Kingborough Cycling Strategy 2021 – 2030

Kingborough

Kingborough Council

February 2022

Institute for Sensible Transport

ACKNOWLEDGEMENT OF TRADITIONAL OWNERS

Kingborough Council and the Kingborough Bicycle Advisory Committee acknowledge this region's traditional and original owners, who have walked upon and cared for this land for thousands of years. We pay respect to those who have passed before us and acknowledge today's Tasmanian Aboriginal community are custodians of this land.

Document reviewed and revised by the Institute for Sensible Transport, based on initial work from the Kingborough Bicycle Advisory Committee.

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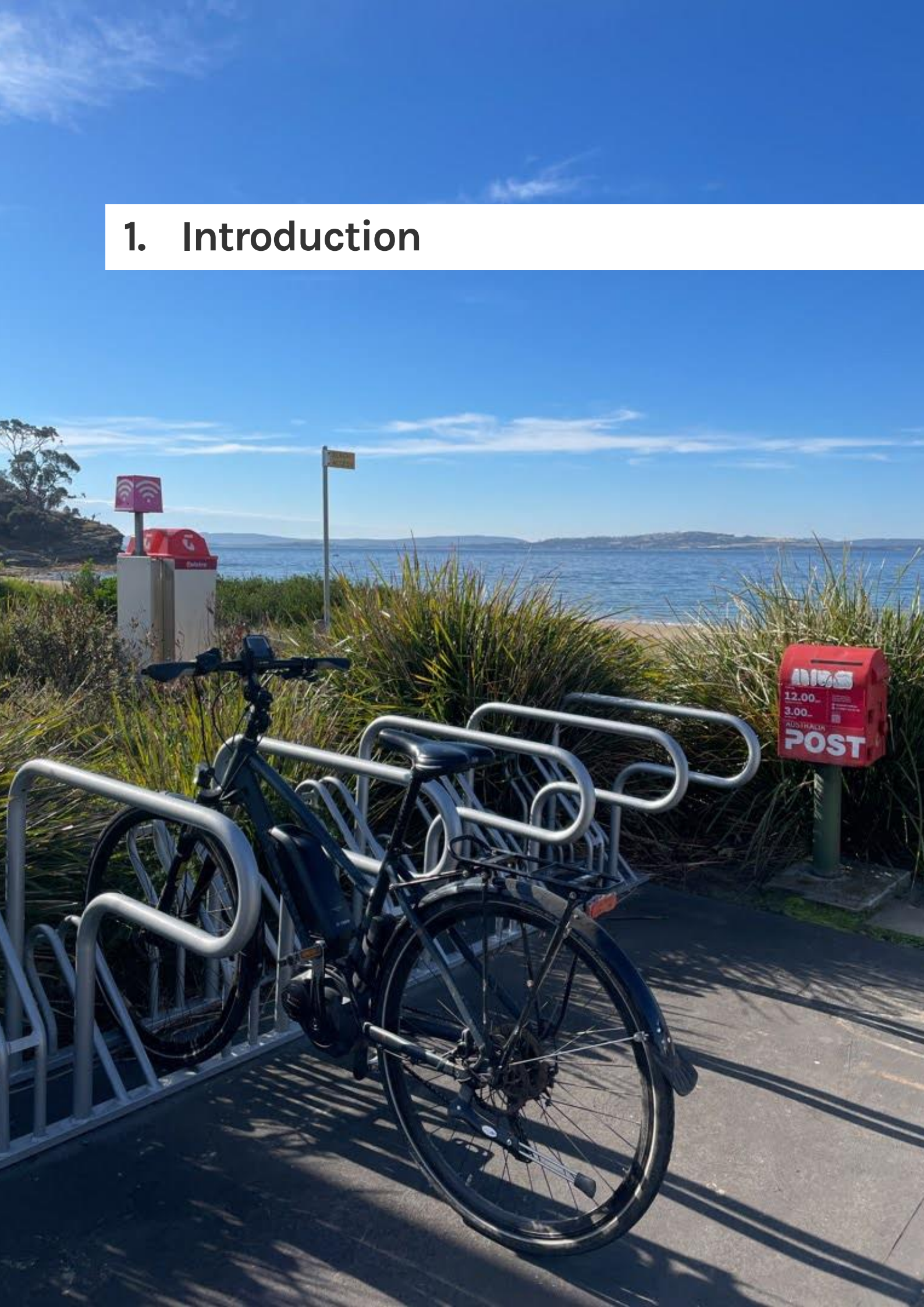


The Kingborough Cycling Strategy 2021-2030 seeks to make cycling an attractive choice for more people, whether for recreation or transport. The Strategy identifies a range of infrastructure upgrades, advocacy actions, policies and programs to help make Kingborough an even better place to cycle.

Increasing cycling participation and safety has long formed part of Kingborough and Tasmanian policy objectives. The State Government has committed to growing cycling participation in Tasmania, including in Kingborough.

The creation of a cycling network across Kingborough supports Council's aspiration for a safe, healthy and connected community. More opportunities to cycle offers a range of benefits to residents and visitors as shown in Figure 1.

The Kingborough Cycling Strategy is aimed at not only improving conditions for people who already ride, but to make cycling attractive to the 78% of the population who are *'interested but concerned'* (Figure 10). This group are interested in cycling but require higher levels of separation from motor vehicle traffic before considering cycling.

Figure 1 How cycling makes cities & towns better for everyone

1.1 Vision, objectives and scope

1.1.1 Vision

Kingborough is a great place to live and visit by making bicycle riding for recreation and transport easy, safe and comfortable.

1.1.2 Objectives

This vision will be met by the following objectives:

1. Developing and maintaining a connected network of trails, shared paths, cycleways and bike lanes that connect town centres, schools, residential areas, transport nodes, sporting hubs and adjoining local government areas.
2. Prioritising active travel in planning of all new developments and subdivisions including end of trip facilities.
3. Promote cycling and road safety.

The Kingborough Cycling Strategy will deliver a holistic set of reinforcing actions to make cycling an everyday transport and recreational choice for residents and visitors.

1.1.3 Scope

The scope of the plan includes the entire Kingborough municipal area, but has a stronger focus on the more populated regions. It has a combined focus on both recreation and transport cycling.

The Strategy has been designed for the different types of people cycling shown in Figure 2.

The development of the actions included in this Strategy have used the three key priorities of the Kingborough Strategic Plan 2020 – 2025, namely:

1. Encourage and support a safe, healthy and connected community
2. Deliver quality infrastructure and services; and
3. Sustain the natural environment whilst facilitating development for our future.

Figure 2 Who is this cycling strategy for?

Appendix 1 provides important background information on different cycling infrastructure typologies as well as transport data critical to the development of this Strategy.

1.1.4 Targets

Mode share targets are a helpful way for us to track our progress to increasing bike riding across Kingborough. We have developed mode share targets based on existing travel behaviour while accounting for projected population growth in the next 10 years.

Figure 3 shows the current mode share in 2021, with 82% of all trips by car and 0.5% by bike. The projections assume no change in commuting behaviour by 2031, but includes the forecast population growth for Kingborough. If the *business as usual* case becomes reality, this will add approximately 11,700 extra car trips onto Kingborough roads by 2031, due to projected population growth.

The *Cycling Strategy* scenario has been developed to offer an indication of how transport decisions change based on the improvement in the cycling network. By achieving these targets, Kingborough will not experience the increase in congestion and parking problems that may occur in the *business as usual* scenario.

The proposed target seeks to increase the amount of cycling by 2031, from a current low of 0.5% to 2% of all trips. Because of forecast population growth in Kingborough, a mode share of 72% in 2030 will have the same number of cars commuting everyday as there is in 2031 with an 82% mode share.

Due to the large proportion of Kingborough residents working in Hobart, it is expected that the largest travel changes will occur in non-work trips, such as shopping, social, and school trips.

It is important to note that the *Business as Usual* scenario is not a zero-cost option. Accommodating the forecast additional car trips, and cars owned, will likely require significant investment in upgraded and expanded roads and parking facilities. The expenditure to deliver *Business as Usual* will likely be much higher than that required to deliver the infrastructure required to facilitate the mode shift recommended under the *Cycling Strategy* scenario.

Should Kingborough's population forecasts become reality, additional travel trips will occur to, from, and through the municipality. The infrastructure built in the next 10 to 15 years will likely dictate how those people will undertake their travel trips, and the modes of transport they use to complete those trips.

By providing more transport choices, including a safe and convenient cycling network, existing and new residents will have a viable alternative to the car for some trips.

1.1.5 Evaluation and review

This Strategy will be reviewed every five years and the Action Plan will be reviewed annually.

The Kingborough Bicycle Advisory Committee will assist with the annual review and evaluation of strategy actions.

The Infrastructure Management Group – made up of key Council staff – will review progress on the Infrastructure Actions and assess capital works bids for each financial year accordingly.

As part of the ongoing evaluation and review process Council will pursue research opportunities and data collection such as local surveys and track counters to form a better understanding of ongoing active transport developments and trends in the municipality and the Greater Hobart region.

Figure 3 Mode share targets as percentage and total trips

Source: Greater Hobart Travel Survey and Kingborough Council forecasts

1.2 Strategic context

This section lists the broader strategic context and key State-wide and Kingborough specific plans, strategies, and reports that relate to *The Kingborough Cycling Strategy 2021-2030*.

It should also be noted that there is a strong connection between cycling and health and this Strategy indirectly supports a range of public and preventative health frameworks and measures to raise awareness and increase opportunities for active living.

1.2.1.1 Hobart City Deal Implementation Plan – October 2019

One of the main aims of the *Hobart City Deal* is for congestion to be reduced by decreasing the percentage of journeys to work made by car. *Park and Ride* locations have been identified. A grant fund was to be established in 2020 to support the creation of extension of bicycle routes that connect activity areas. The City Deal recommends investment in infrastructure for linkages and access for people on bikes and foot.

1.2.1.2 Channel Highway Corridor Study 2020

The Department of State Growth undertook a corridor study to investigate safety concerns and consider how the Channel Highway meets the current and future needs of the community. The community consultation found strong support for a dedicated cycling/walking pathway, upgrade and sealing of shoulders to 1.5m along the corridor and provision for walking and cycling at the bridge across North West Bay River.

1.2.1.3 Hobart Regional Arterial Bicycle Network Plan 2009

This Plan was developed by the five member Councils of Cycling South – Hobart, Glenorchy, Kingborough, Clarence and Brighton with input from the State Government. It identifies an arterial cycling network in Kingborough incorporating the Channel Highway, Roslyn Avenue, Algona Road, Sandfly Road and Huon Road.

1.2.1.4 Tasmanian Walking & Cycling for Active Transport Strategy 2009 (under review)

The Tasmanian Walking and Cycling for Active Transport Strategy outlines the Tasmanian Government's plan to create a more supportive and encouraging environment for pedestrians and cyclists. The Strategy recognises that cycling and walking are important transport options and will make our communities more liveable, better connected and healthier. As part of the Strategy, a *Principal Urban Cycling Network* was identified in population centres across Tasmania. In Kingborough it identified the Channel Hwy corridor between Beach Road, Kingston and Algona Road, Huntingfield.

1.2.1.5 Positive Provision Policy for Cycling Infrastructure, Department of State Growth, 2013

The policy provides a tool for ensuring that provision for cycling is considered and objectively evaluated at the commencement of State Government transport projects, and in the development of maintenance contracts.

1.2.1.6 Southern Tasmanian Regional Land Use Strategy 2010-2035

The strategy is a broad policy document that will facilitate and manage change, growth, and development within Southern Tasmania over the next 25 years. It aims to provide greater opportunities for integrating land use with transport, particularly public transport, and walking/cycling. It encourages walking and cycling as alternative modes of transport through the provision of suitable infrastructure and developing safe, attractive and convenient walking and cycling environments.

1.2.2 Kingborough

1.2.2.1 Kingborough Strategic Plan 2020 - 2025

The Plan is based on 3 key priorities:

1. Encourage and support a safe, healthy and connected community;
2. Deliver quality infrastructure and services; and
3. Sustain the natural environment whilst facilitating development for our future.

Projects identified in the Kingborough Cycling Strategy should be included for consideration and review as part of the preparation of the Annual Plan.

1.2.2.2 Kingborough Sports Precinct Plan 2020

The Sports Precinct Plan included a recommendation to *Prepare an Active Transport Plan to improve accessibility and connectivity within the urban area (and KSP).* This *Kingborough Cycling Strategy* will form a framework for the development of an *Active Transport Plan* for the Sports Precinct. This includes new shared path connections to and within the KSP.

1.2.2.3 Kingborough Bicycle Plan 2006

In 2006 Kingborough Council adopted the *Kingborough Bicycle Plan* which identified a network of cycling routes, paths and local links across Kingborough. This Strategy supersedes the 2006 Bicycle Plan.

1.2.2.4 Kingborough Land Use Strategy of 2019

The Kingborough Land Use Strategy is prepared so that it is consistent with the *Southern Tasmanian Land Use Strategy* but examines the local needs and directions in more detail. It encourages increased opportunities for bicycle use – in particular, targeting infrastructure gaps such as walking and cycling links.

2. Catering to all types of cycling

Kingborough enjoys an enviable mix of townships surrounded by a beautiful, unique natural environment of bushland and coast. The Cycling Strategy and proposed bike network capitalise on the opportunity presented by Kingborough's natural environment and cater to a diversity of different types of riding, detailed below.

2.1 Cycle tourism

Cycle tourism is one of the fastest growing sub-sectors of the tourism industry and has become particularly popular in Tasmania over recent years. By capitalising on Kingborough's unique environment, the *Cycling Strategy* can boost the local economy.

Cycle tourism includes multiday trips (cycle touring), which is an activity that has the potential to flourish in Kingborough, as it connects Hobart with Bruny Island and other parts of southern Tasmania with strong attributes for touring cyclists.

2.1.1 Off-road trails

Off-road trail riding is a popular tourist activity across Australia. Kingborough already has a large number of trails that are popular for tourist and recreation walking and cycling. Of the 42 existing tracks, 22 are permitted for cycle use as well. The Kaoota Tramway Trail and the recently completed Snug to Margate Trail are some of the more popular cycle trails.

The **Channel Trail** concept that is proposed to run for 20km between Kingston to Kettering has significant tourism potential and is a flagship project for this Strategy. If completed it would provide a dedicated cycling trail to the Bruny Island ferry terminal.

The Channel Trail concept involves several staged shared path projects that when all completed would link Kingston to Kettering. The individual projects are listed in Table 3 – Infrastructure Actions

Figure 4 shows the recently constructed Snug to Margate trail, which forms part of the Channel Trail concept

Figure 4 Snug to Margate Trail
Source: Tassie Trails

Studies consistently show that investing in off-road trails provides significant social and economic returns on its investment. They create new jobs in surrounding businesses that cater to tourism, including food and accommodation businesses. They are also an excellent way for visitors to experience and explore the unique environment, without creating increased demand on road infrastructure. Recent business cases for trails[1] in Victoria found that a Benefit Cost Ratio of 2.19 can be achieved, with close to 80 new full-time jobs generated.

2.1.2 Mountain Bike (MTB) riding

Tasmania has seen an explosion in MTB parks in recent years. It now forms a major tourist and recreation activity for Tasmania. MTB riding is undertaken along trail networks but also more increasingly through purpose-built parks.

The growth of e-Mountain bikes has also driven the popularity of the sport and recreation activity. Figure 5 shows an e-Mountain bike rider in action. This Strategy supports MTB riding by enhancing their access to tracks.

[1] https://www.yarraranges.vic.gov.au/files/assets/public/webdocuments/build-develop/projects-initiatives/yarra_valley_trail_-_economic_impact_assessment.pdf

Figure 5 e-Mountain bike rider

Source: Outside Online

Mountain Bike Park in Kingston

Kingston has an existing, popular MTB Park on the western edge of the sporting precinct. However, there are currently no safe paths for people to ride to the MTB Park, requiring visitors to drive to the Park or ride on an unprotected road. Connecting the MTB Park to the off-road network would improve access to the Park, particularly for younger riders and those not comfortable riding in mixed traffic.

Box 1 Mountain Bike Park in Kingston

2.2 E-bikes

The global electric bicycle (e-bike) market has grown substantially in the last decade. E-bikes are now the fastest growing segment of the booming electric vehicle sector and e-bike owners ride more often, and farther than other people on traditional bikes. The ability to maintain speed with less effort is central to e-bike's value proposition and holds particular appeal in Kingborough, which can be very hilly.

E-bikes offer the user quicker travel time, with less effort. E-bikes have been found to lessen some of the common barriers to conventional bikes, including the ability to overcome topographical challenges, physical limitations of the rider and arriving at work without perspiring. Moreover, e-bike owners report that being able to ride with greater loads (e.g. children or groceries) opens up greater possibilities for cycling, including for trips that would have been previously made by car. Figure 6 outlines some of the key benefits that e-bikes provide.

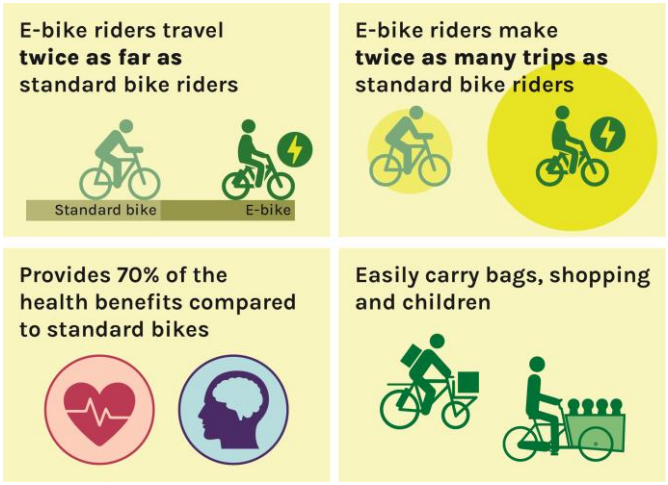


Figure 6 E-bike benefits[2]

E-bike riders ride more frequently than conventional bike users and each trip is significantly longer than conventional bike journeys. E-bike users also report replacing car trips more often, helping to reduce congestion, emissions, parking pressure and other negative impacts associated with car use.

E-bike sales in Australia have been doubling year-on-year recently, with 2020 growing even more rapidly than previous years.

Research suggests that the main barriers to a greater take up of e-bikes relate to a higher purchase price, security concerns of on-street parking, battery range and the safety of riding on streets without adequate bicycle infrastructure.

[2] https://sensibletransport.org.au/wp-content/uploads/2019/11/E-Bikes-IST-CoM-7.08.18_v2_LR.pdf

Figure 7 provides an image of a modern e-bike. Such bikes are generally capable of travelling ~80km between charges. A growing range of e-bike models allow for users to carry cargo, multiple children, as well as dual batteries for extended range.

Figure 7 Modern e-bike

E-bikes have the potential to increase the attractiveness of cycling in Kingborough, for both transport and recreation. E-bike touring is growing in popularity, and Kingborough's location offers a critical connection between central Hobart and tourism hotspots such as Bruny Island.

E-bikes could reduce the perceived distance to reach destinations within the built-up area of Kingston, making trips between Blackmans Bay and Huntingfield to the Kingston CBD a viable and attractive alternative to the car.

Other jurisdictions that have actively sought to boost e-bike ridership have undertaken some or all of the following actions:

- Building a high-quality, separated cycle network
- Increasing e-bike awareness through come-and-try days
- Increasing e-bike ownership via subsidy programs and salary sacrificing
- Increase Council's e-bike fleet and use.

2.3 Road cycling for recreation/fitness/sport

Kingborough has an active road cycling community. The hilly terrain, relatively quiet roads, and proximity to nature make Kingborough and south-eastern Tasmania popular for road cycling and recreation. Road cycling is often done with specialised clothing and road bikes. Group rides are common in Kingborough. The Channel Highway, Sandfly Road, Howden Road, Tinderbox Road, and Huon Road are some of the more popular road cycling roads within Kingston.

Figure 8 Road cycling – Bonnet Hill, Kingston

Source: Bicycle Network

2.4 Developing a network that supports transport cycling

Growing opportunities for Kingborough residents and visitors to make short to medium transport journeys by bicycle is a core objective of this Strategy. New and novice transport cyclists are particularly sensitive to the riding environment provided.

Figure 9 offers a snapshot of how different types of infrastructure influence people's confidence levels.

Only 6% of people say they feel confident riding on a road in traffic without bicycle infrastructure. When provided with protected bicycle lanes, separated from motor vehicles, 83% of people say they feel confident.[3] This information has been used to inform the network development recommendations included in this Strategy.

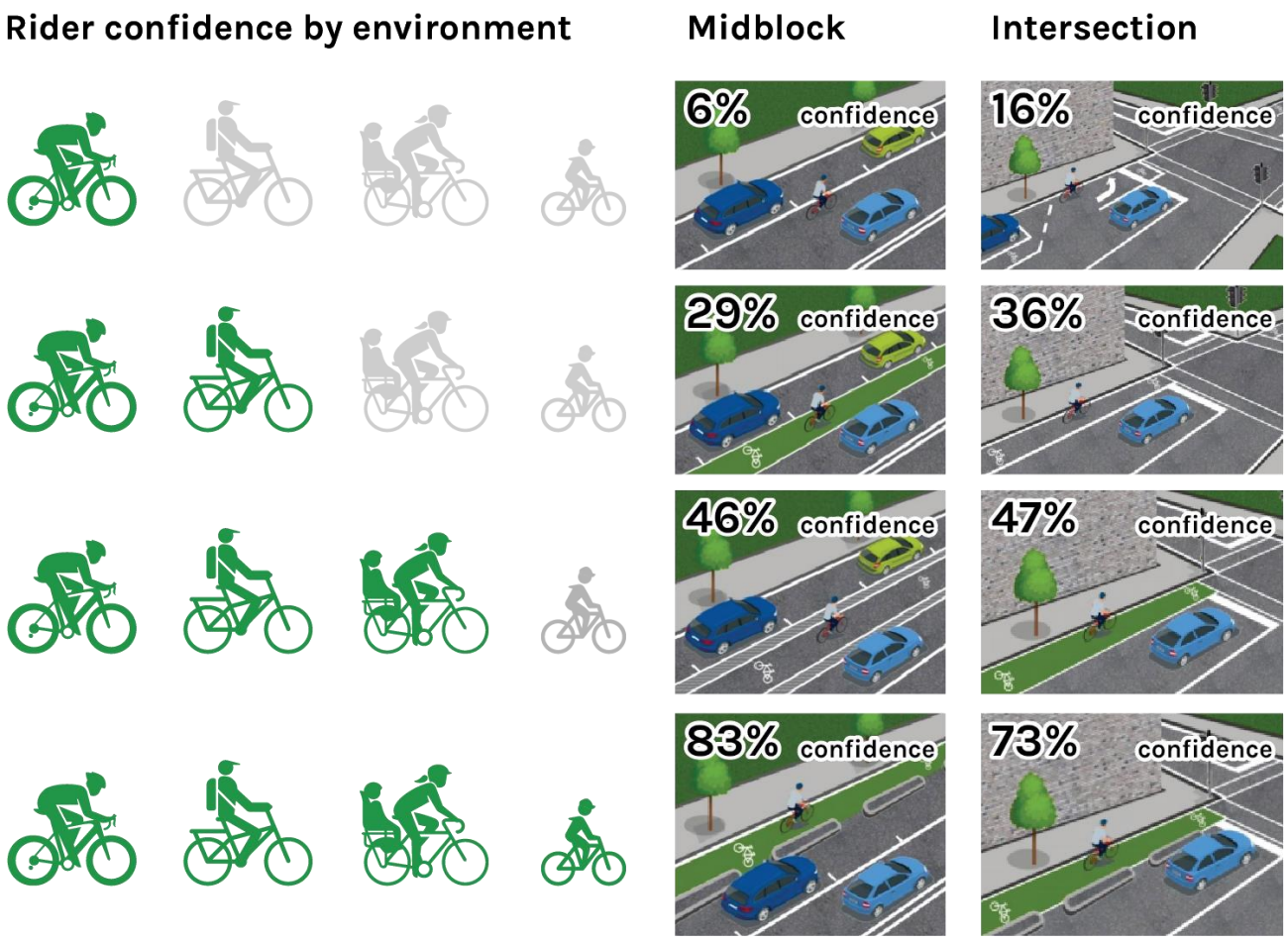


Figure 9 Riding confidence – different infrastructure

Only 6% of people say they feel confident riding on a road in traffic without bicycle infrastructure. Infrastructure that improves rider safety to the maximum extent possible should be prioritised, to increase both safety and confidence.

[3]https://www.researchgate.net/publication/350125778_The_potential_for_bike_riding_across_entire_cities_quantifying_spatial_variation_in_interest_in_bike_riding?fbclid=IwAR0V6_CwdNsxkw7kM3ju8rtgswbg3VOP3mWtOu_sxmEk4lwJTrq2-bf1cnY

2.5 Understanding different types of cyclists

Cycling planning has identified four different types of cyclists, shown below in Figure 10, and outlined briefly below:

- *Strong and fearless* riders are those who are comfortable riding in any road environment, including mixed-traffic environments.
- *Enthused and confident* cyclists are comfortable in most traffic environments but will seek out separated cycling infrastructure and low-traffic alternative routes.
- *Interested but concerned* make up the majority of the population. They are unlikely to consider riding unless trips can be made along safe and separate cycling infrastructure. They are likely to ride shorter distances than the previous two groups.
- '*No way no how*' are people that are not interested in cycling at all, regardless of the relative ease or safety. They are also people who may not be physically able to ride a bike.

Figure 10 shows the results of recent Australian (2021) research to estimate what proportion of the population aligns with each type.

The results show that only 3% of the population identify as either *'Strong and fearless'* or *'Enthused and confident'*. Almost 80% of the survey respondents identified as '*Interested but concerned'*, while only 16% said they would not consider cycling under any circumstances.

These results align with the infrastructure typologies shown in Figure 9. The majority of the Kingborough population is only likely to consider cycling for transport or recreation trips when separate cycling infrastructure is provided, and where it connects to points of interest. Creating connected and separated cycling network is vital to improving the quality of life in Kingborough, allowing more people to cycle, rather than drive to their destination.

The majority of the Kingborough population is only likely to consider cycling for transport or recreation trips when separate cycling infrastructure is provided, and where it connects to points of interest

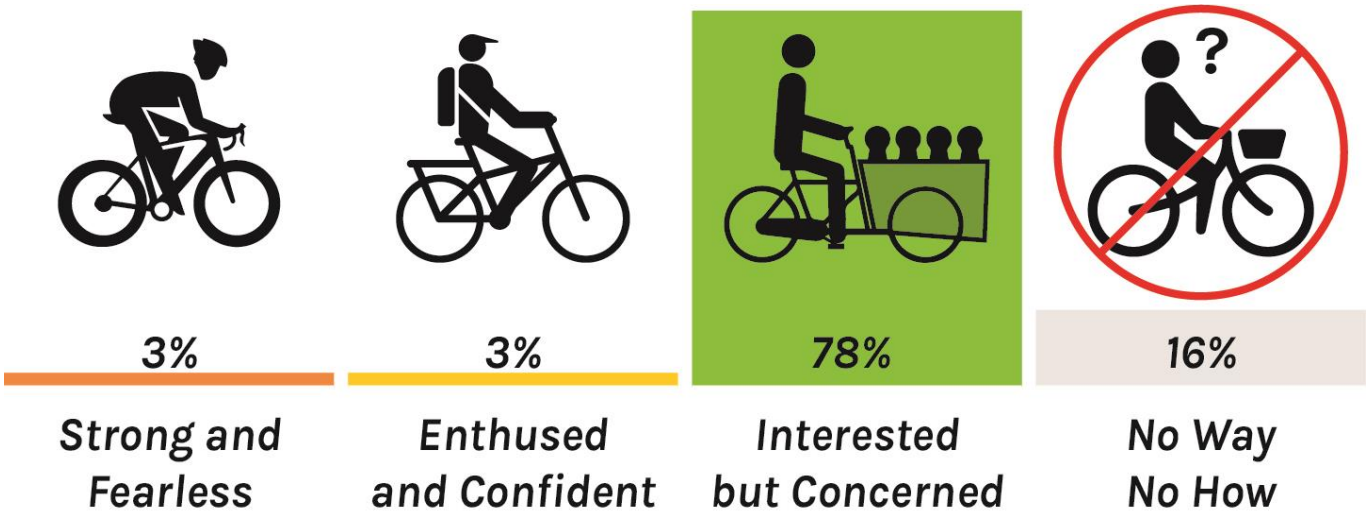


Figure 10 Four types of cyclists

Source: City of Portland (USA) and Pearson et al (2021) https://doi.org/10.1101/2021.03.14.21253340

2.6 Cycling typologies

There are a variety of different types of bicycle infrastructure. Each has a role to play in creating a coherent network. Figure 11 offers a guide to infrastructure selection, based on the *speed* and *volume* of motorised traffic. When roads carry large volumes of fast-moving traffic, separated infrastructure is recommended. Quiet streets with low-speed limits may not require any dedicated cycling infrastructure, other than some simple wayfinding signage. See **Appendix 1 – Infrastructure typologies** for more information on typologies.

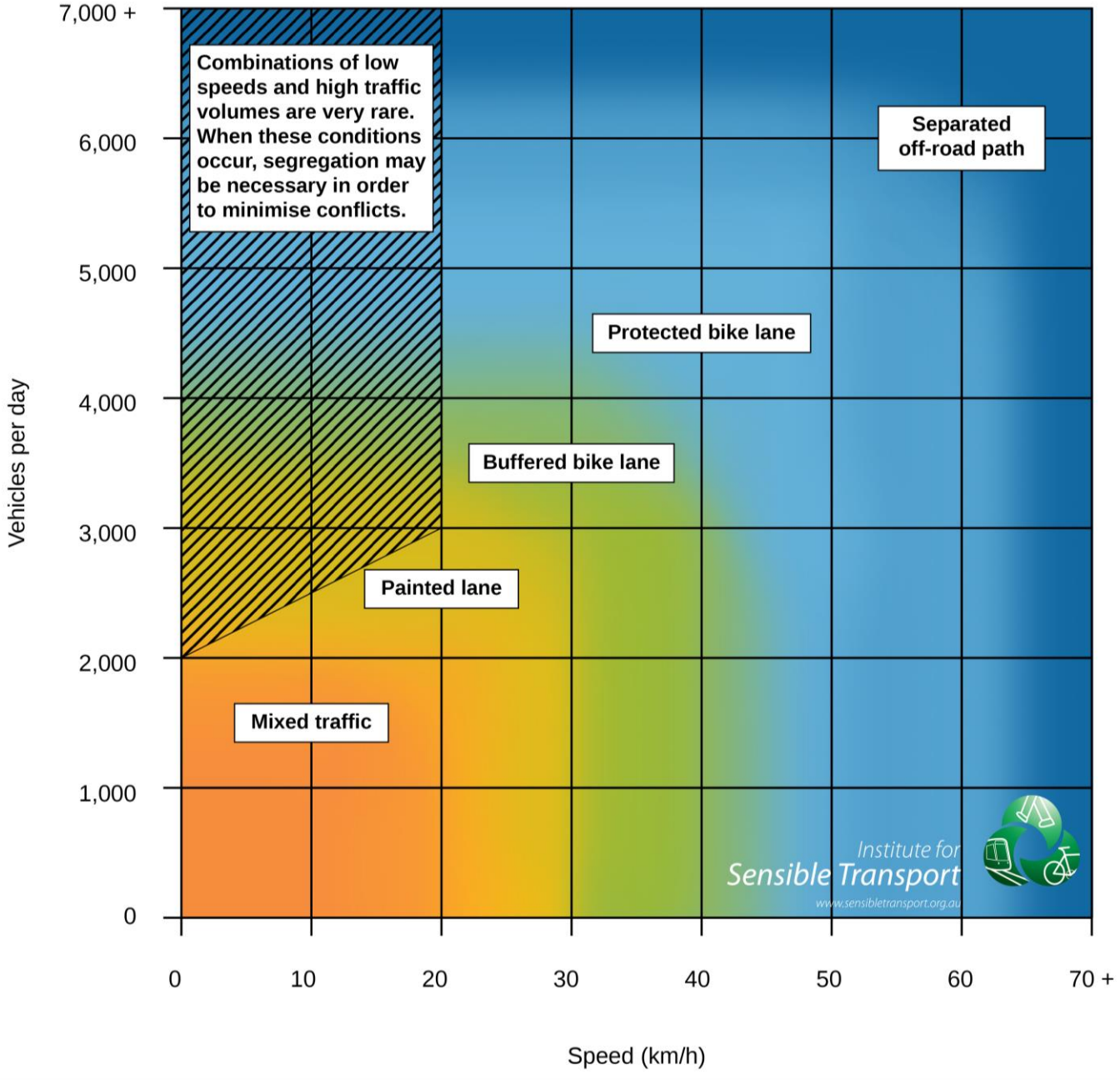


Figure 11 Choosing the right type of bicycle infrastructure

3. Network Plan

This section presents the aspirational Network Plan for Kingborough. This Plan was developed via a multi-stage process. Initially, a draft plan was developed by the Kingborough Bicycle Advisory Committee. The network was then independently reviewed by the Institute for Sensible Transport. This review included a detailed data analysis, including ABS Census and household travel survey data.

Two site visits to inspect on-ground conditions were also undertaken. Refinements were made to ensure maximum connectivity to key destinations and the Kingborough residential areas. Consideration was made for technical feasibility, including topography, street width, and budget. **Appendix 1** provides critical information on infrastructure typologies and the foundational data upon which the actions have been developed.

3.1 Snapshot of network size and cost

The Network Plan identifies cycling routes that connect to major hubs/destinations, including schools. In most cases the routes need to be made safer and more accessible through the upgrade or installation of cycling infrastructure.

Below are general definitions of the basic infrastructure typologies, which are further defined in Appendix 1:

- *On-road*: Ideally on-road bicycle lanes that are no less than 1.4m wide with a white painted line separating motor vehicles from cyclists, and bicycle logos and bike lane signage. On rural roads infrastructure may consist of improved sealed shoulders and linemarking.
- *On-road – protected bike lanes*: Physically separated on-road bike lanes that are built within the road carriageway, with a physical barrier separating cycling lanes and motor vehicle lanes.
- *Off-road shared path*: Shared paths are dedicated off-road infrastructure for pedestrians and cyclists. Cyclists are not the dominant mode and are expected to share the space with pedestrians. Shared paths should be a minimum of 2.5m, ideally 3m in width.
- *Slow streets*: Slow streets are shared environments where no dedicated space for cycling is required, due to low traffic volume and speed.
- *Shared walking paths*: Paths that already exist that connect two streets, such as at the end of a cul-de-sac, upgraded to facilitate people on bicycles. This might include better signage, widening or pram ramps.

Table 1 – Proposed network distance and estimated costs, provides an overview of the existing network in terms of distance for different infrastructure types, as well as the *proposed* distance, and high-level costs. Two approaches to cost have been used, *heavy* and *light*, which are described below:

1. Heavy: A cost approach in which it has been assumed that concrete and other relatively permanent materials have been used in construction, potentially also including more extensive works, such as drainage alterations.
2. Light: Lighter, more temporary *'pop up'* materials have been preferred. In general, these provide a similar impact in terms of the degree of separation between people on bikes and motor vehicles, but using upright traffic dividers and bollards for protection on road lanes and compacted gravel instead of concrete for shared paths. This approach is both quicker and cheaper.

3.2 Network design

The proposed Kingborough Bike Network is illustrated in Figure 12, with a zoomed in map detailing the proposed network for the more populated areas of Kingston and Blackmans Bay (see Figure 13). This map also shows the locations of the Park and Ride facilities that will be built in the area.

Figure 14 offers a spatial analysis of proximity to cycling infrastructure or a cycling environment when the proposed network is implemented. This indicates many parts of the most populated areas of Kingborough will be near cycling infrastructure or a cyclable environment, mostly within 100m – 200m.

Table 1 – Proposed network distance and estimated costs

Infrastructure type		Existing	Proposed	Total distance	Cost (heavy)	Cost (light)
Cycling infrastructure	**On-road**	6,345m	33,002m	39,347m	$16,501,106	$3,300,221
	On-road protected	0m	1,360m	1,360m	$2,176,139	$408,026
	Off-road shared path	14,045m	36,245m	50,290m	$26,458,712	$18,122,405
Cyclable environments	**Slow street**	0m	2,253m	2,253m	$1,126,676	$112,668
Total		**20.4KM**	**73KM**	**93.2KM**	**$46,262,632**	**$21,943,320**

Figure 12 Proposed bike network for municipality

** The Strategy notes this network map is conceptual and subject to a feasibility study to assess all possible route alignments, environmental considerations and includes comprehensive stakeholder engagement. Where possible the conceptual proposed network map has been amended to utilise Crown Land in this area.*

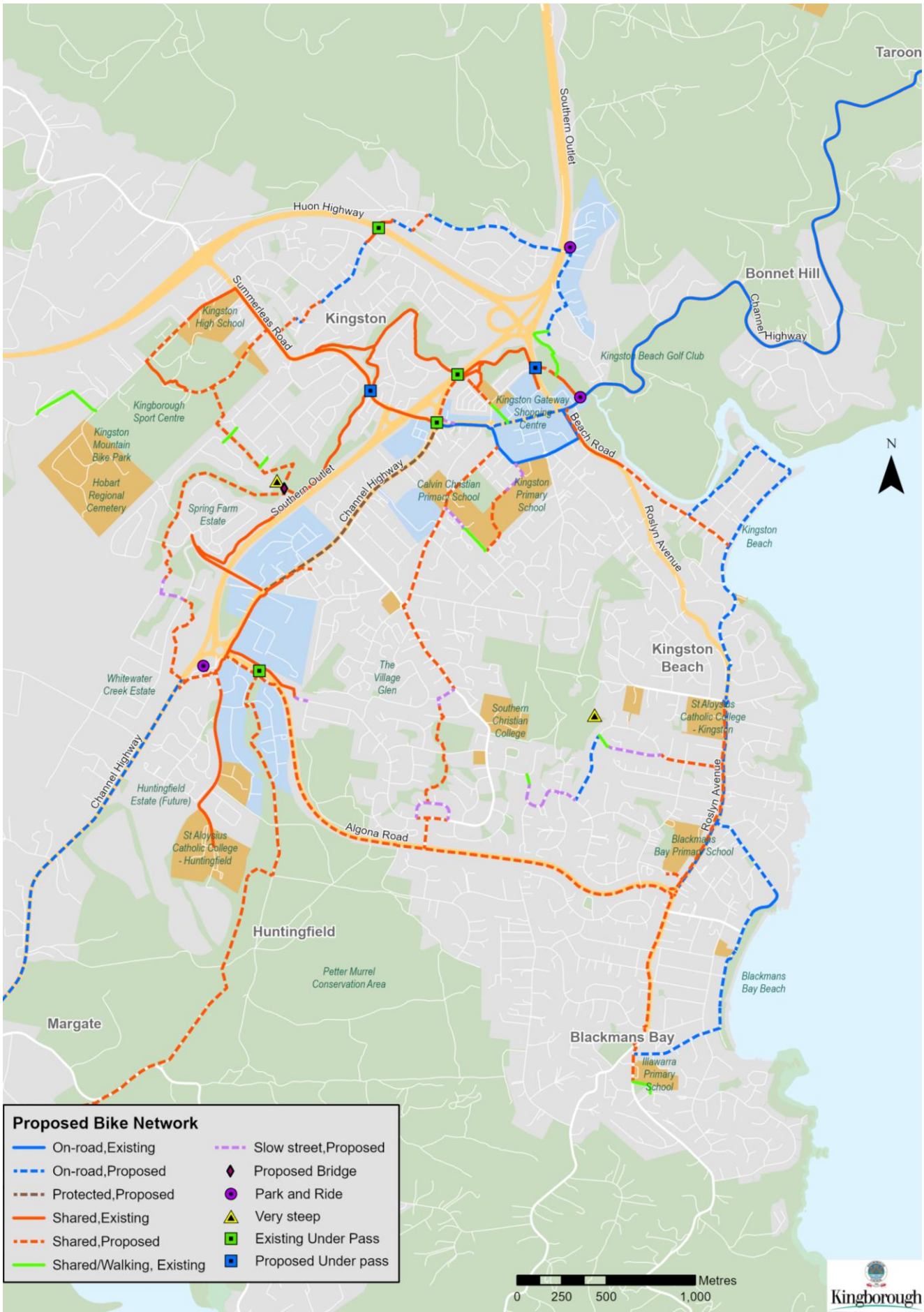


Figure 13 Proposed Bike Network, Kingston

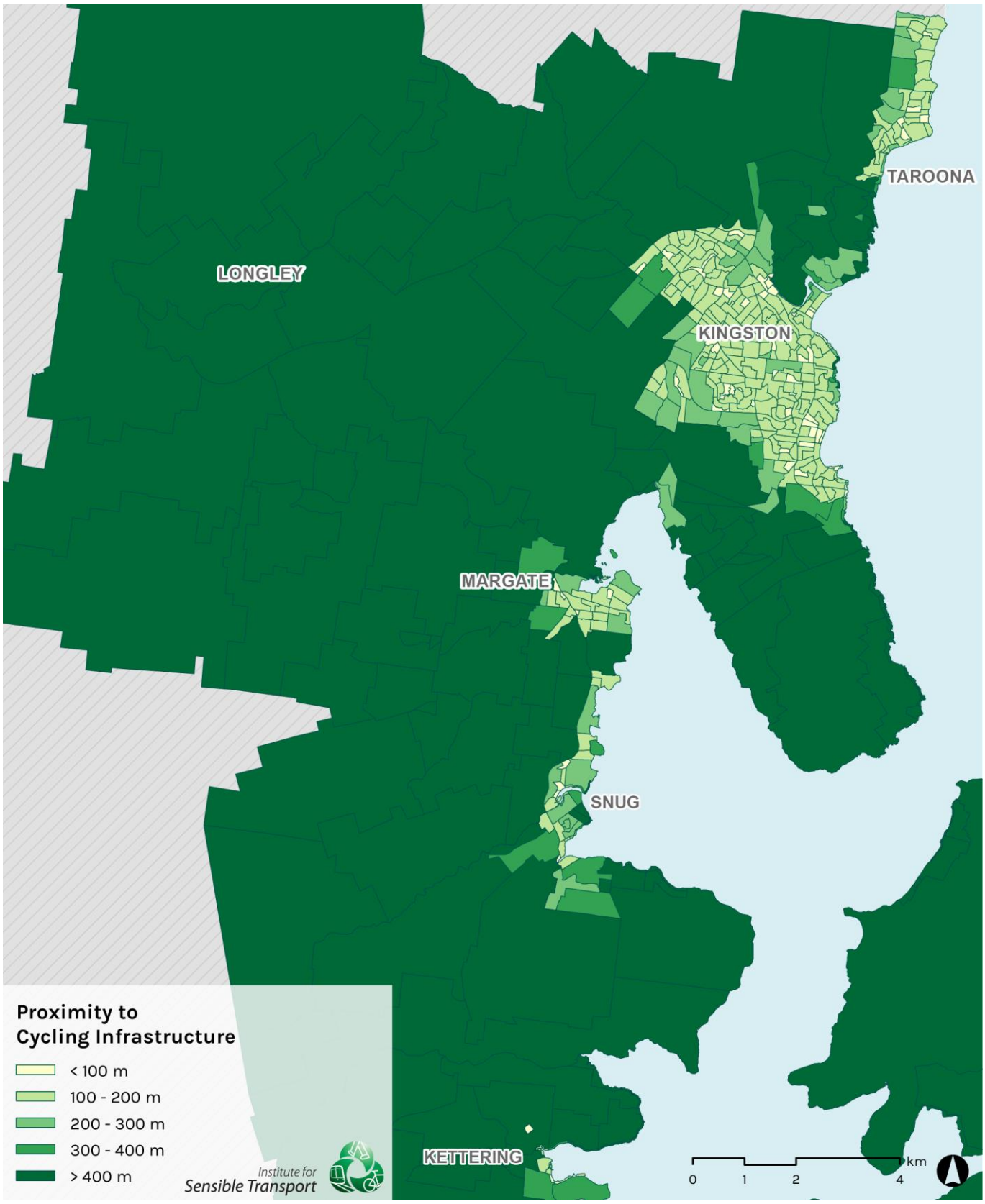


Figure 14 Proximity to cycling infrastructure and cyclable environments

4. Action Plan and Implementation

Implementation is often the most difficult aspect of transport planning. Translating endorsed objectives and actions into physical changes can be difficult and few areas of public policy can be as contentious for local government as transport. This section distils the proposed actions from this Strategy, broken down into each objective.

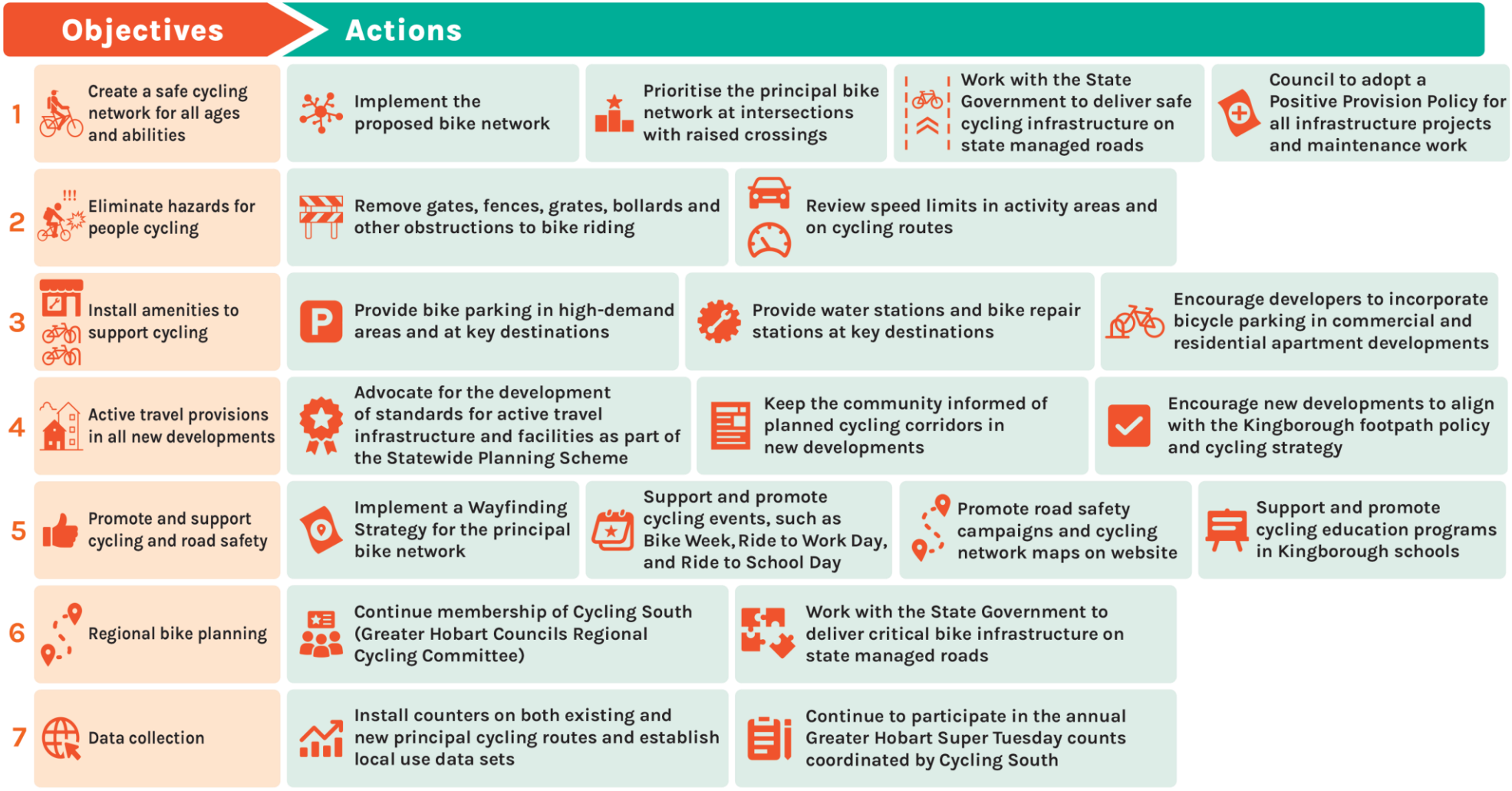


Figure 15 Objectives and actions

Table 2 and Table 3 – Proposed Actions:

The action tables provide a list of the key actions proposed for the life of the Strategy to meet the strategic objectives and initiate the implementation of the proposed cycling network. Actions and priorities are subject to change and adjustment dependant on available funding opportunities and support from other levels of Government. The proposed actions and priority of actions will be reviewed annually.

Suggested timeframes accompany each action, where:

1. Ongoing = an ongoing action for the life of the plan or until the objective is achieved
2. Short = 0 – 5 years
3. Medium = 5 – 10 years
4. Long = 10 or more years.

Suggested costs accompany each action, where:

1. Small = Less than $100,000
2. Medium = $100,000 - $500,000
3. High = $500,000 – $1,000,000
4. Very High = More than $1,000,000.

Proposed funding sources accompany each action, where:

1. Op = Operational expenditure
2. Cap = Future capital expenditure
3. Ex = Externally funded, including grant funding.

Table 2 – Strategic & Advocacy Actions

The proposed strategic and advocacy actions address the below objectives:

2. Eliminate hazards for people cycling
3. Install amenities to support cycling
4. Active travel provisions in all new developments
5. Promote and support cycling and road safety
6. Regional bike planning
7. Data collection

Action	Project	Description	Time frame	Cost	Lead Responsible Authority	Other Responsible Authority	Funding Source
1	**Ride to School Day and Ride to Work Day**	Promote National Ride to School Day and Ride to Work Day through Council communication channels. Assess schools for rideability and barriers to greater cycling uptake.	Ongoing	Low	Council		Op
2	**Commuter Counts**	Continue to collect cycling data by participating in the annual Commuter Counts in March each year.	Ongoing	Low	Council		Op
3	**Install usage counters**	Install counters to collect usage data on cycling routes and create an active transport data set for the municipality.	Ongoing	Low	Council		Op
4	**Bike Week**	Support Bike Week events to encourage participation in cycling, such as the Kingborough Treasure Hunt.	Ongoing	Low	Council		Op
5	**Road safety audits to eliminate hazards for people cycling**	Review road crossings on shared paths and around schools to assess whether safety improvements can be made, such as wombat crossings and pedestrian refuges. Where kerb outstands create 'pinch points' identify options for removing the hazard. Review speed limits in activity areas and on cycling routes.	Ongoing	Low	Council		Op

Action	Project	Description	Time frame	Cost	Lead Responsible Authority	Other Responsible Authority	Funding Source
6	**Active travel provisions in new developments**	Advocate for the development of standards for active travel infrastructure and facilities. Encourage new developments and subdivisions to align with the recommendations of the *Kingborough Footpath Policy* and the *Kingborough Cycling Strategy* endorsed by Council. Where appropriate require a 2.5m wide shared path alongside all collector roads and waterways in new developments. Encourage developers to incorporate bicycle parking in commercial and residential apartment developments.	Ongoing	Low	Council	Tasmanian Planning Policy Unit and Tasmanian Planning Commission	Op
7	**Promote safe cycling in Kingborough**	Promote road safety campaigns developed by RSAC (Road Safety Advisory Council) and the Kingborough Community Safety Committee. Support and promote cycling education programs run by external agencies to provide bicycle education that increases skills and confidence.	Ongoing	Low	Council		Op
8	**Promote cycling routes and places to ride**	Promote cycling-related tourism through provision of maps and online information about routes and destinations, such as Bruny Island.	Ongoing	Low	Council		Op
9	**Advocate for bike racks on buses**	Advocate to MetroTas and the State Government to provide bike racks on buses on all local and regional bus routes.	Short	Low	Council	State Growth	Op
10	**Wayfinding Strategy – signage and mapping**	Develop and implement a Wayfinding Strategy, including improved signage and mapping for active travel throughout Kingborough.	Short	Low	Council		Op
11	**Positive Provisioning Policy**	Adopt a Positive Provisioning Policy to incorporate cycling-friendly design in all Council projects.	Short	Low	Council		Op

Table 3 – Infrastructure Actions

The proposed infrastructure actions address the below strategic objectives:

1. Create a safe cycling network for all ages and abilities
2. Eliminate hazards for people cycling
3. Install amenities to support cycling

Action	Project	Description	Time frame	Lead Responsible Authority	Other Responsible Authority	Cost	Funding source
		Ongoing Actions					
12	**Maintain existing bike network**	Ensure the principal bicycle network is reviewed annually to ensure bicycle infrastructure is safe and surfaces are free of significant bumps, holes, or other impediments. Any issues should be included in road resurfacing or other road maintenance schedules.	Ongoing	Council	State Growth	N/A	Op
13	**Bike parking**	Install bike parking based on an annual audit and community surveying and at key bus stops.	Ongoing	Council	State Growth	Low	Op
14	**Water stations and bike repair stations**	Install water fountains and bike repair stations based on an annual audit and community surveying.	Ongoing	Council		Low	Op
15	**Channel Hwy sealed shoulders – Kingston to Kettering**	Liaise with Department of State Growth to advocate for road upgrades along the Channel Highway that include 1.5m sealed shoulders.	Ongoing	State Growth	Council	Low	Op
16	**Mountain bike park improvements**	Continue to seek opportunities and funding to upgrade the facilities at the Kingston Mountain Bike Park to bring it to contemporary standards.	Ongoing	Council		Low	Ex
		Short Term Actions					
17	**Channel Trail – Kingston to Margate**	Investigate and advocate for a shared path from Huntingfield to the end of the existing shared path in Margate.	Short	State Growth	Council	Low	Cap / Ex

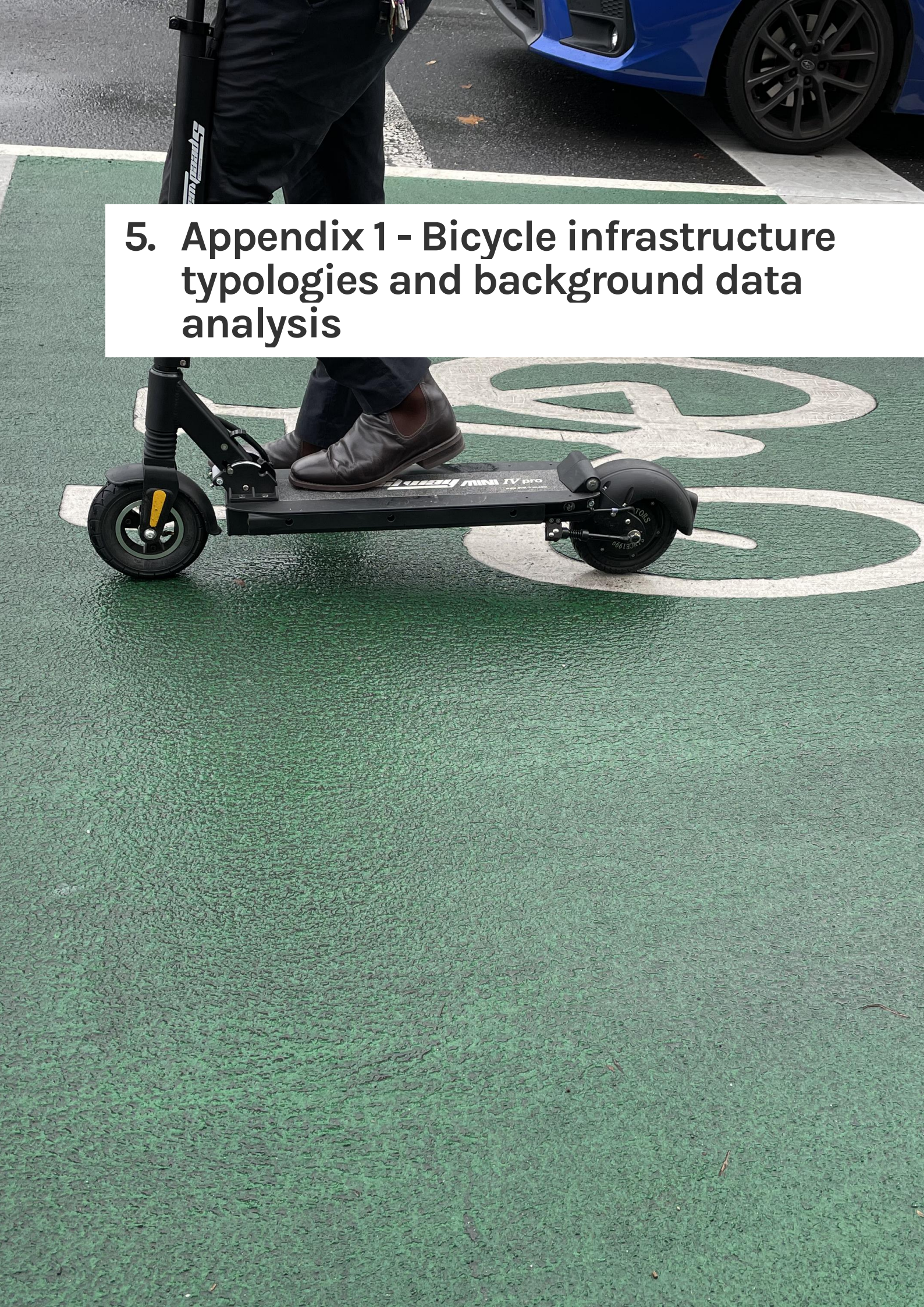
Action	Project	Description	Time frame	Lead Responsible Authority	Other Responsible Authority	Cost	Funding source
18	**Algona Road**	Investigate and advocate for a shared path on the southern side of Algona Road between Roslyn Avenue and Huntingfield.	Short	State Growth	Council	Low	Cap / Ex
19	**Firthside to Summerleas**	Construct a mixed on-road and shared path route between Kingston High School and the Firthside Park & Ride.	Short	Council	State Growth	Medium	Cap / Ex
20	**Huntingfield Park & Ride Connections**	Construct shared path and safe crossings from existing shared paths to the Huntingfield Park & Ride.	Short	Council	State Growth	Medium	Cap / Ex
21	**Taroona – Channel Hwy**	Upgrade on-road cycling facilities along Channel Highway through Taroona.	Short	Council	State Growth	Medium	Cap / Ex
22	**Spring Farm to Sports Precinct**	Construct a shared path from the existing Whitewater Creek path, north to the sporting precinct.	Short	Council		Medium	Cap / Ex
23	**Huntingfield to Kingston CBD – Channel Hwy**	Advocate and seek funding for protected cycling infrastructure along Channel Highway, between Huntingfield and Kingston.	Short	State Growth	Council	Medium	Ex
24	**Roslyn Avenue - Kingston Beach to Blackmans Bay**	Investigate options for an uphill bicycle lane from Algona Road to Jindabyne Road. Investigate a shared path on the western side of Roslyn Avenue, including safe intersection upgrades.	Short	Council		Low	Cap
25	**Kingston to Kingston Beach**	Investigate options and pursue opportunities for a shared path between Kingston and Kingston Beach.	Short	Council	Private Landowners	Low	Cap / Ex
26	**Channel Trail – Snug to Lower Snug**	Construct a shared path between Snug and Lower Snug, starting from the existing shared path in Snug.	Short	Council	State Growth	Very High	Cap / Ex
		Medium Term Actions					
27	**Taroona Safe Route to School**	Construct a mixed on-road and shared path route along Flinders Esplanade to Taroona Primary and High Schools, including modal filters and safe crossings.	Medium	Council	Department of Education	Medium	Cap

Action	Project	Description	Time frame	Lead Responsible Authority	Other Responsible Authority	Cost	Funding source
28	**Sandfly Road – sealed shoulders**	Improve on-road cycling infrastructure along Sandfly Road.	Medium	Council	State Growth	High	Cap / Ex
29	**Blackmans Bay Beach Connections**	Connect Tinderbox Road and Blowhole Road to Ocean Esplanade with cycling infrastructure.	Medium	Council		Medium	Cap
30	**Blackmans Bay Shops Connection**	Provide a cut-through path from Roslyn Avenue and the Blackmans Bay Shops.	Medium	Council	Private Landowners	Low	Cap
31	**Roslyn Avenue – Algona Road to Illawarra**	Investigate providing a shared path from Algona Road to Illawarra Primary School.	Medium	Council		Low	Cap
32	**Gormley Drive and Kingston View Drive**	Link a shared path from Summerleas Road to the Sporting Precinct via the Twin Ovals.	Medium	Council		High	Cap
33	**Margate to Dru Point**	Investigate a shared path link from Margate to Dru Point.	Medium	Council	Private Landowners	Low	Cap
34	**Margate local pathways**	Investigate local access pathways and linkages for upgrades and slow street implementation in Margate.	Medium	Council		Low	Cap
35	**Snug local pathways**	Investigate local access pathways and linkages for upgrades and slow street implementation in Snug.	Medium	Council		Low	Cap
36	**Redwood Road to Algona Road**	Investigate a shared path from the Maranoa Heights Reserve paths to Algona Road.	Medium	Council	State Growth	Low	Cap
37	**Channel Trail – Lower Snug to Kettering**	Investigate a shared path between Lower Snug and Kettering.	Medium	State Growth	Council	Low	Cap / Ex
		Long Term Actions					
38	**Lower Snug to Coningham**	Construct a shared path between Lower Snug and Coningham.	Long	Council		High	Ex / Cap
39	**Redwood Road to Kingston CBD**	Investigate a shared path from Lorikeet Drive to the Kingston CBD.	Long	Council		Low	Cap

Action	Project	Description	Time frame	Lead Responsible Authority	Other Responsible Authority	Cost	Funding source
40	**Longley to Neika – sealed shoulders**	Improve on-road cycling infrastructure on Huon Road between Longley and Neika.	Long	Council		High	Cap / Ex
41	**Harris Ct to Sherburd Ct path**	Construct a path linking Harris Court to Sherburd Court.	Long	Council	Department of Education	Medium	Cap / Ex
42	**Tingira Road to Ash Drive link**	Investigate a shared path and/or on-road improvements, linking existing local tracks to Roslyn Avenue.	Long	Council		Low	Cap
43	**Ferry Road**	Investigate improving active transport infrastructure along Ferry Road to Bruny Island Ferry Terminal.	Long	State Growth	Council	Low	Ex

Figure 16 shows the proposed staging of bike infrastructure across Kingborough.

Figure 16 Infrastructure Priority



5. Appendix 1 - Bicycle infrastructure typologies and background data analysis

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Appendix 1 Bike Infrastructure Typologies and Data Analysis

Kingborough

Developed for the Kingborough Cycling Strategy

February 2022

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1. Infrastructure typologies

The purpose of this section is to provide an overview of different types of bicycle infrastructure, design principles and general guidance on factors to consider when selecting the infrastructure type.

1.1 Design principles

The design principles for each infrastructure type provide an overview of good practise design for developing cycling infrastructure and cyclable environments. These principles are drawn from practitioners' guides, including the *Cycleway Design Toolbox* by Transport for NSW, and provide guideline information for decision makers and designers.

1.2 On-road – mixed traffic

1.2.1 Sealed Shoulders

Sealed shoulders are demarcated road space, on the edge of travel lanes, which cyclists may use, but are not dedicated cycling infrastructure. They may be suitable for cycling when at least 1.5m wide with a maximum 10mm aggregate seal. Where space is limited, and only one sealed shoulder is possible, this should be uphill, to allow slow moving cyclists more space.

On rural roads with posted speeds above 50km/h, wide sealed shoulders offer some safety benefit by allowing cyclists to ride out of the traffic flow. In built up areas, sealed shoulders are not appropriate, as parked cars limit the ability of cyclists to use these shoulders. Figure 1 provides an example of a sealed road shoulder, with rumble strips to warn drifting motorists to keep within the travel lane.

Figure 1 Sealed road shoulder

1.2.2 Sharrows

Sharrows are bicycle stencils painted onto the road surface, with two chevrons above. They are intended to indicate to motorists that the expectation is that motorists share the space with people on bikes. Sharrows are not dedicated bicycle infrastructure, but are useful in certain circumstances where space is not available for dedicated infrastructure and traffic volumes and speeds are low. Additionally, sharrows can be useful for wayfinding. Figure 2 shows an example of sharrows on a quiet residential street.

Figure 2 Sharrows

http://cyclingchristchurch.co.nz/2014/06/13/adelaide-sharrows/

1.2.3 Slow streets

Slow streets are shared environments in which all road users are encouraged to negotiate. In general, it is the intention that motorists use the street as a *'guest'* with walking and cycling having priority.

Slow streets have become popular in response to the COVID-19 pandemic as a way of providing active transport options with safe physical distancing. They provide a low-cost method of increasing actual and perceived safety. Slow street treatments involve reducing speed limits to 30km/h or less and installing signage indicating that motorist are to provide priority to active modes.

Slow streets are not a recommended treatment for through traffic streets, and they should be reserved for cul-de-sacs and other very low volume streets. In the *Kingborough Cycling Strategy*, slow streets have been recommended for cul-de-sacs and other non-through streets which connect to the existing off-road walking network, enhancing safety and active transport permeability. They have the additional benefit of allowing streets to become part of the public realm for non-transport activity such as sports play (e.g., street cricket) and socialisation. Figure 3 shows the signage appropriate for indicating a slow street and its connectivity to other parts of the cycling network.

Figure 3 Slow street signage

Figure 4 provides an illustration of the sign used in the Netherlands to indicate a shared space environment, which is used on quiet residential streets with very low traffic volumes.

Figure 4 A 'living street' sign, The Netherlands

1.2.3.1 Slow streets design principles

- Slow streets should have a speed limit not exceeding 30km/h.
- Slow streets should have 'watch for cyclists' signs installed at road thresholds.
- Slow streets should have children crossing, or similar, signs installed at road thresholds.
- Slow streets should have 'slow' signs installed at regular intervals of at least every 100 metres.

1.2.4 On-road – painted lane

On-road bike lanes are at least 1.5m wide with a white painted line separating motor vehicles from cyclists, and bicycle logos and bike lane signage. They provide a low level of separation between riders and motor vehicles. Motor vehicles are prohibited from parking in bike lanes. Painted lanes are most suitable for streets with low traffic volumes and speeds below 50km/h. Figure 5 shows a painted bike lane between parking bays and travel lane, which should be avoided where possible, due to the risk of car dooring.

Figure 5 Painted bike lane

1.2.4.1 Painted lane with buffer

Painted buffers can provide a higher degree of separation from motor vehicles. Buffers can be on either or both sides of the painted lane, depending on context. Where kerbside parking is permitted to the left of a painted lane, buffers can provide space so cyclists may ride to the right of the 'door zone'. Where speeds or traffic flows are higher, buffers between motor vehicle lanes and painted lanes can provide greater space, increasing actual and perceived safety. Figure 6 shows a buffered bike lane, providing safe space between the car door zone and bike lane.

Figure 6 Buffered bike lane

Source: Philip Mallis (Flickr)

1.2.4.2 On-road bicycle lane design principles

- Speed limits on roads with on-road, painted bicycle lanes should generally not exceed 50km/h.
- On-road bicycle lanes should be 1.5 metres wide, on both sides of the street.
- Where space is insufficient, lanes below 1.5 metres can be acceptable. Narrow lanes still permit safer outcomes than no bicycle lane.
- Parking should not be permitted adjacent to bicycle lanes below 1.5 metres in width, due to the risk of car dooring.
- Where space is insufficient for on-road cycle lanes on both sides of the road, they should be placed on the uphill sections.
- Where space is insufficient for on-road cycle lanes in either direction, but cycling is desired, shared paths should be considered.
- Where space is insufficient for on-road cycle lanes in either direction and shared paths are unfeasible, but cycling is desired, the introduction of design features to lower vehicle speeds should be considered. These include:
  - Lowered speed limits or advisory speeds to 40km/h, especially through corners
  - Install 'watch for cyclist', or similar, signs
  - Narrowed general traffic lane width (3 metres or below) with more space on shoulders
  - Paint 'dragon teeth' or 'zig zag' road markings
  - Rumble strips on outer lane markings.

Intersection design principles

- At signalised intersections, on road cycle lanes should have bike boxes.
- At signalised intersections, advanced start bike lanterns should be installed.

Green painted surface delineating space for cyclists should be applied through intersections and for 10 metres either side.

1.3 On-road – protected

Protected on-road bike lanes are built within the road carriageway, with a physical barrier separating cycling lanes and motor vehicles lanes (either parking or traffic). These lanes are placed kerbside and should be at least 1.5m wide, with 1.8m to 2m preferable, to allow for overtaking. However, narrower protected lanes are still preferable to no physically separated lanes at all. Where parking is provided, the separator should be a minimum of 300mm to provide a buffer for car doors. Physical separation can be either '*light*', with precast plastic adhered to the road surface, or heavy, with large blocks of concrete or stone embedded into the road.

1.3.1 One way pairs

In a single direction configuration, physically separated lanes are generally positioned on both sides of the road to accommodate travel in both directions. They are placed on the same side of the road as motor vehicle traffic. They are safer at non-signalised intersections than bi-directional cycleways (see Section 1.3.2), as drivers are more likely to anticipate the direction of travel, but they require slightly more road carriageway space. Figure 7 shows an example from Frome Street, Adelaide.

Figure 7 Separated single-direction lane

1.3.2 Bi-directional

Bi-directional bike lanes are more space-efficient than one-way pairs but intersection treatments need careful consideration (and are preferably signalised), due to the risk of drivers not looking for riders coming in the opposite direction. Figure 8 shows an example from Sydney.

Figure 8 Bidirectional lane, Sydney

Source: SydneyCycleways

1.3.3 Protected bicycle lane design principles

- Protected lanes should be a minimum of 1.5 metres wide, although lane widths of 1.8 metres are desirable.
- Protected bicycle lanes need to use a form of 'vertical separation' (such as bollards or garden boxes) of at least 100mm wide without parking or at least 300mm wide where parking is adjacent (to act as a buffer between open car doors and oncoming cyclists).
- Protected bicycle lanes on both sides of the road, in the same direction as traffic, is the preferred option (known as one way pairs).
- Where space is insufficient for separated lanes in both directions, bi-directional lanes on one side should be installed. Bi-directional lanes should be at least 2.5 metres. Signage and visual cues for motorists emerging from cross streets must be included to remind the motorist of the presence of cyclists travelling in both directions.
- Where possible, bi-directional protected bicycle lanes should not be adjacent to parking bays, to improve cyclist's sight lines and visibility for motorists.

Intersection design principles

- Green painted surface delineating space for cyclists should be applied through intersections.
- At signalised intersections, advanced start bike lanterns should be installed.

- At signalised intersections, left turns should have delayed start (e.g., red lights which turn off later in the cycle)

At signalised intersections with bi-directional lanes, all turns from lanes parallel to the bi-directional lane should be fully controlled.

1.4 Off-road – dedicated cycleway

Dedicated cycleways can be installed behind the kerb to provide a protected, off-road cycling path. These are suitable in situations where there is insufficient space within the road carriageway to install a bike lane without moving kerbs. The footpath remains separate and is located adjacent to property boundaries, with a separator (such as plantings or grassed strip) between the two. They offer a higher level of physical separation and safety. Dedicated cycleways can be either one-way pairs or bidirectional. Figure 9 is another Sydney example, noting the kerb and drainage difference from the previous Figure 8.

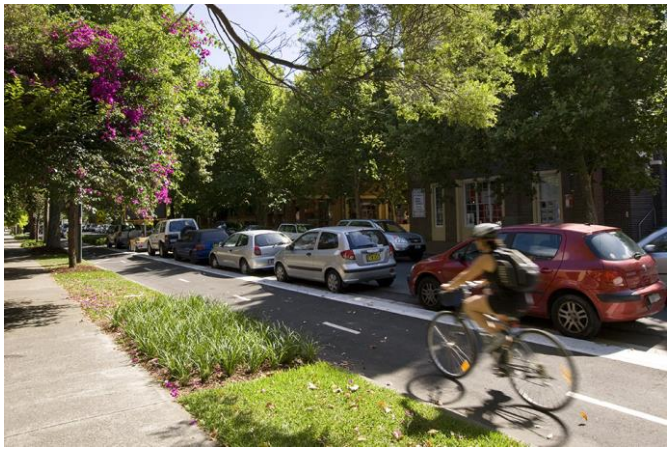

Figure 9 Bidirectional cycle lane (Bourke Street, Sydney)

Source: SydneyCycleways

1.5 Off-road – shared path

Shared paths are dedicated off-road infrastructure for pedestrians and cyclists. Cyclists are not the dominant mode, and are expected to share the space with pedestrians. Shared paths should be a minimum of 2.5m, ideally 3m in width. They can be sealed with bitumen, concreted, or made of compacted gravel. In all cases, they should be smooth and without tripping hazards and provide easy access for wheeled vehicles (e.g., bikes, mobility aids, shopping jeeps, etc).

There are a large number of walking paths within Kingborough which are potentially very useful for people on bikes and should be reviewed for upgrades for cyclists. In some cases, walking paths have steps or stairs. In order to accommodate bikes, troughing should be installed on one side of the steps, allowing bikes to be wheeled up or down. Figure 10 is an example from Kingston.

Figure 10 Shared path in Kingston

1.5.1 Shared path design principles

- Shared paths should be a minimum of 2.5 metres wide. Where use of the shared path by pedestrians and cyclists is higher, a width of 3 metres is desired.
- Shared paths should go on the side of the road that permits the desired width.
- If both sides permit the desired width, shared paths should go on the side which connects to the greatest number of other cycling or cyclable routes.
- Shared paths, where possible, should avoid running out the front of shops, to minimise conflict with other users.

- Shared paths, where possible, should run to the front of schools.
- Shared paths, were possible, should go on the side of the road which has the least driveways.
- Shared paths should avoid crossing from one side of the road to the other.
- Shared paths should avoid bollards and fenced barriers, as these pose a safety hazard.

1.6 Crossings

Dedicated cycling infrastructure often intersects with other parts of the road network, from local streets to large highways. There are several ways to accommodate cycling safely across the intersection, depending on the relative importance of the intersecting road and the desired level of safety for cyclists.

1.6.1 Refuge islands

Refuge islands provide a central waiting area in the middle of a road. The islands are often constructed out of concrete, providing protection from vehicle lanes. Refuge islands may be used where the cycleway intersects with a major road but where signalised crossing is not desired, due to low cycling and / or traffic volumes. Figure 11 provides an example of a refuge island, with pram ramps on each side leading back to the footpath.

Figure 11 Refuge Island

1.6.2 Continuous footpaths

Continuous footpaths are a design that maintains the footpath height and material across a side street. It maintains priority for pedestrians and bike riders. This type of intersection is ideally used where a footpath or protected cycle lane intersects with a local or residential street. Figure 12 shows an example that includes continuous footpath and separate cycle lanes.

Figure 12 Continuous footpaths

1.6.3 Wombat crossings

Wombat crossings, also known as raised zebra crossings, provide a safe mid-block crossing over a local, or collector road. They are appropriate where traffic speed is 50km/h or less and is located on a local or collector road, or is located within an activity centre. Wombat crossings can be used to provide safe crossings at roundabouts and other unsignalised intersections. Figure 13 shows a wombat crossing in Melbourne.

Figure 13 Wombat crossing

1.6.4 Signalised crossings

Signalised crossings use traffic lights to manage traffic movements and safe pedestrian and bike rider crossings. They are most appropriate where traffic speeds and / or traffic volumes are too high to safely install a wombat crossing, or the area where crossing is desired is too complex or dangerous. Signalised crossings can provide separate pedestrian and cycling waiting zones, as shown in Figure 14.

Figure 14 Signalised pedestrian crossing
Source: nzta.govt.nz

2. Data analysis

2.1 Study area and population density

Figure 15 shows a zoomed-in view of the major population and employment areas in Kingborough. The new residential estates are also shown in the south-western edge of the built-up area.

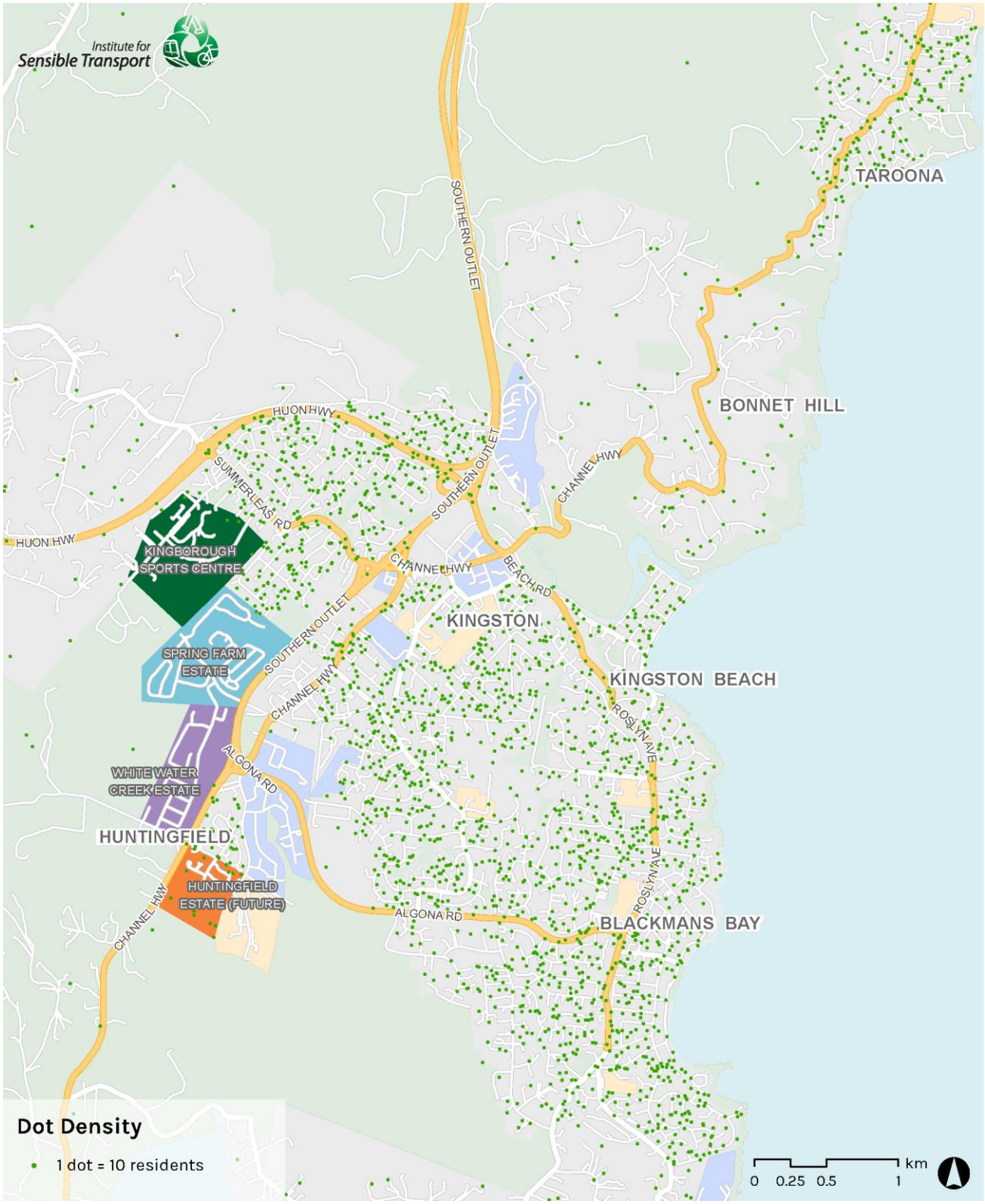

Figure 15 Study area - Built up area

2.2 Land use

Kingborough has a land use structure similar to other parts of Australia. It has a retail and civic CBD area with dispersed, low rise housing residential areas. Several light industrial and commercial precincts exist, separate again from the retail and civic area. For the next 10 years the growth priority areas for Kingborough are Spring Farm, Whitewater Park, Huntingfield and Kingston CBD.

Figure 16 Population density – Built up area

2.3 Journey to work

The *Journey to work* is the most comprehensive dataset of travel movements in Australia, as it is the only transport question included in the Census. We have examined journey to work data collected from the Census to better understand existing travel patterns and the potential for transferring short car trips to cycling.

Our team have interrogated the data available for Kingborough to produce the two graphs shown in Figure 17. The graph on the left is for all work trips (of any distance). It shows that almost 90% of all residents of Kingborough who travel to work do so in a motor vehicle. The most pertinent finding for the Cycling Strategy is that 86% of Kingborough residents drive even when the trip is 5km or less.

One-third of people who live in Kingborough work in Kingborough, while almost half of Kingborough residents work in Hobart.

For people that work in Kingborough, almost two-thirds of them also live in Kingborough.

Approximately 20% of trips to work to Kingborough are 3km or less. About one-third of commutes are 5km or less.

According to the Census, 9 in 10 Kingborough residents travel to work by car, and for trips 5km or less, 86% drive.

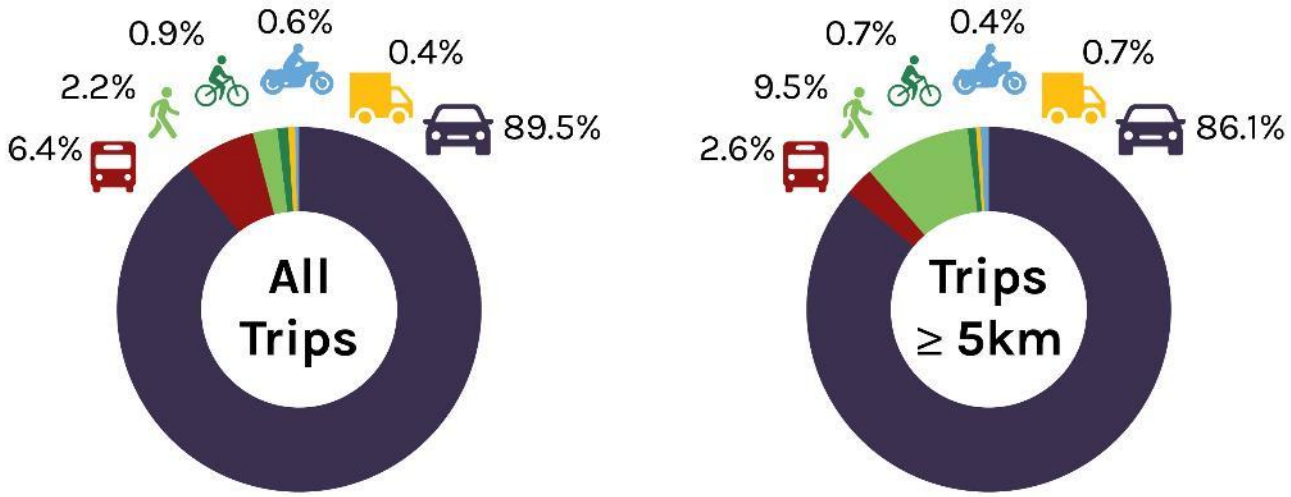

Figure 17 Journey to work for Kingborough residents
Source: ABS Census

2.5 Travel diary

Travel survey data for Kingborough is available via the *2019 Greater Hobart Household Survey of Travel*. Using sample surveys, travel profiles can be constructed for all Councils within Greater Hobart. It provides details regarding mode share for different trip purposes, movement between different Council areas, and how people move throughout the day.

2.5.1 Trips per day

Figure 18 shows the total number of trips taken per day in Kingborough. It shows an average of 3.5 trips per person per day. Kingborough residents spend approximately 1 hour a day travelling, covering 31 km.

Figure 18 Trips per day, Kingborough
Source: Department of State Growth (2019)

2.5.2 Trip Purpose

Figure 19 shows the breakdown in trip purposes for residents of Kingborough. Approximately 20% of all trips are work-related. Education trips constitute 10%, shopping 16%, personal business 8%, pick-up/drop-off 14%, social/recreation 21%, and 10% for other trip purposes.

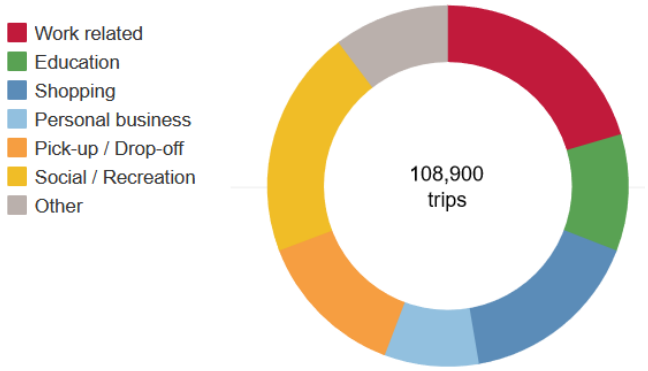

Figure 19 Trip Purpose, Kingborough
Source: Department of State Growth (2019)

This highlights the importance of better understanding non-work travel patterns and behaviour, as they constitute most trips on the transport system.

2.5.3 Mode Share

Figure 20 shows the breakdown in mode share for all trip purposes in Kingborough. Private cars make up most trips and kilometres travelled, however active transport (walking and bike riding) constitute 16% of all trips.

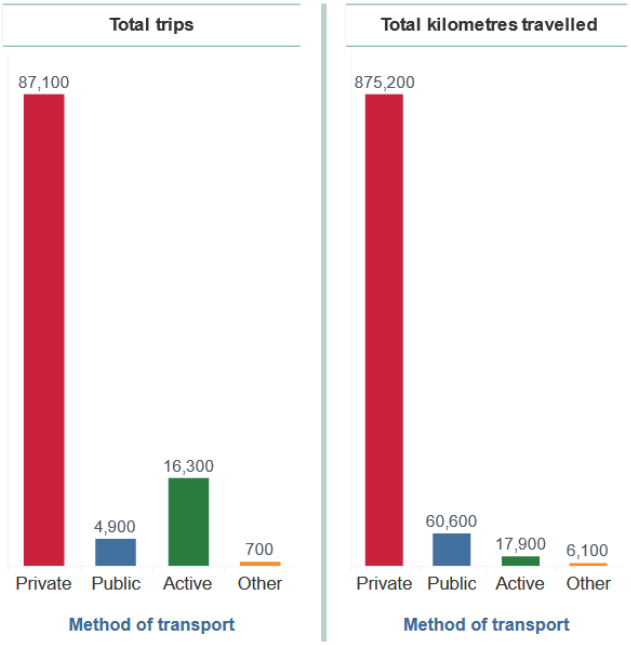

Figure 20 Mode Share for all trips, Kingborough
Source: Department of State Growth (2019)

2.5.4 Destinations

Figure 21 shows the destinations for trips that originated in Kingborough. The vast majority of trips that start in Kingborough also finish in Kingborough, for all times of the day. One-third of AM trips end in Hobart and 20% in the PM. Only a small proportion of trips finish in other Council areas.

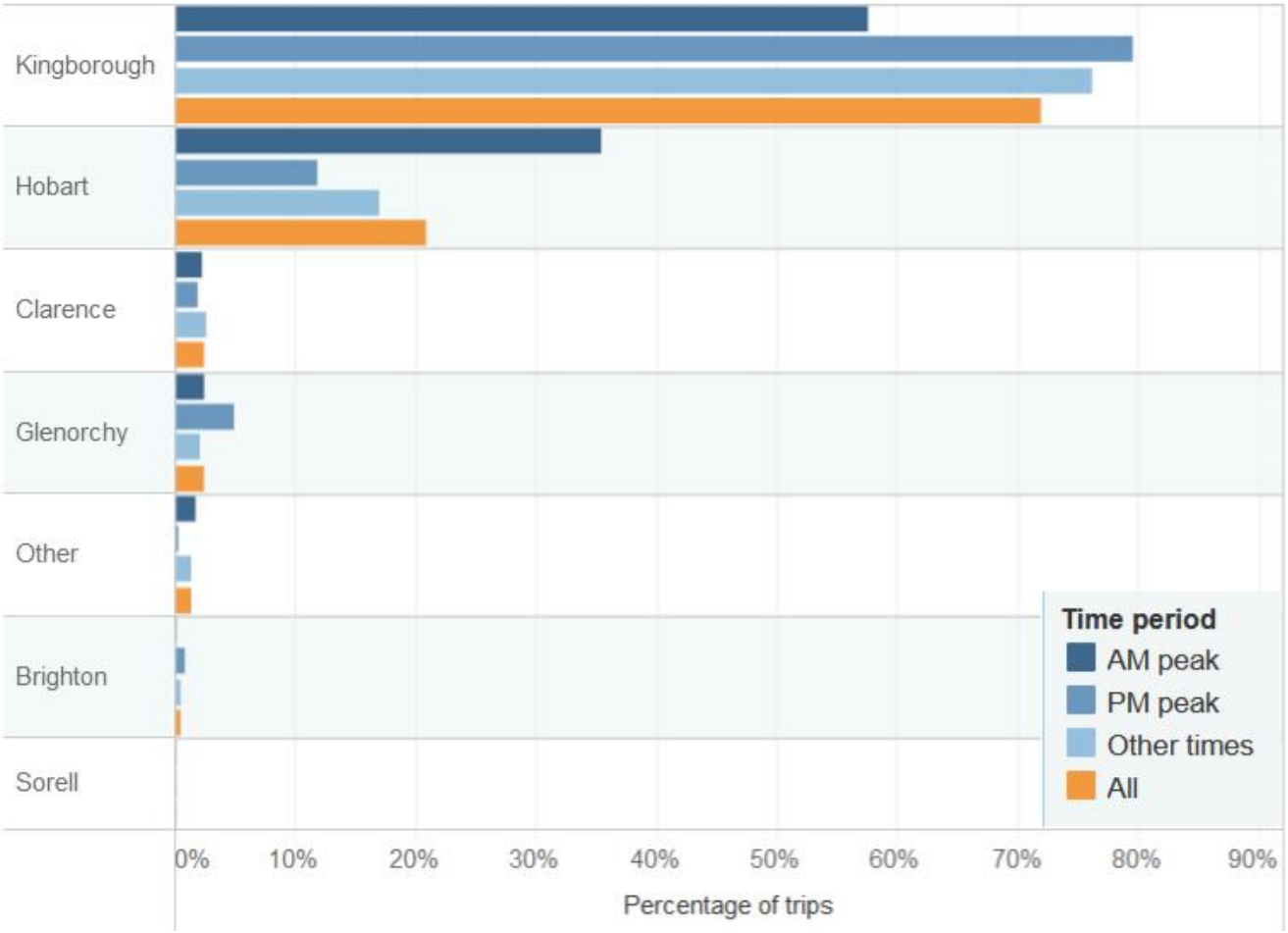

Figure 21 Destinations of trips starting in Kingborough

Source: Department of State Growth (2019)

2.6 Crash statistics

Table 1 shows the location and severity of crashes within the broader Kingston area between 2016 – 2020.

Broader Kingston Area

There were a total of 1,005 crashes recorded during the five-year period, including two fatalities, 21 serious injuries (requiring hospital admission), and 219 'other' or minor injury crashes (see Figure 25).

Excluding property damage and unknown crashes there is a downwards trend of injuries in the last five years (see Figure 22).

Crashes resulting in property damage totalled 763. Crashes were concentrated along the main arterial roads and highways and within the Kingston CBD area.

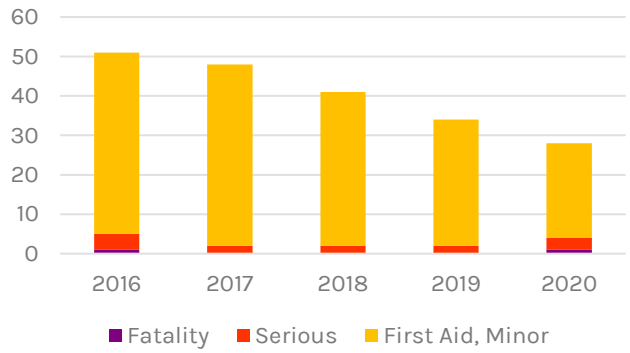

Figure 22 Crash injuries within Broader Kingston in the last five years

Cycling Crashes

Figure 23 identifies the police reported crashes involving cyclists that have taken place in the past five years, that were reported to police. This included four serious injuries and 26 'other' or minor injury crashes. No fatalities were recorded involving a cyclist. There is a cluster of crashes on the Channel Highway within the Kingston CBD and around the intersection of Algona Road and the Channel Highway.

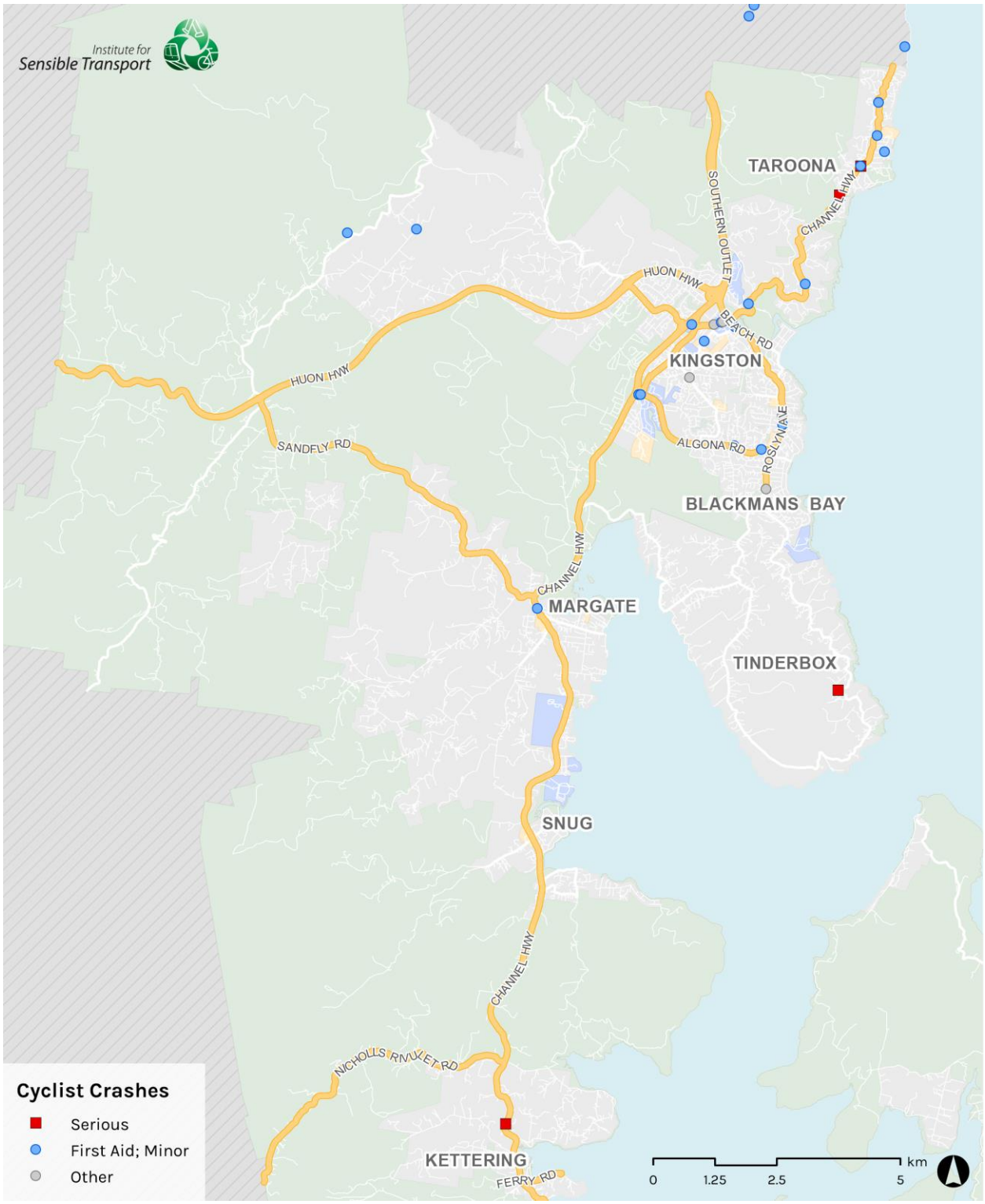

Figure 23 Cycling crashes, Kingborough

Source: Tasmanian Government

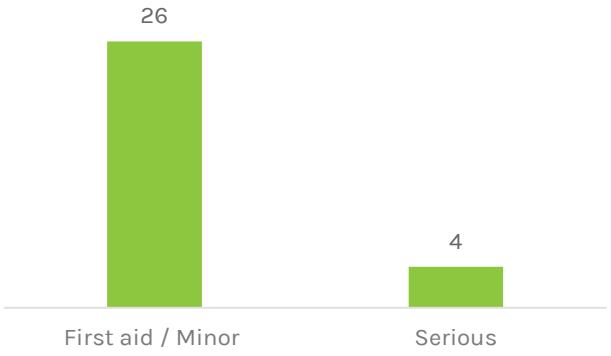

Figure 24 Cycling crash injuries within Kingborough in the last 5 years

Crashes 2016 - 2020	Broader Kingston Area	Kingston CBD Area
Fatalities	2	1
Serious	21	3
First Aid; Minor	219	71
Property Damage; Not	763	388
Total	1,005	463

Table 1 Crashes in last five years

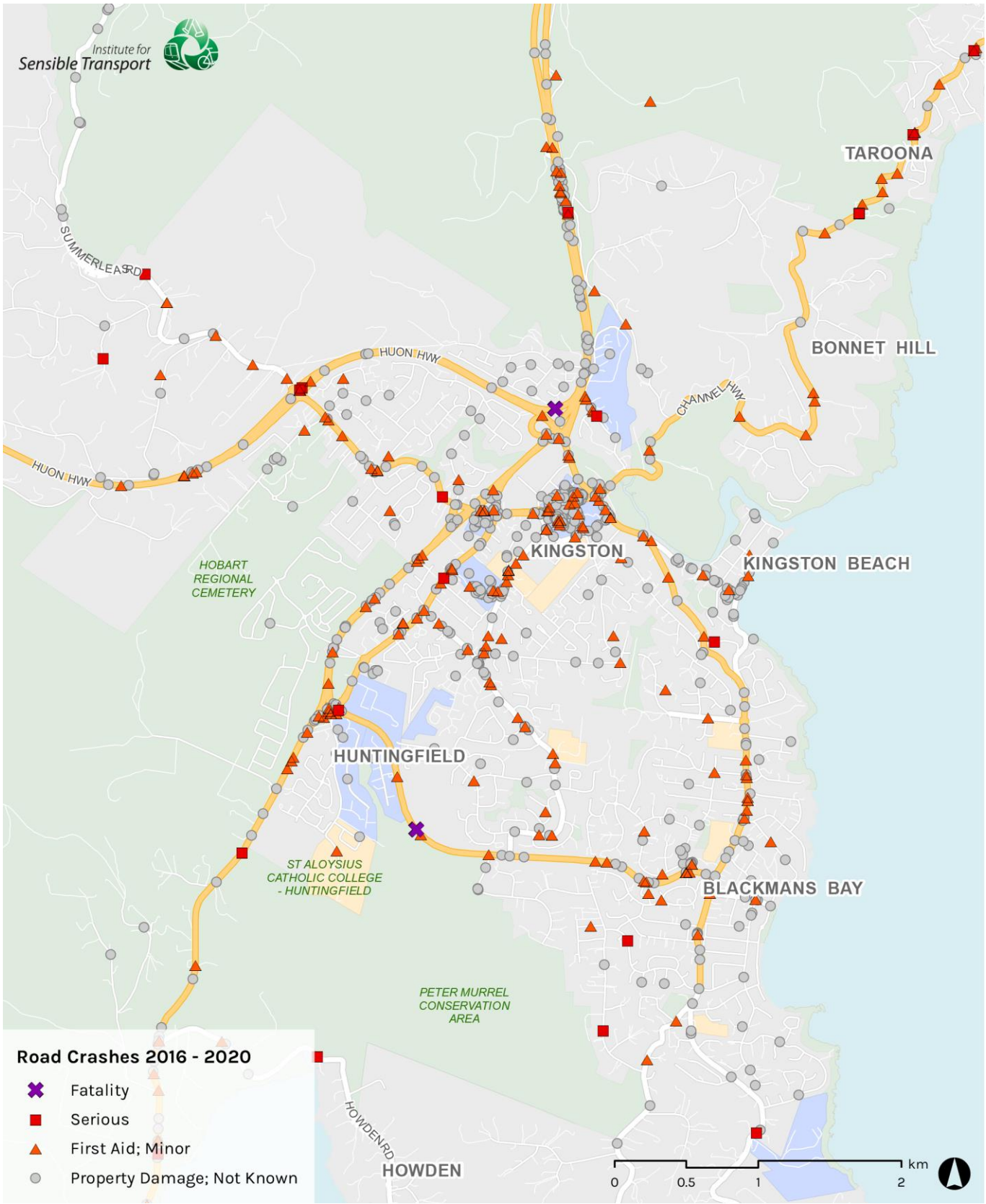

Figure 25 Crashes by severity, Broader Kingston Area

2.7 Topography

Like much of Tasmania, Kingborough consists of a hilly natural form. Many streets and roads have significant gradients. Major roads are often located along flatter valleys, as it affords easier passage and minimises construction costs. Flatter, more direct routes are most conducive to bike riding. Flatter roads, such as Beach Road, Rosyln Avenue, Algona Road, and the Channel Highway may provide an easier and more attractive option for people to ride, compared to hillier and more direct alternatives, such as Redwood and Maronoa Roads.

Figure 26 Topography

2.8 Bike use propensity index

High quality bicycle infrastructure in built up areas can be expensive and government budgets are limited. It is therefore important, when planning a future cycling network, to determine spatial variation in the latent demand for cycling. Through peer reviewed research, a number of Census collected variables have been isolated, in order to provide a heat map of latent demand for cycling, known as the *Bike Use Propensity Index*.

The Institute for Sensible Transport developed the Bike Use Propensity Index to identify spatial differences in latent demand for cycling in a city or region. The Index is based on eight Census collected variables that are statistically significant predictors of bike use (see Fishman, Washington, Haworth, & Watson, 2015). In sum, these maps provide a clear illustration of the spatial variation in propensity to cycle in Kingborough.

The Propensity Index can help guide areas for future investment in cycling infrastructure by identifying the areas where the greatest uptake in cycling is likely to occur. Actions focusing on high propensity areas are likely to include infrastructure projects, but should also consider behaviour change initiatives and other support programs to encourage greater cycling uptake.

2.8.1 Methodology

The Bike Use Propensity Index combines eight variables, all of which are collected as part of the ABS Census. The statistical basis for the Index was developed through the collection of data on riding behaviour and demographic factors. This data was analysed using binary logistic regression in SPSS and STATA. The results, published in Transportation Research Part A (see Fishman, Washington, Haworth, & Watson, 2015) revealed that there are some statistically significant factors for propensity to cycle.

The data that forms the basis of the Index is collected from the following variables, derived directly from the 2016 Census:

1. Residential population density, measured as people per hectare
2. Employment density measured as number of people working per hectare.
3. Density of young adults measured as number of people aged 18 – 34 per hectare.
4. Low motor vehicle ownership measured as number of households with zero or one cars per hectare.
5. Bicycle use - origin measured as number of people riding to work per hectare.
6. Bicycle use – destination measured as number of people riding to work per hectare (weighted x3).
7. City-based employment – people who work within the Hobart CBD SA2 per hectare (weighted x3).
8. Short car trips– destination measured as number of people driving to work between 0 and 5 km per hectare.

The Bike Use Propensity Index has been designed to show the variation in the relative propensity to cycle, at the highest possible level of spatial detail.

The Index contains more residential-oriented variables than it does employment, or destination, variables. To ensure that employment rich areas that have comparatively lower residential populations are not undervalued, such as the Kingston CBD, the employment variables in the index have been weighted by a factor of 3. Doing this helps ensure important bike destinations, such as employment hubs, are adequately considered in the Index.

Geographic areas that rank in the bottom quintile receive a score of 0.2 for that attribute, while those in the top quintile receive 1.0, as shown in Table 2. The mapped values are aggregates of the attributes' scores.

Table 2 Ranking system and Index categories

Quintile	Index Score
5	1.0
4	0.8
3	0.6
2	0.4
1	0.2

It is also important to recognise that SA1's that receive very high Index scores will have scored highly across all the variables included in the Index. In almost all cases, an SA1 that scores above 4.5 (out of 5) will have been in the top quintile in at least five variables.

2.8.2 Index Creation - Maps

We have used ArcGIS to create individual maps. Each of these maps provide a visual illustration of variation in propensity to cycle, based on the eight factors identified above.

In each of these maps, the Propensity Index has been recalculated. This means that in each map, SA1's can only be compared to other SA1, *in that map.* Scores cannot be compared across maps.

2.8.3 Results

The results for Kingborough's Bike Use Propensity Index are shown in Figure 27. The Kingston and Blackmans Bay areas have the highest levels of latent demand for bike riding. In particular, Firthside and Kingston between the Southern Outlet and Huon Highway were highest, as was Kingston Beach.

Blackmans Bay, particularly south of Algona Road, also scored in the top quintile, as did the residential area surrounding Hawthorn Reserve and Southern Christian College.

The Kingston CBD was ranked in the middle quintile. This is likely due to almost no residential population living within the CBD.

2.8.4 Implications

The Propensity Index has been used to help guide proposed infrastructure/network design. Areas that have a high latent demand for cycling have been prioritised, as they are likely to be generate more cycling activities than areas of low cycling propensity.

The bicycle infrastructure opportunities will include how different bike infrastructure typologies (e.g. painted bike lane, separated bike lane) can be used to maximise the appeal of cycling, especially in those areas of Kingborough with higher latent demand.

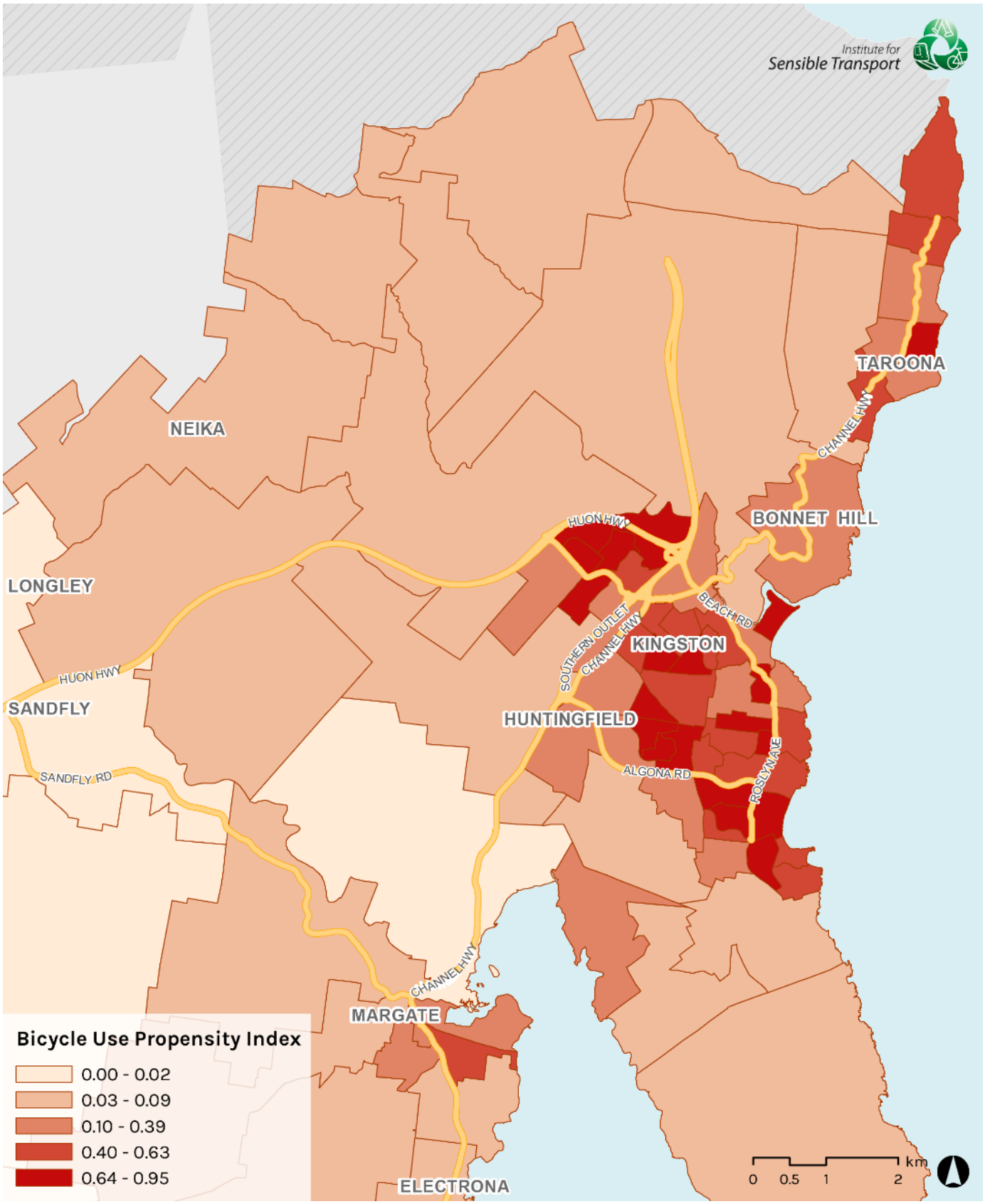

Figure 27 Kingborough Bike Use Propensity Index

Nb. This only provides analysis for adult transport cycling. Recreation, cycle to school for children, and other bike riding propensity may differ and insufficient data is available to integrate non-commute cycling.