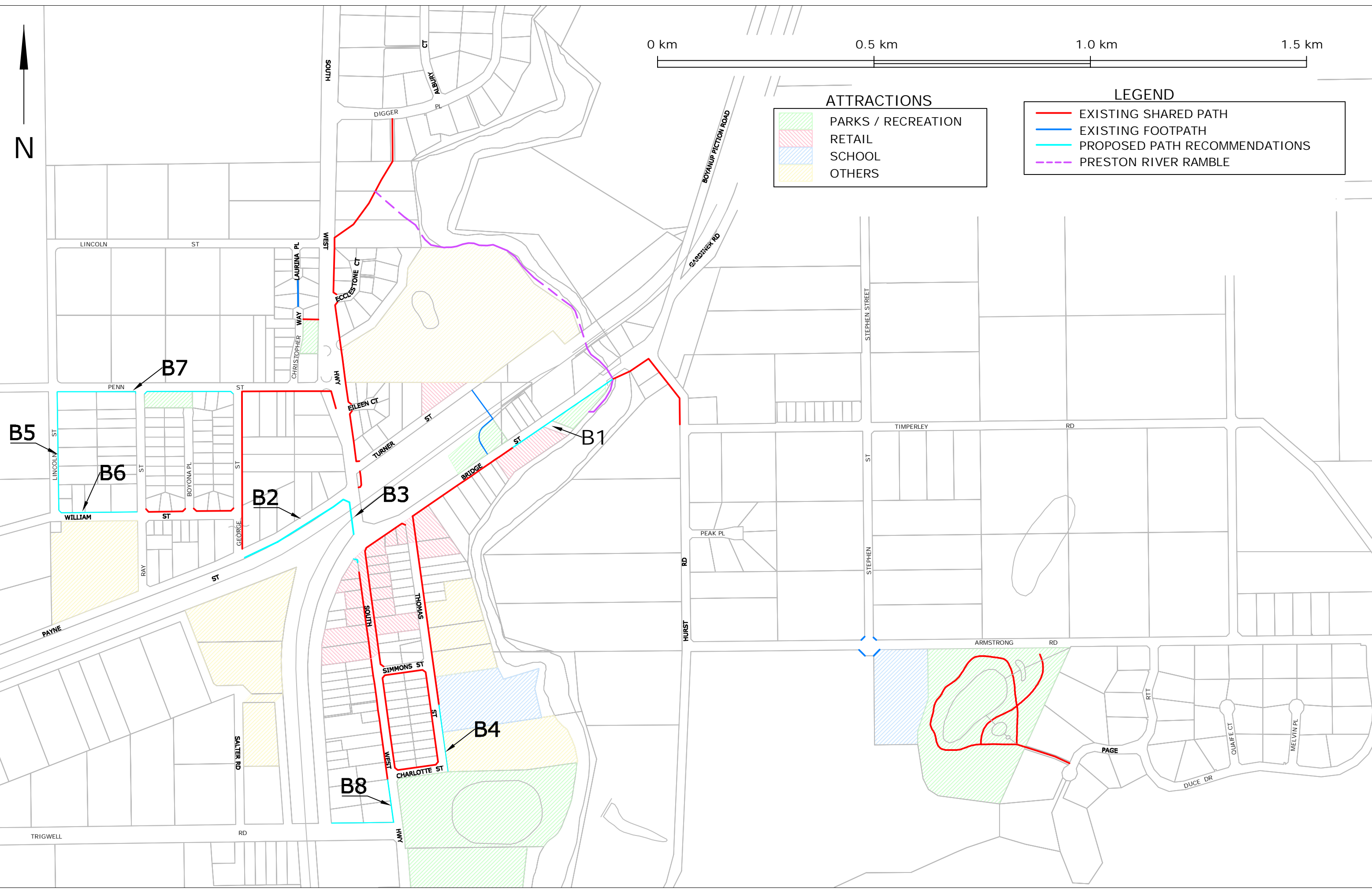
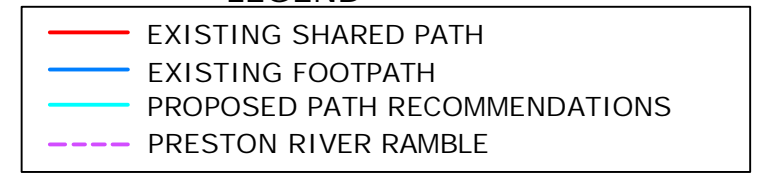
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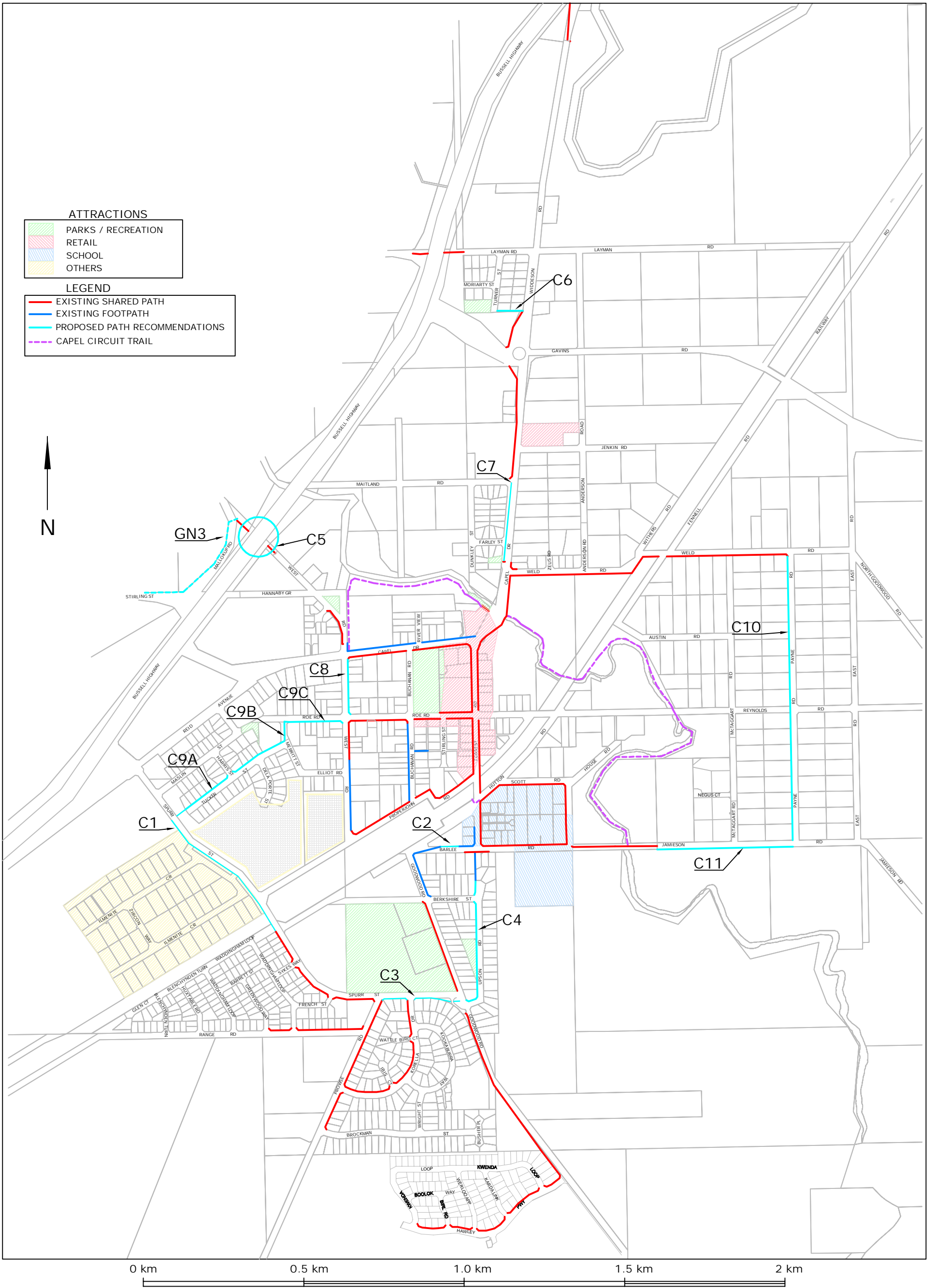
ATTRACTIONS



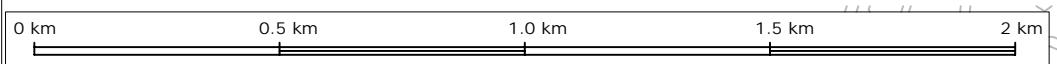
LEGEND



BOYANUP TOWNSITE



CAPRI TOWNSITE

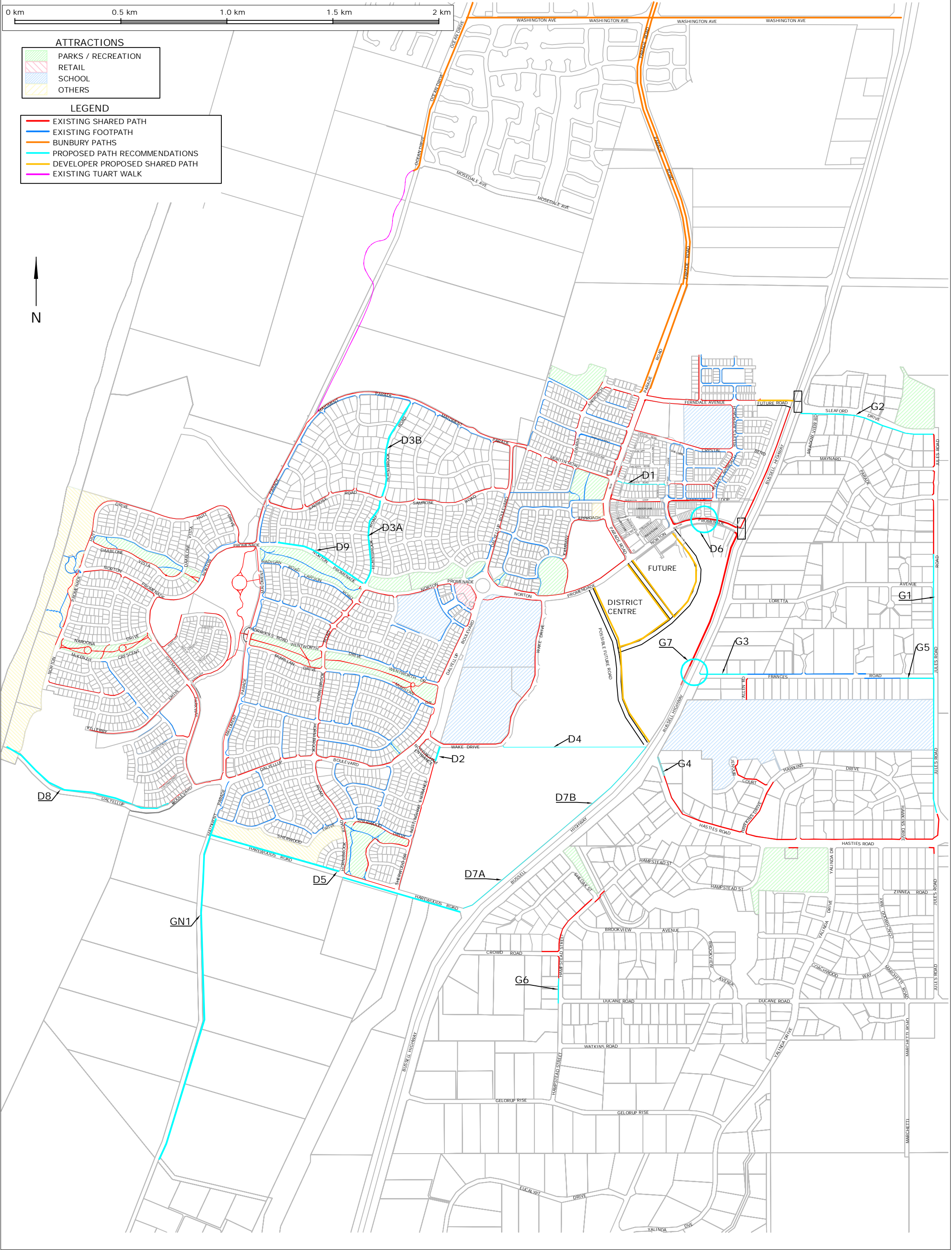
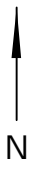


ATTRACTIONS

- PARKS / RECREATION
- RETAIL
- SCHOOL
- OTHERS

LEGEND

- EXISTING SHARED PATH
- EXISTING FOOTPATH
- BUNBURY PATHS
- PROPOSED PATH RECOMMENDATIONS
- DEVELOPER PROPOSED SHARED PATH
- EXISTING TUART WALK



DAL YELLUP/GELORUP PATHS

Local Bike Plan

APPENDIX

B

SCHEDULE OF WORKS

	No.	Corridor	Project Name	Start	End	Length (m)	Width	Surface	Type (on/off)	30%	25%	25%	20%	Weighted Average	Order of Cost Estimate	Rank	Comments
										Connectivity (30%)	Economic (25%)	Safety (25%)	People & community (20%)				
CAPEL	C2		Barlee Road Shared Path Connection	Barlee Road	Capel Donnybrook Road	60	2	Concrete	Off	10	7	6	9	8.05	\$ 8,000	1	
	C5		Bussell Highway Pedestrian/Cyclist Crossing Upgrade Option A	West Road	Malloku p Road	80	2	Concrete	Off	8	7	9	7	7.8	\$ 20,000	2	
	C3		Spurr Street Shared Path Upgrade	Prowse Road	Upson Road	140	2	Concrete	Off	8	7	8	8	7.75	\$ 30,000	3	Planned for 2017/2018
	C7		Capel Drive Service Road Wavfingding	Weld Street	Maitland Road	250	2	Concrete	Off	9	8	6	7	7.6	\$ 5,000	4	
	C1		Spurr Street Shared Path Extension	Berkshire Street	Tucker Street	490	2	Concrete	Off	8	7	7	8	7.5	\$ 75,000	5	Long term
	C10		Payne Road Shared Path	Jamieson Road	Weld Street	890	2	Concrete	Off	7	6	7	7	6.75	\$ 120,000	6	Dependent on future development
	C11		Jamieson Road Shared Path	Barlee Road	Payne Road	430	2	Concrete	Off	7	6	6.5	7	6.625	\$ 60,000	7	
	C4		Upson Road Shared Path Upgrade	Goodwood Road	Upson Road	400	2	Concrete	Off	6	7	7	6	6.5	\$ 47,000	8	
	C9A		Tucker Street/Merritt Street/Roe Road Shared Path (Section A)	Spurr Street	Harris Street	210	2	Concrete	Off	7	7	5	6.5	6.4	\$ 35,000	9	Planned for 2018/2019
	C9B		Tucker Street/Merritt Street/Roe Road Shared Path (Section B)	Harris Street	Roe Road	250	2	Concrete	Off	7	7	5	6.5	6.4	\$ 35,000	9	Planned for 2018/2019
	C9C		Tucker Street/Merritt Street/Roe Road Shared Path (Section C)	Roe Road	West Road	190	2	Concrete	Off	7	7	5	6.5	6.4	\$ 25,000	9	Planned for 2018/2019
	C8		West Road Shared Path	Roe Road	Capel Drive	310	2	Concrete	Off	7	5	4	8	5.95	\$ 25,000	12	
	C6		New Shared Path Connection	Widdeson Road	Turner Street	80	2	Concrete	Off	4.5	4	5	5	4.6	\$ 13,000	13	
GELORUP	G7		Bussell Highway/ Frances Road pedestrian/cycle crossing	-	-	100				9	8	9	7	8.35	\$ 20,000	1	
	G2		Sleaford Drive Shared Path	Bussell Highway	Jules Road	640	2	Concrete	Off	9	7	5	8	7.3	\$ 90,000	2	Long term
	G3		Frances Road Shared Path (West)	Allen Road	Bussell Highway	234	2	Concrete	Off	5	8	8	8	7.1	\$ 32,000	3	
	G5		Frances Road Shared Path (East)	Strachan Court	Jules Road	152	2	Concrete	Off	5	7	7	7.5	6.5	\$ 28,000	4	
	G4		Hasties Road Shared Path	Bussell Highway	Hasties Road	70	2	Concrete	Off	5	7	7	7.5	6.5	\$ 19,000	4	
	G1		Jules Road Shared Path Connection	Hasties Road	Loretta Road	1230	2	Concrete	Off	8	7	4	6	6.35	\$ 170,000	6	Roadworks between Hasties Rd and Frances Rd scheduled for 2018/2019
	G6		Hampstead Street Shared Path Extension	Hampstead Street	Ducane Road	120	2	Concrete	Off	4	4	7	5	4.95	\$ 21,000	7	
DALYELLUP	D3A		Hornibrook Road Shared Path (Section A)	Norton Promenade	Samrose Road	420	2.5	Concrete	Off	9	8.5	9	9	8.875	\$ 75,000	1	Planned for 2016/2017 and 2018/2019
	D3B		Hornibrook Road Shared Path (Section B)	Samrose Road	Maidment Parade	480	2.5	Concrete	Off	9	8.5	9	9	8.875	\$ 85,000	1	Planned for 2016/2017 and 2018/2019
	D7A		Bussell Highway Shared Path (Section A)	Hareswood Road	Sheoak Street	350	2.5	Concrete	Off	9.5	7	10	8	8.7	\$ 130,000	3	Long term
	D7B		Bussell Highway Shared Path (Section B)	Sheoak Street	Hasties Road	600	2.5	Concrete	Off	9.5	7	10	8	8.7	\$ 180,000	3	Long term
	D2		Nottingham Entrance Shared Path Connection	Nottingham Entrance	Wake Drive	80	2.5	Concrete	Off	9.5	9	7	8	8.45	\$ 12,000	5	
	D4		Wake Drive Shared Path	Bussell Highway	Wake Drive	680	2.5	Concrete	Off	10	5	9	9	8.3	\$ 90,000	6	To be constructed by developer
	D6		Norton Promenade on-street bike lane improvement	-	-	30	2.5			8	8	7.5	7	7.675	\$ 4,000	7	Completed
	D9		Norton Promenade Shared Path	Hornibrook Road	Maidment Parade	550	2.5	Concrete	Off	6.5	6.5	8	8	7.175	\$ 75,000	8	Planned for 2017/2018

BOYANUP	D1	Murtin Road Shared Path Connection	Parade Road	Reeves Approach	450	2.5	Concrete	Off	7	5	7	8	6.7	\$ 35,000	9	To be constructed by developer
	D8	Dalyellup Boulevard Shared Path	Dalyellup Beach	Gutman Parkway	850	2	Concrete	Off	7	6.5	5	6	6.175	\$ 110,000	10	To be constructed by developer
	D5	Harewoods Road Shared Path	Bussell Highway	Maidment Parade	900	2.5	Concrete	Off	6	4	5	4	4.85	\$ 170,000	11	To be constructed by developer (Long term)
BOYANUP	B4	Thomas Street Shared Path	Charlotte Street	Primary School	160	2	Concrete	Off	8.5	3.5	8.5	7.5	7.05	\$ 20,000	1	Completed
	B1	Bridge Street Shared Path Upgrade	The Bull & Bush Tavern	Preston River	220	2	Concrete	Off	6.5	5	7	3	5.55	\$ 35,000	2	
	B8	Trigwell Road South West Highway Shared Path Extension	Trigwell Road	West Highway	250	2	Concrete	Off	7.5	3	5	6	5.45	\$ 35,000	3	Completed
	B3	South West Highway Path Upgrade	Bridge Street	Payne Street	75	2	Concrete	Off	6.5	3	6.5	4	5.125	\$ 17,000	4	Approved by PTA
	B2	Payne Street Path Upgrade	George Street	South West Highway	280	2	Concrete	Off	6	4	5	4	4.85	\$ 50,000	5	Completed
	B5	Lincoln Street Shared Path	Penn Street	William Street	280	2	Concrete	Off	4	2	4.5	4	3.625	\$ 35,000	6	
	B6	William Street Shared Path	Lincoln Street	Ray Street	190	2	Concrete	Off	4	2	4.5	4	3.625	\$ 25,000	6	
	B7	Penn Street Shared Path	Lincoln Street	George Street	410	2	Concrete	Off	4	2	4	4	3.5	\$ 60,000	8	
PEPPERMINT GROVE BEACH	P2	Wave Walk Shared Path	Walk/Peppermint Grove	Bay Crescent	450	2	Concrete	Off	3	7.5	5	8	5.625	\$ 60,000	1	Completed
	P1	Sand Dune Drive Zig-Zag path	Peppermint Grove	Sand Dune Drive	80	2	Concrete	Off	3	1	3	4	2.7	\$ 12,000	2	
													TOTAL	\$ 2,193,000		
													TOTAL (excluding completed projects)	\$ 2,024,000		
GN3	Capel/Peppermint Grove Beach Shared Path	Capel	Peppermint Grove Beach	6000	2.5		On/off						0	-	1	Proposal was previously declined
GN1	Minninup Road Shared Path	Harewoods Road	Quambi Drive (approx)	2700	2.5		On/off						0	-	2	
GN2	Minninup Road Shared Path	Fishermans Road	Mangles Road	2800	2.5		On/off						0	-	2	
													TOTAL	\$ 2,193,000		

About Cardno

Cardno is an ASX200 professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX: CDD].

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