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SMEC INTERNAL REF. 3007004

Report

Kingston Beach Local Area Traffic Management Study

Prepared for: Kingborough Council
11 April 2023

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Executive Summary

Kingborough Council has contracted SMEC to undertake a Local Area Traffic Management (LATM) study for the Kingston Beach area. The Kingston Beach LATM study area is a popular recreation, work and education space for residents and visitors alike, with established commercial properties and residential areas and popular public open space. Within the precinct there are areas of high vehicular and pedestrian traffic with numerous potential conflict points. There has been ongoing community concern for pedestrian safety in the area and a lack of safe pedestrian crossing points has been raised in community forums. This has been the primary motivation for the Kingston Beach LATM study.

The LATM report includes the following:

- Chapter 2: Existing Conditions
- Chapter 3: Key Issues & Opportunities
- Chapter 4: Local Area Traffic Management Plan Development
- Chapter 5: Cost Estimates
- Chapter 6: Recommended Staging Plan
- Chapter 7: Summary & Next Steps

In summary the report has presented the process undertaken in the development of a recommended Local Area Traffic Management plan for the Kingston Beach study area. The LATM study has included an extensive review of existing background information, traffic and crash data, as well as site investigations and workshops with Council to confirm existing issues and opportunities.

Key safety concerns related to active transport users, namely pedestrians and cyclists. The local community has been vocal about the safety risks faced by pedestrians crossing Beach Road and Osborne Avenue. A lack of dedicate cycling infrastructure along identified strategic cycling routes is also a key issue. Compliance with the 40km/h speed limit along Beach Road and Osborne Esplanade is also thought to be contributing to the perceived safety risks, also noting a prevalence of parking and manoeuvring type crashes occurring along the main activity road lengths.

A 'long list' of potential projects was developed, and this was then assessed, both through consultation, as well as using a Multi Criteria Analysis, and preferred recommended treatments were then carried forward for concept design development.

Concept plans have been developed for several of the proposed LATM treatments, as follows:

- 3007004-01-001 Beach Road LATM Study Treatment Option, includes:
 - Item 1.1 Beach Road: west end threshold treatment – flat top road hump
 - Item 1.2 Beach Road: kerb extensions with patterned pavement treatment at 2 x locations
 - Item 2.1 Beach Road: Wombat crossing outside off-street public carpark
 - Item 2.5, Option 1: Osborne Avenue: Wombat crossing
- 3007004-02-001 Osborne Esplanade Treatment Option, includes:
 - Item 2.5, Option 2: Osborne Esplanade: Shared Zone
- 3007004-02-002 Osborne Esplanade Treatment Option, includes:
 - Item 2.5, Option 3: Perceptual Countermeasure on Zebra Crossing approaches
- 3007004-03-001 Osborne Esplanade Sharrows
- 3007004-04-001 Balmoral Road Bend: Linemarking Treatment

An overall recommended Local Area Traffic Management Plan for the Kingston Beach LATM area has also been prepared (Drawing 3007004-10-001). All drawings are provided at Appendix E.

Indicative cost estimates have been prepared for each of the key proposed treatments, to assist with budgetary planning and confirmation of staging priorities.

The next steps will be:

- Council to undertake community consultation and confirm the preferred options to be adopted, particularly for Osborne Esplanade;
- Functional design of the LATM measures and formal cost estimations to verify costs; and
- Confirmation of a priority listing for the treatments, which will be dependent on available funding and relative priority with competing projects within Kingborough Council.

Contents

Executive Summary	v
1. Introduction.....	1
1.1 Background	1
1.2 Objective.....	2
1.3 Stakeholder Consultation.....	2
1.4 Policy and background review.....	2
1.5 References	2
1.6 Report structure	2
2. Existing Conditions.....	3
2.1 Site Locality	3
2.2 Key Land Use	3
2.3 Existing Road Network.....	7
2.3.1 Local Roads Overview	7
2.3.2 Existing Traffic Control and Management.....	8
2.3.3 Traffic Data.....	11
2.4 Active & Public Transport.....	17
2.4.1 Active Transport	17
2.4.2 Public Transport	18
2.5 Crash Data Analysis.....	20
2.6 Site Observations.....	24
2.6.1 Shared Use Path Review	25
4. Key Issues and Opportunities.....	26
5. Local Area Traffic Management Plan Development	33
5.1 Active Transport Route Priorities	33
5.2 Safe System Approach to Project Priorities.....	33
5.3 LATM Long List of Treatment Options	34
5.4 Multi-Criteria Analysis (MCA) for Project Prioritisation	39
5.4.1 Assessment Criteria	39
5.4.2 Assessment Weightings	39
5.4.3 Assessment Execution	39
5.4.4 Assessment Results	39
6. Concept Plans	41
7. Cost Estimates	42
8. Recommended Staging of Works	44
9. Summary & Next Steps	45

Appendices

Appendix A **Background review**

Appendix B **Site Photographs**

Appendix C **MCA Scoring Guidelines**

Appendix D **MCA Results**

Appendix E **Concept Plans**

Appendix F **Cost Estimates**

Figures

Figure 1: Kingston Beach LATM study area.....	1
Figure 2: Kingston Beach – Planning Scheme Zoning Map (Source: LISTmap - Land Information System Tasmania (thelist.tas.gov.au)).....	5
Figure 3: Key land uses (map source: Google Earth).....	6
Figure 4: Existing traffic management features (map source: Google Earth).....	9
Figure 5: Existing traffic control features (map source: ESRI).....	10
Figure 6: 2016 traffic survey locations (map source: ESRI).....	12
Figure 7: 2018 traffic survey locations (map source: ESRI).....	13
Figure 8: Traffic survey locations (map source: ESRI).....	15
Figure 9: Overall Summary of Key Traffic Survey Data.....	16
Figure 10: Existing active transport facilities (map source: Google Earth).....	17
Figure 11: Existing public transport facilities (map source: Google Earth).....	19
Figure 12: Crash location map (source: stategrowth.tas.gov.au, Kingborough Council).....	20
Figure 13: Crash history location/crsh type trends (source: stategrowth.tas.gov.au, Kingborough Council).....	23
Figure 14: Key Issues & Opportunities (map source: Metro Maps).....	32

Tables

Table 1: Existing road network.....	7
Table 2: Traffic management and control features inventory.....	11
Table 3: 2016 traffic survey results.....	12
Table 4: 2018 traffic survey results.....	14
Table 5: Summarised traffic survey data.....	15
Table 6: Summarised pedestrian survey data.....	16
Table 7: 5-year crash history to November 2022.....	20
Table 8: Kingston Beach Key Issues & Opportunities.....	27
Table 9. Safe System energy tolerances.....	34
Table 10: LATM long list.....	35
Table 11: MCA results.....	40
Table 12: Cost estimates summary.....	43

1. Introduction

Kingborough Council has contracted SMEC to undertake a Local Area Traffic Management (LATM) study for the Kingston Beach area. The study has been primarily motivated by continuing community concerns for pedestrian safety through the precinct. It aims to ensure that appropriate and effective solutions are considered to address these concerns.

1.1 Background

The Kingston Beach LATM study area is a popular recreation, work and education space for residents and visitors alike, with established commercial properties and residential areas and popular public open space. Within the precinct there are areas of high vehicular and pedestrian traffic with numerous potential conflict points. There has been ongoing community concern for pedestrian safety in the area and a lack of safe pedestrian crossing points has been raised in community forums.

The study area is shown in Figure 1, with a particular focus on Beach Road and Osborne Esplanade, as well as the central Kingston beach business precinct, as requested by Council.

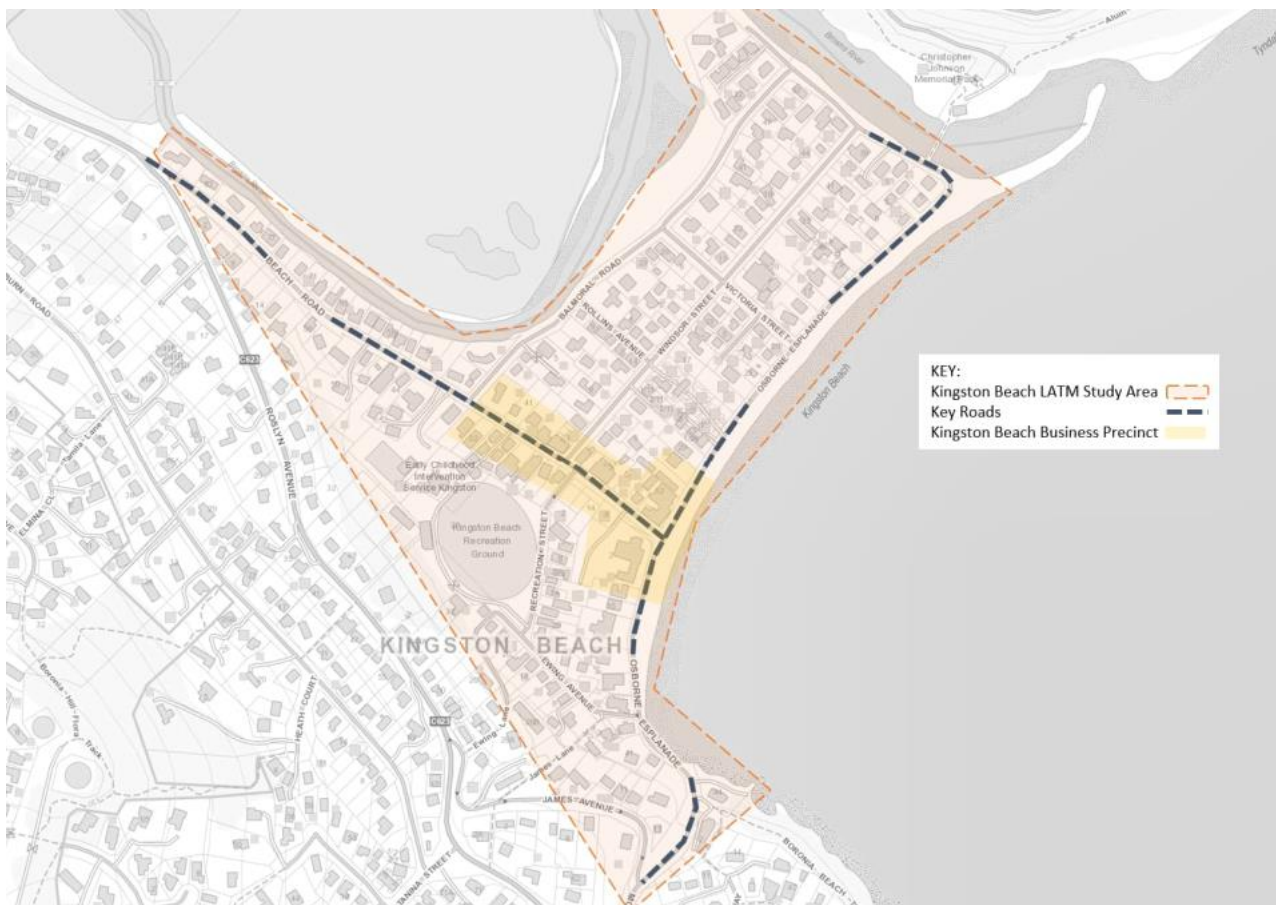


Figure 1: Kingston Beach LATM study area

It is understood that concerns about traffic speed and public safety have been voiced by the community over several years, initiatives by Council including a trail of one-way traffic flow along Osborne Esplanade in 2018. More broadly within the Kingston area, the Kingston Place Strategy was developed in partnership with local businesses, the community and Kingborough Council and adopted at a Council meeting in May 2020 following extensive consultation.

Feedback indicated the community wanted Kingston to be a dynamic, thriving and connected place with more attractive green spaces and improved links for pedestrians and cyclists. The Kingston Beach LATM study aims to

provide a wholistic transport plan that considers this context and priorities safe and efficient outcomes for all transport users.

1.2 Objective

The objectives of this project area to:

- Undertake a LATM study for the Kingston Beach study area which reviews existing transport conditions, identifies issues and opportunities to improve safety and access for all modes of transport, with a key emphasis on improvements to active transport (pedestrians and cyclists).
- Develop a staged and prioritised works schedule for the study area for the next 5 to 10 years, including indicative costs estimates.

1.3 Stakeholder Consultation

SMEC has held workshops at key points through the study process with Council's Senior Roads Engineer, these have included:

- Project Inception – 10th November 2022
- Workshop 1, existing conditions, background document review and issues & opportunities – 7th December 2022
- Workshop 2, priority movement routes, proposed projects – 1st February 2023

In addition, SMEC met with Council's Senior Roads Engineer on-site on Monday 12th December, to review issues and observe traffic and movements at key locations.

Stakeholder consultation with the Kingston Beach community stakeholders, including local businesses, and residents, will be undertaken by Council at the conclusion of this study.

1.4 Policy and background review

A policy and background documentation review were completed to help guide the development of the LATM and to ensure any previous policy or infrastructure proposals were considered, this review is provided in Appendix A.

1.5 References

The following reports and / or parties have been referenced or consulted in the preparation of this LATM report:

- Austroads Guide to Traffic Management Series, particularly Part 8
- Austroads Guide to Road Design Series
- Australian Standards AS1742 Series
- Austroads Safe System Assessment Framework (2016)

1.6 Report structure

The LATM report has been set out with the following chapters:

- Chapter 2: Existing Conditions
- Chapter 3: Key Issues & Opportunities
- Chapter 4: Local Area Traffic Management Plan Development
- Chapter 5: Cost Estimates
- Chapter 6: Recommended Staging Plan
- Chapter 7: Summary & Next Steps

2. Existing Conditions

2.1 Site Locality

Kingston Beach is located approximately 10 kilometres south of Hobart, within the municipality of Kingborough Council. The study area was shown in Figure 1, which has a particular focus on Beach Road and Osborne Esplanade, as well as the central Kingston beach business precinct.

2.2 Key Land Use

Kingston Beach is a predominantly 'General Residential' zoned residential area under the Planning Scheme. Key non-residential land uses within the Kingston Beach study area include:

- The Beach Road precinct:
 - Kingston Beach Early Learning Centre and Child Care Centre;
 - Kingston Beach Early Childhood Intervention Service Kindergarten;
 - Kingston Beach Community Hall, home to the Kingston Beach Market, which operates on the second Sunday of each month;
 - Kingston Beach RSL Club;
 - Several retail, hospitality, health and commercial businesses, including:
 - Boho at the Beach;
 - Fall Real Estate and Harcourts Real Estate;
 - Panko Chan;
 - Chosen Pieces Thrift Store;
 - Kingston Beach Service Centre;
 - Total health and Rehabilitation;
 - Beauty @ Kingston Beach;
 - PEP Pizza;
 - Kingston Beach Health Centre; and
 - The Salty Dog Hotel (located on the south-west corner of Beach Road and Osborne Esplanade); and
 - Kingston Beach Take Away (located on the north-west corner of Beach Road and Osborne Esplanade).
- The Osborne Avenue precinct:
 - Kingston Beach Public Toilets & Surf Life Saving Club storage (located north-east of Beach Road);
 - Kingston Beach Motel;
 - Several retail and hospitality businesses including:
 - Robbie Brown's;
 - Eb + Flo Local Espresso;
 - Next Level Kayaking; and
 - Zero81 Napoli Ristorante and Pizzeria.
 - Kingston Beach Boat Ramp (located south of Beach Road);
 - Ewing Avenue access which provides access through to Recreation Street and the Kingston Beach Oval including the Kingston Crows Cricket Club; and

- Kingston Beach Sailing Club (located at the south end of Osborne Avenue where it meets Mount Royal Road).
- Rotary Centennial Park ('The Duck Park'), including playground and exercise stations, located on the north-west side of Balmoral Road;
- The Browns River passive recreation facilities along the north-east side of Balmoral Road;
- Kingston Dog Beach, located at the north-east extent of the foreshore at the mouth of Browns River;
- A search for short-term/holiday residential properties returns around 15 properties spread throughout the Kingston Beach Area.

The current Planning Scheme for Kingborough is the Kingborough Interim Planning Scheme 2015. Land use zoning for the study area is shown in Figure 2.

Key land uses highlighted in the lists above are shown in Figure 3.

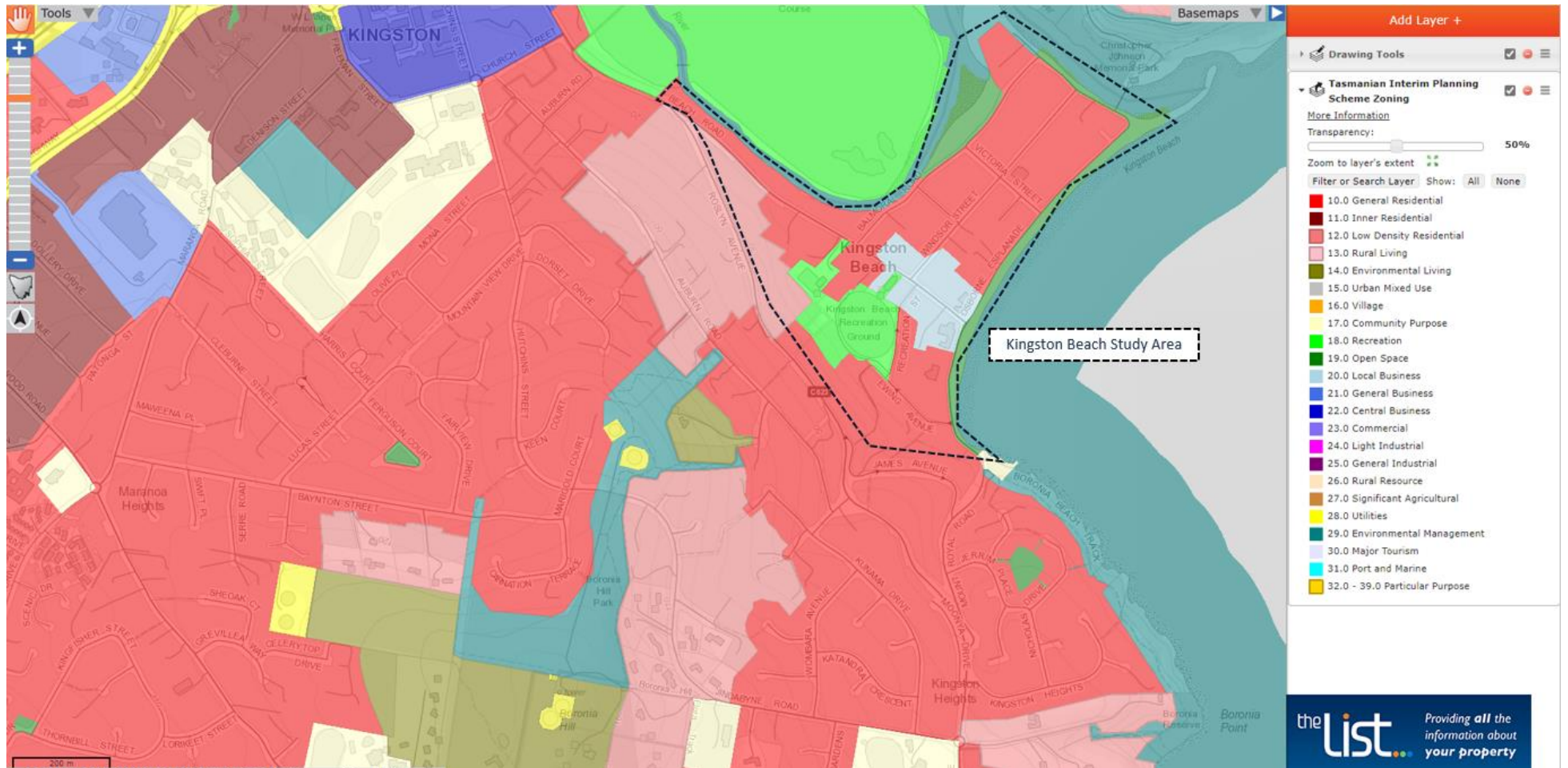


Figure 2: Kingston Beach – Planning Scheme Zoning Map (Source: [LISTmap - Land Information System Tasmania \(thelist.tas.gov.au\)](http://LISTmap - Land Information System Tasmania (thelist.tas.gov.au)))



Figure 3: Key land uses (map source: Google Earth).

2.3 Existing Road Network

2.3.1 Local Roads Overview

Table 1 summarises the existing conditions of key roads within the study area.

Table 1: Existing road network

Road element	Beach Road	Osborne Esplanade	Balmoral Road	Recreation Street/Ewing Avenue	Mount Royal Road
Speed limit (kph)	40	40	40	40	40
Classification	Local	Local	Local	Local	Local
Managed by	Kingborough Council	Kingborough Council	Kingborough Council	Kingborough Council	Kingborough Council
Carriageway width (m)	8.8	7.1	5.3	4.7	7.1
Total number of traffic lanes	Two	Two	Two	One	Two
Traffic control	Priority at Balmoral Road, Windsor Street, and Recreation Street Give Way at Osborne Esplanade	Priority at Beach Road and Victoria Street	Give Way at Beach Road and Balmoral Road (east-west) Priority at Rollins Avenue and Victoria Street	Give way at Beach Road	Priority at James Avenue
Road user hierarchy	Collector Road	Collector road	Local Street	Local Street	Collector Road
On the principal bicycle network?	No	No	No	No	No
On a strategic cycling corridor?	Yes	Yes	Yes	No	Yes
Bicycle facilities	No	No	No	No	No
Pedestrian facilities	Pedestrian path on both sides of the road	Pedestrian path on northeast side of the road Off-road shared user path on the southwest side of the road	Pedestrian path on the southwest side of the road	Pedestrian path on the south side on the road between Osborne Esplanade and the crossover Pedestrian path on east side of the road north of the crossover	Pedestrian paths on both sides of the road
Bus routes / facilities	Public bus routes 407, 411, 427	Public bus routes 407, 411	No	No	No
B-Double approved route?	No	No	No	No	No
Over-dimensional approved route?	No	No	No	No	No

Road element	Beach Road	Osborne Esplanade	Balmoral Road	Recreation Street/Ewing Avenue	Mount Royal Road
Over size and over mass (OSOM) route?	No	No	No	No	No
On-Street car parking facilities?	Parallel parking permitted on both sides of the road	Parallel parking permitted on the west side of the road south of Beach Road Indented parallel and perpendicular parking permitted in allocated bay on the east side of the road south of Beach Road Indented parallel and perpendicular parking permitted in allocated bay on the east side of the road north of Beach Road	Parallel parking permitted on both sides of the road Indented perpendicular parking provided at Rotary Centennial Park	Parallel parking permitted on the east side of the road	No

2.3.2 Existing Traffic Control and Management

The existing traffic control and management features are shown in Figure 4 and Figure 5 and are tabulated in

. Osborne Avenue features several speed humps throughout the study area with advisory speed limits of 20km/h. It also features a zebra crossing near to the Beach Road intersection.

Kerb Extensions feature on Balmoral Road and Windsor Street. These slow cornering speeds and provide shorter crossing distances for pedestrians.

Ewing Avenue is one-way between the sports reserve and Osborne Crescent in the westbound direction. This limits access to Osborne Esplanade and reduces any 'rat running' that may be performed to avoid the business/restaurant centre of Kingston Beach.

The precinct also has several horizontal curves which serve to reduce the achievable speed. There is also a steep incline on Osborne Esplanade towards Mount Royal Road that is not shown below. In the southbound direction it serves as a speed reducing elements, however, in the northbound direction, it enables high rates of speed.



Figure 4: Existing traffic management features (map source: Google Earth).

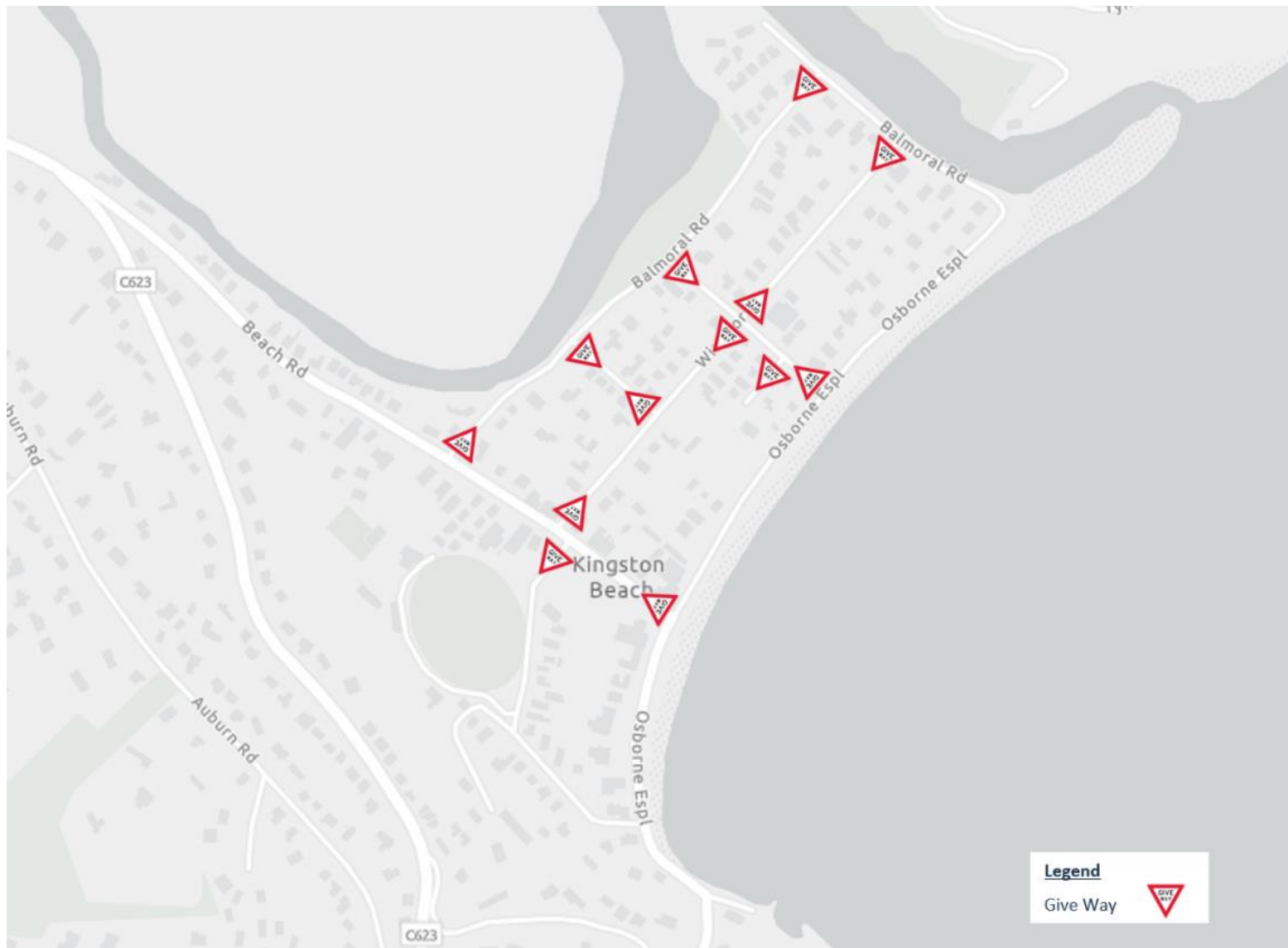


Figure 5: Existing traffic control features (map source: ESRI).

Table 2: Traffic management and control features inventory.

Location	Feature
Traffic Management Features	
Mount Royal Road	Steep grade and horizontal curves
Osborne Esplanade	5 x Speed humps
Osborne Esplanade near Beach Road	Zebra Crossing
Ewing Avenue	One-way (westbound direction only)
Ewing Avenue intersection with Recreation Street	Crossover
Windsor Street intersection with Beach Road	2 x Kerb extension
Windsor Street intersection with Balmoral Road	2 x Kerb extension
Balmoral Road (north-south) intersection with Balmoral Road (east-west)	Kerb extension
Osborne Esplanade intersection with Balmoral Road	90° Horizontal curve
Balmoral Road	Horizontal curves
Traffic Control Features	
Intersection of Beach Road and Balmoral Road	Give Way (Beach Road Priority)
Intersection of Balmoral Road and Rollins Avenue	Give Way (no signage or linemarking) (Balmoral Road priority)
Intersection of Balmoral Road and Victoria Street	Give Way (no signage or linemarking) (Balmoral Road priority)
Intersection of Balmoral Road (north-south) with Balmoral Road (east-west)	Give Way (Balmoral Road east-west priority)
Intersection of Beach Road and Windsor Street	Give Way (Beach Road priority)
Intersection of Windsor Street and Rollins Avenue	Give Way (no signage or linemarking) (Windsor Street priority)
Intersection of Windsor Street and Victoria Street	Give Way (Victoria Street priority)
Intersection of Windsor Street and Balmoral Road	Give Way (Balmoral Road priority)
Intersection of Beach Road and Recreation Street	Give Way (Beach Road priority)
Intersection of Ewing Avenue and Recreation Street	Give Way (Recreation Street priority)
Intersection of Osborne Esplanade and Ewing Avenue	N/A
Intersection of Osborne Esplanade and Beach Road	Give Way (Osborne Esplanade priority)
Intersection of Osborne Esplanade and Victoria Street	Give Way (Osborne Esplanade priority)
Intersection of Osborne Esplanade and Balmoral Road	N/A
Intersection of Albert Street and Victoria Street	Give Way (no signage or linemarking) (Victoria Street priority)

2.3.3 Traffic Data

Various traffic surveys have been conducted in the Kingston Beach area over the last several years. The subsections below review and explore these survey results.

2.3.3.1 2016 survey data

In 2016, two traffic surveys were undertaken. One was undertaken on Beach Road (outside number 63) over two weeks from 18th April to 2nd May. The other was undertaken on Osborne Esplanade (outside number 25) over four weeks from 23rd December to 20th January. The survey locations are shown below in Figure 6 and results are provided in Table 3.

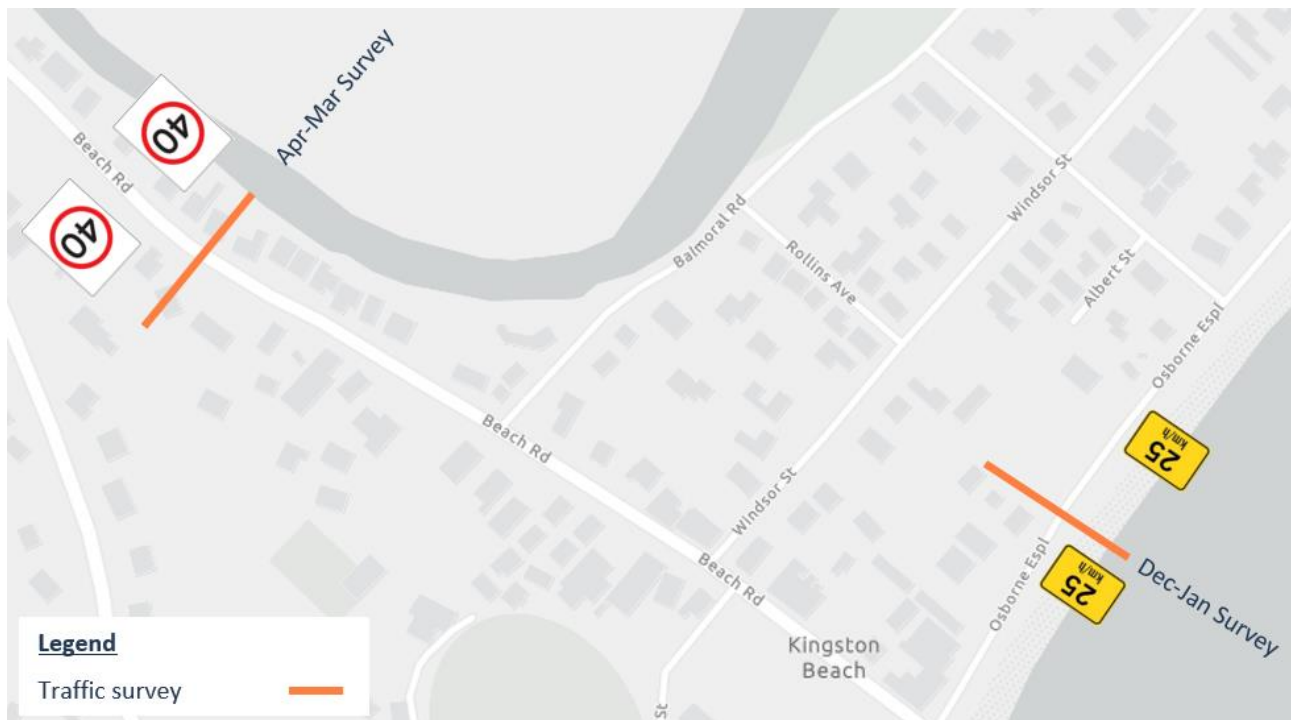


Figure 6: 2016 traffic survey locations (map source: ESRI).

Table 3: 2016 traffic survey results.

	Beach Road		Osborne Esplanade	
Average daily traffic	5339 vehicles		2312 vehicles	
AM peak (11:00am – 12:00pm)	448 vehicles		187 vehicles	
PM peak	499 vehicles (12pm-1pm)		218 vehicles (1pm-2pm)	
% Light vehicles and motorcycles	92.2%		96.2%	
% Commercial and heavy vehicles	7.5%		3.1%	
% Bicycles	0.4%		0.7%	
	<u>Westbound</u>	<u>Eastbound</u>	<u>Westbound</u>	<u>Eastbound</u>
85th %ile speed	46.4km/h	50.4km/h	31.0km/h	33.5km/h
Mean speed	41.5km/h	44.3km/h	25.6km/h	29.6km/h
% Exceeding speed limit (40km/h)	62.9%	76.7%	5.8%	10.6%

The survey data indicates that:

- Beach Road has a relatively high traffic volume;
- Beach Road and Osborne Esplanade experience a similar AM peak period, and Osborne Esplanade has a slightly delayed PM peak period (1 hour);
- Osborne Esplanade has less commercial/heavy vehicles use - in alignment with the road characteristics;
- Osborne Esplanade is used by more (on-road) cyclists compared to Beach Road, perhaps reflective of the movement/place characteristics of Osborne Esplanade; and
- Relatively, speeds are much lower on Osborne Esplanade than Beach Road as per the advisory speed limits, and compliance is much higher.

This data infers that Beach Road was used as more of a thoroughfare (more of a 'movement' classification) and Osborne Esplanade was used as more of a destination (more of a 'place' classification). This is evidenced by the

relatively poor speed compliance on Beach Road, the lower traffic volume on Osborne Esplanade, and the lower volume of commercial and heavy vehicles on Osborne Esplanade.

2.3.3.2 2018 Survey Data

In 2018, 5 traffic surveys were undertaken within the study area (another was also undertaken outside of the study area on Mount Royal Road). The survey locations and periods include:

- Balmoral Road (outside number 32) over two weeks from 25th April to 9th May;
- Windsor Street (outside number 33A) over two weeks from 25th April to 9th May;
- Victoria Street (outside number 4) over two weeks from 25th April to 9th May;
- Osborne Esplanade (outside number 32) over one week from 29th June to 6th July; and
- Osborne Esplanade (outside number 22) over two weeks from 25th April to 9th May.

The survey locations are shown below in Figure 7 and results are provided in Table 4.

These traffic surveys were commissioned to investigate the impact of a one-way trail for the precinct. The trial is explored in Appendix A. The April-May surveys were started two weeks before the trial was implemented and ran for two more weeks after the trial had begun. The June-July survey was commissioned to investigate the number of vehicles travelling the wrong way in the trial and was implemented after the trial had begun.



Figure 7: 2018 traffic survey locations (map source: ESRI).

Table 4: 2018 traffic survey results.

	Balmoral Road		Windsor Street		Victoria Street		Osborne Esplanade (#22)		Osborne Esplanade (#32)	
Average daily traffic	479 vehicles		624 vehicles		706 vehicles		1257 vehicles		1260 vehicles	
AM peak	48 vehicles (11am-12pm)		58 vehicles (11am-12pm)		69 vehicles (10am-11am)		120 vehicles (11am-12pm)		123 vehicles (11am-12pm)	
PM peak	54 vehicles (1pm-2pm)		74 vehicles (1pm-2pm)		74 vehicles (12pm-1pm)		131 vehicles (1pm-2pm)		137 vehicles (12pm-1pm)	
% Light vehicles and motorcycles	96.1%		95.1%		95.1%		95.5%		96.1%	
% Commercial and heavy vehicles	3.2%		4.4%		4.9%		2.9%		2.4%	
% Bicycles	0.7%		0.5%		0.1%		1.7%		1.5%	
	<u>Westbound</u>	<u>Eastbound</u>	<u>Westbound</u>	<u>Eastbound</u>	<u>Westbound</u>	<u>Eastbound</u>	<u>Westbound</u>	<u>Eastbound</u>	<u>Westbound</u>	<u>Eastbound</u>
85th %ile speed	41.4km/h	36.7km/h	42.1km/h	43.6km/h	34.9km/h	36.0km/h	31.0km/h	31.7km/h	24.5km/h	25.9km/h
Mean speed	34.2km/h	30.5km/h	35.3km/h	34.6km/h	29.3km/h	29.5km/h	23.2km/h	26.1km/h	19.5km/h	20.4km/h
% Exceeding speed limit (40km/h)	20.9%	5.9%	24.5%	28.3%	4.7%	6.7%	2.2%	1.2%	0.0%	0.2%

The survey data indicates that:

- Osborne Esplanade received more traffic than other parallel routes;
- The southern end of Osborne Esplanade had an earlier peak than the middle section of Osborne Esplanade (reflects the location of commercial areas);
- All roads experienced a similar daytime peak of 10am-2pm;
- On-road bicycle use was relatively higher on Osborne Esplanade than other surveyed streets on the Kingston Beach local road network;
- Speed compliance was significantly reduced on Windsor Street and Balmoral Road than the other surveyed streets.

This data infers that Balmoral Road and Windsor Street was used as more of a thoroughfare (more of a 'movement' classification, likely for residential access given the land use) and Osborne Esplanade was used as more of a destination (more of a 'place' classification). This is evidenced by the significantly reduced speed compliance on these roads, and the lower volume of commercial and heavy vehicles on Osborne Esplanade.

2.3.3.3 2021 Survey Data

As part of a response to a motion for pedestrian safety issues to be investigated (explored below), Council officers commissioned pedestrian and traffic surveys. Traffic surveys were conducted over two weeks from 4th November to 18th November. Pedestrian surveys were conducted over one week from 22nd November to 2nd December during the AM traffic peak hour. Survey locations are shown in Figure 8 and survey data is summarised in Table 5 and Table 6.

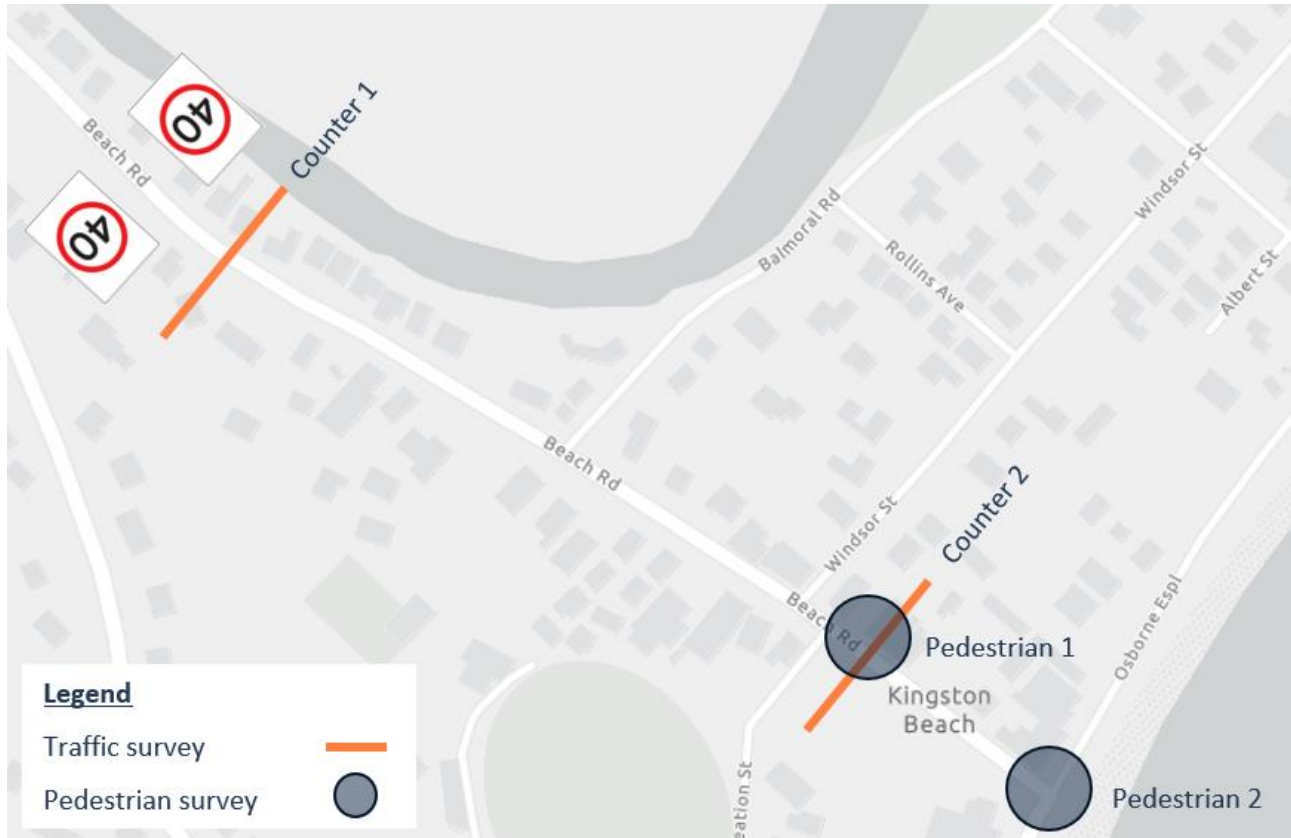


Figure 8: Traffic survey locations (map source: ESRI).

Table 5: Summarised traffic survey data.

	Counter 1		Counter 2	
Average daily traffic	6400 vehicles		4700 vehicles	
AM peak (11:30am – 12:30pm)	580 vehicles		420 vehicles	
PM peak (12:00pm-1:00pm)	540 vehicles		395 vehicles	
% Light vehicles and motorcycles	94.2%		84.3%	
% Commercial and heavy vehicles	5.3%		15.2%	
% Bicycles	0.6%		0.6%	
	<u>Westbound</u>	<u>Eastbound</u>	<u>Westbound</u>	<u>Eastbound</u>
85th %ile speed	47.5km/h	47.5km/h	51.1km/h	40.0km/h
Mean speed	42.2km/h	42.0km/h	38.4km/h	33.3km/h
% Exceeding 40km/h	67%	63%	32%	15%
% Exceeding 45km/h	30%	27.5%	22%	4%

Table 6: Summarised pedestrian survey data.

	Pedestrian 1 Near public carpark	Pedestrian 2 Beach Road	Pedestrian 2 Osborne Esplanade
Average peak hour crossings	80	60	210
Number of sensitive ¹ peak hour pedestrians	4	1	3
Average waiting time	5s	0.7s	0.2s
Maximum waiting time	30s	8s	4s
% crossing away from pedestrian crossing points	80%	57%	26%

2.3.3.4 Summary of Traffic Survey Data

An overall summary of key traffic survey data for Beach Road and Osborne Avenue is provided in Figure 9.



Figure 9: Overall Summary of Key Traffic Survey Data

¹ Includes elderly pedestrians, vision and mobility impaired pedestrians, and pedestrians under 12 years of age.

2.4 Active & Public Transport

2.4.1 Active Transport

The existing active transport facilities provided within the Kingston Beach Study Area are shown in Figure 10. It is noted that cyclists are legally allowed to use footpaths unless otherwise signed throughout Tasmania. The paths shown below are the sealed paths with adequate widths for a wheelchair or pram. It is noted that the bridge crossing Browns River in the north is for pedestrians only – cyclists must dismount to cross. Council have indicated that this is on the Capital Works Program for upgrade within the next 5 years, and it will likely be upgraded to be wide enough to accommodate cyclists.

There are no formal on-road cycling facilities within the study area. An approximately 1m wide lane without bicycle demarcations has been informally marked on the east side of Osborne Esplanade behind the parking facilities.



Figure 10: Existing active transport facilities (map source: Google Earth).

2.4.2 Public Transport

Existing public transport provisions through the Kingston Beach study area are shown in Figure 11, including the route travel path and the location of bus stops. There are three bus routes that service the area:

- Route 407: Blackmans Bay via Southern Outlet, Kingston Central, Kingston Beach;
- Route 411: Howden via Southern Outlet, Kingston Central, Kingston Beach, Blackmans Bay; and
- Route 427: Blackmans Bay via Taroona, Kingston Central, Kingston Beach.

They run along Beach Road and Osborne Esplanade (south of Beach Road).

It is noted that the off-street public car parking area to the south-west side of Beach Road in front of the Kingston Beach Health Centre is used by commuters as an informal Park and Ride facility. Parking within this off-street area is not subject to parking restrictions. The use of this area by commuters restricts the use of the facility for Kingston Beach businesses and services during typical weekdays.



Figure 11: Existing public transport facilities (map source: Google Earth).

2.5 Crash Data Analysis

Kingborough Council provided SMEC with the available 5-year crash data to November 2022. The locations of crashes are shown in Figure 12 and detailed in Table 7. Pedestrian crash types are highlighted in orange.

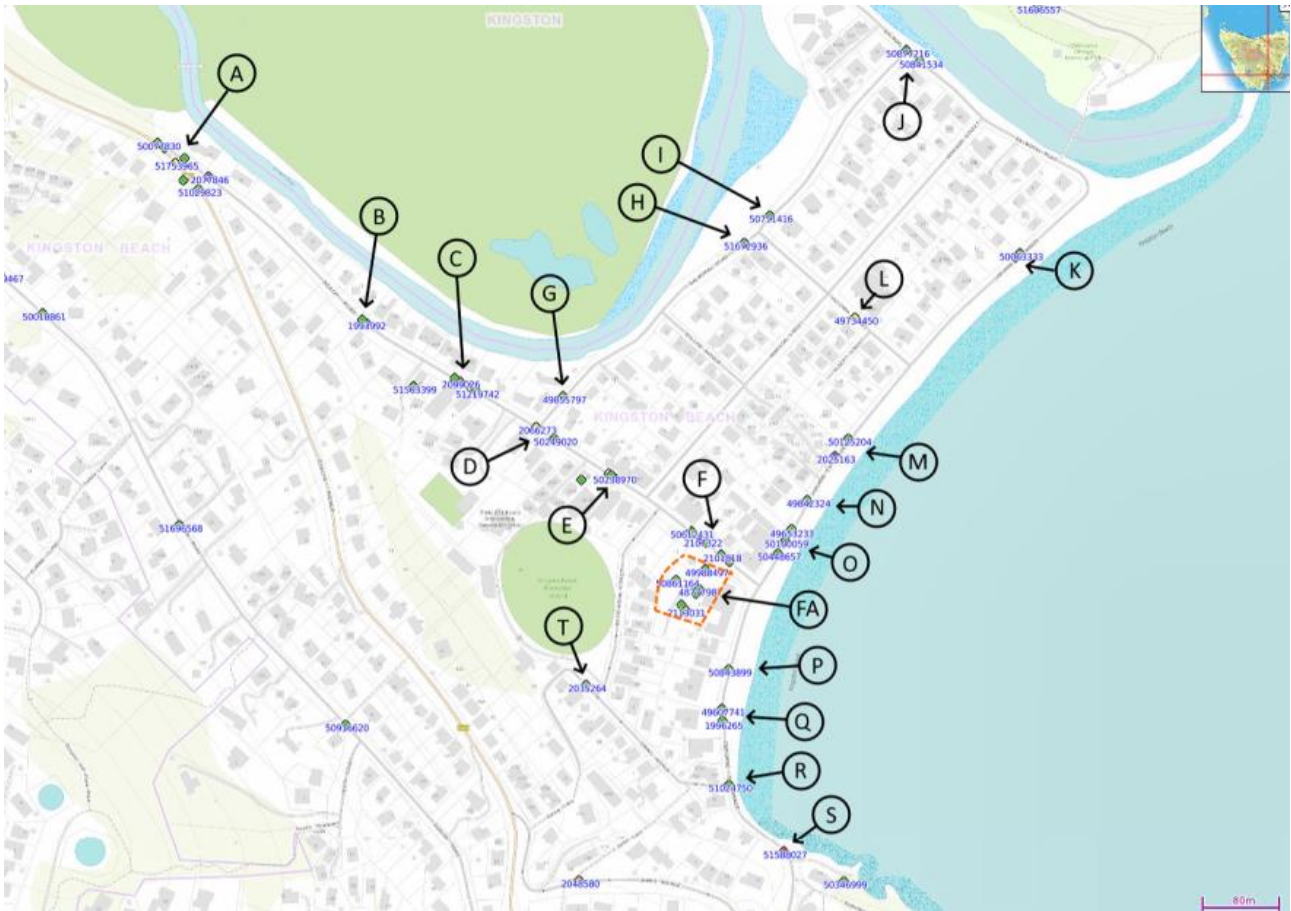


Figure 12: Crash location map (source: stategrowth.tas.gov.au, Kingborough Council).

Table 7: 5-year crash history to November 2022.

Area	DCA	Severity Unknown	Property Damage Only Crash	First Aid Injury Crash	Minor Injury Crash	Serious Injury Crash	Fatal Crash	Grand Total
A	100 (Near Side)				1			1
	160 (Parked)			1				1
	130 (Rear End)		3					3
	Not noted		3					3
B	109 (Other Pedestrian)		1					1
	169 (Other on Path)		1					1
C	139 (Other Same Direction)		1					1
	169(Other on Path)		1					1
	160 (Parked)		2					2
D	110 (Cross Traffic)				1			1
	189 (Other Curve)			1				1

Area	DCA	Severity Unknown	Property Damage Only Crash	First Aid Injury Crash	Minor Injury Crash	Serious Injury Crash	Fatal Crash	Grand Total
	163 (Vehicle Door)		1					1
E	130 (Rear End)		1					1
	160 (Parked)		1					1
	163 (Vehicle Door)		1					1
F	147 (Emerging from Driveway/Lane)		1	1				2
	163 (Vehicle Door)		1					1
	149 (Other Manoeuvring)		2					2
	169 (Other on Path)		1					1
F(A)	146 (Reversing into Fixed Object/Parked Vehicle)		1					1
	149 (Other Manoeuvring)		5					5
G	120 (Head On)		1					1
H	Not noted		1					1
I	149 (Other Manoeuvring)		1					1
J	169 (Other on Path)		1					1
	175 (Off End of Road/T-Intersection)		1					1
K	149 (Other Manoeuvring)		1					1
	147 (Emerging from Driveway/Lane)		1					1
L	160 (Parked)				1			1
M	100 (Near Side)			1				1
	144 (Parking Vehicles Only)		1					1
N	144 (Parking Vehicles Only)		1					1
O	146 (Reversing into Fixed Object/Parked Vehicle)		1					1
	149 (Other Manoeuvring)		3					3
P	144 (Parking Vehicles Only)		1					1
Q	149 (Other Manoeuvring)		3					3
	160 (Parked)		1					1
R	183 (Off Left Bend into Object/Parked Vehicle)		1					1
S	120 (Head On)						1	1
T	146 (Reversing into Fixed Object/Parked Vehicle)		1					1
Grand Total		0	47	4	3	0	1	55

Kingston Beach area on the whole has a relatively high number of property damage only crashes (47 out of 55 crashes, 85%). From a road safety engineering viewpoint, this preliminarily indicates that crash energy is well managed. Crash energy is typically well managed through low speeds and less consequential crash types e.g., crashes involved with parking etc rather than high angle intersection crashes.

The most frequent crash types are:

- DCA 149 – Other Manoeuvring (15 No.);
- DCA 160 – Parked (6 No.);
- DCA 169 – Other Parked Car (4 No.);
- DCA 130 – Rear End (4 No.); and
- DCA 163 – Vehicle Door (3 No.).

These crash types are usually very low-speed crash types with low crash severity outcomes (except DCA 163). Vehicle data is not available for these crashes, however, DCA 163 (Vehicle Door) crashes usually involve cyclists travelling adjacent to parallel parking lanes. Council has confirmed that this is not the case in this instance, indicating that the vehicle door crashes involved a second motorised vehicle rather than a cyclist.

It is also noted that a DCA 120 (Head On) crash occurred on Osborne Esplanade/Mount Royal Road with fatal injuries. Council have advised that this crash was incidental. A power disruption caused a crew to manage underground services that were buried under the road reserve. The pavement cut was temporarily filled with a cold-pack asphalt before it could be permanently reinstated. The local cyclist was undertaking their usual route northbound on Mount Royal Road (downhill) where they hit the temporarily reinstated patch. They were then vaulted into oncoming traffic. Council has confirmed that the road has been fully reinstated, and this has been confirmed through site inspection.

Some key crash trend spots/lengths have been identified in Figure 13.

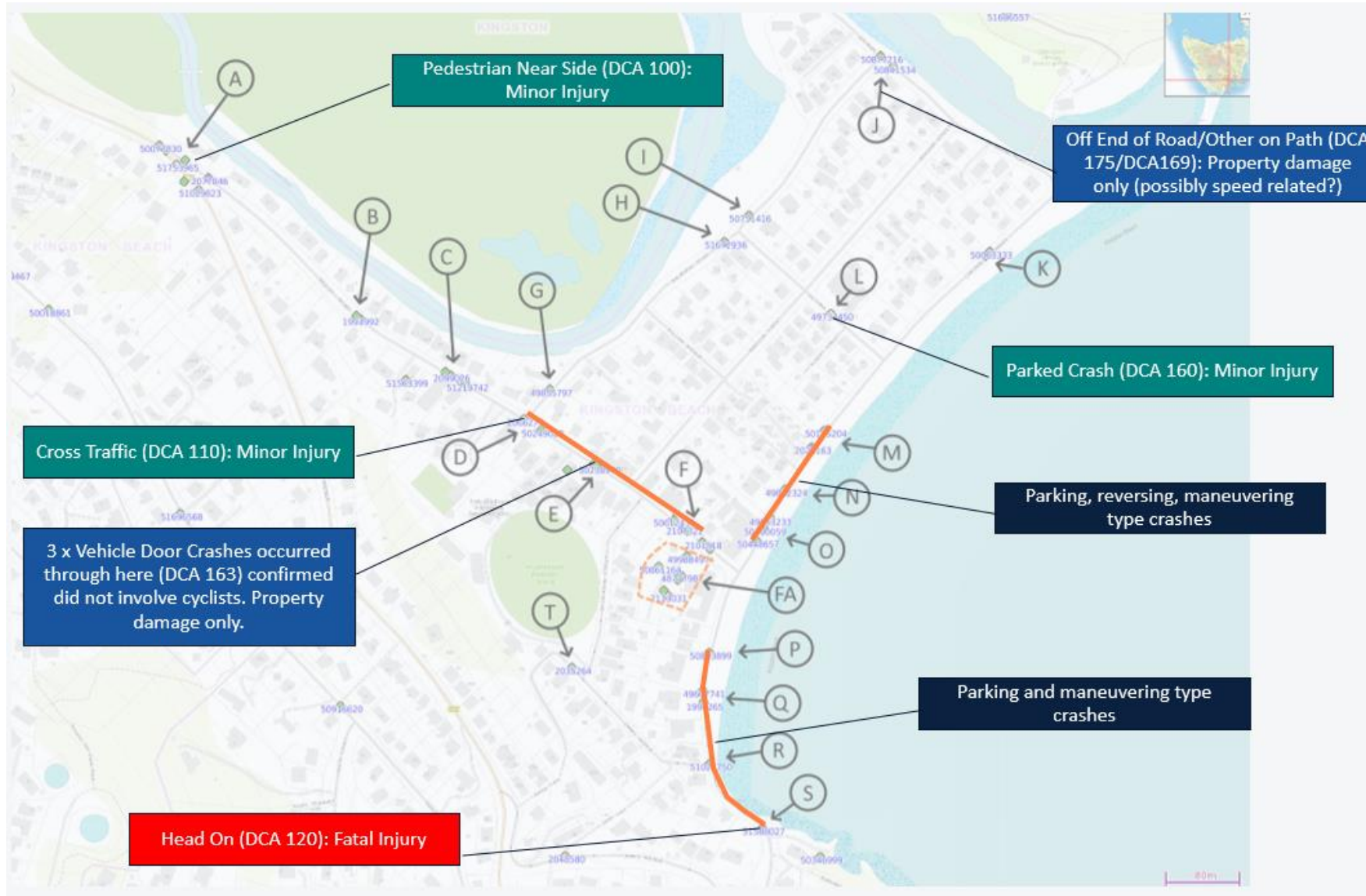


Figure 13: Crash history location/crash type trends (source: stategrowth.tas.gov.au, Kingborough Council).

2.6 Site Observations

Site inspections were undertaken by SMEC to capture first-hand data of on-site behaviour and transport dynamics, and to confirm existing conditions. The site was inspected during the day and evenings on Saturday and Sunday 10th and 11th December, and on the morning of Monday 12th December 2022. The weather was fine and overcast on all days.

The following observations were made:

Beach Road:

- Beach Road has short term parking restrictions for short lengths of the project extent.
- The off-street parking spaces are unrestricted (Salty Dog, medical centre, and hall).
- Beach Road has a narrow carriageway. When cars are parallel parked on both side of the carriageway, two-way flow is automatically calmed by the reduced trafficable width.
- Pedestrians generally have good sight distance in both direction of Beach Road.
- Bicycles and motor vehicles must share the traffic lane on Beach Road.
- The line marking condition on Beach Road is generally poor and maintenance is required.

Rotary Centennial Park:

- Parking could be formalised for the Rotary Centennial Park, no issues observed, low level of activity at all times observed.

Osborne Esplanade/Foreshore:

- The parking at the north end of Osborne Avenue (north of Beach Road) has wheel stops, and spaces are generally well defined.
- The parking at the south end (south of Beach Road) has sections without have wheel stops, including the parallel parking spaces.
- Parking is consistently 80-100% occupied (weekends), but there is unrestricted parking available on side streets. There is No Stopping yellow linemarking at the intersections to reinforce statutory No Stopping distances.

Recreation Reserve:

- Access is via a narrow one-way circulation road (Ewing Avenue then Recreation Street).
- Did not observe the reserve in action – cricket was not on as expected (or may have been at lunch break?), low levels of activity observed.

Activity Observations:

- Saturday:
 - Kingston Beach:
 - Passive recreation – walking, swimming etc
 - Beach volleyball with a radio station set up near the SLSC facilities
 - Sailing club was being utilised
 - Salty Dog al fresco dining was heavily utilised over lunch.
 - The study area was busier during the day and less busy at night.
 - Not as many patrons at restaurants in the evening as during the day.
- Sunday:
 - Kingston Beach:
 - Passive recreation – walking, swimming etc

-
- Beach volleyball
 - Cultural dancing
 - Sea kayaking
 - The Kingston Beach Makers Market was on at the community hall.
 - Cafes were all full.
 - High pedestrian activity on both sides of Beach Road and Osborne Esplanade.
 - Salty Dog was not open for breakfast.
 - Salty Dog provided live music in the afternoon.
 - High volumes of recreational walking and dog walking.
 - High volume of recreational swimming in the morning.
 - Monday:
 - Kingston Beach:
 - Passive recreation – walking, swimming etc
 - Cafes were busy.
 - High pedestrian activity on both sides of Beach Road and Osborne Esplanade.
 - High volumes of recreational walking and dog walking.
 - Some recreational swimming observed.

Photographs of the abovementioned observations are provided at Appendix B.

2.6.1 Shared Use Path Review

Council specifically requested that Kingston Beach footpaths be reviewed for their appropriateness to be formalised as Shared Use Paths (SUPs). It is noted that in Tasmania, cyclists can legally cycle on standard footpaths where it is not signed as otherwise.

Austrroads Guide to Road Design 6a: Paths for Walking and Cycling (2017) indicates that a standard regional SUP is approximately 3.0m wide. This accommodates two cyclist's handlebars or cargo bags, two prams, or two wheelchairs passing at the same time. Also, this width provides adequate width to slowly overtake pedestrians and other path users.

Reviewing the existing Kingston Beach footpaths, none of the existing footpaths can be recommended to be designated as SUPs. Considering desire line and given the carriageway width restrictions through Kingston Beach, only the foreshore path is suggested for upgrade to an SUP path. The integration of the path in the south to Mount Royal Road would have to be appropriately considered for safety given the grade, and the connection to the north would have to be appropriately considered for connectivity given the unsealed nature of Tyndall Road and the walking tracks.

4. Key Issues and Opportunities

A summary of the identified key issues and opportunities for the Kingston Beach study area have been tabulated in Table 8 and mapped in Figure 14. They include findings from the background document review, those identified during SMEC's investigations, and discussions with Council.

Key issues have been prioritised as either high, medium or low priority, based on their impact on safety and amenity.

Table 8: Kingston Beach Key Issues & Opportunities.

Item	Location	Issue	Opportunity	Priority (High, Medium, Low)
1.0 Traffic Speeds				
1.1	Beach Road west end	Poor 40km/h Speed Limit compliance westbound and eastbound	Traffic calming treatment to reinforce 40km/h speed limit and improve speed compliance and road safety. Options include: <ul style="list-style-type: none"> Updated entry treatment where the 40km/h speed zone commences, possibly including: <ul style="list-style-type: none"> a raised threshold treatment; and/or a place making pavement treatment which highlights a change from a 'movement' to a 'place' function for this section of Beach Road. 	High
1.2	Beach Road length	Poor 40km/h Speed Limit compliance westbound	Traffic calming treatment/s to reinforce 40km/h speed limit and improve speed compliance and road safety. Options include: <ul style="list-style-type: none"> speed hump treatments at appropriate spacings to calm traffic; and/or road narrowing treatment using kerb extensions to reduce trafficable width and encourage lower speeds; and/or a place making pavement treatment which highlights a change from a 'movement' to a 'place' function for this section of Beach Road. 	High
1.3	Osborne Esplanade near Beach Road	Poor 40km/h Speed Limit compliance northbound	Traffic calming treatment to reinforce 40km/h speed limit and improve speed compliance and road safety. Options include: <ul style="list-style-type: none"> a place making pavement treatment at the intersection of Osborne Avenue and Beach Road, to further reinforce the location as a 'place' rather than a 'movement' focus; and/or conversion of this area to a Shared Zone to highlight the mix of pedestrians, cyclists and general traffic at this location, and improve placemaking; and/or upgrade the zebra crossing to a wombat crossing to reduce traffic speeds and improve visibility of the device and safety for users (noting that this area has recently been upgraded). 	High

Item	Location	Issue	Opportunity	Priority (High, Medium, Low)
2.0 Pedestrian Facilities & Safety				
2.1	Beach Road Commercial Precinct	Pedestrians crossing informally. Council has received ongoing concerns from the community regarding crossing safety for pedestrians along this length.	Dedicated pedestrian crossing facility adjacent to the off-road public car park. This could be installed as wombat crossings, which slow traffic as well as providing good visibility and amenity to pedestrians.	High
2.2	Beach Road – near #69 (west end towards Roslyn Avenue)	Crash involving a pedestrian.	Traffic calming treatment to reinforce 40km/h speed limit and improve speed compliance and road safety.	High
2.3	Beach Road outside childcare facility	Reports of children running across the road.	Traffic calming treatment to reinforce 40km/h speed limit and improve speed compliance and road safety. Pedestrian safety fencing to prevent children from running across the road and guide them to safer crossing locations. Soft measure could be a school road safety initiative to teach children how to safely behave and awareness of the road environment.	High
2.4	Osborne Esplanade – near Surf Life Saving facilities	Crash involving a child pedestrian. Reports of children running across the road.	Upgrade crossing point to a wombat crossing and clearly define pedestrian priority.	High
2.5	Osborne Esplanade Zebra Crossing	Sight line issues for vehicles approaching Osborne Esplanade from Beach Road (eastbound) to the pedestrians crossing. Pedestrians crossing Osborne Esplanade using the zebra crossing are obscured by the glassed-in alfresco dining area on the corner. They can only be seen once the turning movement has been completed.	Options include: <ul style="list-style-type: none"> Consider removal of the glass screening to improve sight lines to pedestrians at the crossing point. Upgrade the zebra crossing to a wombat crossing to raise the height of pedestrians relative to driver sight lines, improve visibility of the treatment and reduce traffic speeds. 	High

Item	Location	Issue	Opportunity	Priority (High, Medium, Low)
2.6	Rotary Centennial Park to Christopher Johnson Memorial Park & the Kingston Beach Dog Beach	No pedestrian connection along Browns River to connect these passive recreation spaces.	Design of a SUP facility along the Browns River on the Kingston Beach side, including raised boardwalk where required, to provide a dedicated passive recreation facility and improved amenity for local residents.	Medium
3.0 Cyclist Facilities & Safety				
3.1	Beach Road	<p>Beach Road does not have sufficient width for cyclists to have a dedicated cycling lane, without significant loss of on-street parallel parking. There is also not sufficient road reserve to widen the footpath to provide a dedicated off-road SUP of sufficient width.</p> <p>This results in motor vehicles and bicycles needing to share the traffic lane. There is currently no linemarking or signage to support this arrangement.</p>	<p>Beach Road is proposed as a first priority for a shared cycling facility in the Kingborough Cycling Strategy.</p> <p>There are major constraints to providing a dedicated cycling facility along this route given the limited road reserve width. Options considered, all which have considerable constraints, have included:</p> <ul style="list-style-type: none"> • A SUP through the Kingston Beach Golf Club; or • Removal of all kerbside parallel parking along Beach Road to provide width for an on-road kerbside cycling lane. <p>Our first recommendation would be to provide the dedicated infrastructure. However, we acknowledge the considerable constraints faced to achieving this.</p> <p>As an interim measure, we recommend that consideration is given to the use of Sharrows along Beach Road, from where the off-road path finishes at Roslyn Avenue, through to Osborne Esplanade.</p> <p>"Sharrows" or Share Lane Markings are pavement markings used to indicate a shared environment for bicycles and motor vehicles. The 'sharrows' highlight cycling routes and recommend the lateral positioning of bike rider, while alerting all road users to the presence of bicycles on the road. The 'sharrows' are not a dedicated cycling facility, but a pavement marking which supports a complete bike network.²</p>	High
3.2	Osborne Esplanade	<p>An informal 1.0m wide lane has been linemarked behind the 90-degree parking bays on Osborne Esplanade north of Beach Road.</p> <p>This facility is problematic as it suggests to both motorists and cyclists that this is a safe</p>	<p>Osborne Esplanade and Balmoral Road are proposed as a priority for an on-road cycling facility in the Kingborough Cycling Strategy.</p> <p>Our first recommendation would be to provide a dedicated and separated cycling facility, however, acknowledge that width required to achieve this would require a significant impact on the existing 90-degree parking bays, or consideration of conversion to a One-Way traffic arrangement and a reallocation of pavement to a cycling lane.</p> <p>As an interim treatment, it is recommended that the current linemarking is removed and that Sharrows are implemented along Osborne Avenue and Balmoral Road. Sharrows indicate to</p>	High

² VicRoads Supplement to AS 1724.9:2000 *Manual of Uniform Traffic Control Devices Part 9: Bicycle Facilities* – Edition 1, October 2015

Item	Location	Issue	Opportunity	Priority (High, Medium, Low)
		location for cyclists to travel, where in fact it puts them directly behind reversing vehicles. It also indicates to motorists that cyclists should be travelling further over to the left than they may be comfortable doing, given the parked cars, and that they do not need to share the main traffic lane with cyclists.	both motorists and cyclists that the road pavement is a shared travel path and encourage a safe and joint use of the road.	
3.3	Kingston Beach residential area north of Beach Road	No cycling route provided.	<p>A dedicated on-road or off-road cycling path would be the first preference to accommodate cyclists safely through this residential area. However, this would require either reallocation of road space from parking, or a significant off-road facility.</p> <p>As detailed above, it is recommended that Sharrows are considered for the Kingborough Cycling Strategy route around the Kingston Beach residential area of along Osborne Avenue north of Beach Road and then following Balmoral Road all the way around to where it meets Beach Road.</p>	Medium
4.0 Other				
4.1	Off-Street Parking Facilities	The off-street parking facilities to the south side of Beach Road were observed to be used for all-day commuter type parking. It is anecdotally known that Kingston Beach or nearby residents use the bus service to journey into Hobart with free all-day parking. This congests the key off-street parking facility making finding parking for other users of the precinct generally difficult. It also necessitates further on-street parking, which has been shown to be less safe than off-street parking, given the prevalence	Consider implementation of short (1-2 hour) and medium (4-6 hour) parking restrictions through the off-street carpark, depending on specific needs of the local community. This should be coupled with significant education and communication campaign to encourage use of the new 'park and ride' facilities further north-west within Kingston.	Low

Item	Location	Issue	Opportunity	Priority (High, Medium, Low)
		of manoeuvring and dooring type crashes through the area, including cyclists.		
4.2	Linemarking throughout precinct	Throughout the precinct, the maintenance of linemarking is noted to be generally poor. This suggests that maintenance for linemarking is limited by budget constraints. This may lead to erosion of traffic controls.	Consideration of this should be accounted for in recommendations for traffic management throughout the Kingston Beach local area. New treatments should be designed and implemented with longer-lasting paint types that will have less regular maintenance requirements.	Low
4.3	Osborne Esplanade on-street carparking south of Beach Road	The parking on Osborne Esplanade south of Beach Road does not have wheel stops for the 90° spaces or the parallel parking spaces. This may lead to vehicles encroaching onto the footpath or striking pedestrians when entering/exiting the carparks.	Install wheel stops where appropriate for the indented angle parking on Osborne Esplanade south of Beach Road.	Medium
4.4	Balmoral Road T-Intersection	There were two recorded crashes at this intersection, one involving a vehicle losing control, suggesting an inappropriate speed.	This intersection has recently been upgraded to change priority to the NW-SE Balmoral Road, and a kerb extension installed on the SE corner. It is recommended that this intersection continue to be monitored for traffic safety concerns. Consideration could be given to traffic calming treatments on each approach to the intersection if it is deemed warranted.	Medium
4.5	Rotary Centennial Park	Informal gravel parking area can result in an inefficient parking outcome. Debris from gravel parking spaces can migrate to the road surface where it becomes a hazard for cyclists and motorcyclists.	Consider upgrading and formalising the parking area.	Low

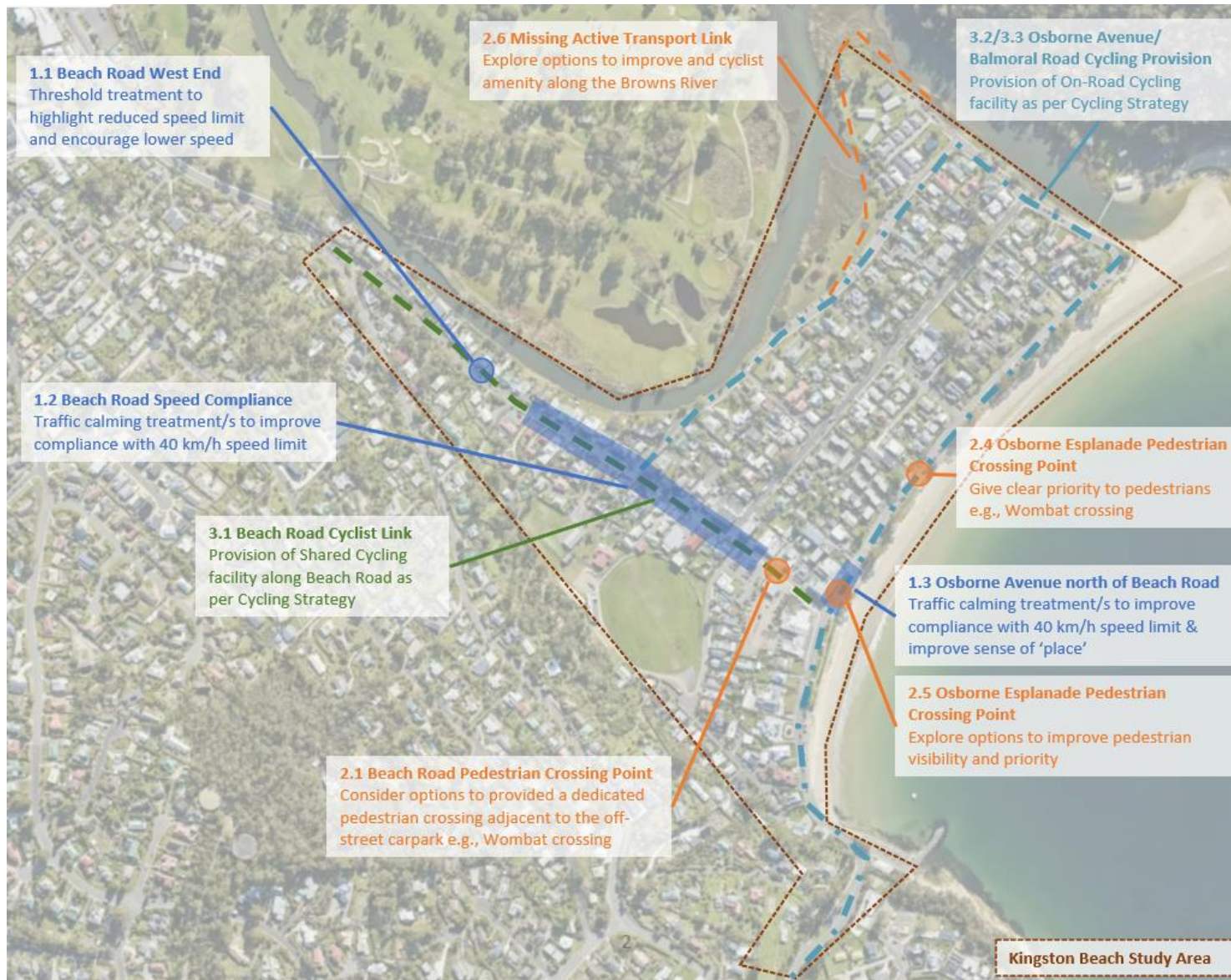


Figure 14: Key Issues & Opportunities (map source: Metro Maps).

5. Local Area Traffic Management Plan Development

The development of an overall Local Area Traffic Management Plan for the Kingston Beach area has considered the key objectives of the study as defined by Council:

- Undertake a LATM study for the Kingston Beach study area which reviews existing transport conditions, identifies issues and opportunities to improve safety and access for all modes of transport, with a key emphasis on improvements to active transport (pedestrians and cyclists).
- Develop a staged and prioritised works schedule for the study area for the next 5 to 10 years, including indicative costs estimates.

As such, all modes of transport have been considered in the choice of proposed treatments, with emphasis given to improvements for active transport users.

When selecting treatments, broad urban design and town planning principles are applied as well as key traffic management objectives. Treatments are selected which are deemed appropriate for the road classification, transport requirements, and level of 'place'. Treatments are carefully located and spaced, to achieve aspirational traffic speeds and provide an overall 'local area' treatment, to avoid less effective standalone treatments.

5.1 Active Transport Route Priorities

Priority pedestrian routes have been determined through review of background documents, discussions with Council (see Section 1.3 for details) and SMEC's investigations. The priority pedestrian routes are:

1. Beach Road Pedestrian Crossing Point

Pedestrians crossing to/from the central business area of Kingston Beach to the car park adjacent to the recreation reserve and medical centre.

2. Osborne Esplanade Crossing (north of Beach Road)

Pedestrians crossing to/from the central business area of Kingston beach to the car parks and foreshore adjacent to the Beach Road intersection.

3. Osborne Esplanade Crossing (Surf Lifesaving Club)

Pedestrians crossing to/from the foreshore carparks and foreshore to the Surf Life Saving Centre on Osborne Esplanade.

4. Balmoral Road Loop

Pedestrian access between Centennial Park and the Dog Beach.

The Kingborough Cycling Strategy was outlined in Section 2.4.1. It identifies a desire to provide a dedicated Shared Facility along Beach Road down to Osborne Avenue, and to provide an on-road cycling facility along Osborne Avenue and around Balmoral Road.

5.2 Safe System Approach to Project Priorities

The proposed projects are heavily informed by current Australian road safety best practice, the Safe System approach. The Safe System is a road safety philosophy that requires roads to be designed and managed so that death and serious injury are avoidable. The basic principles are:

- Humans are fallible, and will inevitably make mistakes when driving, riding or walking.
- Despite this, road trauma should not be accepted as inevitable. No one should be killed or seriously injured on our roads.
- To prevent serious trauma, the road system must be forgiving, so that the forces of collisions do not exceed the limits that the human body can tolerate.

The Safe System philosophy underpins Australia’s emerging strategic approach to road safety. It is divided into four core interrelated pillars:

- **Safer Roads:** Relates to both the road itself and the roadside. This considers ways to reduce the chance of a crash occurring as well as the consequence when one does occur.
- **Safer Speeds:** Relates to the speed at which vehicles are likely to travel on the road. Factors that influence operating speeds includes posted speed limits, the level of compliance with the speed limit and physical constraints. Unsafe speeds can increase both likelihood and consequence of a crash.
- **Safer Vehicles:** Relates to the safety features, including intelligent technologies that are incorporated into vehicles of different types, which contribute to crash avoidance and/or reduced crash severity.
- **Safer Road Users:** Relates to road user behaviour, driver/rider training and licensing, levels of compliance and personal safety equipment in the case of vulnerable road users such as cyclists and motorcyclists.

Safe System Tolerances are an integral reference when considering crash risk. The tolerances describe the human body’s capacity to absorb the crash energy for common crash types. Beyond these energy limits, the likelihood of fatal injury is 10% (Jurewicz et al. 2015). Table 9 gives these tolerances.

Table 9. Safe System energy tolerances.

Crash Type	Tolerance
Head on	70 km/h
Side impact	50 km/h
Side impact with fixed point hazard (e.g., tree or pole)	30 km/h
Impact with pedestrian, cyclist, or motorcyclist	30 km/h

The proposed projects adopt this Safe System framework more so than typical warrant-based assessment. While warrants are important for determining whether a treatment would be effective in each traffic environment (speed and volume), warrants alone can be restrictive. Often treatments that would benefit an area would not be implemented where they would be of great benefit due to seasonality or other traffic dynamics that skew warrant inputs. Adopting an energy-management approach enables safe system solutions to be prioritised.

5.3 LATM Long List of Treatment Options

A long list of LATM projects have been developed and subsequently discussed with Council, some projects were flagged as being captured by other investment strategies or rejected in early feedback, and as such were not included in the LATM long list of projects.

Table 10 outlines the LATM long list of projects and whether these have been either accepted (to be taken forward for concept design / cost estimation) or rejected (with justification given as). Item numbers are the same as to those assigned in the Issues and Opportunities located at Table 8.

Table 10: LATM long list

Item	Location	Issue	Opportunity	Priority Issue	Proposed Treatment Option/s	Description	Adopted for Recommended LATM Plan
1.0 Traffic Speeds							
1.1	Beach Road west end	Poor 40km/h Speed Limit compliance westbound and eastbound	Traffic calming treatment to reinforce 40km/h speed limit and improve speed compliance and road safety. Options include: <ul style="list-style-type: none"> Updated entry treatment where the 40km/h speed zone commences, possibly including: <ul style="list-style-type: none"> a raised threshold treatment; and/or a place making pavement treatment which highlights a change from a 'movement' to a 'place' function for this section of Beach Road. 	High	Kingston Beach Threshold Treatment	Updated entry treatment where the 40km/h speed zone commences, including a raised threshold treatment with a place making pavement treatment which highlights the change from a 'movement' to a 'place' function for this section of Beach Road.	Yes
1.2	Beach Road length	Poor 40km/h Speed Limit compliance westbound	Traffic calming treatment/s to reinforce 40km/h speed limit and improve speed compliance and road safety. Options include: <ul style="list-style-type: none"> speed hump treatments at appropriate spacings to calm traffic; and/or road narrowing treatment using kerb extensions to reduce trafficable width and encourage lower speeds; and/or a place making pavement treatment which highlights a change from a 'movement' to a 'place' function for this section of Beach Road. 	High	Speed Humps	Austrroads Guide to Traffic Management Part 8, 2022 (AGTM8-22) suggests road humps for reducing speeds and crash risk. Speed cushions are not recommended as drivers often attempt to dodge the cushion by veering to the left. When cyclists are present, this is dangerous. For this reason, a raised hump/threshold treatment is proposed at the existing 40km/h speed limit signs to set a standard for the speed environment (Item 1.1 above), and then speed humps would be repeated to ensure an effective speed reduction treatment along the length of Beach Road.	No – Council did not believe speed humps at regular intervals would be supported by the community.
					Road Narrowing Treatment: Kerb Extensions	Austrroads Guide to Traffic Management Part 8, 2022 (AGTM8-22) suggests kerb extensions/lane narrowing for reducing speeds and crash risk. It is proposed that extensions are placed on Beach Road at key locations where the benefit.	Yes
					Pavement Treatment: 'Dragons Teeth' Perceptual Countermeasure	Application of the 'dragons' teeth' linemarking treatment was considered for application at both ends of Beach Road through the Beach Road precinct. Surveys showed that this area has poor speed compliance (westbound) and high pedestrian activity (pedestrians crossing away from the formal crossing points). (Examples: Anglesea Road near Hardings Road, Freshwater Creek, VIC; and Warrigal Road near Batesford Road, Chadstone, VIC).	No – Council not convinced of effectiveness of treatment.
1.3	Osborne Esplanade near Beach Road	Poor 40km/h Speed Limit compliance northbound	See Item 2.5 for Options developed for this location.	High	-	-	-
2.0 Pedestrian Safety							
2.1	Beach Road Commercial Precinct	Pedestrians crossing informally. Council has received ongoing concerns from the community regarding crossing safety for pedestrians along this length.	Dedicated pedestrian crossing facility adjacent to the off-road public car park. This could be installed as wombat crossings, which slow traffic as well as providing good visibility and amenity to pedestrians.	High	Raised Wombat Crossing	A wombat crossing could be considered opposite the medical centre and car park on Beach Road to facilitate pedestrian movements (create priority) and to compliment the calmed speed environment. (Example: Main Street near The Esplanade, Mornington, VIC).	Yes
2.2	Beach Road – near #69 (west end towards Roslyn Avenue)	Crash involving a pedestrian.	See Item 1.2 for Beach Road speed reduction recommendations.	High	-	-	-
2.3	Beach Road outside childcare facility	Reports of children running across the road.	See Item 1.2 for Beach Road speed reduction recommendations. Pedestrian safety fencing to prevent children from running across the road and guide them to safer crossing locations. Soft measure could be a school road safety initiative to teach children how to safely behave and awareness of the road environment.	High	-	-	-

Item	Location	Issue	Opportunity	Priority Issue	Proposed Treatment Option/s	Description	Adopted for Recommended LATM Plan
2.4	Osborne Esplanade – near Surf Life Saving facilities	Crash involving a child pedestrian. Reports of children running across the road.	Upgrade crossing point to a wombat crossing and clearly define pedestrian priority.	High	Wombat Crossing	<p>A pedestrian crossing features on Osborne Esplanade near the Surf Life Saving Centre (motor vehicle priority). It has been designed such that the surface colour is different from the traffic lane to raise awareness for the crossing. Crossing priority is managed through signage but remains unclear. Council has indicated that this is intentional so that priority can be managed by pedestrians and motor vehicle traffic.</p> <p>It is proposed that this crossing is formalised given its location (near the public bathroom facilities, change rooms, and SLSC) and existing conditions. An upgrade to a wombat crossing is deemed appropriate given the reduction of speed to Safe System pedestrian tolerances, as recommended in AGTM8-22. A wombat crossing would also make priority clear (i.e., in favour of the pedestrian) for both pedestrians and motor vehicle traffic as the crossing would be consistent with other crossings in the network.</p>	Yes
2.5	Osborne Esplanade Zebra Crossing	<p>Poor 40km/h Speed Limit compliance northbound.</p> <p>Sight line issues for vehicles approaching Osborne Esplanade from Beach Road (eastbound) to the pedestrians crossing. Pedestrians crossing Osborne Esplanade using the zebra crossing are obscured by the glassed-in alfresco dining area on the corner. They can only be seen once the turning movement has been completed.</p>	<p>Options include:</p> <ul style="list-style-type: none"> upgrade the zebra crossing to a wombat crossing to reduce traffic speeds and improve visibility of the device and safety for users (noting that this area has recently been upgraded); or conversion of this area to a Shared Zone to highlight the mix of pedestrians, cyclists and general traffic at this location, and improve placemaking; or improve conspicuity of the zebra crossing with a contrast pavement treatment on each approach to the zebra crossing; and consider removal of the glass screening to improve sight lines to pedestrians at the crossing point. 	High	Pedestrian Facilities Option 1: Osborne Esplanade zebra crossing upgrade to a Wombat crossing	It is proposed that the existing zebra crossing on Osborne Esplanade be replaced with a wombat crossing. While it has previously been determined as not warranted based on the volume characteristics, a vertical displacement device would be a beneficial speed management device in this area as recommended by AGTM8-22 (see Table 7.1). A wombat crossing would ensure that motor vehicle traffic is always slowing on the approach to the crossing. The wombat crossing should be such a height that it will slow vehicles to below the Safe System tolerance speed for pedestrians (30km/h).	Yes – Option for consideration
					Pedestrian Facilities Option 2: Osborne Esplanade zebra crossing conversion to a Shared Zone	It is proposed that the existing zebra crossing on Osborne Esplanade be removed and this length of Osborne Esplanade be replaced with a Shared Zone, significantly reducing vehicle speeds, and formally allowing this to be a shared space between pedestrians, cyclists and motorised transport. The treatment would be constructed with a long flat-top road hump and supplemented with a placemaking pavement treatment.	Yes – Option for consideration
					Pedestrian Facilities Option 3: Perceptive countermeasure treatments on the approach to Osborne Esplanade zebra crossing	It is proposed that an alternative aggregate is used on the approach to the zebra crossing on Osborne Esplanade to highlight the conflict point. The aggregate should be lighter in colour to be distinguished in both good and poor visibility conditions.	Yes – Option for consideration
					Remove glass screening at the alfresco area	It is proposed that the 'parklet' style alfresco area on the corner be reviewed to be more transparent or otherwise improve sight lines to the pedestrian crossing.	No – Council did not believe this would be supported by the local traders/ community
2.6	Rotary Centennial Park to Christopher Johnson Memorial Park & the Kingston Beach Dog Beach	No pedestrian connection along Browns River to connect these passive recreation spaces.	Design of a SUP facility along the Browns River on the Kingston Beach side, including raised boardwalk where required, to provide a dedicated passive recreation facility and improved amenity for local residents.	Medium	Shared Use Path including boardwalk.	Design of a SUP facility along the Browns River on the Kingston Beach side, including raised boardwalk where required, to provide a dedicated passive recreation facility and improved amenity for local residents.	Low priority. For future consideration.

Item	Location	Issue	Opportunity	Priority Issue	Proposed Treatment Option/s	Description	Adopted for Recommended LATM Plan
3.0 Cyclist Safety							
3.1	Beach Road	<p>Beach Road does not have sufficient width for cyclists to have a dedicated cycling lane, without significant loss of on-street parallel parking. There is also not sufficient road reserve to widen the footpath to provide a dedicated off-road SUP of sufficient width.</p> <p>This results in motor vehicles and bicycles needing to share the traffic lane. There is currently no linemarking or signage to support this arrangement.</p>	<p>Beach Road is proposed as a first priority for a shared cycling facility in the Kingborough Cycling Strategy.</p>	High	Dedicated Off-Road Shared Use Path	<p>There are major constraints to providing a dedicated cycling facility along this route given the limited road reserve width. Options considered, all which have considerable constraints, have included:</p> <ul style="list-style-type: none"> A SUP through the Kingston Beach Golf Club; or Removal of all kerbside parallel parking along Beach Road to provide width for an on-road kerbside cycling lane. <p>Our first recommendation would be to provide the dedicated infrastructure. However, we acknowledge the considerable constraints faced to achieving this.</p>	For continued review & investigation by Council
					Sharrows	<p>As an interim measure, we recommend that consideration is given to the use of Sharrows along Beach Road, from where the off-road path finishes at Roslyn Avenue, through to Osborne Esplanade.</p> <p>"Sharrows" or Share Lane Markings are pavement markings used to indicate a shared environment for bicycles and motor vehicles. The 'sharrows' highlight cycling routes and recommend the lateral positioning of bike rider, while alerting all road users to the presence of bicycles on the road. The 'sharrows' are not a dedicated cycling facility, but a pavement marking which supports a complete bike network.²</p>	Yes
3.2	Osborne Esplanade	No formal cycling facility.	<p>Osborne Esplanade and Balmoral Road are proposed as a priority for an on-road cycling facility in the Kingborough Cycling Strategy.</p> <p>Our first recommendation would be to provide a dedicated and separated cycling facility, however, acknowledge that width required to achieve this would require a significant impact on the existing 90-degree parking bays along Osborne Avenue, or consideration of conversion to a One-Way traffic arrangement and a reallocation of pavement to a cycling lane.</p> <p>As an interim treatment, it is recommended that the current linemarking is removed and that Sharrows are implemented along Osborne Avenue and Balmoral Road. Sharrows indicate to both motorists and cyclists that the road pavement is a shared travel path and encourage a safe and joint use of the road.</p>	High	Sharrows	<p>As an interim measure, we recommend that consideration is given to the use of Sharrows along Osborne Esplanade, looping around to Balmoral Road.</p> <p>"Sharrows" or Share Lane Markings are pavement markings used to indicate a shared environment for bicycles and motor vehicles. The 'sharrows' highlight cycling routes and recommend the lateral positioning of bike rider, while alerting all road users to the presence of bicycles on the road. The 'sharrows' are not a dedicated cycling facility, but a pavement marking which supports a complete bike network.²</p>	Yes
3.3	Kingston Beach residential area north of Beach Road	No cycling route provided.		Medium			
4.0 Other Items							
4.1	Off-Street Parking Facilities	<p>The off-street parking facilities to the south side of Beach Road were observed to be used for all-day commuter type parking. It is anecdotally known that Kingston Beach or nearby residents use the bus service to journey into Hobart with free all-day parking. This congests the key off-street parking facility making finding parking for other users of the precinct generally difficult. It also necessitates further on-street parking, which has been shown to be less safe than off-street parking, given the prevalence of manoeuvring and dooring</p>	Short to medium term parking restrictions.	Low	Parking Restrictions	<p>Consider implementation of short (1-2 hour) and medium (4-6 hour) parking restrictions through the off-street carpark, depending on specific needs of the local community. This should be coupled with significant education and communication campaign to encourage use of the new 'park and ride' facilities further north-west within Kingston.</p>	Yes – for further consideration by Council

Item	Location	Issue	Opportunity	Priority Issue	Proposed Treatment Option/s	Description	Adopted for Recommended LATM Plan
		type crashes through the area, including cyclists.					
4.2	Linemarking throughout precinct	Throughout the precinct, the maintenance of linemarking is noted to be generally poor. This suggests that maintenance for linemarking is limited by budget constraints. This may lead to erosion of traffic controls.	Consideration of this should be accounted for in recommendations for traffic management throughout the Kingston Beach local area. New treatments should be designed and implemented with longer-lasting paint types that will have less regular maintenance requirements.	Low	-	-	-
4.3	Osborne Esplanade on-street carparking south of Beach Road	The parking on Osborne Esplanade south of Beach Road does not have wheel stops for the 90° spaces or the parallel parking spaces. This may lead to vehicles encroaching onto the footpath or striking pedestrians when entering/exiting the carparks.	Install wheel stops where appropriate for the indented angle parking on Osborne Esplanade south of Beach Road.	Medium	-	-	Continue to monitor.
4.4	Balmoral Road T-Intersection	There were two recorded crashes at this intersection, one involving a vehicle losing control, suggesting an inappropriate speed.	This intersection has recently been upgraded to change priority to the NW-SE Balmoral Road, and a kerb extension installed on the SE corner. It is recommended that this intersection continue to be monitored for traffic safety concerns. Consideration could be given to traffic calming treatments on each approach to the intersection if it is deemed warranted.	Medium	Resheeting and linemarking	The crash history near 36 Balmoral Road suggests the T-intersection is sometimes misunderstood by motor vehicles, or that vehicles are negotiating the bend at an inappropriately high speed. As such, resealing and refreshing of pavement markings are proposed. The T-intersection will have existing priorities maintained.	Yes
4.5	Rotary Centennial Park	Informal gravel parking area can result in an inefficient parking outcome. Debris from gravel parking spaces can migrate to the road surface where it becomes a hazard for cyclists and motorcyclists.	Consider upgrading and formalising the parking area.	Low	-	-	Continue to monitor.

5.4 Multi-Criteria Analysis (MCA) for Project Prioritisation

Prioritisation of the proposed projects (for each route above) was undertaken using a Multiple Criteria Analysis (MCA) process. An MCA establishes a matrix of criteria and weightings to increase the objectivity of decision making.

The assessment criteria and associated project assessment outcomes are outlined in the following sub-sections.

5.4.1 Assessment Criteria

The development of the MCA criteria is the key part of the process as the identification of the most suitable projects are directly related to the quality and weighting of the criteria and their relevance to Council objectives.

The criteria used for the proposed projects were developed collaboratively with Council and SMEC representatives prior to commencing the assessment. The criteria decided upon are:

- Safety benefits;
- Estimated capital costs;
- Traffic Impacts;
- Likelihood of Modal Shift; and
- Inclusivity Impacts.

These criteria align with Kingborough's Integrated Transport Strategy (2010) by contributing to safety, accessibility, equity, sustainable transport, and travel behaviour change.

5.4.2 Assessment Weightings

Guidance from Department for Transport and Main Roads (Smarter Solutions: Multi-Criteria Analysis Tool – Technical Note, October 2016) was sought to objectify the weighting process. However, the weighting methods used did not logically align with criteria importance.

First, a maximum weighting of 100 was selected arbitrarily. The aim of this LATM Study is to improve safety first and foremost, so a large weighting (50) was applied. Then, Value for Money (estimated capital costs) was determined to be next most important so a weighting of 20 was agreed upon. Finally, Traffic Impacts, Likelihood of Modal Shift and Inclusivity Impacts were determined to be evenly important and as such, the remaining 30 weighting points were evenly divided amongst them (10 each). In summary, the following weightings were adopted for the analysis:

- Safety benefits – 50;
- Estimated capital costs – 20;
- Traffic Impacts – 10;
- Likelihood of Modal Shift – 10; and
- Inclusivity Impacts – 10.

5.4.3 Assessment Execution

The assessment is undertaken by scoring the compliance of each project with the criteria (out of a nominal score of 3). Scoring guidelines have been written to ensure that scoring is applied evenly and with justification. These guidelines can be found at Appendix C. The compliance scoring is then multiplied with the criteria weighting to achieve a weighted criterion score for the project. The weighted criterion scores for the project are then summed to yield the final project assessment score. The project scores can then be ranked to find the highest priority projects.

5.4.4 Assessment Results

The MCA results are shown below in Table 11, with full results at Appendix D. These results can be used to inform the LATM plan and the schedule of works. Projects with a higher score and rank are of highest benefit and should be implemented as early as possible.

It is noted that this tool is particularly useful when considering options for a single location, such as for Osborne Esplanade. When considering overall LATM priorities and staging, it is important that a more wholistic approach is taken, to ensure that lengths of road are treated, rather than individual standalone treatments which are less effective when installed in isolation.

Table 11: MCA results.

MCA Rank	Location	Proposed Treatment Option/s	MCA Score	Item
Beach Road				
1	Beach Road commercial precinct	Wombat crossing	240	2.1
	Whole Beach Road extent	Sharrows	240	3.1
3	West end of Beach Road extent	Road hump threshold treatment	210	1.1
4	Beach Road length	Road narrowing treatment: kerb extensions	200	1.2
Osborne Esplanade				
1	Osborne Esplanade – near Surf Life Saving facilities	Wombat crossing	275	2.4
2	Osborne Esplanade length	Sharrows	240	3.2
3	Osborne Esplanade zebra crossing	Upgrade to wombat crossing	215	2.5
4		Perceptive countermeasure treatment	175	2.5
		Conversion to shared zone	175	2.5
Balmoral Road Loop				
1	Balmoral Road length	Sharrows	240	3.3
2	Balmoral Road T-intersection	Resheeting and linemarking	210	4.4

6. Concept Plans

Concept plans have been developed for several of the proposed LATM treatments, as follows:

- 3007004-01-001 Beach Road LATM Study Treatment Option, includes:
 - Item 1.1 Beach Road: west end threshold treatment – flat top road hump
 - Item 1.2 Beach Road: kerb extensions with patterned pavement treatment at 2 x locations
 - Item 2.1 Beach Road: Wombat crossing outside off-street public carpark
 - Item 2.5, Option 1: Osborne Avenue: Wombat crossing
- 3007004-02-001 Osborne Esplanade Treatment Option, includes:
 - Item 2.5, Option 2: Osborne Esplanade: Shared Zone
- 3007004-02-002 Osborne Esplanade Treatment Option, includes:
 - Item 2.5, Option 3: Perceptual Countermeasure on Zebra Crossing approaches
- 3007004-03-001 Osborne Esplanade Sharrows
- 3007004-04-001 Balmoral Road T-intersection: Linemarking Treatment

An overall recommended Local Area Traffic Management Plan for the Kingston Beach LATM area has also been prepared (Drawing 3007004-10-001). All drawings are provided at Appendix E.

Plans are overlaid on aerial imagery to give a conceptual view of how a treatment may be integrated to the site. This gives an indication to Council and stakeholders how treatments are implemented.

Designs have been prepared in line with current Australian Standards and Austroads Guidelines. They are conceptual in nature prepared on aerial images and not on-site measurements, and, once the overall LATM plan is confirmed and adopted by Council, these should proceed to functional design of the LATM measures, including survey and service proving etc.

7. Cost Estimates

The likely costs of each proposed treatment need to be understood to inform the recommended staging and scheduling of works. Below in The preliminary estimates are based on cost rates for similar projects applied to the quantities derived from the conceptual sketch designs. Compounding allowances have been added to the likely construction costs to account for project delivery costs and contingency rates are based on costs as at 2023.

The following allowances have been made in deriving the preliminary cost estimates:

- Traffic management (10% of construction value, \$4000 minimum)
- Site establishment including provision of access, survey Setout, provision of site and office compounds, insurances and other works as specified. (10% of construction value)
- Site Management and supervision (10% of construction value)
- OHS, Quality and Environmental Plans & Monitoring (1% of construction value)
- Program administration (3% of construction value)
- Design fees (10% of construction value, \$3500 minimum)
- Survey (where applicable, 10% of construction value)
- Service proving (provisional, where required, 5% of construction value)
- Contingency (20% of construction value + specific inclusions above)
- Escalation (5% of base estimate, construction value + specific inclusions + contingency)

The following has been excluded from the preliminary cost estimates:

- Environmental issues and costs associated with public/authority consultation;
- Working in rock;
- Removal of hazardous materials;
- Work to existing services (other than the allowances made);
- Staging costs;
- Security;
- Allowance for premium or overtime rates associated with any out of hours working or acceleration;
- Land Acquisition (if required);
- Legal / Financing charges; and
- GST.

A cost estimate procedure, which estimates the 'inherent or range risk' (uncertainty in rates and quantities), and 'contingent risk' (an allowance for unforeseen or unknown cost items across the project), has not been undertaken.

Table 12 is a summary of estimated project costs. Treatments have been grouped by street, to enable a sense of cost associated with treating each length of road (in particular Beach Road and Osborne Esplanade).

For detailed cost break down, please refer to Appendix F. The preliminary estimates are based on cost rates for similar projects applied to the quantities derived from the conceptual sketch designs. Compounding allowances have been added to the likely construction costs to account for project delivery costs and contingency rates are based on costs as at 2023.

The following allowances have been made in deriving the preliminary cost estimates:

- Traffic management (10% of construction value, \$4000 minimum)
- Site establishment including provision of access, survey Setout, provision of site and office compounds, insurances and other works as specified. (10% of construction value)

- Site Management and supervision (10% of construction value)
- OHS, Quality and Environmental Plans & Monitoring (1% of construction value)
- Program administration (3% of construction value)
- Design fees (10% of construction value, \$3500 minimum)
- Survey (where applicable, 10% of construction value)
- Service proving (provisional, where required, 5% of construction value)
- Contingency (20% of construction value + specific inclusions above)
- Escalation (5% of base estimate, construction value + specific inclusions + contingency)

The following has been excluded from the preliminary cost estimates:

- Environmental issues and costs associated with public/authority consultation;
- Working in rock;
- Removal of hazardous materials;
- Work to existing services (other than the allowances made);
- Staging costs;
- Security;
- Allowance for premium or overtime rates associated with any out of hours working or acceleration;
- Land Acquisition (if required);
- Legal / Financing charges; and
- GST.

A cost estimate procedure, which estimates the ‘inherent or range risk’ (uncertainty in rates and quantities), and ‘contingent risk’ (an allowance for unforeseen or unknown cost items across the project), has not been undertaken.

Table 12: Cost estimates summary.

Item	LATM Treatment	Cost
Beach Road		
1.1	Road hump threshold treatment on Beach Road	\$62,000
1.2	Kerb extensions on Beach Road	\$269,000
2.1	Wombat crossing on Beach Road near medical centre carpark	\$82,600
3.1	Sharrows on Beach Road	\$16,200
Osborne Esplanade		
2.4	Osborne Esplanade SLSC flat top road hump upgrade to wombat crossing	\$12,900
2.5	Pedestrian Facilities Option 1: Osborne Esplanade zebra crossing upgrade to a wombat crossing	\$88,300
	Pedestrian Facilities Option 2: Osborne Esplanade zebra crossing conversion to a Shared Zone	\$257,100
	Pedestrian Facilities Option 3: Perceptive countermeasure treatments on the approach to Osborne Esplanade zebra crossing	\$28,900
3.2	Sharrows on Osborne Esplanade	\$20,600
Balmoral Loop		
3.3	Sharrows on Balmoral Road	\$15,600
4.4	Balmoral Road T-intersection reformation / countermeasures	\$54,800

8. Recommended Staging of Works

The full implementation of the recommended Kingston Beach Local Area Traffic Management Plan has the greatest chance of achieving Council's goals and objectives. It is clear that the order in which devices or countermeasures are installed, and the length of time over which that occurs, could drastically impact the performance of the overall LATM scheme. Risks associated with staging works include:

- Localised speed reduction only if treatments are installed in isolation;
- The effectiveness of individual treatments will be less than if installed with a series of devices working together;
- The installation of the first 'big ticket', high priority items may do enough to then justify not completing the scheme, with good proposals of lower priority never being implemented.

However, Council must work with a set capital works budget each year and so prioritisation and staging of works will be essential.

Priorities for treatments should be drawn from the assessments detailed throughout this report, which have highlighted various considerations such as key objectives of the study, the need to treat lengths of road rather than isolated locations, and the MCA which included weighted considerations of costs etc.

Austrroads Guide to Traffic Management Part 8: Local Street Management articulates:

"Works may be staged, or implemented in full at one time. Staging is usually undertaken for practical or funding reasons, but it may also be used as a form of trial or familiarisation. In particular, there may be uncertainty about the traffic displacement effects of a set of treatments, so the scheme may be implemented gradually, and the changes monitored at each stage. Where there are identified accident black spots (usually at intersections), countermeasures may be installed in isolation in advance of the rest of the area scheme. A pre-opening stage road safety audit should be carried out before the modified street is opened to traffic. Staging precinct by precinct is usually better than scattered sequencing of treatments. Another technique for staging is to work inwards from the boundaries of the local area, so that appropriate behaviour is 'signalled' to incoming traffic.

However, staging can seriously compromise the speed effects of a series of devices forming an integrated installation. The whole set of treatments is needed to obtain the desired speed effect. In addition, there are practical difficulties."

Council will need to carefully consider their allocated budget, year by year, and then prioritise treatments accordingly. Council has indicated their priority routes, in order, for treatment are:

1. Beach Road;
2. Osborne Esplanade; and
3. the Balmoral Road loop.

With other treatments to follow, or be included along the way, as budget allows.

9. Summary & Next Steps

This report has presented the process undertaken in the development of a recommended Local Area Traffic Management plan for the Kingston Beach study area. The LATM study has included an extensive review of existing background information, traffic and crash data, as well as site investigations and workshops with Council to confirm existing issues and opportunities. A long list of potential projects was developed, and this was then assessed, both through consultation, as well as using a Multi Criteria Analysis.

Concept options have been developed for several key treatment options, as well as an overall recommended Local Area Traffic Management plan.

The next steps will be:

- Council to undertake community consultation and confirm the preferred options to be adopted, particularly for Osborne Esplanade;
- Functional design of the LATM measures and formal cost estimations to verify costs; and
- Confirmation of a priority listing for the treatments, which will be dependent on available funding and relative priority with competing projects within Kingborough Council.

Appendix A

Background review

Background review

Relevant documents and investigations have been reviewed to contextualise this LATM study. This ensures that the local traffic engineering history is well understood before key issues are defined and solutions are engineered. The following documents have been included in this review:

- Council Report – ‘Beach Road Pedestrian Crossing’ (April 2022) (and associated traffic data);
- Kingston Place Strategy 2020-2050;
- Kingborough Cycling Strategy 2021-2030;
- Kingborough Footpath Provision and Maintenance Policy 5.1;
- Council Report – ‘Kingston Beach One-Way Trial Report’ (2017-2018).

A review summary for each of these documents is provided below.

Council Report – Beach Road Pedestrian Crossing

In April 2022, the Engineering Services branch of Kingborough Council responded to a motion for pedestrian road safety issues on Beach Road be investigated. Council officers undertook pedestrian and traffic surveys (detailed above) and developed conclusions about the road safety issues present. Treatments were also suggested. Below is a summary of the main points drawn from the report:

- A relatively high percentage of motorists exceed the 40km/h speed limit sign south of the Roslyn Avenue intersection. This suggests that the existing signage and road geometry are ineffective in reducing vehicle speeds;
- A relatively moderate percentage of motorists exceed the 40km/h speed limit just south of Windsor Street. This also suggests that the existing civil engineering elements are ineffective at reducing vehicle speeds;
- There is a relatively high percentage of pedestrians jaywalking on Beach Road near the business district south of Windsor Street;
- There is a moderate percentage of pedestrians jaywalking on Beach Road near the business district at the intersection of Osborne Esplanade (pedestrians cross approximately 40m west of the tram ramps);
- Most pedestrians crossing Osborne Esplanade near the business district do so via the zebra crossing;
- For the great majority of the time, pedestrians do not struggle to find gaps in traffic to cross at the locations surveyed;
- An assessment was undertaken using the Austroads Pedestrian Crossing Facility Selection Tool which indicated that a raised platform is the only appropriate crossing facility on:
 - Beach Road near the business district south of Windsor Street;
 - Beach Road near the business district at the intersection of Osborne Esplanade; and
 - Osborne Esplanade just north of Beach Road where the existing pedestrian crossing is.

A LATM study was recommended to install civil engineering solutions to calm traffic on entry to the Kingston Beach precinct (detailed in this report).

Kingston Place Strategy 2020-2050

The Kingborough Place Strategy 2020-2050 outlines the vision and actions to achieve a self-sufficient, walkable, green & stayable, investment attracting Central Kingston. The strategy has limited impact on the Kingston Beach precinct as it focuses on the business district to the northwest. Below is a summary of the strategy that may have flow-on effects for the Kingston Beach precinct:

- The strategy aims to increase the area’s development, investment, volume of land use users, and length of stay.
- An action for the strategy is to improve walking connections to public transport on Beach Road.

Community and stakeholder engagement surveys highlight that an improved walking and cycling network beyond Central Kingston is desirable.

Kingborough Cycling Strategy 2021-2030

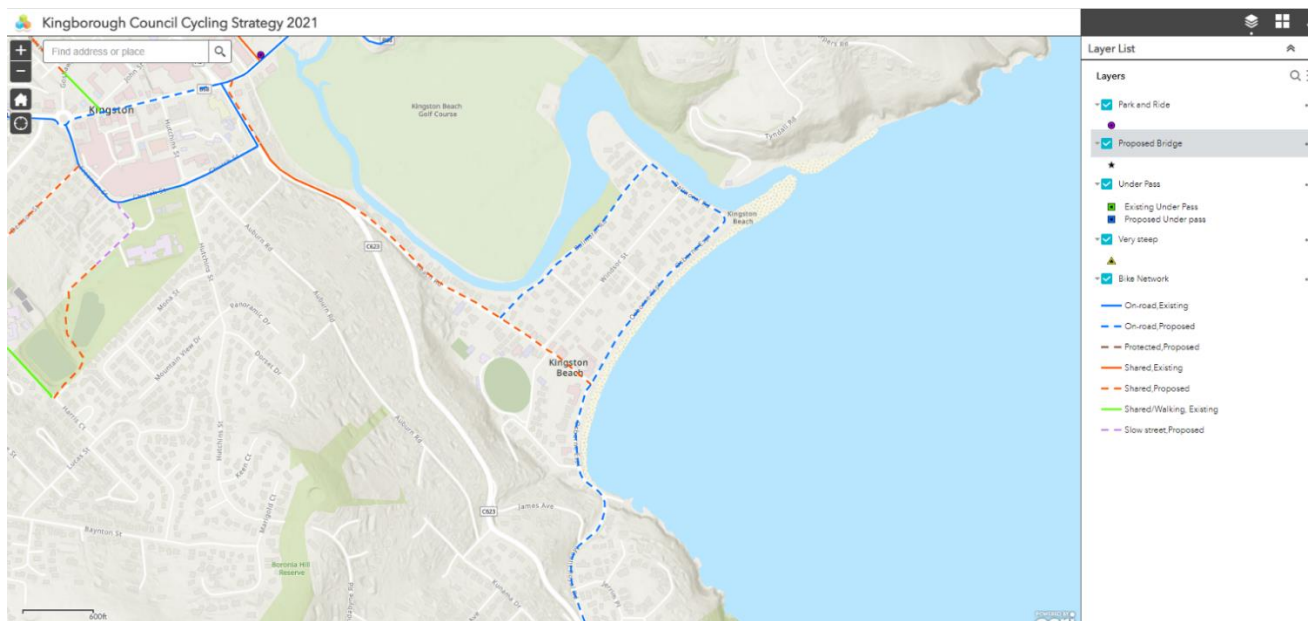
The Kingborough Cycling Strategy provides direction for cycling development in Kingborough's future. It aims to improve conditions for those that already cycle in Kingborough, and to attract new ridership. It identifies that 78% of people are interested in cycling but are concerned and aims to improve conditions to quell concerns. The strategy considers both transport and recreational cyclists. Below is a summary of the main directions and actions of the strategy that relate to the Kingston Beach area:

- Cycle tourism is growing in popularity and the Strategy aims to support this. Tinderbox Road is listed as one of the most popular road cycling routes in Kingborough. Tinderbox Road can be accessed from Osborne Esplanade and Roslyn Avenue.
- Beach Road south of the intersection with Roslyn Avenue to the foreshore is proposed as a shared cycle facility (first priority).
- The circuit starting at the intersection of Beach Road/Balmoral Road and continuing clockwise through Balmoral Road, Osborne Esplanade, Mount Royal Road and Roslyn Avenue is proposed as an on-road cycling facility (first priority).
- Strategic and advocacy actions include:
 - Installing usage counters to build an active transport dataset for the municipality; and
 - Develop and implement a wayfinding strategy that includes improved signage and mapping for active travel.
- Infrastructure actions include:
 - Investigating options for an uphill bicycle lane from Algona Road to Jindabyne Road and investigating a shared path on the western side of Roslyn Avenue including safe intersection upgrades;
 - Investigating options to pursue opportunities for a shared path between Kingston and Kingston Beach.

The Strategy's objectives and actions, and the proposed bicycle routes within the Kingston Beach precinct are shown on the subsequent plans.

Objectives	Actions
1 Create a safe cycling network for all ages and abilities	<ul style="list-style-type: none"> Implement the proposed bike network Prioritise the principal bike network at intersections with raised crossings Work with the State Government to deliver safe cycling infrastructure on state managed roads Council to adopt a Positive Provision Policy for all infrastructure projects and maintenance work
2 Eliminate hazards for people cycling	<ul style="list-style-type: none"> Remove gates, fences, grates, bollards and other obstructions to bike riding Review speed limits in activity areas and on cycling routes
3 Install amenities to support cycling	<ul style="list-style-type: none"> Provide bike parking in high-demand areas and at key destinations Provide water stations and bike repair stations at key destinations Encourage developers to incorporate bicycle parking in commercial and residential apartment developments
4 Active travel provisions in all new developments	<ul style="list-style-type: none"> Advocate for the development of standards for active travel infrastructure and facilities as part of the Statewide Planning Scheme Keep the community informed of planned cycling corridors in new developments Encourage new developments to align with the Kingborough footpath policy and cycling strategy
5 Promote and support cycling and road safety	<ul style="list-style-type: none"> Implement a Wayfinding Strategy for the principal bike network Support and promote cycling events, such as Bike Week, Ride to Work Day, and Ride to School Day Promote road safety campaigns and cycling network maps on website Support and promote cycling education programs in Kingborough schools
6 Regional bike planning	<ul style="list-style-type: none"> Continue membership of Cycling South (Greater Hobart Councils Regional Cycling Committee) Work with the State Government to deliver critical bike infrastructure on state managed roads
7 Data collection	<ul style="list-style-type: none"> Install counters on both existing and new principal cycling routes and establish local use data sets Continue to participate in the annual Greater Hobart Super Tuesday counts coordinated by Cycling South

Kingborough Cycling Strategy objectives and actions (source: Kingborough Cycling Strategy 2021-2030, Figure 15).



Kingborough Council Cycling Strategy 2021 (map source: <https://kingborough.maps.arcgis.com/>).

Kingborough Footpath Provision and Maintenance Policy 5.1

The Kingborough Footpath Provision and Maintenance Policy 5.1 ensures that footpaths are provided and maintained in an equitable, sustainable, practical and safe manner. It outlines where footpaths are to be provided and which footpaths are priority (distributor road, collector through roads, public transport route roads, and roads adjacent to significant pedestrian generators). The policy also states that footpaths are to be maintained to achieve a safe, convenient and comfortable state for pedestrian passage. Technical specifications of footpaths are also provided.

Kingston Beach One-Way Trial Report

Starting in 2017, Kingborough Council explored a one-way trial for the precinct northeast of Beach Road. Initially, a full trial including parking bay realignment on Osborne Esplanade was proposed to Council, however this was not supported. After a consultant investigated the feasibility of the proposal, it was determined that the trial would:

- Significantly reduce the traffic volume on Osborne Esplanade; and
- Significantly increase the traffic volume on adjacent streets, namely Victoria Street (up to 3 x existing traffic volumes), Windsor Street, and the section of Balmoral Street between Osborne Avenue and Windsor Street.

Fully realigning the parking on Osborne Street to 60° parking would result in a loss of 22% of existing parking spaces (preferred over 45° degree parking which would result in a loss of 40% of existing parking spaces). A parking occupancy survey was conducted during a peak traffic period in May 2016 which found:

- 83% of car parks between Beach Road and Victoria Street were occupied; and
- 56% of car parks between Victoria Street and Balmoral Road were occupied.

Community feedback also noted that during busy periods, Osborne Esplanade and Victoria Street were blocked by parked vehicles requiring vehicles to reverse to facilitate passing. Albert Street has also been reported as being so heavily saturated with parked vehicles that residents are required to reverse out of Albert Street on to Victoria Street. Parking for the area has therefore been shown to be a key asset and any detrimental changes to parking yield would have unsatisfactory outcomes if not managed in some other way (modal shift or provision of additional convenient off-street parking, for example).

Initially in 2017, Council resolved to not continue with the trial. However, in February 2018, after a proposal for a lower-cost trial was proposed (through a reduction of the trial area), Council resolved to pursue the one-way trial with the caveat of implementing signage, pavement markings and junction barriers only.

In April 2018, the one-way trial was undertaken on Osborne Esplanade (northbound only) through to Windsor Street. It involved signage, pavement markings and intersection barrier reformation at Victoria Street and Windsor Street. To determine the performance of the one-way treatment, the community and local businesses were surveyed. The surveys revealed:

- Most people who responded to the survey (411 No.) lived in Kingston Beach or visited once per day (60%), with 31% visiting Kingston Beach once per week;
- 52% of respondents (414 No.) said that the trial had not improved their overall visiting experience;
- 47% of respondents (418 No.) said that in their opinion public safety had not been improved by the treatment;
- 49% of respondents (416 No.) said that in their opinion, the traffic flow did not improve with the treatment;
- 64% of respondents (418 No.) said that in their opinion, parking was no different or not any easier than the existing conditions;
- 50% of respondents (418 No.) said that in their opinion, the trial had no effect on traffic speed; and
- 50% of respondents (418 No.) said that they did not support the treatment being installed permanently, with 8% not being sure.

Additionally, the survey provided opportunity for open comments. Among others, concerns included:

- The increase in traffic on residential streets, including the introduction of heavy vehicles (volume, noise, speed, and general amenity concerns) (84 concerned respondents);
- Drivers travelling contra-flow despite the treatment (44 concerned respondents);
- Road signage needing improvement (35 concerned respondents); and
- Angle parking not provided (15 concerned respondents).

Other feedback considered alternative treatments to treat traffic speed and road safety. Also included was consideration for emergency vehicle access.

Five local businesses were also engaged to provide feedback. Three of the businesses indicated that the trial had no impact on their business. Two businesses indicated that their customer feedback was positive, one said feedback was mixed, one said feedback was mostly negative, and the other did not receive any feedback. Business concerns included:

- The suggestion of a narrower carriageway to enforce the one-way system; and
- The suggestion that the one-way system stops at Victoria Street.

The traffic surveys for the trial showed a reduction of traffic volumes on Osborne Esplanade by 22% with approximately 2% disobeying the one-way treatment. One percent of traffic exceeded the speed limit. Further, the surveys showed:

- Traffic on Victoria Street increased by 113%, with 5% of traffic exceeding the speed limit;
- Traffic on Windsor Street increased by 176% with 25% of traffic exceeding the speed limit; and
- Traffic on Balmoral Road between Victoria Street and Windsor Street experienced a 7% reduction of traffic. Before the trial, the southbound movement had a higher volume than the northbound movement (59% and 41% respectively). After the trial, the northbound movement was much higher at 71% (southbound at 29%).

The trial was concluded after the planned period. With the loss of parking required to facilitate the system and the stakeholder feedback received, Council resolved to reinstate the two-way system.

Appendix B

Site Photographs

Beach Road



Figure B-1: Beach Road west of Balmoral Road view east



Figure B-2: Beach Road at Windsor Street – view west towards Kingston Beach Market activity



Figure B-3: Beach Road east of Windsor Street – view west towards Kingston Beach Market activity



Figure B-4: Beach Road west of Windsor Street – view west towards Kingston Beach Market activity



Figure B-5: Beach Road off-street public carpark – view south-east



Figure B-6: Beach Road approach to Osborne Esplanade – view southeast

Osborne Esplanade



Figure B-7: Osborne Esplanade at Surf Life Saving Club – view north to crossing point



Figure B-8: Osborne Avenue north of Beach Road – view southwest towards Beach Road adjacent to 90 degree parking



Figure B-9: Osborne Esplanade & Beach Road Intersection – view towards Osborne Avenue zebra crossing



Figure B-10: Osborne Avenue & Beach Road Intersection – view north-east



Figure B-11: Osborne Avenue angled parking south of Beach Road – view north



Figure B-12: Osborne Avenue angled parking south of Beach Road – view south



Figure B-13: Osborne Avenue south of Beach Road – view south



Figure B-14: Kingston Beach weekend activities – view north

Balmoral Road



Figure B-15: Balmoral Road north of Beach Road – view north-east



Figure B-16: Balmoral Road at Rotary Centennial Park – view north-east at informal parking



Figure B-17: Balmoral Road at Rotary Centennial Park – view south-west at informal parking



Figure B-18: Balmoral Road bend – view south-east towards intersection



Figure B-19: Balmoral Road bend – view north-east towards intersection



Figure B-20: Balmoral Road bend – view south-west towards intersection

Windsor Street



Figure B-21: Windsor Street at Victoria Street – view north-east



Figure B-22: Windsor Street at Victoria Street – view south-west

Community Facilities



Figure B-23: View towards Early Childhood Intervention Service Carpark off Beach Road



Figure B-24: View towards Kingston Beach Early Learning Centre Access off Beach Road

Appendix C

MCA Scoring Guidelines

Project Prioritisation Scoring Guidelines				ADOPTED WEIGHTING
	1	2	3	
Safety benefits	The project presents no/limited impact to current safety concerns for road traffic, pedestrians, patrons, and/or cyclists.	The project presents minor impact to safety concerns for road traffic, pedestrians, patrons, and/or cyclists and minimum design requirements are satisfied.	The project presents major impact to safety concerns for road traffic, pedestrians, patrons, and/or cyclists compared to existing conditions.	50
Estimated capital costs	Estimate project capital cost >\$50,000.	Estimate project capital costs ≤ \$50,000 and > \$25,000.	Estimate project capital costs ≤ \$25,000.	20
Traffic impacts	The project provides a significant reduction to traffic flows and intersection performance. A high likelihood of vehicle diversion to alternate routes that are unfavourable.	The project provides a minor reduction to traffic flows and intersection performance. A minor likelihood of vehicle diversion to alternate routes that are unfavourable.	The project provides no reduction to traffic flows and intersection performance. Existing travel patterns favourably unimpacted or improved.	10
Likelihood of modal shift	The project provides no significant change to route usage with no change to pedestrian/cyclist or public transport volumes.	The project provides minor change to route usage with minor increase to pedestrian/cyclist or public transport volumes.	The project provides significant change to route usage with significant increase to pedestrian/cyclist or public transport volumes.	10
Inclusivity impacts	The project provides unfavourable impacts to pedestrian/cyclist inclusivity. Pedestrian/cyclist inclusivity is considered to be how agreeable the infrastructure is for users of broad age, ability, and impairment ranges and considers the use of diverse mobility devices and recreational mobility equipment.	The project provides no impacts to pedestrian/cyclist inclusivity. Pedestrian/cyclist inclusivity is considered to be how agreeable the infrastructure is for users of broad age, ability, and impairment ranges and considers the use of diverse mobility devices and recreational mobility equipment.	The project provides favourable impacts to pedestrian/cyclist inclusivity. Pedestrian/cyclist inclusivity is considered to be how agreeable the infrastructure is for users of broad age, ability, and impairment ranges and considers the use of diverse mobility devices and recreational mobility equipment.	10

Appendix D

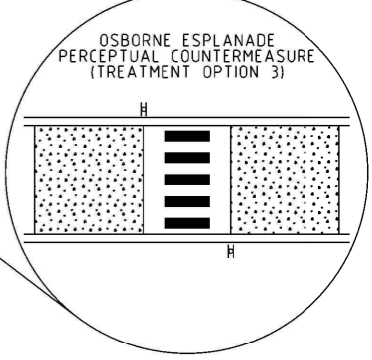
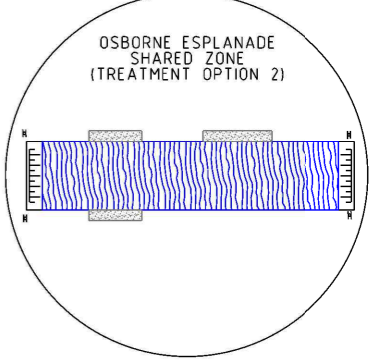
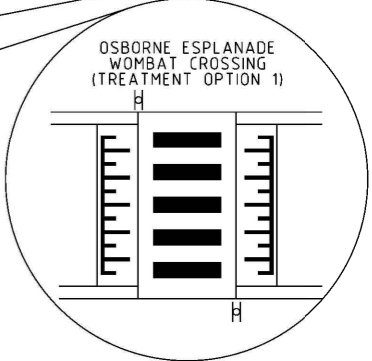
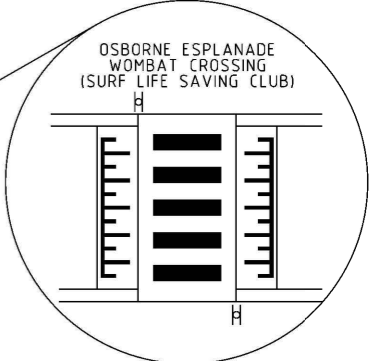
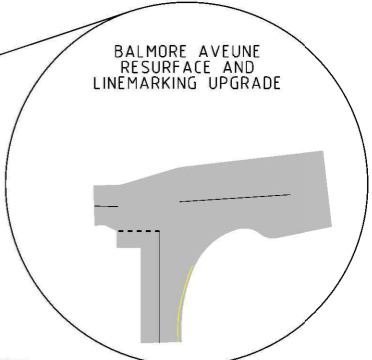
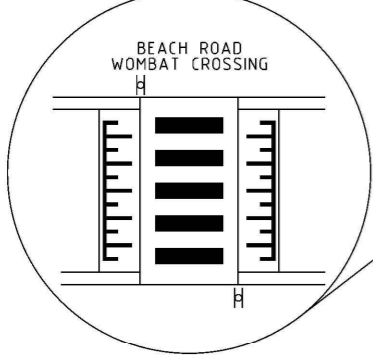
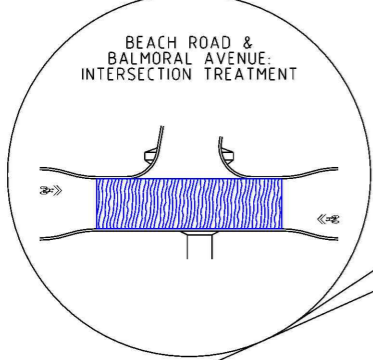
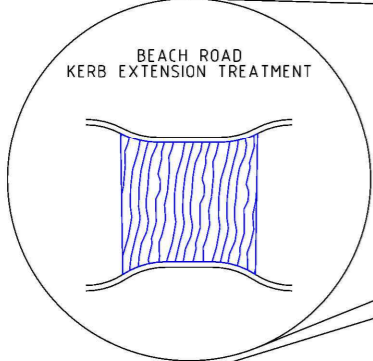
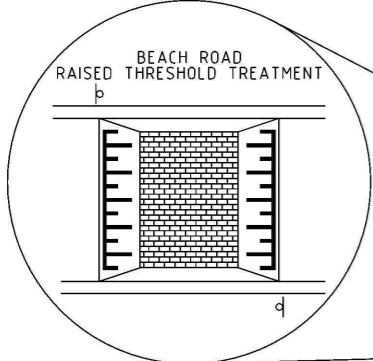
MCA Results

Kingston Beach LATM Study: Project Prioritisation

Ranking	Proposed Project	Details	MCA Total	Safety Benefits				Estimated Capital Costs				Traffic Impacts				Likelihood of Modal Shift				Inclusivity Impacts			
				Criteria Weighting	Score	Justification	Weighted Score	Criteria Weighting	Score	Justification	Weighted Score	Criteria Weighting	Score	Justification	Weighted Score	Criteria Weighting	Score	Justification	Weighted Score	Criteria Weighting	Score	Justification	Weighted Score
Beach Road																							
1	Wombat crossing on Beach Road near medical centre carpark	A wombat crossing could be considered opposite the medical centre and car park on Beach Road to facilitate pedestrian movements (create priority) and to compliment the calmed speed environment. (example: Main Street near The Esplanade, Mornington, VIC).	230	50	3	Reduces vehicle speeds at pedestrian-motor vehicle interaction point but does not completely separate users or eliminate crash risk	150	20	1	Estimate project capital cost >\$50,000.	20	10	2	Minor reduction in speed and possibility of minor queues forming during events and busy periods	20	10	2	Possibility of encouraging walking due to improved safety.	10	10	3	If well designed (limited vertical displacement for pedestrians) this provides a safe, comfortable and convenient crossing point for a diversity of people by giving priority to all pedestrians	30
3	Road hump threshold treatment on Beach Road	Austrroads Guide to Traffic Management Part 8, 2022 (AGTM8-22) suggests road humps for reducing speeds and crash risk. Speed cushions are not recommended as drivers often attempt to dodge the cushion by veering to the left. When cyclists are present, this is dangerous. For this reason, a raised hump/threshold treatment is proposed at the existing 40km/h speed limit signs to set a standard for the speed environment.	210	50	3	Reduces speeds significantly, but the possibility for speeds beyond Safe System tolerance may still be present	150	20	1	Estimate project capital cost >\$50,000.	20	10	2	Minor reduction in speed for Beach Road	20	10	1	Not likely to motivate modal shift	10	10	1	Does not effect inclusivity for active transport users	10
1	Sharrows on Beach Road	AGTM8-22 suggests bicycle facilities for reducing crash risk and increasing cyclist safety. It is noted that Beach Road has a restricted carriageway width, however, in line with the Kingborough Cycling Strategy, Beach Road is proposed to be upgraded to include a shared cycling facility. This could be done by marking 'sharrows' on the road to mark the traffic lanes as shared lanes. Supporting signage is also recommended.	230	50	2	Provides greater awareness of cyclists but does not remove risk of cyclist-motor vehicle crash types	100	20	3	Estimate project capital costs ≤ \$25,000.	60	10	3	No change to traffic flows	30	10	2	Possibility of encouraging mode shift due to improved safety, on-road support and overall connectivity	10	10	3	Likely to encourage less confident riders to use Beach Road and access the Kingston Beach precinct	30
4	Kerb extensions on Beach Road	Austrroads Guide to Traffic Management Part 8, 2022 (AGTM8-22) suggests kerb extensions/lane narrowing for reducing speeds and crash risk. It is proposed that extensions are placed on Beach Road at points of need - near the early learning centres.	200	50	3	Reduces vehicle speeds at pedestrian-motor vehicle interaction point but does not completely separate users or eliminate crash risk	150	20	0.5	Estimate project capital costs >>\$50,000.	10	10	2	Minor reduction in speed for Beach Road	20	10	1	Not likely to motivate modal shift	10	10	1	Does not effect inclusivity for active transport users	10
Osborne Esplanade																							
1	Osborne Esplanade SLSC flat top road hump upgrade to wombat crossing	A pedestrian crossing features on Osborne Esplanade near the Surf Life Saving Centre (motor vehicle priority). It has been designed such that the surface colour is different from the traffic lane to raise awareness for the crossing. Crossing priority is managed through signage but remains unclear. Council has indicated that this is intentional so that priority can be managed by pedestrians and motor vehicle traffic. It is proposed that this crossing is formalised given its location (near the public bathroom facilities, change rooms, and SLSC) and existing conditions. An upgrade to a wombat crossing is deemed appropriate given the reduction of speed to Safe System pedestrian tolerances that it would provide, as recommended in AGTM8-22. A wombat crossing would also make priority clear for both pedestrians and motor vehicle traffic as the crossing would be consistent with other crossings in the network.	275	50	3	Reduces vehicle speeds at pedestrian-motor vehicle intersection point but does not completely separate streams or eliminate crash risk. Clarifies right of way for all users.	150	20	3	Estimate project capital costs ≤ \$25,000.	60	10	2	Minor reduction in speed and possibility of minor queues forming during events and busy periods	20	10	1.5	Possibility of encouraging walking due to improved safety and priority. Existing treatment has confusing priorities.	15	10	3	Likely to improve accessibility by making priority clear.	30
2	Sharrows on Osborne Esplanade	AGTM8-22 suggests bicycle facilities for reducing crash risk and increasing cyclist safety. It is noted that Osborne Esplanade has a restricted carriageway width, and in line with the Kingborough Cycling Strategy, Osborne Esplanade is proposed to be upgraded to include an on-road cycling facility. This could be done by marking 'sharrows' on the road to mark the traffic lanes as shared lanes. Supporting signage is also recommended.	240	50	2	Provides greater awareness of cyclists but does not remove risk of cyclist-motor vehicle crash types	100	20	3	Estimate project capital costs ≤ \$25,000.	60	10	3	No change to traffic flows	30	10	2	Possibility of encouraging mode shift due to improved safety, on-road support and overall connectivity	20	10	3	Likely to encourage less confident riders to use Beach Road and the Osborne Avenue to access and explore the Kingston Beach precinct	30
3	Pedestrian Facilities Option 1: Osborne Esplanade zebra crossing upgrade to a wombat crossing	It is proposed that the existing zebra crossing on Osborne Esplanade be replaced with a wombat crossing. While it has previously been determined as not warranted based on the volume characteristics, a vertical displacement device would be a beneficial speed management device in this area as recommended by AGTM8-22 (see Table 7.1). A wombat crossing would ensure that motor vehicle traffic is always slowing on the approach to the crossing. The wombat crossing should be such a height that it will slow vehicles to below the Safe System tolerance speed for pedestrians (30km/h). It is also proposed that the 'parklet' style al fresco area on the corner be reviewed to be more transparent or otherwise improve sight lines to the pedestrian crossing.	215	50	2.5	Reduces vehicle speeds at pedestrian-motor vehicle intersection point but does not completely separate streams or eliminate crash risk	125	20	1	Estimate project capital cost >\$50,000.	20	10	2	Minor reduction in speed and possibility of minor queues forming during events and busy periods	20	10	2	Possibility of encouraging walking due to improved safety	20	10	3	If well designed (limited vertical displacement for pedestrians) this provides a safe, comfortable and convenient crossing point for a diversity of people by giving priority to all pedestrians	30
4	Pedestrian Facilities Option 3: Perceptive countermeasure treatments on the approach to Osborne Esplanade zebra crossing	It is proposed that an alternative aggregate is used on the approach to the zebra crossing on Osborne Esplanade is used to highlight the conflict point. The aggregate should be lighter in colour to be distinguished in both good and poor visibility conditions.	175	50	1.5	Reduces vehicle speeds at pedestrian-motor vehicle intersection point by raising awareness of crossing but does not completely separate streams or eliminate crash risk	75	20	2	Estimate project capital costs between \$25,000 and \$50,000	40	10	3	No change to traffic flows	30	10	2	Possibility of encouraging walking due to improved safety	20	10	1	Does not effect inclusivity for active transport users	10
4	Pedestrian Facilities Option 2: Osborne Esplanade zebra crossing conversion to a Shared Zone	It is proposed that the existing zebra crossing on Osborne Esplanade be removed and this length of Osborne Esplanade be replaced with a Shared Zone, significantly reducing vehicle speeds, and formally allowing this to be a shared space between pedestrians, cyclists and motorised transport. The treatment would be constructed with a long flat-top road hump, and supplemented with a placemaking pavement treatment.	175	50	2	Reduces vehicle speeds at pedestrian-motor vehicle intersection point but does not completely separate streams or eliminate crash risk	100	20	0.5	Estimate project capital cost >>\$50,000.	10	10	2	Minor reduction in speed and possibility of minor queues forming during events and busy periods	20	10	2.5	Possibility of encouraging walking due to improved safety	25	10	2	Improves inclusivity for active transport users by allowing ease of access for prams, wheelchairs etc if treatment is brought up to footpath height.	20
Balmoral Road Loop																							
1	Sharrows on Balmoral Road	AGTM8-22 suggests bicycle facilities for reducing crash risk and increasing cyclist safety. It is noted that Balmoral Road has a restricted carriageway width, and in line with the Kingborough Cycling Strategy, Balmoral Road is proposed to be upgraded to include an on-road cycling facility. This could be done by marking 'sharrows' on the road to mark the traffic lanes as shared lanes. Supporting signage is also recommended.	240	50	2	Provides greater awareness of cyclists but does not effectively remove risk of cyclist-motor vehicle crash	100	20	3	Estimate project capital costs ≤ \$25,000.	60	10	3	No change to traffic flows	30	10	2	Possibility of encouraging mode shift due to improved safety, on-road support and overall connectivity	20	10	3	Likely to encourage less confident riders to use Balmoral Road and Osborne Esplanade	30
2	Balmoral Road T-intersection reformation / countermeasures	The crash history near 36 Balmoral Road suggests the T-intersection is sometimes misunderstood by motor vehicles, or that vehicles are negotiating the bend at an inappropriately high speed. As such, resealing and refreshing of pavement markings are proposed. The T-intersection will have existing priorities maintained.	210	50	2	Provides greater definition of intersection movements and raises awareness of conflict point	100	20	3	Estimate project capital cost >\$50,000.	60	10	3	No change to traffic flows	30	10	1	Not likely to motivate modal shift	10	10	1	Does not effect inclusivity for active transport users	10

Appendix E

Concept Plans



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ISSUE	APP'D	DATE	AMENDMENT

GENERAL NOTES

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A. BACKMAN
22/03/2023

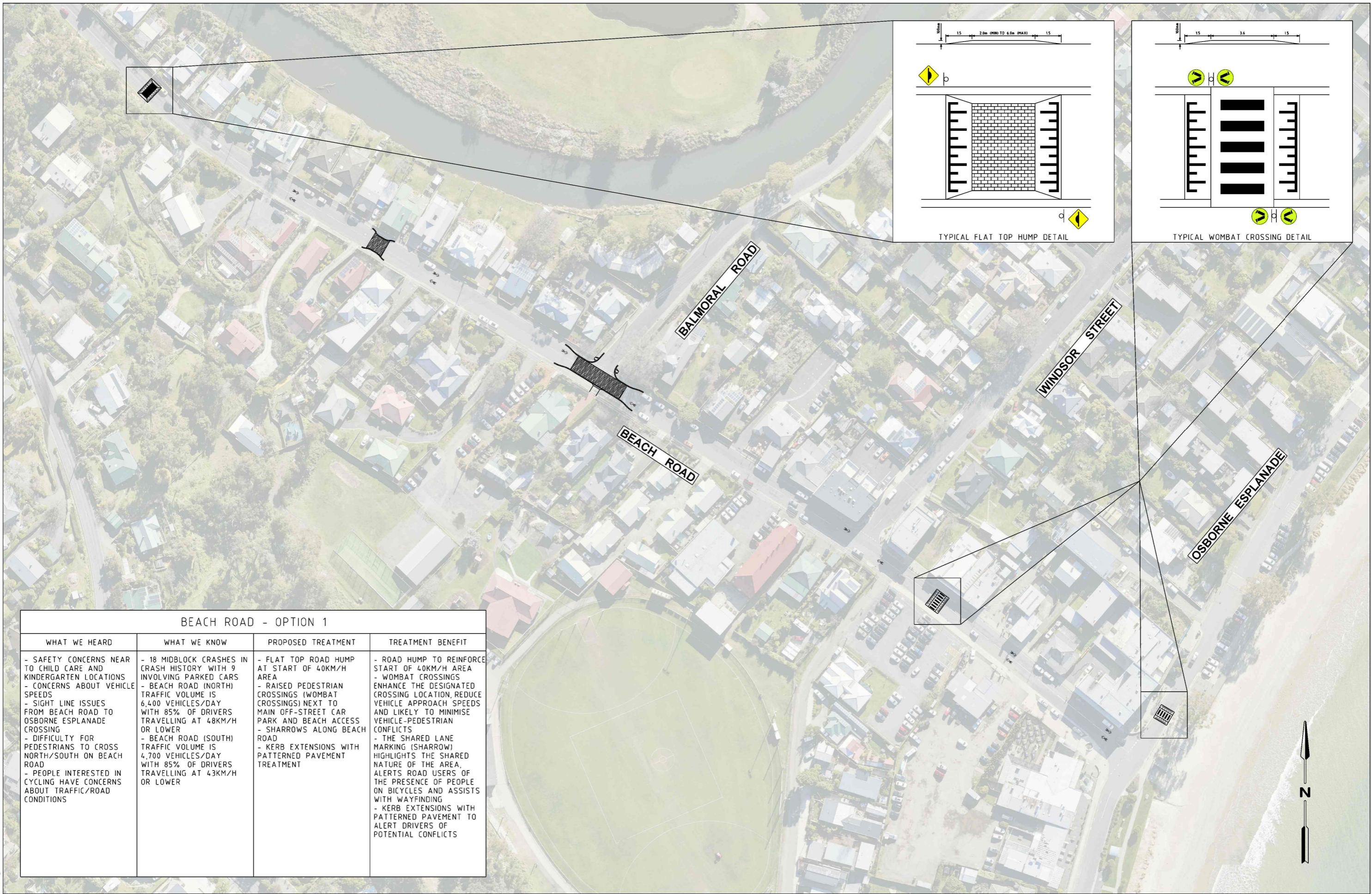
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L. PROCTER
22/03/2023

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KINGSTON BEACH
KINGSBOROUGH COUNCIL
LOCAL AREA TRAFFIC MANAGEMENT STUDY
TREATMENT PLAN

FILE NO. 3007004	SHEET NO. 1 OF 1	DRAWING NO. -10-001	ISSUE -
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BEACH ROAD - OPTION 1

WHAT WE HEARD	WHAT WE KNOW	PROPOSED TREATMENT	TREATMENT BENEFIT
<ul style="list-style-type: none"> - SAFETY CONCERNS NEAR TO CHILD CARE AND KINDERGARTEN LOCATIONS - CONCERNS ABOUT VEHICLE SPEEDS - SIGHT LINE ISSUES FROM BEACH ROAD TO OSBORNE ESPLANADE CROSSING - DIFFICULTY FOR PEDESTRIANS TO CROSS NORTH/SOUTH ON BEACH ROAD - PEOPLE INTERESTED IN CYCLING HAVE CONCERNS ABOUT TRAFFIC/ROAD CONDITIONS 	<ul style="list-style-type: none"> - 18 MIDBLOCK CRASHES IN CRASH HISTORY WITH 9 INVOLVING PARKED CARS - BEACH ROAD (NORTH) TRAFFIC VOLUME IS 6,400 VEHICLES/DAY WITH 85% OF DRIVERS TRAVELLING AT 48KM/H OR LOWER - BEACH ROAD (SOUTH) TRAFFIC VOLUME IS 4,700 VEHICLES/DAY WITH 85% OF DRIVERS TRAVELLING AT 43KM/H OR LOWER 	<ul style="list-style-type: none"> - FLAT TOP ROAD HUMPS AT START OF 40KM/H AREA - RAISED PEDESTRIAN CROSSINGS (WOMBAT CROSSINGS) NEXT TO MAIN OFF-STREET CAR PARK AND BEACH ACCESS - SHARROWS ALONG BEACH ROAD - KERB EXTENSIONS WITH PATTERNED PAVEMENT TREATMENT 	<ul style="list-style-type: none"> - ROAD HUMPS TO REINFORCE START OF 40KM/H AREA - WOMBAT CROSSINGS ENHANCE THE DESIGNATED CROSSING LOCATION, REDUCE VEHICLE APPROACH SPEEDS AND LIKELY TO MINIMISE VEHICLE-PEDESTRIAN CONFLICTS - THE SHARED LANE MARKING (SHARROW) HIGHLIGHTS THE SHARED NATURE OF THE AREA, ALERTS ROAD USERS OF THE PRESENCE OF PEOPLE ON BICYCLES AND ASSISTS WITH WAYFINDING - KERB EXTENSIONS WITH PATTERNED PAVEMENT TO ALERT DRIVERS OF POTENTIAL CONFLICTS

GENERAL NOTES

ISSUE	APP'D	DATE	AMENDMENT
A	A.B.	1/03/23	UPDATED TO INCLUDE COUNCIL COMMENTS



DESIGNED
A. BACKMAN
02/02/2023

APPROVED
L. PROCTER
06/02/2023

CAT:
PROJ:
FILE: 3007004-01-001

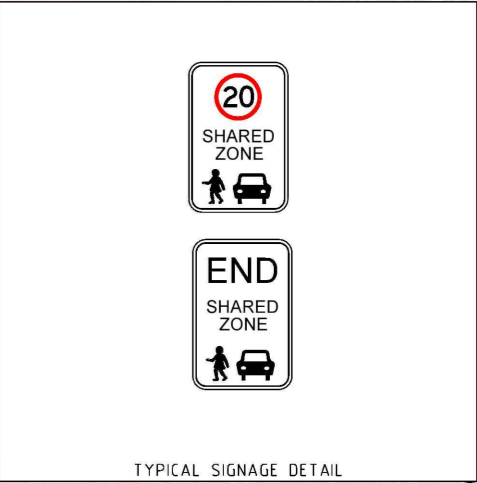


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BEACH ROAD
KINGBOROUGH COUNCIL
LATM STUDY
TREATMENT OPTION

SHEET NO.
1 OF 1
DRAWING NO.
-01-001
ISSUE
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TYPICAL SIGNAGE DETAIL

BEACH ROAD / OSBORNE ESPLANADE - OPTION 1			
WHAT WE HEARD	WHAT WE KNOW	PROPOSED TREATMENT	TREATMENT BENEFIT
- SIGHT LINE ISSUES FROM BEACH ROAD TO OSBORNE ESPLANADE CROSSING	- 4 CRASHES IN CRASH HISTORY WITH ALL INVOLVING PARKING MOVEMENTS - OSBORNE ESPLANADE TRAFFIC VOLUME IS 2,300 VEHICLES/DAY WITH 85% OF DRIVERS TRAVELLING AT 32KM/H OR LOWER	- RAISED SHARED AREA WITH PATTERNED PAVEMENT TREATMENT	- IMPROVES PEDESTRIAN SAFETY BY A REDUCED SPEED ENVIRONMENT AND ALERTS DRIVERS TO AN DIFFERENT DRIVING ENVIRONMENT

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ISSUE	APP'D	DATE	AMENDMENT
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GENERAL NOTES
 NOT FOR CONSTRUCTION
 SUBJECT TO FUNCTIONAL DESIGN
 SUBJECT TO ROAD SAFETY AUDIT

SMC
 Member of the Surbana Jurong Group

DESIGNED
 A. BACKMAN
 02/02/2023

APPROVED
 L. PROCTER
 06/02/2023

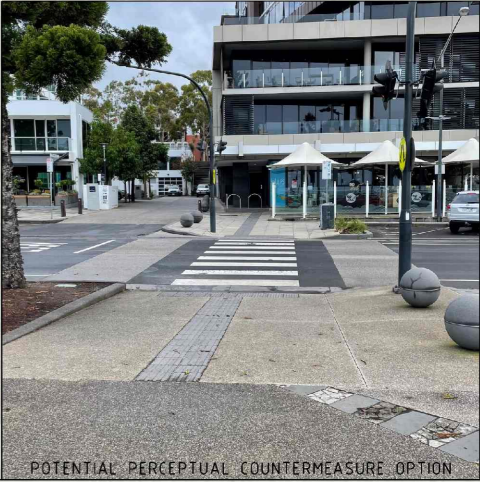
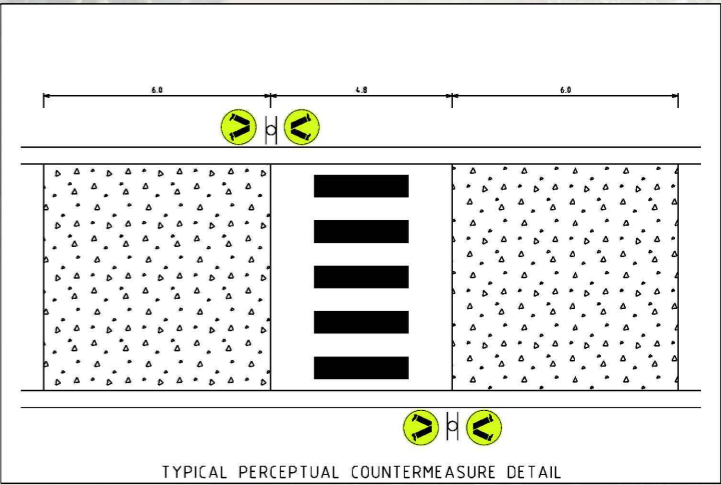
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Kingborough

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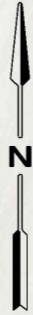
BEACH ROAD / OSBORNE ESPLANADE
 KINGSBOROUGH COUNCIL
 LATM STUDY
 TREATMENT OPTION

FILE NO. 3007004
 SHEET NO. 1 OF 1
 DRAWING NO. -02-001
 ISSUE A



BEACH ROAD / OSBORNE ESPLANADE - OPTION 2

WHAT WE HEARD	WHAT WE KNOW	PROPOSED TREATMENT	TREATMENT BENEFIT
- SIGHT LINE ISSUES FROM BEACH ROAD TO OSBORNE ESPLANADE CROSSING	- 4 CRASHES IN CRASH HISTORY WITH ALL INVOLVING PARKING MOVEMENTS - OSBORNE ESPLANADE TRAFFIC VOLUME IS 2,300 VEHICLES/DAY WITH 85% OF DRIVERS TRAVELLING AT 32KM/H OR LOWER	- ENHANCED ZEBRA CROSSING	- IMPROVES PEDESTRIAN SAFETY BY ALERTING DRIVERS THE PRESENCE OF THE ZEBRA CROSSING



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ISSUE	APP'D	DATE	AMENDMENT
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GENERAL NOTES
 NOT FOR CONSTRUCTION
 SUBJECT TO FUNCTIONAL DESIGN
 SUBJECT TO ROAD SAFETY AUDIT

SMC
 Member of the Surbana Jurong Group

DESIGNED
 A. BACKMAN
 02/02/2023

APPROVED
 L. PROCTER
 06/02/2023

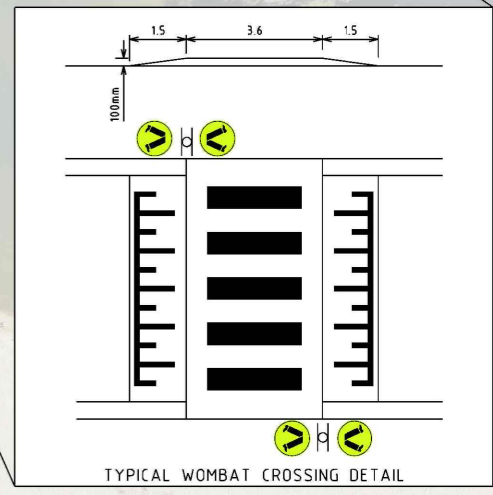
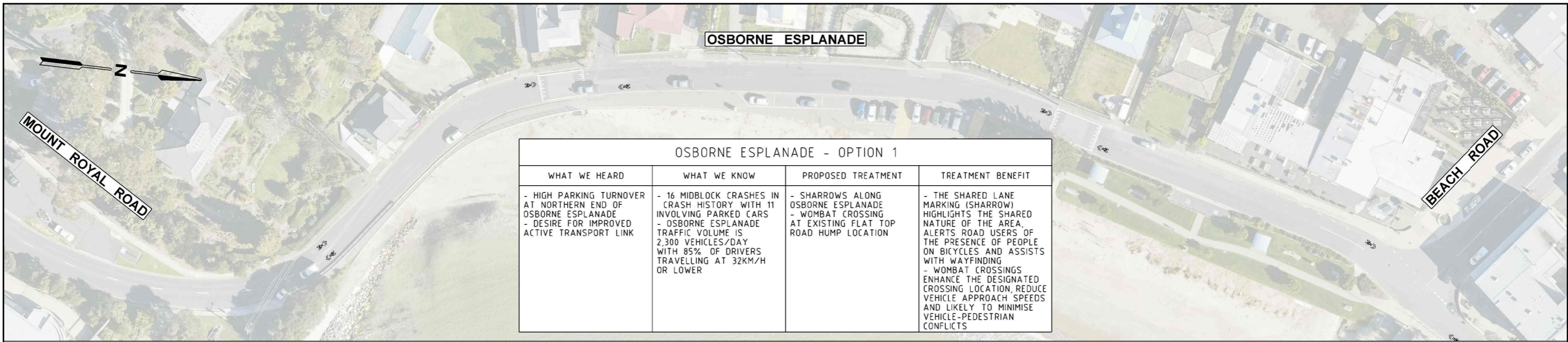
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Kingborough

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BEACH ROAD / OSBORNE ESPLANADE
 KINGSBOROUGH COUNCIL
 LATM STUDY
 TREATMENT OPTION

FILE NO. 3007004
 SHEET NO. 1 OF 1
 DRAWING NO. -02-002
 ISSUE A



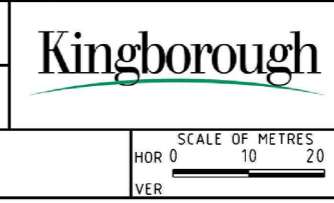
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ISSUE	APP'D	DATE	AMENDMENT
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GENERAL NOTES
NOT FOR CONSTRUCTION
SUBJECT TO FUNCTIONAL DESIGN
SUBJECT TO ROAD SAFETY AUDIT



DESIGNED
A. BACKMAN
02/02/2023
APPROVED
L. PROCTER
06/02/2023
CAT:
PROJ:
FILE: 3007004-03-001



OSBORNE ESPLANADE
KINGSBOROUGH COUNCIL
LATM STUDY
TREATMENT OPTION

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BALMORAL ROAD - OPTION 1			
WHAT WE HEARD	WHAT WE KNOW	PROPOSED TREATMENT	TREATMENT BENEFIT
- CONCERNS/CONFUSION OVER INTERSECTION LAYOUT	- 2 CRASHES IN CRASH HISTORY - BALMORAL ROAD TRAFFIC VOLUME IS 480 VEHICLES/DAY WITH 85% OF DRIVERS TRAVELLING AT 38KM/H OR LOWER	- INTERSECTION RESHEET - REMARK INTERSECTION AS STANDARD 'T' PRIORITY	- REMOVES CONFUSION CAUSED BY VISABLE REDUNDANT MARKINGS

23/03/2023 Default 9:49:36 PM 3007004-04-001.dgn

ISSUE	APP'D	DATE	AMENDMENT
A	A.B.	1/03/23	UPDATED TO INCLUDE COUNCIL COMMENTS


GENERAL NOTES
 NOT FOR CONSTRUCTION
 SUBJECT TO FUNCTIONAL DESIGN
 SUBJECT TO ROAD SAFETY AUDIT



DESIGNED
A. BACKMAN
02/02/2023

APPROVED
L. PROCTER
06/02/2023

CAT:
PROJ:
FILE: 3007004-04-001



BALMORAL ROAD
 KINGSBOROUGH COUNCIL
 LATM STUDY
 TREATMENT OPTION

FILE NO. 3007004	SHEET NO. 1 OF 1	DRAWING NO. -04-001	ISSUE A
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SCALE OF METRES

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Appendix F

Cost Estimates

3007004 - Kingston Beach LATM Study

Bill of Quantities - 17/03/2023

Beach Road Wombat Crossing adjacent to carpark and 13-19 Beach Road

The tenderer is responsible for determining the actual quantity of the works and the schedules supplied are issued as a guide and for information only. It is the tenderers responsibility to check the quantities and correct any errors.

Item	Description	Unit of Measure	Quantity	Rate	Amount
1	Preliminaries				\$ 11,716.00
1.1	Site establishment including provision of access, survey Setout, provision of site and office compounds, insurances and other works as specified.	% of CV	1	10%	\$ 3,674.00
1.2	Site Management and supervision	% of CV	1	10%	\$ 3,674.00
1.3	OHS, Quality and Environmental Plans & Monitoring	% of CV	1	1%	\$ 368.00
1.4	Traffic Management	item	1	\$ 4,000.00	\$ 4,000.00
2	Site Works & Demolition				\$ 7,100.00
2.1	Excavator	hr	4	\$ 200.00	\$ 800.00
2.2	Truck (x1)	hr	4	\$ 200.00	\$ 800.00
2.3	Labour (2 person)	hr	4	\$ 200.00	\$ 800.00
2.4	Plant Hire (saw cutter)	hr	4	\$ 50.00	\$ 200.00
2.5	Mill out 20mm existing pavement (mounted profiler), including dump fee	item	1	\$ 4,500.00	\$ 4,500.00
3	Concrete Works				\$ 4,200.00
3.1	Kerb and Channel				
3.1.1	Supply & Cast Kerb & Channel (B2, B3, SM2 & SM3)	lin.m.	14	\$ 200.00	\$ 2,800.00
3.2	Footpaths				
3.2.1	125mm depth concrete (SL72 mesh) including bedding - new footpath to tie into crossing	sq.m	7	\$ 200.00	\$ 1,400.00
4	Pavement Works				\$ 13,500.00
4.1	New Pavement Works				
4.1.3	New asphalt raised pavement treatment	sq.m	54	\$ 250.00	\$ 13,500.00
5	Drainage Works				\$ 7,000.00
5.1	Drainage Pits				
5.1.1	Upgrade existing SEP (inlet & cover)	no.	2	\$ 3,500.00	\$ 7,000.00
6	Signage & Linemarking				\$ 3,860.00
6.1	Signage				
6.1.1	Remove, store and reinstate required signage	no.	1	\$ 500.00	\$ 500.00
6.1.3	Install new signage	no.	4	\$ 500.00	\$ 2,000.00
6.2	Linemarking - Thermoplastic Permanent Paint				
6.2.2	Zebra crossing	lin.m	8	\$ 50.00	\$ 400.00
6.2.3	Piano Key' markings	lin.m	16	\$ 60.00	\$ 960.00
7	Miscellaneous				\$ 1,080.00
7.2	Supply and Install TGSI (Hazard & Directional inc installation)	sq.m	2.2	\$ 500.00	\$ 1,080.00
CV	TOTAL CONSTRUCTION VALUE				\$ 48,456.00
8	Project Management & Design				\$ 17,039.00
8.1	Program Administration	% of CV	1	3%	\$ 1,549.00
8.2	Design	% of CV	1	10%	\$ 6,196.00
8.3	Survey	% of CV	1	10%	\$ 6,196.00
8.4	Service Proving (provisional)	% of CV	1	5%	\$ 3,098.00
BE	BASE ESTIMATE VALUE				\$ 65,495.00
	Contingency Allowance	%	20%		\$ 13,099.00
	Base Estimate + Contingency				\$ 78,594.00
	Escalation	%	5%		\$ 3,929.70
TE	TOTAL ESTIMATE				\$ 82,600.00



3007004 - Kingston Beach LATM Study

Bill of Quantities - 17/03/2023

Beach Road Raised Threshold Treatment near 69 Beach Road

The tenderer is responsible for determining the actual quantity of the works and the schedules supplied are issued as a guide and for information only. It is the tenderers responsibility to check the quantities and correct any errors.

Item	Description	Unit of Measure	Quantity	Rate	Amount
1	Preliminaries				\$ 8,948.00
1.1	Site establishment including provision of access, survey Setout, provision of site and office compounds, insurances and other works as specified.	% of CV	1	10%	\$ 2,356.00
1.2	Site Management and supervision	% of CV	1	10%	\$ 2,356.00
1.3	OHS, Quality and Environmental Plans & Monitoring	% of CV	1	1%	\$ 236.00
1.4	Traffic Management	Item	1	\$ 4,000.00	\$ 4,000.00
2	Site Works & Demolition				\$ 7,100.00
2.1	Excavator	hr	4	\$ 200.00	\$ 800.00
2.2	Truck (x1)	hr	4	\$ 200.00	\$ 800.00
2.3	Labour (2 person)	hr	4	\$ 200.00	\$ 800.00
2.4	Plant Hire (saw cutter)	hr	4	\$ 50.00	\$ 200.00
2.5	Mill out 20mm existing pavement (mounted profiler), including dump fee	Item	1	\$ 4,500.00	\$ 4,500.00
3	Pavement Works				\$ 13,500.00
3.1	New Pavement Works				
3.1.1	New asphalt raised pavement treatment	sq.m	54	\$ 250.00	\$ 13,500.00
4	Signage & Linemarking				\$ 6,960.00
4.1	Signage				
4.1.1	Remove, store and reinstate required signage	no.	2	\$ 500.00	\$ 1,000.00
4.1.2	Install new signage	no.	2	\$ 500.00	\$ 1,000.00
4.2	Linemarking - Thermoplastic Permanent Paint				
4.2.1	Piano Key markings	lin.m	16	\$ 60.00	\$ 960.00
4.2.2	Surface treatment (CST)	sq.m	20	\$ 200.00	\$ 4,000.00
CV	TOTAL CONSTRUCTION VALUE				\$ 36,508.00
5	Project Management & Design				\$ 12,654.00
5.1	Program Administration	% of CV	1	3%	\$ 1,151.00
5.2	Design	% of CV	1	10%	\$ 4,601.00
5.3	Survey	% of CV	1	10%	\$ 4,601.00
5.4	Service Proving (provisional)	% of CV	1	5%	\$ 2,301.00
BE	BASE ESTIMATE VALUE				\$ 49,162.00
	Contingency Allowance	%	20%		\$ 9,832.40
	Base Estimate + Contingency				\$ 58,994.40
	Escalation	%	5%		\$ 2,949.72
TE	TOTAL ESTIMATE				\$ 62,000.00

3007004 - Kingston Beach LATM Study
 Bill of Quantities - 17/03/2023
 Beach Road Sharrows

The tenderer is responsible for determining the actual quantity of the works and the schedules supplied are issued as a guide and for information only. It is the tenderers responsibility to check the quantities and correct any errors.

Item	Description	Unit of Measure	Quantity	Rate	Amount
1	Preliminaries				\$ 4,882.00
1.1	Site establishment including provision of access, survey Setout, provision of site and office compounds, insurances and other works as specified.	% of CV	1	10%	\$ 420.00
1.2	Site Management and supervision	% of CV	1	10%	\$ 420.00
1.3	OHS, Quality and Environmental Plans & Monitoring	% of CV	1	1%	\$ 42.00
1.4	Traffic Management	Item	1	\$ 4,000.00	\$ 4,000.00
2	Signage & Linemarking				\$ 4,200.00
2.1	Linemarking - Thermoplastic Permanent Paint				
2.1.1	Sharrows	no.	12	\$ 350.00	\$ 4,200.00
CV	TOTAL CONSTRUCTION VALUE				\$ 9,082.00
3	Project Management & Design				\$ 3,728.00
3.1	Program Administration	% of CV	1	3%	\$ 228.00
3.2	Design	Item	1	\$ 3,500.00	\$ 3,500.00
BE	BASE ESTIMATE VALUE				\$ 12,810.00
	Contingency Allowance	%	20%		\$ 2,562.00
	Base Estimate + Contingency				\$ 15,372.00
	Escalation	%	5%		\$ 768.60
TE	TOTAL ESTIMATE				\$ 16,200.00



3007004 - Kingston Beach LATM Study
 Bill of Quantities - 17/03/2023
 Beach Road Kerb Extensions x 2

The tenderer is responsible for determining the actual quantity of the works and the schedules supplied are issued as a guide and for information only. It is the tenderers responsibility to check the quantities and correct any errors.

Item	Description	Unit of Measure	Quantity	Rate	Amount
1	Preliminaries				\$ 37,371.00
1.1	Site establishment including provision of access, survey Setout, provision of site and office compounds, insurances and other works as specified.	% of CV	1	10%	\$ 12,055.00
1.2	Site Management and supervision	% of CV	1	10%	\$ 12,055.00
1.3	OHS, Quality and Environmental Plans & Monitoring	% of CV	1	1%	\$ 1,206.00
1.4	Traffic Management	% of CV	1	10%	\$ 12,055.00
2	Site Works & Demolition				\$ 4,460.00
2.1	Excavator	hr	8	\$ 150.00	\$ 1,200.00
2.2	Truck (x1)	hr	8	\$ 150.00	\$ 1,200.00
2.3	Labour (2 person)	hr	8	\$ 150.00	\$ 1,200.00
2.4	Plant Hire (saw cutter)	hr	8	\$ 45.00	\$ 360.00
2.5	Tip/Dump fee	Item	1	\$ 500.00	\$ 500.00
3	Concrete Works				\$ 22,000.00
3.1	Kerb and Channel				
3.1.1	Supply & Cast Kerb & Channel (B2, B3, SM2 & SM3)	lin.m.	104	\$ 200.00	\$ 20,800.00
3.1.2	Layback kerb (crossover/driveway)	lin.m.	6	\$ 200.00	\$ 1,200.00
4	Pavement Works				\$ 44,000.00
4.1	New Pavement Works				
4.1.1	Reinstate 600mm pavement from new kerb (Inc. Type N Asphalt, Class 2 FCR)	sq.m	66	\$ 250.00	\$ 16,500.00
4.1.2	Asphalt footpath at kerb blisters	sq.m	110	\$ 250.00	\$ 27,500.00
5	Drainage Works				\$ 7,000.00
5.1	Drainage Pits				
5.1.1	Upgrade existing SEP (inlet & cover)	no.	2	\$ 3,500.00	\$ 7,000.00
6	Signage & Linemarking				\$ 43,085.00
6.1	Signage				
6.1.1	Remove, store and reinstate required signage	no.	2	\$ 500.00	\$ 1,000.00
6.2	Linemarking - Thermoplastic Permanent Paint				
6.2.1	Yellow 'No Stopping'	lin.m	110	\$ 10.00	\$ 1,100.00
6.2.2	Omnigrip pavement treatment	sq.m	203	\$ 200.00	\$ 40,600.00
6.2.3	Hold line (stop)	lin.m	11	\$ 35.00	\$ 385.00
CV	TOTAL CONSTRUCTION VALUE				\$ 157,916.00
7	Project Management & Design				\$ 55,528.00
7.1	Program Administration	% of CV	1	3%	\$ 5,048.00
7.2	Design	% of CV	1	10%	\$ 20,192.00
7.3	Survey	% of CV	1	10%	\$ 20,192.00
7.4	Service Proving (provisional)	% of CV	1	5%	\$ 10,096.00
BE	BASE ESTIMATE VALUE				\$ 213,444.00
	Contingency Allowance	%	20%		\$ 42,688.80
	Base Estimate + Contingency				\$ 256,132.80
	Escalation	%	5%		\$ 12,806.64
TE	TOTAL ESTIMATE				\$ 269,000.00



3007004 - Kingston Beach LATM Study
 Bill of Quantities - 17/03/2023

Osborne Esplanade SLSC Wombat Crossing (upgrade of existing flat top road hump)

The tenderer is responsible for determining the actual quantity of the works and the schedules supplied are issued as a guide and for information only. It is the tenderers responsibility to check the quantities and correct any errors.

Item	Description	Unit of Measure	Quantity	Rate	Amount
1	Preliminaries				\$ 4,063.00
1.1	Site establishment including provision of access, survey Setout, provision of site and office compounds, insurances and other works as specified.	% of CV	1	10%	\$ 30.00
1.2	Site Management and supervision	% of CV	1	10%	\$ 30.00
1.3	OHS, Quality and Environmental Plans & Monitoring	% of CV	1	1%	\$ 3.00
1.4	Traffic Management	Item	1	\$ 4,000.00	\$ 4,000.00
2	Signage & Linemarking				\$ 3,020.00
2.1	Linemarking - Thermoplastic Permanent Paint				
2.1.1	Zebra crossing	lin.m	6	\$ 50.00	\$ 300.00
2.1.2	Piano Key' markings	lin.m	12	\$ 60.00	\$ 720.00
2.2	Signage				
2.2.1	Install new R3-1	no.	4	\$ 500.00	\$ 2,000.00
CV	TOTAL CONSTRUCTION VALUE				\$ 7,083.00
3	Project Management & Design				\$ 3,110.00
3.1	Program Administration	% of CV	1	3%	\$ 110.00
3.2	Design	Item	1	\$ 3,000.00	\$ 3,000.00
BE	BASE ESTIMATE VALUE				\$ 10,193.00
	Contingency Allowance	%	20%		\$ 2,038.60
	Base Estimate + Contingency				\$ 12,231.60
	Escalation	%	5%		\$ 611.58
TE	TOTAL ESTIMATE				\$ 12,900.00



3007004 - Kingston Beach LATM Study
 Bill of Quantities - 17/03/2023
 Osborne Esplanade Sharrows

The tenderer is responsible for determining the actual quantity of the works and the schedules supplied are issued as a guide and for information only. It is the tenderers responsibility to check the quantities and correct any errors.

Item	Description	Unit of Measure	Quantity	Rate	Amount
1	Preliminaries				\$ 5,470.00
1.1	Site establishment including provision of access, survey Setout, provision of site and office compounds, insurances and other works as specified.	% of CV	1	10%	\$ 700.00
1.2	Site Management and supervision	% of CV	1	10%	\$ 700.00
1.3	OHS, Quality and Environmental Plans & Monitoring	% of CV	1	1%	\$ 70.00
1.4	Traffic Management	Item	1	\$ 4,000.00	\$ 4,000.00
2	Signage & Linemarking				\$ 7,000.00
2.1	Linemarking - Thermoplastic Permanent Paint				
2.1.1	Sharrows	no.	20	\$ 350.00	\$ 7,000.00
CV	TOTAL CONSTRUCTION VALUE				\$ 12,470.00
3	Project Management & Design				\$ 3,812.00
3.1	Program Administration	% of CV	1	3%	\$ 312.00
3.2	Design	Item	1	\$ 3,500.00	\$ 3,500.00
BE	BASE ESTIMATE VALUE				\$ 16,282.00
	Contingency Allowance	%	20%		\$ 3,256.40
	Base Estimate + Contingency				\$ 19,538.40
	Escalation	%	5%		\$ 976.92
TE	TOTAL ESTIMATE				\$ 20,600.00



3007004 - Kingston Beach LATM Study
 Bill of Quantities - 17/03/2023
 Osborne Esplanade Shared Zone

The tenderer is responsible for determining the actual quantity of the works and the schedules supplied are issued as a guide and for information only. It is the tenderers responsibility to check the quantities and correct any errors.

Item	Description	Unit of Measure	Quantity	Rate	Amount
1	Preliminaries				\$ 35,185.00
1.1	Site establishment including provision of access, survey Setout, provision of site and office compounds, insurances and other works as specified.	% of CV	1	10%	\$ 11,350.00
1.2	Site Management and supervision	% of CV	1	10%	\$ 11,350.00
1.3	OHS, Quality and Environmental Plans & Monitoring	% of CV	1	1%	\$ 1,135.00
1.4	Traffic Management	% of CV	1	10%	\$ 11,350.00
2	Site Works & Demolition				\$ 7,100.00
2.1	Excavator	hr	4	\$ 200.00	\$ 800.00
2.2	Truck (x1)	hr	4	\$ 200.00	\$ 800.00
2.3	Labour (2 person)	hr	4	\$ 200.00	\$ 800.00
2.4	Plant Hire (saw cutter)	hr	4	\$ 50.00	\$ 200.00
2.5	Mill out 20mm existing pavement (mounted profiler), including dump fee	Item	1	\$ 4,500.00	\$ 4,500.00
3	Concrete Works				\$ 4,000.00
3.1	Kerb and Channel				
3.1.1	Supply & Cast Kerb & Channel	lin.m.	10	\$ 200.00	\$ 2,000.00
3.1.2	Footpath	sq.m	10	\$ 200.00	\$ 2,000.00
4	Pavement Works				\$ 52,500.00
4.1	New Pavement Works				
4.1.3	New asphalt raised pavement treatment	sq.m	210	\$ 250.00	\$ 52,500.00
5	Signage & Linemarking				\$ 46,400.00
5.1	Signage				
5.1.1	Remove and dispose existing signage	no	4	\$ 500.00	\$ 2,000.00
5.1.2	Install new shared zone signage	no	8	\$ 500.00	\$ 4,000.00
5.2	Linemarking - Thermoplastic Permanent Paint				
5.2.1	Piano Key markings	lin.m	20	\$ 60.00	\$ 1,200.00
5.2.2	Surface Treatment (CST)	sq.m	196	\$ 200.00	\$ 39,200.00
6	Miscellaneous				\$ 3,500.00
6.1	Supply and Install TGSI (Hazard & Directional inc installation)	sq.m	7	\$ 500.00	\$ 3,500.00
CV	TOTAL CONSTRUCTION VALUE				\$ 148,685.00
7	Project Management & Design				\$ 55,328.00
7.1	Program Administration	% of CV	1	3%	\$ 5,030.00
7.2	Design	% of CV	1	10%	\$ 20,119.00
7.3	Survey	% of CV	1	10%	\$ 20,119.00
7.4	Service Proving (provisional)	% of CV	1	5%	\$ 10,060.00
BE	BASE ESTIMATE VALUE				\$ 204,013.00
	Contingency Allowance	%	20%		\$ 40,802.60
	Base Estimate + Contingency				\$ 244,815.60
	Escalation	%	5%		\$ 12,240.78
TE	TOTAL ESTIMATE				\$ 257,100.00

3007004 - Kingston Beach LATM Study
 Bill of Quantities - 17/03/2023
 Osborne Esplanade Wombat Crossing

The tenderer is responsible for determining the actual quantity of the works and the schedules supplied are issued as a guide and for information only. It is the tenderers responsibility to check the quantities and correct any errors.

Item	Description	Unit of Measure	Quantity	Rate	Amount
1	Preliminaries				\$ 12,562.00
1.1	Site establishment including provision of access, survey Setout, provision of site and office compounds, insurances and other works as specified.	% of CV	1	10%	\$ 4,077.00
1.2	Site Management and supervision	% of CV	1	10%	\$ 4,077.00
1.3	OHS, Quality and Environmental Plans & Monitoring	% of CV	1	1%	\$ 408.00
1.4	Traffic Management	Item	1	\$ 4,000.00	\$ 4,000.00
2	Site Works & Demolition				\$ 7,100.00
2.1	Excavator	hr	4	\$ 200.00	\$ 800.00
2.2	Truck (x1)	hr	4	\$ 200.00	\$ 800.00
2.3	Labour (2 person)	hr	4	\$ 200.00	\$ 800.00
2.4	Plant Hire (saw cutter)	hr	4	\$ 50.00	\$ 200.00
2.5	Mill out 20mm existing pavement (mounted profiler), including dump fee	Item	1	\$ 4,500.00	\$ 4,500.00
3	Concrete Works				\$ 11,600.00
3.1	Kerb and Channel				
3.1.1	Supply & Cast Kerb & Channel (B2, B3, SM2 & SM3)	lin.m.	14	\$ 200.00	\$ 2,800.00
3.2	Footpaths				
3.2.1	125mm depth concrete (SL72 mesh) including bedding - new footpath to tie into crossing	sq.m	24	\$ 200.00	\$ 4,800.00
3.2.2	Construct DDA Compliant kerb ramps	Item	2	\$ 2,000.00	\$ 4,000.00
4	Pavement Works				\$ 11,550.00
4.1	New Pavement Works				
4.1.1	Reinstate 600mm pavement from new kerb (Inc. Type N Asphalt, Class 2 FCR)	sq.m	8	\$ 250.00	\$ 2,100.00
4.1.2	New asphalt raised pavement treatment	sq.m	42	\$ 225.00	\$ 9,450.00
5	Signage & Linemarking				\$ 3,020.00
5.1	Signage				
5.1.1	Remove, store and reinstate required signage	no.	4	\$ 500.00	\$ 2,000.00
5.2	Linemarking - Thermoplastic Permanent Paint				
5.2.1	Zebra crossing	lin.m	6	\$ 50.00	\$ 300.00
5.2.2	Piano Key markings	lin.m	12	\$ 60.00	\$ 720.00
6	Miscellaneous				\$ 7,500.00
6.1	Supply and Install TGSI (Hazard & Directional inc installation)	sq.m	7	\$ 500.00	\$ 3,500.00
6.2	Removal, storage and reinstatement of bollards	no.	8	\$ 500.00	\$ 4,000.00
CV	TOTAL CONSTRUCTION VALUE				\$ 53,332.00
7	Project Management & Design				\$ 16,746.00
7.1	Program Administration	% of CV	1	3%	\$ 1,523.00
7.2	Design	% of CV	1	10%	\$ 6,089.00
7.3	Survey	% of CV	1	10%	\$ 6,089.00
7.4	Service Proving (provisional)	% of CV	1	5%	\$ 3,045.00
BE	BASE ESTIMATE VALUE				\$ 70,078.00
	Contingency Allowance	%	20%		\$ 14,015.60
	Base Estimate + Contingency				\$ 84,093.60
	Escalation	%	5%		\$ 4,204.68
TE	TOTAL ESTIMATE				\$ 88,300.00



3007004 - Kingston Beach LATM Study
 Bill of Quantities - 17/03/2023
 Osborne Esplanade Perceptive Crossing

The tenderer is responsible for determining the actual quantity of the works and the schedules supplied are issued as a guide and for information only. It is the tenderers responsibility to check the quantities and correct any errors.

Item	Description	Unit of Measure	Quantity	Rate	Amount
1	Preliminaries				\$ 6,835.00
1.1	Site establishment including provision of access, survey Setout, provision of site and office compounds, insurances and other works as specified.	% of CV	1	10%	\$ 1,350.00
1.2	Site Management and supervision	% of CV	1	10%	\$ 1,350.00
1.3	OHS, Quality and Environmental Plans & Monitoring	% of CV	1	1%	\$ 135.00
1.4	Traffic Management	Item	1	\$ 4,000.00	\$ 4,000.00
2	Signage & Linemarking				\$ 13,500.00
2.1	Linemarking - Thermoplastic Permanent Paint				
2.1.1	Zebra crossing	lin.m	6	\$ 50.00	\$ 300.00
2.1.2	Surface Treatment (CST)	sq.m	66	\$ 200.00	\$ 13,200.00
CV	TOTAL CONSTRUCTION VALUE				\$ 20,335.00
3	Project Management & Design				\$ 2,543.00
3.1	Program Administration	% of CV	1	3%	\$ 509.00
3.2	Design	% of CV	1	10%	\$ 2,034.00
BE	BASE ESTIMATE VALUE				\$ 22,878.00
	Contingency Allowance	%	20%		\$ 4,575.60
	Base Estimate + Contingency				\$ 27,453.60
	Escalation	%	5%		\$ 1,372.68
TE	TOTAL ESTIMATE				\$ 28,900.00

3007004 - Kingston Beach LATM Study
 Bill of Quantities - 17/03/2023
 Balmoral Road Sharrows

The tenderer is responsible for determining the actual quantity of the works and the schedules supplied are issued as a guide and for information only. It is the tenderers responsibility to check the quantities and correct any errors.

Item	Description	Unit of Measure	Quantity	Rate	Amount
1	Preliminaries				\$ 4,882.00
1.1	Site establishment including provision of access, survey Setout, provision of site and office compounds, insurances and other works as specified.	% of CV	1	10%	\$ 420.00
1.2	Site Management and supervision	% of CV	1	10%	\$ 420.00
1.3	OHS, Quality and Environmental Plans & Monitoring	% of CV	1	1%	\$ 42.00
1.4	Traffic Management	Item	1	\$ 4,000.00	\$ 4,000.00
2	Signage & Linemarking				\$ 4,200.00
2.1	Linemarking - Thermoplastic Permanent Paint				
2.1.1	Sharrows	no.	12	\$ 350.00	\$ 4,200.00
CV	TOTAL CONSTRUCTION VALUE				\$ 9,082.00
3	Project Management & Design				\$ 3,228.00
3.1	Program Administration	% of CV	1	3%	\$ 228.00
3.2	Design	Item	1	\$ 3,000.00	\$ 3,000.00
BE	BASE ESTIMATE VALUE				\$ 12,310.00
	Contingency Allowance	%	20%		\$ 2,462.00
	Base Estimate + Contingency				\$ 14,772.00
	Escalation	%	5%		\$ 738.60
TE	TOTAL ESTIMATE				\$ 15,600.00



3007004 - Kingston Beach LATM Study
 Bill of Quantities - 17/03/2023
 Balmoral Road T-Intersection Resheet

The tenderer is responsible for determining the actual quantity of the works and the schedules supplied are issued as a guide and for information only. It is the tenderers responsibility to check the quantities and correct any errors.

Item	Description	Unit of Measure	Quantity	Rate	Amount
1	Preliminaries				\$ 8,591.00
1.1	Site establishment including provision of access, survey Setout, provision of site and office compounds, insurances and other works as specified.	% of CV	1	10%	\$ 2,186.00
1.2	Site Management and supervision	% of CV	1	10%	\$ 2,186.00
1.3	OHS, Quality and Environmental Plans & Monitoring	% of CV	1	1%	\$ 219.00
1.4	Traffic Management	Item	1	\$ 4,000.00	\$ 4,000.00
2	Site Works & Demolition				\$ 7,100.00
2.1	Excavator	hr	4	\$ 200.00	\$ 800.00
2.2	Truck (x1)	hr	4	\$ 200.00	\$ 800.00
2.3	Labour (2 person)	hr	4	\$ 200.00	\$ 800.00
2.4	Plant Hire (saw cutter)	hr	4	\$ 50.00	\$ 200.00
2.5	Mill out 200mm existing pavement (mounted profiler), including dump fee	Item	1	\$ 4,500.00	\$ 4,500.00
4	Pavement Works				\$ 13,160.00
4.1	New Pavement Works				
4.1.1	Resheet (type N pavement)	sq.m	376	\$ 35.00	\$ 13,160.00
5	Signage & Linemarking				\$ 2,575.00
5.1	Signage				
5.1.1	Remove, store and reinstate required signage	no.	3	\$ 500.00	\$ 1,500.00
5.2	Linemarking - Thermoplastic Permanent Paint				
5.2.1	Yellow 'No Stopping'	lin.m	10	\$ 10.00	\$ 100.00
5.2.2	Center Line	lin.m	33	\$ 25.00	\$ 825.00
5.2.3	Hold line (Give Way)	lin.m	6	\$ 25.00	\$ 150.00
CV	TOTAL CONSTRUCTION VALUE				\$ 31,426.00
6	Project Management & Design				\$ 11,996.00
6.1	Program Administration	% of CV	1	3%	\$ 1,091.00
6.2	Design	% of CV	1	10%	\$ 4,362.00
6.3	Survey	% of CV	1	10%	\$ 4,362.00
6.4	Service Proving (provisional)	% of CV	1	5%	\$ 2,181.00
BE	BASE ESTIMATE VALUE				\$ 43,422.00
	Contingency Allowance	%	20%		\$ 8,684.40
	Base Estimate + Contingency				\$ 52,106.40
	Escalation	%	5%		\$ 2,605.32
TE	TOTAL ESTIMATE				\$ 54,800.00



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