Technical Study

Clarenza URA Structure Plan Active and Public Transport Analysis, GSTE. Rev B 03/03/25

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Clarenza URA Structure Plan
South Grafton

Active and Public Transport Analysis

GSTE

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Development: Clarenza URA Structure Plan Active Transport Analysis

Site Address: Clarenza South Grafton

Prepared for: deGroot & Benson

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Contents

1 Introduction

1.1 Scope

This Clarenza URA Active and Public Transport Analysis should be read in conjunction with the suite of Technical Studies in support of the Draft Structure Plan for the Clarenza Urban Release Area (URA) and in particular the Draft Clarenza URA Traffic and Transport Study Dec 2024.

This report assesses the requirements for cycling and pedestrian infrastructure relevant to traffic and transport movement within and external to the Clarenza area.

Consideration is also given to the three schools located in the Clarenza area which have plans in place for growth in student numbers, and the area of Council owned land to the immediate south of the URA with access to and from Big River Way which is planned for rezoning to E4 General Industrial land.

Specific Active Transport requirements included in the Clarence Valley Council Technical Studies Brief are:

- *Detailed review of the proposed link road between the north and south villages and whether this should remain as vehicular or be reconsidered as a cycle and walkway.*
- *Provision of a safe pedestrian connection between the URA and future industrial zone to encourage an overall reduction in local trips generated on the classified road network.*
- *Active transport infrastructure to link to South Grafton and beyond from this development.*

2 Existing Conditions

2.1 Existing Transport Network

Big River Way provides road connection between the URA and South Grafton and Grafton CBD. The URA is within a 5-minute drive of shops, businesses and services in South Grafton and 5 to 8-minute drive or 15 minute bicycle ride from the Grafton CBD.

Big River Way once formed part of the New South Wales State Highway Network (State Highway 10 and A1) and was the primary road transport link between Sydney and Brisbane. The road would have carried over 10,000 vehicles per day with a high percentage of Heavy Vehicle traffic.

Following the Pacific Highway Upgrade, which opened to traffic in 2020, Big River Way now only carries around 4,000 vehicles per day with traffic volumes projected to grow to 5,370 vehicles per day by 2036.

As part of works constructed by the NSW State Governments Clarence River Bridge project a high standard shared path connection now provides safe pedestrian and cycle access between Hennessy Drive (McAuley Catholic College) through to Iolanthe Street which in turn provides connection to the South Grafton and Grafton CBD pedestrian and cycle networks.

Hennessy Drive to Iolanthe Street existing Shared Path

The existing path is 2.5m wide concrete and asphalt and signposted and linemarked in accordance with relevant standards. The path includes a traffic signal-controlled crossing of Iolanthe Street and extends through to South Grafton Railway Station.

Clarence Valley Council Active Transport Strategy 2024 – 2044 includes high priority projects to continue providing shared path links through to South Grafton and Grafton CBD.

The Active Transport Strategy also includes plans to service the growing school populations in the Clarenza area, including facilities on Centenary Drive.

Centenary Drive is a two-lane rural collector road running along a ridge line generally parallel with Big River Way and carries local traffic in the order of 1,100 vehicles per day. Traffic and pedestrian activity on Centenary Drive is currently dominated by the Clarence Valley Anglican School located opposite Clarenza Road. This is reflected in the Clarence Valley Councils Active Transport Strategy with a high priority allocated to pedestrian facilities on the north side of Centenary Drive linking through to the Clarenza URA.

Centenary Drive typical formation

3 Clarenza URA Structure Plan

3.1 Pedestrian and Cycle Networks

The Clarenza URA Active transport plan includes definition of a network of key walking routes between residential catchments and connecting to the primary networks.

The proposed Connector Road linking the Northern and Southern URA residential precincts includes separate pedestrian and cycle infrastructure within a 26m wide road reserve.

The Connector Road pedestrian and cycle facilities connect to McAuley College and the Big River Way network at the north end and Centenary Drive at the south end via shared paths. The Connector Road also provides pedestrian and cycle access to the Big River Way south intersection and potentially to the Alipou Creek rezoning site discussed in Section 3.2 below.

On-going development of the Clarenza URA will generate additional pedestrian and cycle access to Centenary Drive. The Clarenza URA Structure Plan shows good pedestrian and cycle connection to Centenary Drive, with the majority of likely use to be access to Clarence Valley Anglican School. As previously detailed the Clarence Valley Council Active Transport Strategy 2024 – 2044 includes high priority projects to service the growing school populations in the area, including facilities on Centenary Drive.

There is nexus however between the Clarenza URA and the demand for pedestrian/cycle crossing facilities on Centenary Drive. While it is difficult to estimate utilisation rates of the proposed link to Centenary Drive a high-level analysis of the required pedestrian facility can be undertaken using the Australasian Pedestrian Crossing Facility Selection Web Tool.

The tool has been applied to a mid-block crossing on Centenary Drive for assumed future vehicular and pedestrian traffic criteria. The tool confirms that a pedestrian refuge island provides good investment and level of service criteria to adequately cater for future conditions on Centenary Drive. Outputs from the selection tool are included in Appendix A of this report.

There is nexus between the Clarenza URA and the demand for pedestrian/cycle crossing facilities on Centenary Drive. It is therefore proposed that construction of an at-grade pedestrian refuge on Centenary Drive in accordance with Austroads standards should be considered for funding in the review of Councils Section 7.11 and 7.12 Developer Contributions Plans..

3.2 Proposed Re-zoning of Alipou Creek Site to E4 General Industrial

The Alipou Creek site is Council owned land at 1007 Big River Way South Grafton (Lot 3//872232). It comprises approximately 75Ha. It is immediately to the south of the URA with potential access off Big River Way.

It is the intention of Council to re-zone this land from RU2 Rural Landscape to E4 General Industrial. Given proximity to the URA and Big River Way access and egress, it is important that any traffic and transport assessment for the URA also considers the interactions with a future industrial area and the transport network that will service it.

Alipou Creek Site

The Alipou Creek proposed E4 General Industrial Zone, being near the Clarenza URA, will provide direct employment and service opportunities and demand for travel between the two areas One of the key objectives of the Clarenza URA is to ensure appropriate consideration of Active Transport links within the URA and the desirable external links.

At grade pedestrian crossing facilities could be integrated into the design of any proposed 'T' intersection arrangements on Big River Way however the multi-lane crossing distances would not be considered appropriate for encouragement of pedestrian and cycle movement between the two areas.

Application of the Australasian Pedestrian Crossing Facility Selection Web Tool to the site shows that while a median refuge is considered feasible, facility comparison metrics of Perceived Safety and Pedestrian Level of Service are both 'E' (not good) for a median refuge.

The recommended pedestrian crossing facility from the Pedestrian Crossing Facility Selection Tool is Traffic Control Signals with Perceived Safety and Pedestrian Level of Service both 'B' (good).

The ultimate intersection configuration to the Alipou Creek industrial land will depend on timing of development and staging of vehicular access requirements. Traffic Control Signals will provide cost effective traffic and pedestrian/bicycle access to Big River Way and facilitate traffic and active transport movement between the Industrial land and the Clarenza URA, however other options can be considered.

4 Public Transport

4.1 Existing Public Transport Services

The intersection traffic turning movement counts recorded as part of the Clarenza URA Traffic and Transport Study show that the majority of peak hour heavy vehicle movements at the local road intersections are school buses.

There are currently limited public bus services to the area with only Bus Route 380 Grafton to Yamba providing regular service to Hennessy Drive and Duncans Road (Appendix B).

4.2 Clarenza URA Bus Services

School buses form an important part of the trip to school transport mix and the proposed Clarenza URA road network will improve accessibility and access options for school bus routing.

As the Clarenza URA residential development progresses, demand for town bus services will also eventually meet the required criteria for extension of bus services to the new residential areas.. The Clarenza URA structure plan road network layout provides good opportunity for staging of bus routes via residential loop roads pending development of the full road network.

The proposed Connector Road is essential to provide an efficient public transport route minimising the potential for 'backtracking' of bus services and provide good connectivity to and between the Clarenza URA Local Centres.

The Draft Structure Plan includes possible bus stop location in both the north and south precincts which would warrant installation of bus shelters.

It is considered that the installation of bus shelters at two locations in the Clarenza URA should be included in the Clarenza URA Developer Contributions Plan.

Appendix A

Pedestrian Crossing Facility Selection Web Tool

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Australasian Pedestrian Crossing Facility Selection Tool [2.2.2]

HELP PRINT

Choose File No file chosen | Load a CSV File | OR fill in the form below

Project details

Project name:	Clarenza URA
Project location:	Centenary Drive
Option/assessment number:	1
Date of assessment:	25-11-2024

Site information

Jurisdiction:	New South Wales
Midblock or intersection?	Midblock
Existing facility	No facility

Crash information

Use crash model or crash history?	History
Years of crash history:	5
Number of pedestrian injury crashes:	0

Wombat crossings

The tool can be used to assess Wombat crossings. A Wombat crossing is functionally similar to a "Zebra with platform" or "Zebra with platform and kerb extensions" (if the crossing includes kerb extensions). To assess a Wombat crossing please select the appropriate crossing type in the Feasible facilities table and continue with the assessment as normal.

Australian Transport Assessment and Planning (ATAP) procedures

It is recommended that practitioners follow the three tiered 'Options generation and assessment' process outlined at https://www.atap.gov.au/framework/options-generation-assessment/3-options-assessment, of which the Cost Benefit Assessment is only one consideration.

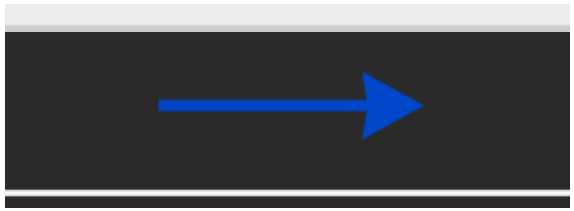
Physical/environmental/Operational variables

Number of traffic directions:	Two
Centre treatment:	No treatment
Parking/shoulder:	No
Pedestrian visibility:	60 metres

Direction 1

Flow:	Left to Right
Flow type:	Uninterrupted
Peak vehicle volume:	126 veh/hr
Traffic lanes:	1

Layout diagram

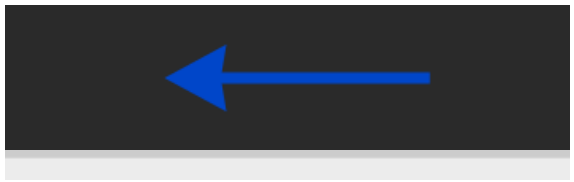


Posted speed limit:	80 km/h
Approach speed (85th percentile):	80 km/h
Traffic volume (AADT):	3000 veh/day
Peak sensitive pedestrian volume:	30 ped/hr
Peak non-sensitive pedestrian volume:	20 ped/hr
Estimated daily pedestrian volume:	50 ped/day
Average vehicle occupancy:	1.3 pers/veh

Crossing distance:	4 metres

Direction 2

Flow:	Right to Left
Flow type:	Uninterrupted
Peak vehicle volume:	174 veh/hr
Traffic lanes:	1
Crossing distance:	4 metres



Site characteristics

Exposed crossing distance:	4 + 4 = **8 metres**
Est. pedestrian crossing time (exposed):	**7.4 seconds**
Total peak hourly vehicle flow:	126 + 174 = **300 veh/hr**

Model parameters Show/Hide

Walk speed of average sensitive pedestrians:	1 m/s
Walk speed of average non-sensitive pedestrians:	1.2 m/s
Average cost of pedestrian crashes:	$ 626459
Pedestrian value of delay:	$ 14.99 /hr
Vehicle value of delay:	$ 31.34 /hr
Pedestrian conversion factor:	0.6
Vehicle conversion factor:	0.4

Economic assessment parameters

Evaluation days per annum:	250
Project lifetime:	30 years
Discount rate:	7 %

Economic update factors

	Base date	Update factor to current date
Travel time costs/savings	June 2010	1
Vehicle operating costs/savings	June 2010	1
Crash costs/savings	June 2010	1

Expected crash reduction factors

Platform	Kerb extensions	Median refuge	Kerb extensions with median refuge	Zebra only	Zebra with platform	Zebra with kerb extensions	Zebra with platform and kerb extensions	Zebra with median refuge	Zebra with kerb extensions and median refuge	Signals	Signals with kerb extensions	Grade separation

47 %	35 %	56 %	56 %	0 %	63 %	35 %	63 %	56 %	56 %	45 %	45 %	86 %

Calculate feasibility

View the facility feasibility process (PDF) here

Automatically calculate when inputs are updated?

Feasible facilities

	Suitable for site?	Built parameters	Construction cost	Annual maintenance cost	Show in final output? Select all/none/feasible
No facility *	*N/a*	*No parameters*	$ 0	$ 0	☑
Platform	No Posted speed > 50km/h	Vehicle negotiation speed: Please select	$	$ 0	☑
Kerb extensions	No Max. of approach/posted speed >= 65km/h and parking/shoulder not present	Total crossing distance: metres	$	$ 0	☑
Median refuge	Yes	Direction 1 crossing distance: 3 metres Median refuge width: 2 metres Direction 2 crossing distance: 3 metres	$ 30000	$ 30000	☑
Kerb extensions with median refuge	No Kerb extensions not suitable	Direction 1 crossing distance: metres	$	$ 0	☑

		Median refuge width: metres Direction 2 crossing distance: metres			
Zebra only	**No** Max. of approach/posted speed >= 65km/h	*No parameters*	$	$ 0	☑
Zebra with platform	**No** Zebra not suitable Platform not suitable	*Applies vehicle negotiation speed from **Platform** above*	$	$ 0	☑
Zebra with kerb extensions	**No** Zebra not suitable Kerb extensions not suitable	*Applies total crossing distance from **Kerb extensions** above*	$	$ 0	☑
Zebra with platform and kerb extensions	**No** Zebra not suitable Platform not suitable Kerb extensions not suitable	*Applies vehicle negotiation speed from **Platform** and total crossing distance from **Kerb extensions** above*	$	$ 0	☑
Zebra with median refuge	**No** Zebra not suitable	*Applies distances and refuge width from **Median refuge** above*	$	$ 0	☑
Zebra with kerb extensions and median refuge	**No** Zebra not suitable Kerb extensions with median refuge not suitable	*Applies distances and refuge width from **Kerb extensions with median refuge** above*	$	$ 0	☑
Signals	**No** Max. of approach/posted speed > 75km/h	Signals activated by pedestrian call button? Please sele Cycle time: seconds Percent of time in green pedestrian phase: %	$	$ 0	☑

Signals with kerb extensions	**No** Signals not suitable Kerb extensions not suitable	*Applies parameters from **Signals** above, plus:* Total crossing distance: metres	$	$ 0	☑
Grade separation	**Yes**	*No parameters*	$ 500000	$ 10000	☑

Calculate assessment

Facility assessment

	Suitable for site?	Pedestrian delay	Vehicle delay	Predicted crash rate	CSD	ASD	SISD
No facility ✱	**N/a**	**6 sec**	**0 sec**	**0.00 /year**	**178 m**	**103 m**	**170 m**
Platform	No						
Kerb extensions	No						
Median refuge	Yes	2 sec	0 sec	0.00 /year	67 m	103 m	170 m
Kerb extensions with median refuge	No						
Zebra only	No						
Zebra with platform	No						
Zebra with kerb extensions	No						
Zebra with platform and kerb extensions	No						
Zebra with median refuge	No						

Zebra with kerb extensions and median refuge	No							
Signals	No							
Signals with kerb extensions	No							
Grade separation	Yes	0 sec	0 sec	0.00 /year				

	Perceived delay	Perceived safety	**Pedestrian LOS**	Pedestrian delay cost	Pedestrian delay saving	Vehicle delay cost	Vehicle delay saving	Crash cost	Safety saving	Total benefits	**BCR**
No facility ✱	**B**	**D**	**D**	**$ 2,000**		**$ 0**		**$ 0**			
Platform											
Kerb extensions											
Median refuge	B	C	C	$ 1,000	$ 1,000	$ 0	$ 0	$ 0	$ 0	$ 1,000	**0.0**
Kerb extensions with median refuge											
Zebra only											
Zebra with platform											
Zebra with kerb extensions											
Zebra with platform and kerb extensions											
Zebra with median refuge											

Zebra with kerb extensions and median refuge												
Signals												
Signals with kerb extensions												
Grade separation			A	$ 0	$ 2,000	$ 0	$ 0	$ 0	$ 0	$ 2,000	**0.0**

Notes

Reset all Fields | Clarenza URA_1_25-11-2024 .csv | Export CSV File

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Version: 2.2.2

Australasian Pedestrian Crossing Facility Selection Tool [2.2.2]

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HELP PRINT

Choose File No file chosen | Load a CSV File | OR fill in the form below

Project details

Project name:	Clarenza URA
Project location:	Big River Way
Option/assessment number:	1
Date of assessment:	25-11-2024

Site information

Jurisdiction:	New South Wales
Midblock or intersection?	Intersection
Existing facility	No facility

Crash information

Use crash model or crash history?	History
Years of crash history:	5
Number of pedestrian injury crashes:	0

Wombat crossings

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It is recommended that practitioners follow the three tiered 'Options generation and assessment' process outlined at https://www.atap.gov.au/framework/options-generation-assessment/3-options-assessment, of which the Cost Benefit Assessment is only one consideration.

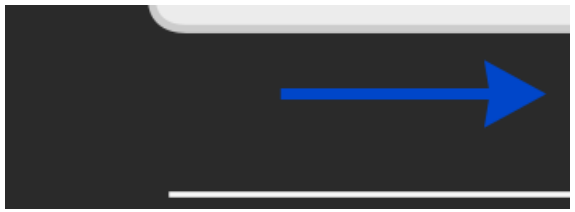
Physical/environmental/Operational variables

Number of traffic directions:	Two
Centre treatment:	No treatment
Parking/shoulder:	No
Pedestrian visibility:	60 metres

Direction 1

Flow:	Left to Right
Flow type:	Uninterrupted
Peak vehicle volume:	467 veh/hr
Traffic lanes:	1

Layout diagram

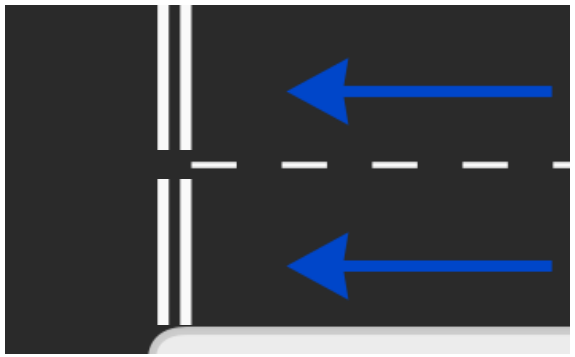


Posted speed limit:	70 km/h
Approach speed (85th percentile):	70 km/h
Traffic volume (AADT):	8500 veh/day
Peak sensitive pedestrian volume:	30 ped/hr
Peak non-sensitive pedestrian volume:	20 ped/hr
Estimated daily pedestrian volume:	50 ped/day
Average vehicle occupancy:	1.3 pers/veh
Degree of pedestrian/turning vehicle conflict:	High

Crossing distance:	8 metres

Direction 2

Flow:	Right to Left
Flow type:	Uninterrupted
Peak vehicle volume:	355 veh/hr
Traffic lanes:	2
Crossing distance:	8 metres



Site characteristics

Exposed crossing distance:	8 + 8 = **16 metres**
Est. pedestrian crossing time (exposed):	**14.8 seconds**
Total peak hourly vehicle flow:	467 + 355 = **822 veh/hr**

Model parameters Show/Hide

Walk speed of average sensitive pedestrians:	1 m/s
Walk speed of average non-sensitive pedestrians:	1.2 m/s
Average cost of pedestrian crashes:	$ 24524(
Pedestrian value of delay:	$ 14.99 /hr
Vehicle value of delay:	$ 31.34 /hr
Pedestrian conversion factor:	0.6
Vehicle conversion factor:	0.4

Economic assessment parameters

Evaluation days per annum:	250
Project lifetime:	30 years
Discount rate:	7 %

Economic update factors

	Base date	Update factor t current date
Travel time costs/savings	June 2010	1
Vehicle operating costs/savings	June 2010	1
Crash costs/savings	June 2010	1

Expected crash reduction factors

Platform	Kerb extensions	Median refuge	Kerb extensions with median refuge	Zebra only	Zebra with platform	Zebra with kerb extensions	Zebra with platform and kerb extensions	Zebra with median refuge	Zebra with kerb extensions and median refuge	Signals	Signals with kerb extensions	Grade separation
47 %	35 %	56 %	56 %	0 %	63 %	35 %	63 %	56 %	56 %	45 %	45 %	86 %

Calculate feasibility

View the facility feasibility process (PDF) here

Automatically calculate when inputs are updated?

Feasible facilities

	Suitable for site?	Built parameters	Construction cost	Annual maintenance cost	Show in final output? Select all/none/feasible
No facility *	*N/a*	*No parameters*	$ 0	$ 0	☑
Platform	**No** Posted speed > 50km/h Too many lanes	Vehicle negotiation speed: Please select	$	$ 0	☑
Kerb extensions	**No** Max. of approach/posted speed >= 65km/h and parking/shoulder not present	Total crossing distance: metres	$	$ 0	☑
Median refuge	**Yes**	Direction 1 crossing distance: 4 metres Median refuge width: 2 metres	$ 60000	$ 3000	☑

		Direction 2 crossing distance: 8 metres			
Kerb extensions with median refuge	**No** Kerb extensions not suitable	Direction 1 crossing distance: metres Median refuge width: metres Direction 2 crossing distance: metres	$	$ 0	☑
Zebra only	**No** Intersection location Too many lanes Max. of approach/posted speed >= 65km/h	*No parameters*	$	$ 0	☑
Zebra with platform	**No** Zebra not suitable Platform not suitable	*Applies vehicle negotiation speed from **Platform** above*	$	$ 0	☑
Zebra with kerb extensions	**No** Zebra not suitable Kerb extensions not suitable	*Applies total crossing distance from **Kerb extensions** above*	$	$ 0	☑
Zebra with platform and kerb extensions	**No** Zebra not suitable Platform not suitable Kerb extensions not suitable	*Applies vehicle negotiation speed from **Platform** and total crossing distance from **Kerb extensions** above*	$	$ 0	☑
Zebra with median refuge	**No** Zebra not suitable	*Applies distances and refuge width from **Median refuge** above*	$	$ 0	☑
Zebra with kerb extensions and median refuge	**No** Zebra not suitable Kerb extensions with median refuge not suitable	*Applies distances and refuge width from **Kerb extensions with median refuge** above*	$	$ 0	☑
Signals	**Yes**	Cycle time: 80 seconds	$ 500000	$ 5000	☑

		Percent of time in green pedestrian phase: 10 %			
Signals with kerb extensions	**No** Kerb extensions not suitable	*Applies parameters from **Signals** above, plus:* Total crossing distance: metres	$	$ 0	☑
Grade separation	**No** Intersection location	*No parameters*	$ 500000	$ 10000	☑

Calculate assessment

Facility assessment

	Suitable for site?	Pedestrian delay	Vehicle delay	Predicted crash rate	CSD	ASD	SISD
No facility ✱	**N/a**	**179 sec**	**0 sec**	**0.00 /year**	**311 m**	**83 m**	**141 m**
Platform	No						
Kerb extensions	No						
Median refuge	Yes	8 sec	0 sec	0.00 /year	156 m	83 m	141 m
Kerb extensions with median refuge	No						
Zebra only	No						
Zebra with platform	No						
Zebra with kerb extensions	No						

Zebra with platform and kerb extensions	No						
Zebra with median refuge	No						
Zebra with kerb extensions and median refuge	No						
Signals	Yes	34 sec	0 sec	0.00 /year	311 m	83 m	141 m
Signals with kerb extensions	No						
Grade separation	No						

	Perceived delay	Perceived safety	**Pedestrian LOS**	Pedestrian delay cost	Pedestrian delay saving	Vehicle delay cost	Vehicle delay saving	Crash cost	Safety saving	Total benefits	**BCR**
No facility ✱	**F**	**F**	**F**	**$ 72,000**		**$ 0**		**$ 0**			
Platform											
Kerb extensions											
Median refuge	B	E	E	$ 3,000	$ 68,000	$ 0	$ 0	$ 0	$ 0	$ 68,000	**0.7**
Kerb extensions with median refuge											
Zebra only											
Zebra with platform											
Zebra with kerb extensions											

Zebra with platform and kerb extensions											
Zebra with median refuge											
Zebra with kerb extensions and median refuge											
Signals	C	B	B	$ 14,000	$ 58,000	$ 0	$ 0	$ 0	$ 0	$ 58,000	**0.0**
Signals with kerb extensions											
Grade separation											

Notes

Reset all Fields

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Version: 2.2.2

Appendix B

Route 380 Bus Service

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Grafton Bus Network