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Final Rev 1

Railway Road and Elizabeth Street Traffic Study

Prepared For:
City of Kalamunda



Report



T: +61 8 9274 7076
F: +61 8 9274 4854
E: Admin@dvcworld.com

6 Burgess St Midland WA 6056
PO Box 5060 Midland WA 6056
www.dvcworld.com

Client: City of Kalamunda
Project: Elizabeth St Kalamunda Traffic Study



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1. INTRODUCTION

1.1 Background

The City of Kalamunda has commissioned Donald Veal Consultants (DVC) to prepare a traffic study report to determine the best treatment to address the severity and frequency of the predominant crash types at the intersection of Railway Road and Elizabeth Street, Kalamunda.

The traffic study assesses various options to improve the safety of the existing intersection and the resulting traffic impact imposed on the surrounding road network. Options, identified by the City, comprise:

- a) Closure of the eastern leg of the intersection of Railway Road and Elizabeth Street; and
- b) Changing the priority at the Railway Road / Elizabeth Street intersection, making Elizabeth Street the through route. This option would include a narrow (bus route compliant) speed cushion on the south bound approach to reduce approach speeds.

An alternative solution developed by DVC during the course of the investigation is also investigated and documented in the report.

1.2 Site Location

The site location is shown in **Figure 1.1**.



Figure 1.1: Site location

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1.3 Crash History

Crash data has been extracted from Main Roads Western Australia's (MRWA's) CrashMap database for the intersections of Elizabeth Street with Railway Road and Williams Street for the 5 year reporting period from January 2018 to December 2022.

This data showed a total of 27 reported crashes, as shown in **Figure 1.2**, with 24 crashes reported at the intersection of Elizabeth Street and Railway Road and three crashes reported at the intersection of Elizabeth Street and Williams Street. Three crashes resulted in a hospital visit, while seven required medical attention at the intersection of Elizabeth Street and Railway Road. One crash resulted in a hospital visit at the intersection of Elizabeth Street and Williams Street. The majority of crashes occurred during daylight hours, and in dry conditions.

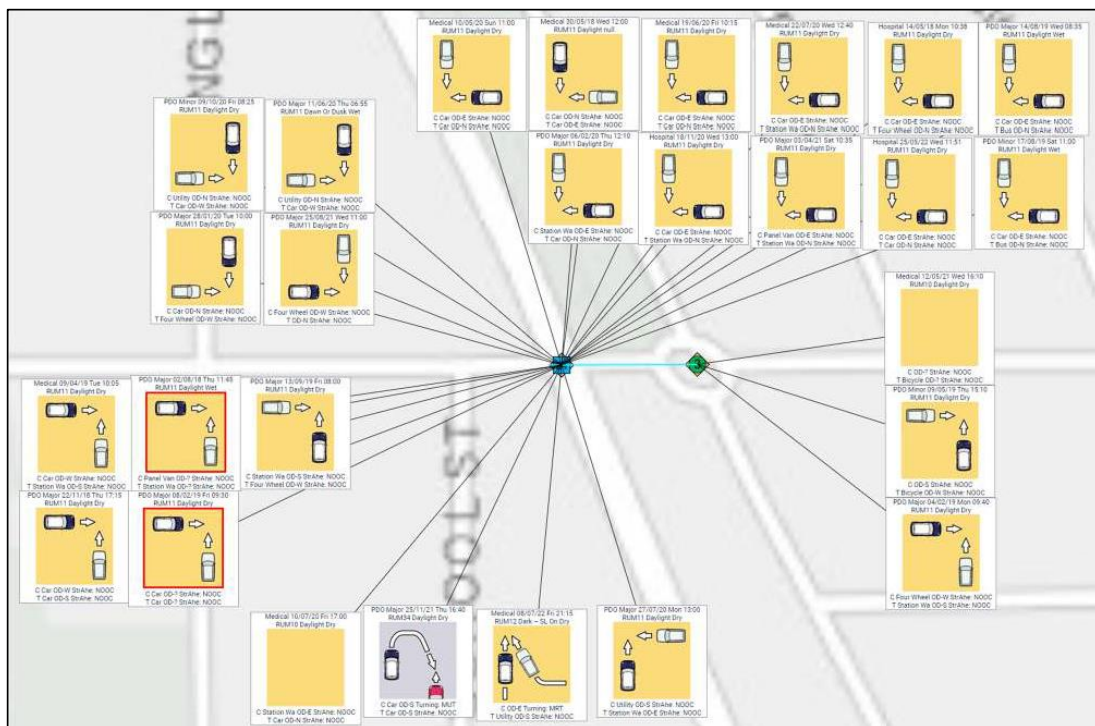


Figure 1.2: Crash Diagram

Source: Crash Map

There were 26 right angle crashes and one side swipe opposite direction crash. It is noted that the proportion of right-angle crashes is very high compared to the network average. A breakdown of the right-angle crashes is shown in **Figure 1.3**. The most common crash movement (11 crashes) is Elizabeth Street westbound traffic colliding with Railway Road southbound traffic.



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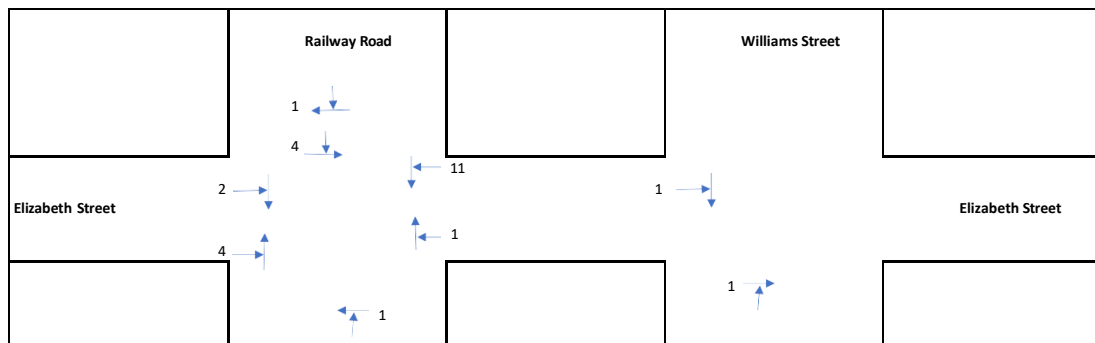


Figure 1.3: A breakdown of Right-Angle Crashes for Each Intersection

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2. ROADS AND TRAFFIC

2.1 Existing Local Road Network and Hierarchy

MRWA’s Road Hierarchy Classification for the local road network in the vicinity of the site is shown in **Figure 2.1**.



Figure 2.1: MRWA Road Hierarchy

Elizabeth Street is classified as a Distributor B road, west of Williams Street, and as an Access Road, east of Williams Street. Williams Street is classified as a Local Distributor and Railway Road is classified as a Distributor B. These roads are constructed as a single carriageway with one lane in each direction.

The posted speed limit on both Elizabeth Street and Williams Street are subject to default urban speed limit of 50 km/h as they are in a built-up environment. The posted speed limit on Railway Road is 60 km/h and changed to a 40km/h shared zone between Stirk Street and Mead Street/Mundaring Weir Road.

2.2 Existing Traffic Volumes

Traffic data provided by the City of Kalamunda is shown in **Table 2.1**. This indicates that Elizabeth Street carried approximately 1,600 vehicles per day (vpd) between Railway Road and Williams Street and 180



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vehicles per hour (vph) in the peak hours in 2023, whilst Railway Road (count adjacent No. 67) carried close to 4,700vph and nearly 600vph in the peak hours in 2023.

Table 2.1: Traffic Data**Source: City of Kalamunda**

Road	Location	Date	Daily (vpd)	AM Peak (vph)	PM Peak (vph)	% HV	85%tile Speed (km/h)
Elizabeth St	110m E of Lindsay St	2016	1,126	82	106	5.9	60.8
Elizabeth St	30m E of Poets Ln	2017	1,029	106	103	3.3	45.4
Elizabeth St	House #25	2023	1,106	103	106	11.3	38.2
Elizabeth St –EB	Btw Railway Rd & Williams St	2023	829	92	89	15.7	22.7
Elizabeth St –WB	Btw Railway Rd & Williams St	2023	790	91	75	7	26.6
Elizabeth St	House #26	2023	1,219	154	139	6.7	42.5
Railway Rd	100m N of Burt St	2019	5,853	618	662	-	-
Railway Rd	55m N of Stirk St	2017	5,132	447	564	5.2	54.7
Railway Rd	73m N of Stirk St	2019	5,385	580	588	-	-
Railway Rd	50m N of Elizabeth St	2017	4,386	418	486	5.4	59
Railway Rd	House #85	2023	3,561	423	456	8	64.6
Railway Rd	House #71	2023	4,043	493	497	9	61.7
Railway Rd	House #67	2023	4,691	553	588	8.3	55.3
Railway Rd	House #47	2023	5,203	518	567	12.3	34.2
Williams St	80m S of Dixon Rd	2018	1,582	160	204	4.3	54
Williams St	House #50	2023	1,056	129	122	5.3	52.4
Williams St	House #38	2023	1,347	149	148	7.5	57.6
Williams St	House #12	2023	1,563	189	173	6.5	52.2
Headingly Rd	61m S of Railway Rd	2018	216	25	23	6.7	51.5
Headingly Rd	Btw Railway Rd & Williams St	2023	670	98	83	9.3	35.1
Headingly Rd	House #26	2023	186	18	16	6.5	51.6
McRae Rd	House #8	2023	1,370	243	186	6.6	49.5
McRae Rd	House #24	2023	1,258	234	177	5.7	45.5
Spring Rd	House 1A	2023	652	64	58	11.2	45.7
Spring Rd	Btw Railway Rd & Williams St	2023	2,247	245	224	7.3	29.7
Sultana Rd W	100m NW of Eureka St	2023	423	78	60	10.6	58.5
Canning Rd	500m S of Canning Mills Rd	2023	2,095	203	220	22.1	87.3
Canning Rd	300m S of Canning Mills Rd	2023	2,110	202	214	26.2	93.1

DVC carried out manual traffic turning counts at the two key intersections of Elizabeth Street with Railway Road and Williams Street during the AM and PM peak hour periods on Thursday 9th November 2023. The peak hours were determined based on available data. The AM peak is generally 7:30-9:30 and the PM peak is generally 14:30-16:30. Full details are included in **Appendix A**.

The peak hour results from these surveys are shown in **Figures 2.2 and 2.3** for the AM and PM peak hour, respectively. Percentages refer to heavy vehicle percentage for that movement.

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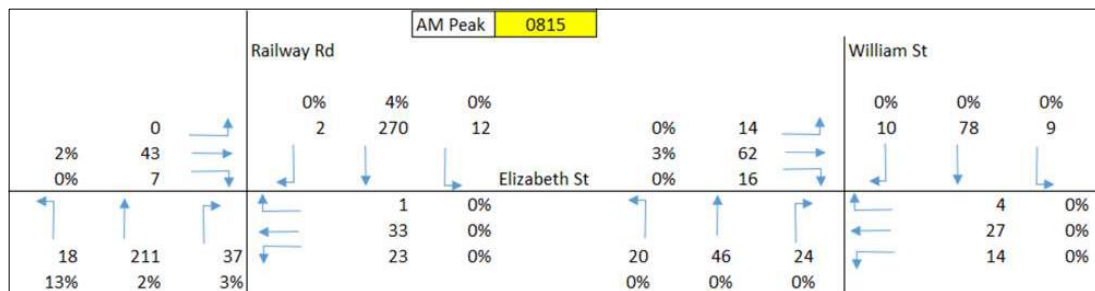


Figure 2.2: Observed AM Peak Hour Counts (Thursday, 9th November 2023)

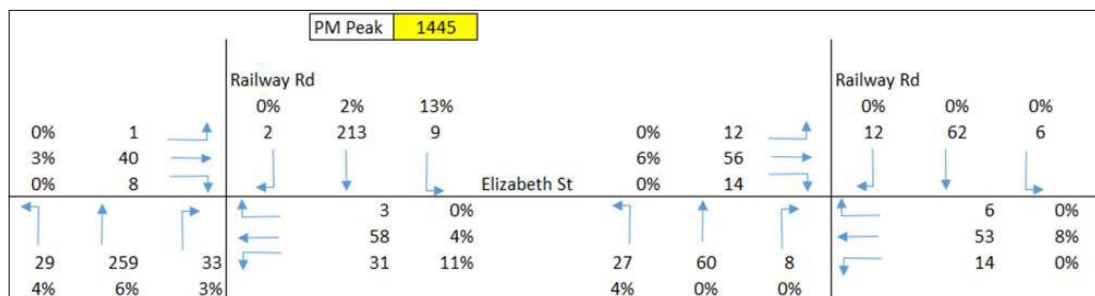


Figure 2.3: Observed PM Peak Hour Counts (Thursday, 9th November 2023)

2.3 Site Visit

A site visit was carried out by Yaqoob Siddiqui, an accredited Senior Road Safety Auditor, and Ken Lak, an accredited Road Safety Auditor, on Thursday 26th October 2023, to confirm details of the current site layout and better understand pedestrian and traffic movement patterns through the intersections.

Notes were taken during the visit, together with several photographs, some of which appear in this report.

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3. CURRENT SCENARIO

3.1 Intersection of Elizabeth St with Railway Rd

3.1.1 Intersection Layout

This intersection layout is an unsignalized four-way intersection, with Give Way sign controls on Elizabeth Street, which provides priority for through movements on Railway Road. Speed Cushions are installed on both Elizabeth Street approaches. See **Figure 3.1**.



Figure 3.1: Current Intersection of Elizabeth St with Railway Rd is under Give Way Control

3.1.2 Sight Distance (western leg)

Drivers approaching the intersection on the western leg of Elizabeth Street, have limited sight distance to the north, on approach to Railway Road. Dense vegetation and trees along the verge on the north west corner of the intersection, impedes sight distance. Based on site observations, due to ground level elevation, with intersection located on top of a crest, vehicles need to drive very close to the give way line to see the line and achieve adequate sightline to the north. The sight distance to the south is less impeded. Despite being identified in the previous Road Safety Audit report, the Western Power pole and Telstra pillar on the southwest corner of the intersection, do not appear to have any significant adverse impact on sight distance. See **Photos 1 and 2**.



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There may also be an issue with sun glare on this approach in the morning. Based on crash data there was one Property Damage Only (PDO) Major during the dawn period and there were also some crashes recorded between 8am to 10am where sun glare may have been a contributing factor.

The limited sight distance may be a contributing factor to the high number of right-angle crashes involving eastbound vehicles on Elizabeth Street as described in **Section 1.3**.

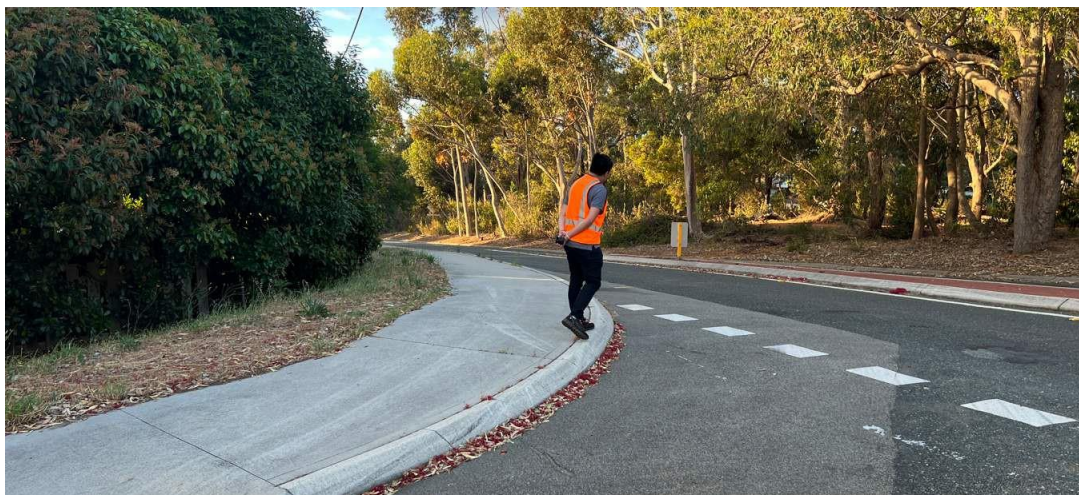


Photo 1: Sight Distance is limited to the North on Elizabeth St Eastbound



Photo 2: Sight Distance unimpeded to the South on Elizabeth St Eastbound

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3.1.1 Sight Distance (*eastern leg*)

For the eastern leg of the intersection, west bound vehicles on Elizabeth Street have limited sight distance to the north, on approach to Railway Road. Dense vegetation and trees along the verge on the northeast corner of the intersection and mature trees to the south, impede sight distance. Vehicles need to drive as close as possible to the give way line to achieve adequate sightline to the north and south. See **Photos 3 and 4**.

Again, to note that the afternoon sunset light directly shines on approaching traffic driver's eyes as shown in **Photo 5**.

The limited sight distance may be a contributing factor to the very high number of right-angle crashes involving westbound vehicles on Elizabeth Street as described in **Section 1.3**.



Photo 3: Sight Distance is limited to the North on Elizabeth St Westbound

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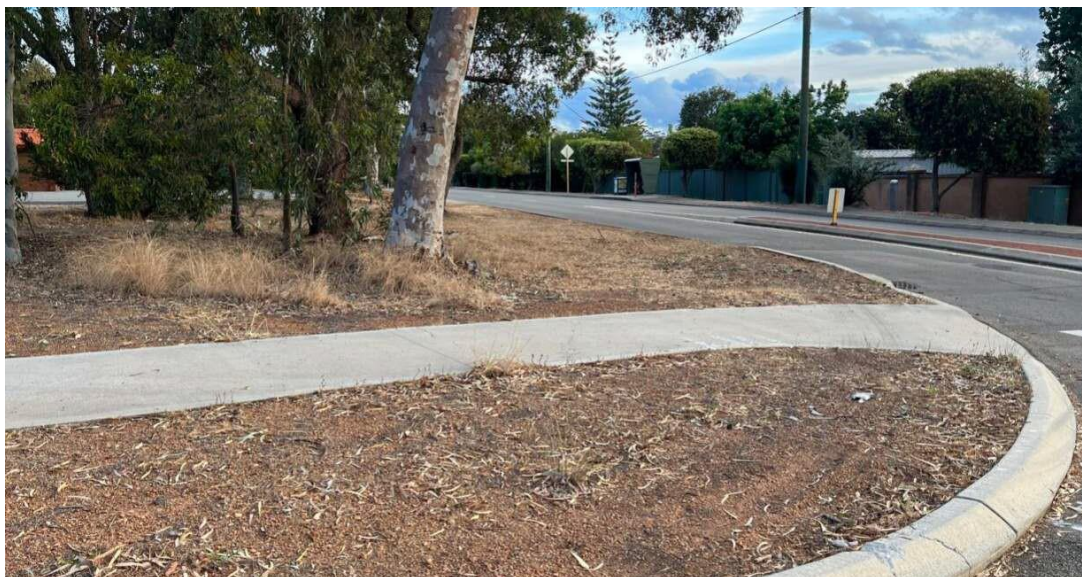


Photo 4: Sight Distance is also limited to the South on Elizabeth St Westbound



Photo 5: Glare from the sun setting in the west

3.2 Intersection of Elizabeth St with Williams St

3.2.1 Intersection Layout

This intersection layout is a roundabout, with a non-circular, oval shaped central island. A large tree and some low lying shrubs are situated in the centre of the roundabout. See **Figure 3.2**.

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Figure 3.2: Current layout at the intersection of Elizabeth St with Williams St

3.2.1 Sight Distance

Photos 6 to 9 show all roundabout approaches are compliant with the sight distance requirements of Austroads Guideline to Road Design 4B – Roundabouts Figure 3.1: Distance Criteria for Roundabouts.



Photo 6: View from Eastern Leg of Roundabout Towards the Western Leg

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Photo 7: View from Southern Leg of Roundabout Towards the Northern Leg



Photo 8: View Towards the Eastern Leg that is Partially Obscured by Kalamunda Hospital Sign

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Photo 9: View from Western Leg of Roundabout Towards the North

3.3 Pedestrians and Cyclists

3.3.1 Elizabeth St and Williams St Roundabout

A footpath runs along the eastern verge of Williams Street, varying in width from 1.2m to 2.0m. The pedestrian crossing on the eastern leg of the roundabout comprises a median refuge, approximately 1.5m in width. A footpath runs along the western verge of Williams Street, south of the roundabout. The Railway Heritage Trail runs through the centre of the nature strip between Railway Road and Williams Street. The pedestrian crossing on Elizabeth Street is mid-block and aligns with the Railway Heritage Trail as shown in **Photo 10**. It has been observed during the site visit and survey that this crossing has been well used.



Photo 10: Mid-block Pedestrian crossing on Elizabeth St

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3.3.1 Railway Rd and Elizabeth St

A footpath runs along the western verge of Railway Road, varying in width from 1.5m to 2.0m. The pedestrian crossing on the northern leg of the intersection comprises a median refuge, approximately 2.8m in width.

3.4 Public Transport

Bus stop numbers 13947 and 13959 along Railway Road is approximately 50m south of Elizabeth Street intersection and services bus routes 274, 276 and 307.

3.5 Lighting

The intersection of Elizabeth Street and Williams Street is well lit, as show in **Photo 11**. However, lighting at the intersection of Elizabeth Street and Railway Road is poor, especially for the northern leg as shown in **Photos 12 & 13** respectively.



Photo 11: Adequate lighting of Elizabeth St/Williams St intersection

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Photo 12a: Dim Lighting of Elizabeth St/Railway Rd intersection, view westbound



Photo 12b: Dim Lighting of Elizabeth St/Railway Rd intersection

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Photo 13: Poor lighting on the north leg of Elizabeth St/Railway Rd intersection

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4. OPTION ASSESSEMENT

The City of Kalamunda previously contacted residents about its plans to construct a roundabout at the intersection of Railway Road with Elizabeth Street. This was in response to several serious accidents at the intersection, with the aim of making the intersection safer for drivers and pedestrians. However, initial investigations by the City determined that a roundabout was not a suitable option as it was deemed to have the following detrimental impacts:

- Compromise pedestrian sight lines;
- Cause vehicles to stack between Railway Road and Williams Street resulting in traffic queuing into Williams Street roundabout; and
- Require removal of several mature trees at the intersection.

The “Dog Bone” or “Peanut” roundabout layout option encompassing both intersections was also initially considered as a possible solution. However, after consultation with the City it was decided that this option was not suitable for the following reasons:

- Generate environmental issues with uncertain outcome;
- Prolonged community consultation process with uncertain results;
- Possible objection from residents along Williams Street for the increase in through traffic;
- Possible rejection by Public Transport Authority for the disruption to bus services on Railway Road; and
- Possible illegal movements by southbound traffic on Railway Road, taking short cut and traveling against the opposing northbound traffic over the head of the “Dog Bone”.

DVC was provided with the community feedback on the two initial options proposed by the City, being the closure of Elizabeth Street and a roundabout at intersection of Elizabeth Street and Railway Road. A total of 96 submissions were received and these are summarised in **Appendix C**. Further investigation of these submissions identified 25 suggested treatments, many of which have been incorporated in the options investigated in this report. **Table 4.1** shows the level of support for the treatments identified by the community. Reasons for not adopting some identified treatments are provided in **Table 4.2**.



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Table 4.1: Community Feedback Treatments

No.	Suggested Treatment	No. in Support	Incorporated in Options Assessed?
1	Stop signs to replace Give Way signs	23	Yes
2	Speed humps	20	Yes
3	Reduce speed	19	Yes
4	Clear vegetation/obstacles	3	Yes
5	Change road priority	2	Yes
6	Improved lighting	2	Yes
7	Improved signs and lines	2	Yes
8	Make a deviation on Railway Road	2	Yes
9	Add island at the junction	1	Yes
10	Maintenance of existing signs and lines	1	Yes
11	Regular maintenance of vegetation	1	Yes
12	Roundabout	19	No
13	Close Elizabeth Street to the west of Railway Road	2	No
14	Cul-de-sac Elizabeth Street west of Railway Road	2	No
15	Double mini roundabouts	2	No
16	Traffic signals	2	No
17	Alternative closure	1	No
18	Barrier along centreline of Railway Road	1	No
19	Black Spot sign installed	1	No
20	Closing Railway Road from Elizabeth Street to Mead Street	1	No
21	Elizabeth Street left turn only, Railway Parade SB right turn ban	1	No
22	Install fixed speed cameras	1	No
23	More police enforcement of speed limit	1	No
24	One way only entry point to Railway Road	1	No
25	Slow points, not speed humps	1	No

Table 4.2: Treatments Not Adopted

No.	Suggested Treatment	Reason for not Pursuing
12	Roundabout	Already dismissed by the City
13	Close Elizabeth Street to the west of Railway Road	Adverse impact on connectivity
14	Cul-de-sac Elizabeth Street west of Railway Road	Adverse impact on connectivity
15	Double mini roundabouts	Roundabouts already dismissed
16	Traffic signals	Would not meet warrants
17	Alternative closure	Adverse impact on connectivity
18	Barrier along centreline of Railway Road	Adverse impact on connectivity
19	Black Spot sign installed	Would not meet warrants
20	Closing Railway Road from Elizabeth St to Mead St	Adverse impact on connectivity
21	Elizabeth St left only, Railway Pde SB right turn ban	Adverse impact on connectivity
22	Install fixed speed cameras	Would not meet warrants
23	More police enforcement of speed limit	Would not meet warrants
24	One way only entry point to Railway Road	Adverse impact on connectivity
25	Slow points, not speed humps	Speed reduction managed by other means



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Improvement options considered as part of this report, comprise:

1. Option proposed by the City for road closure: Closure of the eastern leg of the intersection of Railway Road and Elizabeth Street i.e. Elizabeth Street between Railway Road and Williams Street.
2. Option proposed by the City for changing road priority: Swapping the existing “Give Way” control on the Elizabeth Street legs to the Railway Road legs, so the Railway Road traffic yields to the Elizabeth Street traffic. This option would include a narrow (bus route compliant) speed cushion on the south bound approach to achieve a speed reduction for vehicles travelling to the town centre; and
3. Option 3 developed by DVC for road realignment and speed reduction: Realignment of the eastern leg of the intersection of Railway Road and Elizabeth Street, implementation of speed hump on Railway Road, replacing existing give way control with stop sign on Elizabeth Street, provide advance warning stop sign ahead sign at the approach to the intersection on Elizabeth Street west of Railway Road and extending the 40 km/h posted speed zone on Railway Road through the intersection of Elizabeth Street.

4.1 Option 1 - Road Closures

Closure of the eastern leg of Railway Road and Elizabeth Street intersection would eliminate crashes involving eastbound Elizabeth Street traffic with Williams Street traffic and also crashes involving westbound Elizabeth Street traffic with Railway Road traffic. The crashes resulting from these movements contributed to more than 50% of all recorded crashes for this intersection. However, this treatment option does not eliminate crashes involving Elizabeth Street eastbound traffic with Railway Road traffic.

The City of Kalamunda had received 94 community feedback comments on this proposed option (see **Appendix C** for community feedback). Seventy of the 94 comments disagreed with pursuing this option, including eleven that strongly disagreed. One of the main reasons for the community objection was the impact it may have on St Johns Ambulance. It was made clear that ambulances require direct access to Kalamunda Hospital or to Kalamunda Road via Elizabeth Street (Stirk Park), and this option would sever the direct access that is currently allowed.

Traffic volumes on Williams Street are likely to increase between Headingly Road and Spring Street as a result of Elizabeth Street link closure with Railway Road. It is likely that traffic needing to travel to/from north will access William Street/Railway Parade via Headingly Road and traffic that needs to travel to/from south will access William Street/ Railway Road via Spring Road. William Street is a single carriageway with two lanes in each direction. The lane widths for each lane are approximately 3m wide with no shoulder provisioning. In comparison, Railway Road is single carriage with one lane in each direction and the lane widths are approximately 3.5 - 3.7m.

The intersection of Railway Road and Headingly Road is at the start of a curve, with trees and vegetation on the southwest corner of the intersection impeding sight distance to the south, as shown in **Photo 14**.

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Photo 14: Sightline to the south from Headingly Road

Source: Google

The intersections of William Street/ Spring Road and Spring Road/ Railway Road provides access to the town centre and will likely be very busy during peak times. Further traffic data and analysis is required to determine if there will be any issues with regards to traffic queue generated at these intersections due to additional traffic generated on William Street because of Elizabeth Street closure.

4.2 Option 2 - Changing Priority of Traffic

Changing the priority at the Railway Road/ Elizabeth Street intersection, making Elizabeth Street the through route may provide some improvement with the existing issue concerning vehicles on Elizabeth Street failing to give-way to through traffic on Railway Road.

Westbound traffic exiting the roundabout and accelerating might not expect to have to give-way immediately after leaving the roundabout. There is a very short distance of approximately 25m between the roundabout and the intersection of Railway Road and Elizabeth Street. Therefore, by removing the give way control on Elizabeth Street and providing priority to through traffic on Elizabeth Street will eliminate this issue.

However, it may also introduce a new issue concerning vehicles on Railway Road not giving way to traffic on Elizabeth Street, particularly during the initial period after introduction of the changing traffic priority. Adequate signage would need to be provided, including temporary signs to provide awareness regarding the changed priority. The sightline from Railway Road northbound to the approaching traffic on Elizabeth Street east/westbound are less obstructed by trees/vegetation/roadside infrastructure, as compared to the sight lines on Elizabeth Street to the approaching traffic on Railway Road. The sight line for northbound vehicles on Railway Road to the east and west are shown in **Photos 15 and 16** respectively.

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Photo 15: Sightline to the east from Railway Rd



Photo 16: Sightline to the west from Railway Rd

The sightlines from Railway Road southbound to the approaching traffic on Elizabeth Street east/west bound are still obstructed by trees/vegetation/roadside infrastructure, as shown in **Photo 17**. To improve Safe Intersection Sight Distance (SISD) to the south along Railway Road, it is recommended to remove/prune some trees/vegetation that are causing sight line obstruction on the northeastern, northwestern and southeastern corners of the intersection.

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Photo 17: Approach sightline to the intersection for southbound Railway Rd traffic

Furthermore, it is noted that Railway Road carries approximately five times more traffic compared to Elizabeth Street, as shown in **Table 2.1**. Therefore, it may result in some traffic queues developing along Railway Road at peak times.

4.3 Option 3 - Road Realignment and Speed Reduction

The main scope of this road realignment and speed reduction option is to realign Elizabeth Street between Railway Road and Williams Street to create an intersection configuration with a pre-deflection curve. The revised configuration requires westbound vehicles on Elizabeth Street to turn slightly right at the intersection of Railway Road before turning left on to Elizabeth Street (west of the intersection). Conversely eastbound vehicles on Elizabeth Street will need to turn slightly right at the intersection of Railway Road before turning left on to Elizabeth Street (east of the intersection). This means that vehicles on Elizabeth Street will not be able to drive straight through the intersection if they inadvertently miss the give way line or are not aware of an oncoming vehicle on Railway Road due to sight distance issues as discussed. The revised intersection layout should improve driver's awareness of the intersection and therefore provide a safer crossing point at the intersection.

It is recommended to replace the existing give way controls on Elizabeth Street with a stop sign instead due to sightline issues. As per AS1742.2-2009 Section 2.5.1 (d) STOP signs shall be provided instead of GIVE WAY signs on any controlled approach where intersection sight distance is substandard as determined in accordance with Clause 2.5.4. STOP signs shall not be used where intersection sight distance is adequate for GIVE WAY signs.

In conjunction with the road realignment and speed reduction, it is important that the sightline to the north be improved by removing/pruning trees/vegetation in the northeast and northwest corners of the intersection. The give way line on Elizabeth Street west of Railway Road is located on top of a crest curve making it

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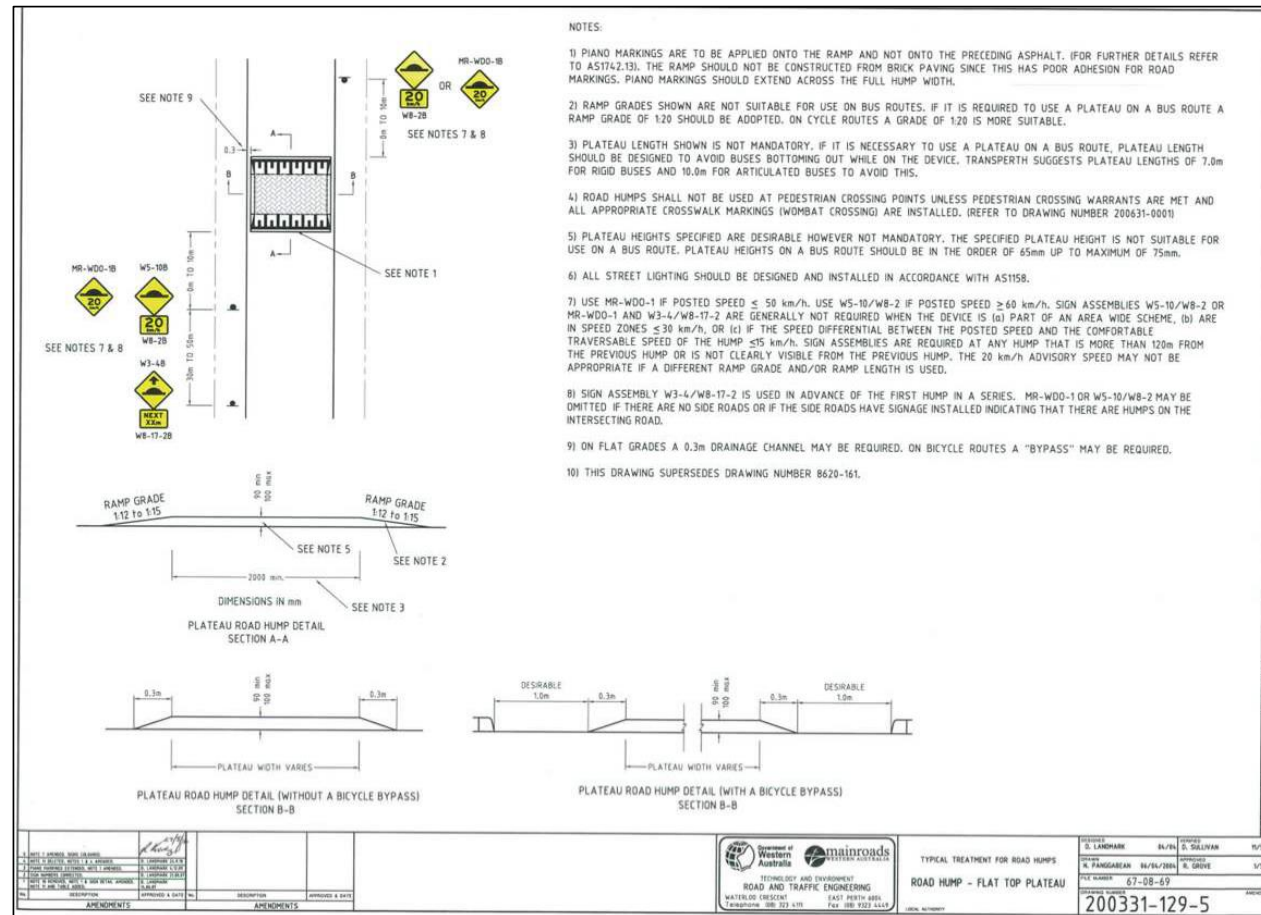


difficult to notice for Eastbound drivers. Based on site observation, the give way line is noticeable only when the vehicle is in very close proximity to the intersection. By providing advance warning sign of a stop sign ahead mounted on a post at the approach to the intersection, may assist with increasing driver awareness and provide advance warning of the intersection ahead.

The speed zoning on Railway Road changes from 40km/h to 60 km/h north of Stirk Street intersection. It is recommended that the 40km/h speed zone on Railway Road be extended further north to include the intersection of Elizabeth Street. This will assist with reducing the severity of crashes at the intersection. The additional extent of the 40km/h zone on Railway Road is approximately 200m (distance from current 40km/h sign post to the intersection of Railway Road and Elizabeth Street). Speed enforcement and monitoring may required to ensure speed compliance by installing speed cameras on Railway Road.

Additionally, it is recommended to install speed humps on Railway Road, at the northern and southern approaches to Elizabeth Street to enforce the slower speed environment through the intersection. The speed humps should comply to Main Roads requirement as per drawing Road Hump – Flat top Plateau (200331-129-5), as shown in **Figure 4.1**. Railway Road is a bus route, therefore a ramp grade of 1:20 and plateau lengths of 7m (rigid buses) or 10m (articulated buses) should be adopted to comply with Public Transport Authority (PTA) requirements for implementation on bus routes.

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Source: Main Roads WA

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Figure 4.2 and **Appendix B** shows this option to include:

- Deflection curve on Elizabeth Street westbound between Railway Road and Williams Street;
- Replacement of the existing give way controls on Elizabeth Street at the intersection with Railway Road with a stop sign instead due to sightline issue;
- Providing stop sign ahead mounted on a post on Elizabeth Street western leg, at the approach to the intersection, may assist with increasing driver awareness and provide advance warning of the intersection ahead;
- Extend 40km/h speed zone on Railway Road further north to include the intersection of Elizabeth Street; and
- Install speed humps on Railway Road at both approaches (north and south) to the intersection with Elizabeth Street (compliant with PTA bus route requirements)

The design vehicle for the concept design is a 12.5m Heavy Rigid Vehicle, per consultation with the City of Kalamunda. Its swept path analysis is shown in **Figure 4.2** whereas, **Figure 4.3** shows the indicative kerb line required for a 19m semi-trailer vehicle (right of way vehicle). As indicated by the swept path analysis, the wheel tracks for the 12.5m and 19m vehicles are both currently breaching the existing roundabout annulus at the intersection of Elizabeth Street and William Street. Mountable kerbing has been provided to allow the heavy vehicles to mount the central island while negotiating the turns.

Additionally, SISD as shown in **Figure 4.4** should be achieved in blue and red zones for eastbound and westbound respectively. Currently Railway Road has the posted speed limit of 60km/h and therefore a design speed of 70km/h will apply. The SISD required is 161m based on 2.5s reaction time as per *MRWA supplement to Austroads Guide to Road Design – Part 4A – Unsignalised and Signalised Intersections* Table 3.2. By reducing the posted speed limit on Railway Road through the intersection to 40 km/h, the revised design speed applicable will be 50km/h and therefore the SISD will be 104m.

As requested by the City, we have prepared an indicative cost estimation for this treatment as shown in Appendix D. The estimate is based on unit costs and may vary significantly depending upon specific conditions encountered. A nominal allowance has been made for works to underground services and design works. As such, the estimates should be updated and refined once preliminary design investigations have been undertaken.

4.4 Comparing Options through Benefit Cost Ratio (BCR)

The Benefit Cost Ratio (BCR) for each option was determined to provide an assessment of each option's economic viability and to make a cost comparison of the three options. The BCR is the ratio of the benefits of an option, i.e. the potential reduction in crashes, expressed in monetary terms, relative to its costs of construction and maintenance, also expressed in monetary terms as shown in the formula below. All benefits and costs are expressed in discounted present values.

Benefit-Cost Ratio Formula = (Present Value of Benefits Expected from the Option) / (Present Value of the Cost of the Option)



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If the option has a BCR value that is greater than one, then the option can be expected to return or deliver a positive Net Present Value (NPV). If the BCR is less than 1, then the option cost can be expected to be higher than the benefits, and the option would therefore be uneconomic to pursue.

A summary of the construction cost estimates for each option is indicated below. Refer to Appendix D for a detailed cost breakdown for each option.

- OPTION 1: \$1,071,220
- OPTION 2: \$48,304
- OPTION 3: \$449,584

It should be noted that Construction cost rates and quantities were based on order of magnitude figures extracted from Australian Construction Handbook (2015) with a 6% escalation factor applied. The costs shown in the Handbook are generic and may not reflect the actual costs on a site specific basis. An allowance of 20% has been made for miscellaneous construction costs. The cost estimates do not include allowance for overhead costs. The cost estimate for maintenance is based on the Main Roads Cost Reduction Factor. The cost estimate for Project Management, Underground Services and Design Management costs are high level nominal estimates. No on-cost or contingencies have been applied. The cost estimates for Option 1 and Option 2 were not based on any design or concept plans, as no design has been developed yet.

To determine the BCR for each option, Main Roads Crash Map system was used to obtain the most recent 5 year crash data, to the end of December 2023. Main Roads Crash Reduction Factors were used to obtain the expected percentage reduction in crashes resulting from the implementation of a proposed treatment, expressed as a percentage reduction. Main Roads Crash Costs Willingness to Pay data was used to provide an estimate of the overall cost to society incurred when crashes occur on the WA road network. For each RUM code the crash cost was based on the average crash costs in WA recorded between 2019-2023.

A summary of the BCRs for each option is indicated below. Refer to Appendix E for details.

- OPTION 1: BCR = 1.57
- OPTION 2: BCR = 3.18
- OPTION 3: BCR = 2.16

Whilst the BCRs allow a general comparison of the options, it should be noted that differences in the costs of certain unknown items may skew the comparison. For example, it should be noted that the BCR for Option 3 may be lower than shown should there be a need to relocate significant number of underground services.

The cost for travel was based on additional time and distance incurred for each option. Option 1 requires closure of Elizabeth Street between Railway Road and William Street. Vehicles on Elizabeth Street west of Railway Road, would need to either travel north or south on Railway Road to access William Street via Headingly Road or Spring Road respectively. This incurs an additional distance of 840m because of the road closure. Vehicles assessed included private vehicles, vehicles used for business and heavy vehicles. The estimated values of travel time for each vehicle type was based on Australian Transport Assessment and Planning guidelines. The fuel consumption rate for each vehicle type was based on Australian Bureau of Statistics.

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The BCR for travel impact for each option are indicated below.

- OPTION 1: BCR = 0.32
- OPTION 2 & 3: Negligible change to travel distance, therefore there is negligible impact to travel time and fuel consumption.

Option 2 has the highest BCR value and would therefore appear to offer the most cost effective treatment compared to the other two options. It offers a relatively simple and low cost treatment solution. However, as noted in Section 4.2, this option may introduce a new issue concerning vehicles on Railway Road not giving way to traffic on Elizabeth Street, particularly during the initial period after introduction of the changing traffic priority. Adequate signage would need to be provided, including temporary signs to provide awareness regarding the changed priority. Furthermore, it is noted that Railway Road carries approximately five times more traffic compared to Elizabeth Street. Therefore, it may result in driver frustration and some traffic queues developing along Railway Road at peak times.

Option 1 has the lowest BCR value and is the least cost effective treatment compared to the other two options. Based on the travel impact, Option 1 also has a BCR value of less than 1 indicating that the cost of travel impact is higher than the benefits the treatment is hoping to achieve.

Option 3 has a BCR value that is greater than Option 1 but less than Option 2. This indicates that it is a cost effective and viable solution. However, its implementation, over Option 2 would be subject to funding availability.

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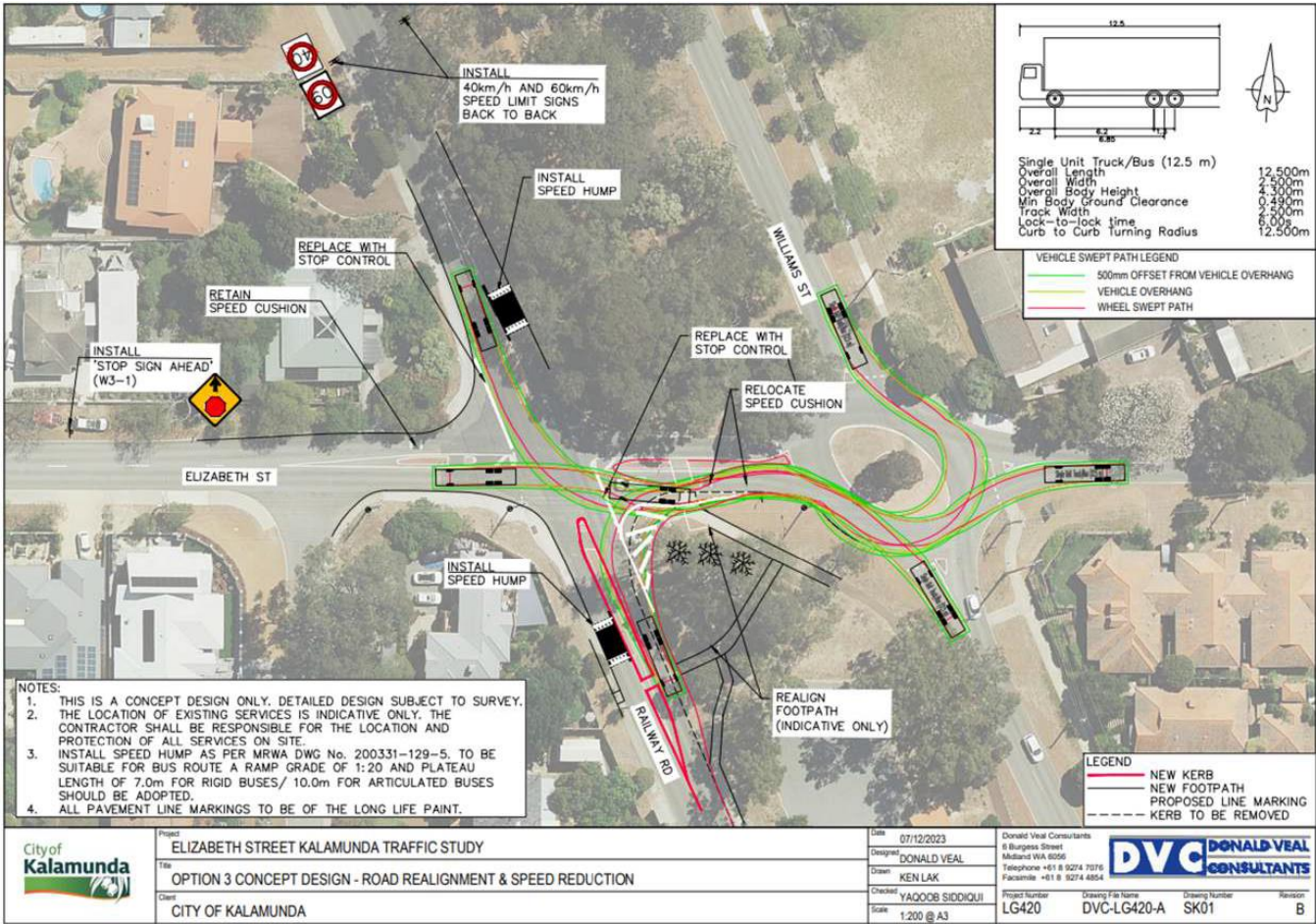


Figure 4.2: Concept design – Option 3 with 12.5m design vehicle swept path

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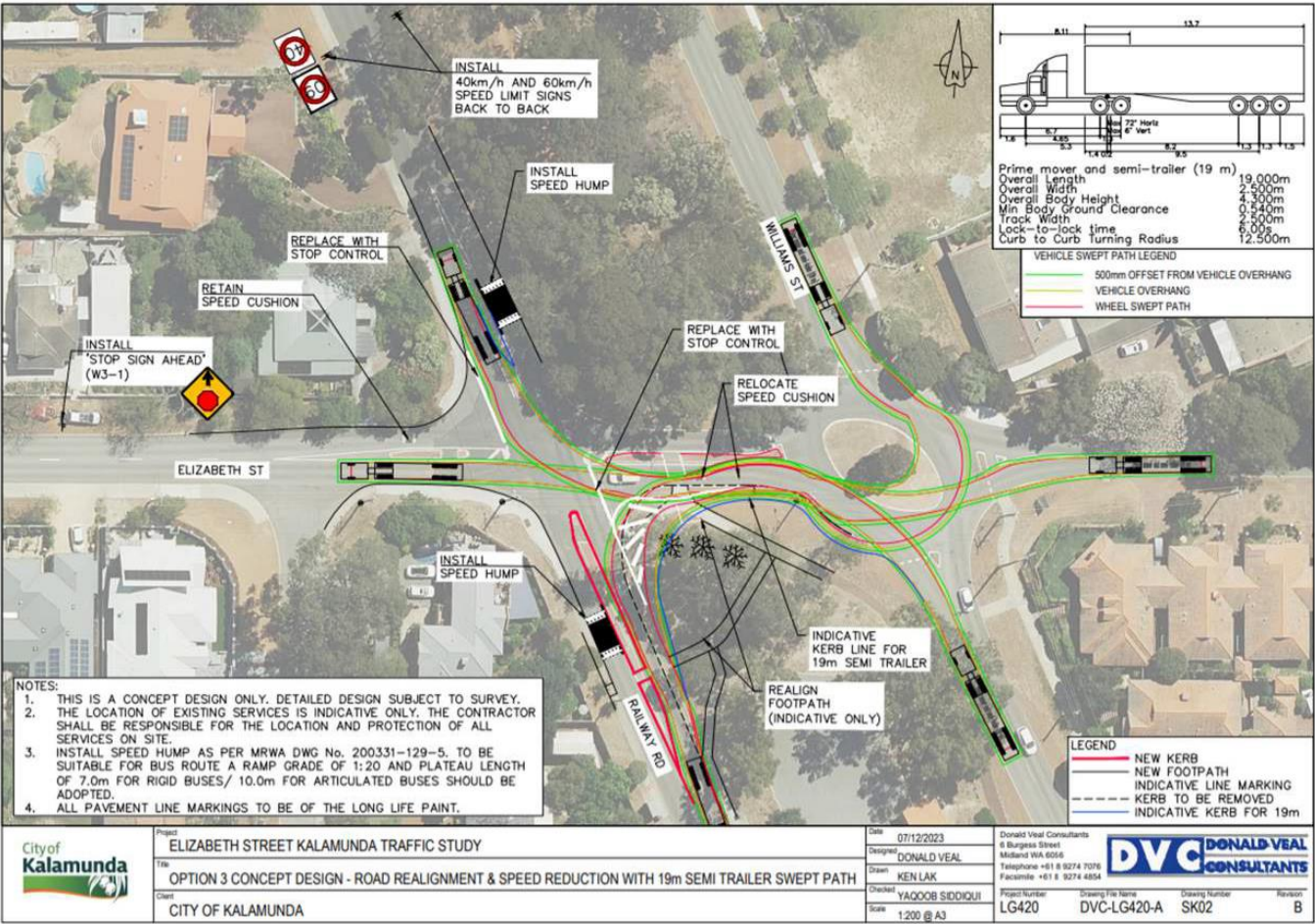


Figure 4.3: Concept design – Option 3 with 19m semi-trailer swept path

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Figure 4.4: 104m SISD Required along Railway Rd

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5. SUMMARY AND RECOMMENDATIONS

5.1 Summary

The City of Kalamunda commissioned Donald Veal Consultants (DVC) to prepare a traffic study report to determine the best treatment to address the severity and predominant crash types at the intersection of Railway Road and Elizabeth Street, Kalamunda.

Elizabeth Street is classified as a Distributor B road, west of Williams Street, and as Access Road to the east. Williams Street is classified as a Local Distributor and Railway Road is classified as a Distributor B. Both Elizabeth Street and Williams Street are subject to default urban speed limit of 50 km/h. The posted speed limit on Railway Road is 60 km/h.

The City of Kalamunda has provided the traffic data of Elizabeth Street carried approximately 1,000 vehicles per day (vpd) and 100 vehicles per hour (vph) in the peak hours whilst Railway Road carried traffic close to 6,000vpd and 600vph in the peak hours.

Crash data extracted from MRWA CrashMap database for intersections of Elizabeth Street with Railway Road and Williams Street for the 5-year reporting period from January 2018 to December 2022. This data showed a total of 27 reported crashes. There were 26 right angle crashes and one side swipe opposite direction crash. The most common crashes movement is Elizabeth Street westbound traffic collided with Railway Road southbound traffic.

This intersection of Elizabeth Street and Railway Road layout is an unsignalized four-way intersection, with Give Way sign controls on Elizabeth Street. Elizabeth Street alignment is in east/west direction that causes direct sunlight to driver's eyes at dawn and dusk times. The sightlines for traffic on Elizabeth Street, especially to the north of Railway Road, is poor for both eastbound and westbound approaches.

The intersection of Elizabeth Street and Williams Street layout is a roundabout, with a non-circular oval shaped central island. The lighting at the intersection of Elizabeth Street and Railway Road is poorly lit, especially for the northern leg of the intersection.

Community feedback on the two initial options proposed by the City, being the closure of Elizabeth Street and a roundabout at intersection of Elizabeth Street and Railway Road, were assessed. A total of 96 submissions were received and identified 25 suggested treatments, many of which have been incorporated in the options investigated in this report.

Three improvement options were assessed, namely:

1. **Road Closure:** Closure of the eastern leg of the intersection of Railway Road and Elizabeth Street. This would eliminate the crashes between eastbound Elizabeth Street traffic with Williams Street traffic and westbound Elizabeth Street traffic with Railway Road traffic. These movements contributed more than 50% of the recorded crashes at the intersection. However, 70 out of the 94 community feedback comments received disagreed with this option, including 11 that strongly disagreed with this proposal.



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Traffic volumes on Williams Street are likely to increase between Headingly Road and Spring Street as a result of Elizabeth Street link closure with Railway Road.

2. **Changing Road Priority:** Changing the road priority from Railway Road to Elizabeth Street, would resolve the existing right-angled crashes. However, it would introduce a new risk concerning vehicles on Railway Road not giving way on entry to Elizabeth Street. The sightline from Railway Road northbound to the approaching traffic on Elizabeth Street east/westbound are less obstructed by trees/vegetation/roadside infrastructure, as compared to the sight lines on Elizabeth Street to the approaching traffic on Railway Road. The sightline from Railway Road southbound to the approaching traffic on Elizabeth Street east/west bound are still obstructed by trees/vegetation/roadside infrastructure. It is recommended to remove/prune some trees/vegetation that are causing sight line obstruction on the northeastern and northwestern corners of the intersection. As Railway Road carries approximately five time more traffic volume as compared to Elizabeth Street, swapping road priority could also swap the crash pattern.
3. **Road Realignment and Speed Reduction:** Realignment of Elizabeth Street between Railway Road and Williams Street to create an intersection configuration with a pre-deflection curve. This would help prevent drivers from inadvertently missing the intersection by realigning their approach. Drivers would no longer look straight along Elizabeth Street, straight through the intersection with Railway Road but instead be looking directly at the verge opposite the intersection. Replacing the existing give way controls on Elizabeth Street with a stop sign, due to sightline issues, should be considered. It is important that the sightline to the north be improved by removing/pruning trees/vegetation in the northeast and northwest corners of the intersection. An advance warning stop sign ahead at the approach to the intersection on Elizabeth Street west of Railway Road, that may assist with increasing driver awareness and provide advance warning of the intersection ahead. The 40km/h speed zone on Railway Road should be extended further north to include the intersection of Elizabeth Street. Speed enforcement and monitoring to ensure speed compliance may require installation of speed cameras on Railway Road if warranted. Speed humps on Railway Road, at the northern and southern approaches to Elizabeth Street to enforce the slower speed environment through the intersection could be considered. These would need to be compliant with Public Transport Authority (PTA) requirements for implementation on bus routes.

The Benefit Cost Ratio (BCR) for each option was determined to provide an assessment of each option's viability and to make a cost comparison of the three options. Summary of BCRs for each option are indicated below.

- OPTION 1: BCR = 1.57
- OPTION 2: BCR = 3.18
- OPTION 3: BCR = 2.16

The BCR for travel impact for each option are indicated below.

- OPTION 1: BCR = 0.32
- OPTION 2 & 3: Negligible change to travel distance, therefore there is negligible impact to travel time and fuel consumption.

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5.2 Recommendations

As an initial measure, we recommend trees and bushes causing sight line obstructions on each corner of the intersection of Elizabeth Street with Railway Road be pruned or removed as far as practicable.

For each identified option, the advantages and disadvantages are listed in the **Table 5.1**, based on the findings of this report.

Table 5.1: Assessment of Options

Option	Advantages	Disadvantages
1. Road Closure	<ul style="list-style-type: none">• Eliminate common crash patterns (eastbound Elizabeth Street traffic with Williams Street traffic and westbound Elizabeth Street traffic with Railway Road traffic)	<ul style="list-style-type: none">• Disrupts hospital traffic• Not supported by the community• Increases traffic volumes on William Street
2. Changing Road Priority	<ul style="list-style-type: none">• Removes the issue regarding traffic on Elizabeth Street needing to give way to Railway Road	<ul style="list-style-type: none">• May switch the crash pattern to be on Railway Road• Potential traffic queue on Railway Road
3. Road Realignment and Speed Reduction	<ul style="list-style-type: none">• Increase visibility of the intersection• Slows traffic• Reduces severity of crashes	<ul style="list-style-type: none">• Some disruption to footpath alignments

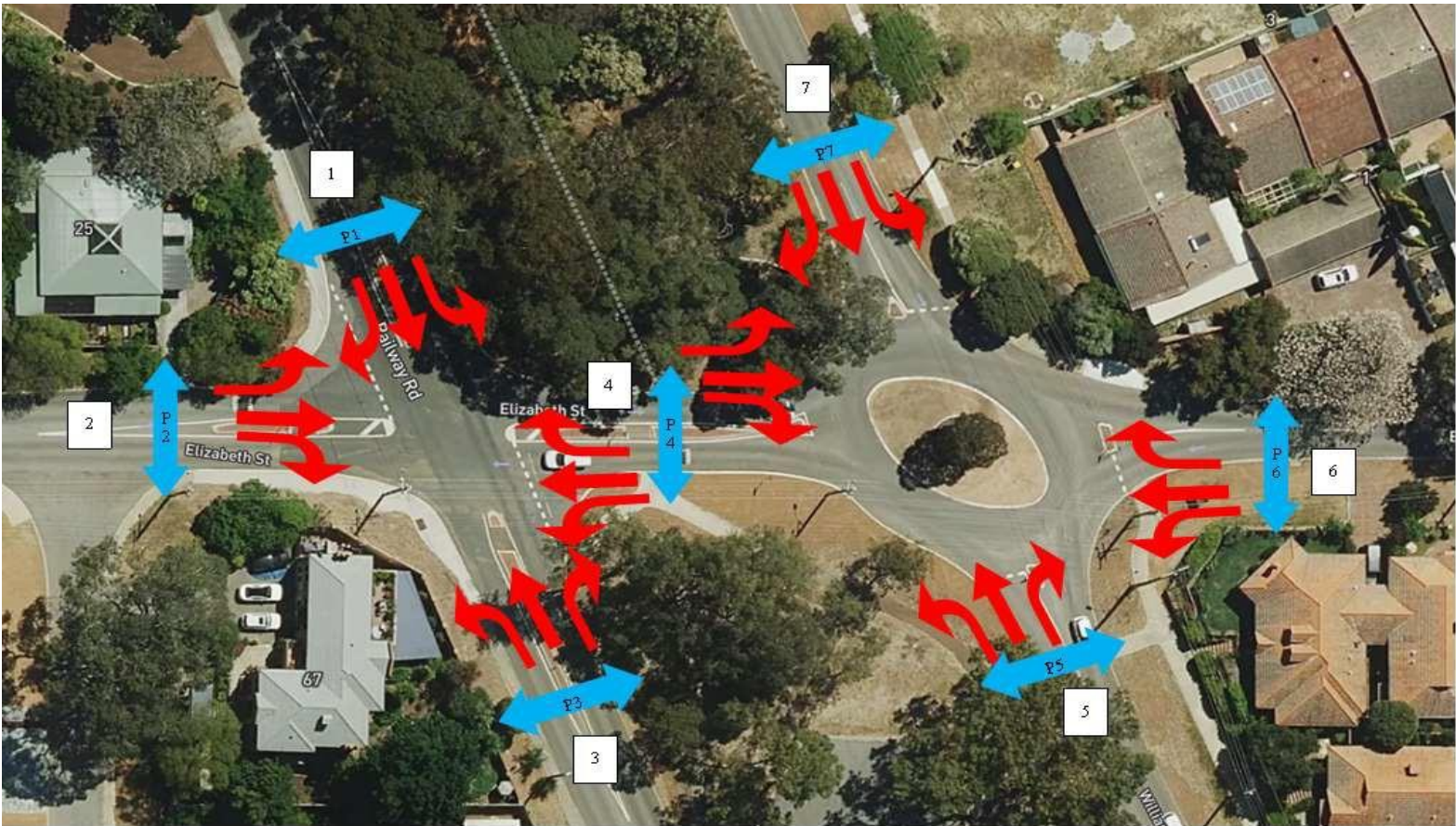
Option 2 has the highest BCR value and would therefore appear to offer the most cost effective treatment compared to the other two options. Option 1 has the lowest BCR value and is the least cost effective treatment compared to the other two options. Based on the travel impact, Option 1 also has a BCR value of less than 1 indicating that the cost of travel impact is higher than the benefits the treatment is hoping to achieve. Option 3 has a BCR value that is greater than Option 1 but less than Option 2. This indicates that it is a cost effective and viable solution. However, its implementation, over Option 2 would be subject to funding availability.

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APPENDIX A: MANUAL TRAFFIC COUNTS



Start Time	Leg 1						Leg 2						Leg 3						Leg 4(WB)					
	Right Turn		Through		Left-Turn		Right Turn		Through		Left-Turn		Right Turn		Through		Left-Turn		Right Turn		Through		Left-Turn	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
0730	1	1	177	12	11	0	7	0	22	3	0	0	25	1	144	12	25	0	1	1	20	0	2	0
0745	1	1	237	15	14	0	8	0	28	2	0	0	34	0	193	8	22	2	1	1	25	0	8	0
0800	1	0	268	15	16	0	8	0	38	2	0	0	32	0	213	6	16	2	1	1	30	0	16	0
0815	2	0	259	11	12	0	7	0	42	1	0	0	36	1	207	4	16	2	1	0	33	0	23	0
0830	1	0	237	7	8	0	5	0	49	1	3	0	36	1	182	3	15	3	3	0	30	0	34	2
1430	2	0	206	4	8	1	7	0	39	1	1	0	32	1	255	13	26	1	3	0	50	3	29	4
1445	2	0	209	4	8	1	8	0	39	1	1	0	32	1	245	14	28	1	3	0	56	2	28	3
1500	3	0	197	4	7	0	10	0	44	0	1	0	33	1	228	16	24	1	3	0	52	1	29	3
1515	3	0	192	8	8	0	9	0	45	0	3	0	30	0	194	10	17	0	5	0	49	0	33	2
1530	2	0	161	8	7	0	7	0	43	0	4	0	30	0	200	9	19	1	7	0	47	0	32	0

AM Peak	2	0	259	11	12	0	7	0	42	1	0	0	36	1	207	4	16	2	1	0	33	0	23	0
PM Peak	2	0	209	4	8	1	8	0	39	1	1	0	32	1	245	14	28	1	3	0	56	2	28	3

	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV
AM Peak	2	0%	270	4%	12	0%	7	0%	43	2%	0	0%	37	3%	211	2%	18	13%	1	0%	33	0%	23	0%
PM Peak	2	0%	213	2%	9	13%	8	0%	40	3%	1	0%	33	3%	259	6%	29	4%	3	0%	58	4%	31	11%

Start Time	Leg 4 (EB)						Leg 5						Leg 6						Leg 7					
	Right Turn		Through		Left-Turn		Right Turn		Through		Left-Turn		Right Turn		Through		Left-Turn		Right Turn		Through		Left-Turn	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
0730	12	0	31	1	15	3	12	2	22	0	10	1	0	0	8	0	5	0	5	0	48	1	12	0
0745	13	0	44	0	19	2	15	1	31	0	12	1	1	0	15	0	9	0	7	0	62	0	14	0
0800	13	0	54	0	19	2	20	1	37	0	16	1	3	0	21	0	13	0	10	0	76	0	13	0
0815	16	0	60	2	14	0	24	0	46	0	20	0	4	0	27	0	14	0	10	0	78	0	9	0
0830	19	0	58	2	16	0	19	0	36	0	20	0	7	0	33	1	17	0	14	1	71	0	11	0
1430	17	0	51	3	11	0	8	1	53	0	26	1	5	0	45	6	16	0	11	0	60	0	6	0
1445	14	0	53	3	12	0	8	0	60	0	26	1	6	0	49	4	14	0	12	0	62	0	6	0
1500	16	0	49	1	19	0	8	0	51	0	22	1	5	0	51	3	12	0	11	0	49	0	8	0
1515	13	0	49	0	21	0	11	0	44	0	17	1	4	0	55	1	9	0	15	0	50	0	6	0
1530	12	0	46	0	22	0	13	0	35	0	12	0	5	0	58	0	16	0	16	0	45	0	6	0

AM Peak	16	0	60	2	14	0	24	0	46	0	20	0	4	0	27	0	14	0	10	0	78	0	9	0
PM Peak	14	0	53	3	12	0	8	0	60	0	26	1	6	0	49	4	14	0	12	0	62	0	6	0

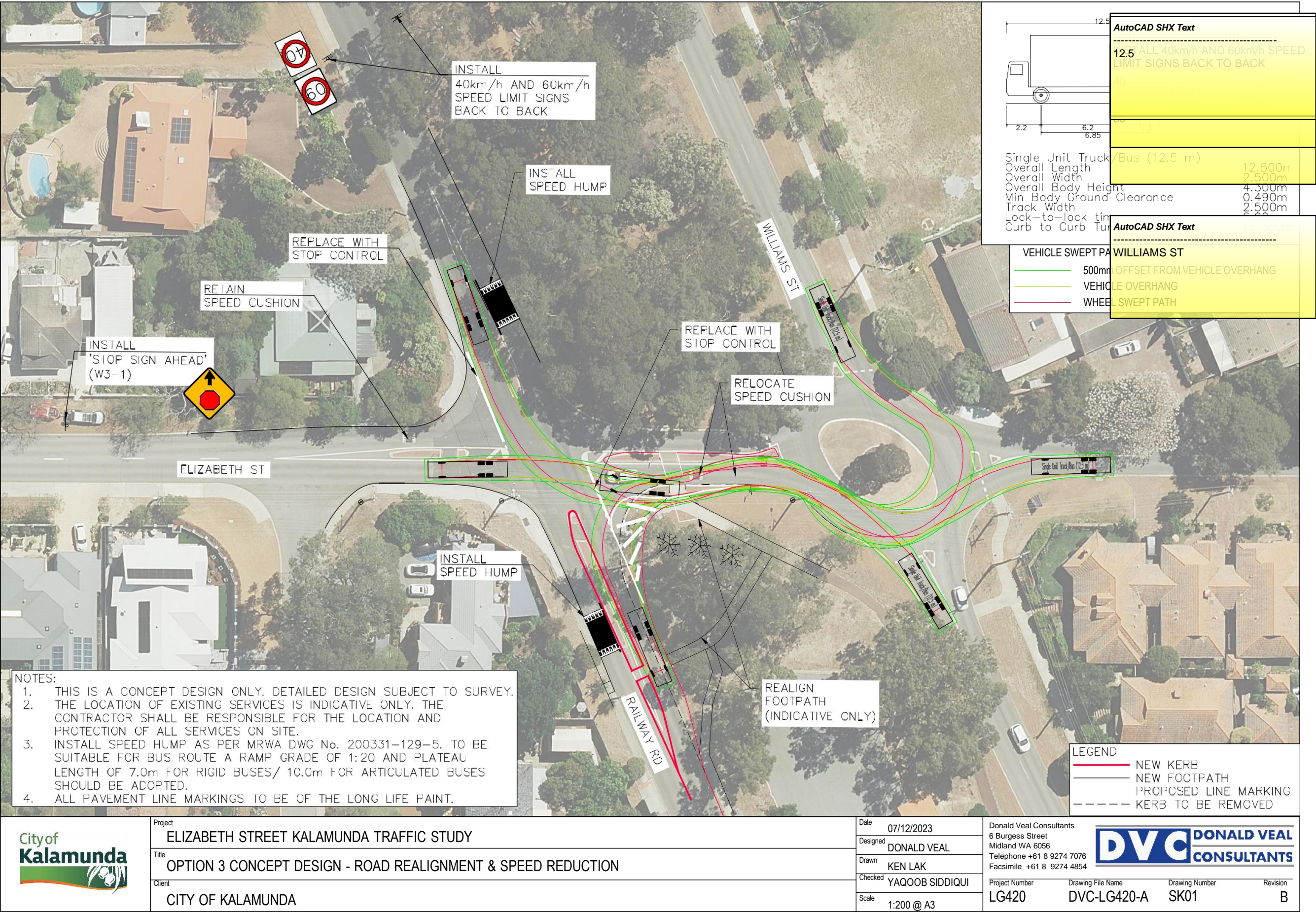
	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV	Total	%HV
AM Peak	16	0%	62	3%	14	0%	24	0%	46	0%	20	0%	4	0%	27	0%	14	0%	10	0%	78	0%	9	0%
PM Peak	14	0%	56	6%	12	0%	8	0%	60	0%	27	4%	6	0%	53	8%	14	0%	12	0%	62	0%	6	0%

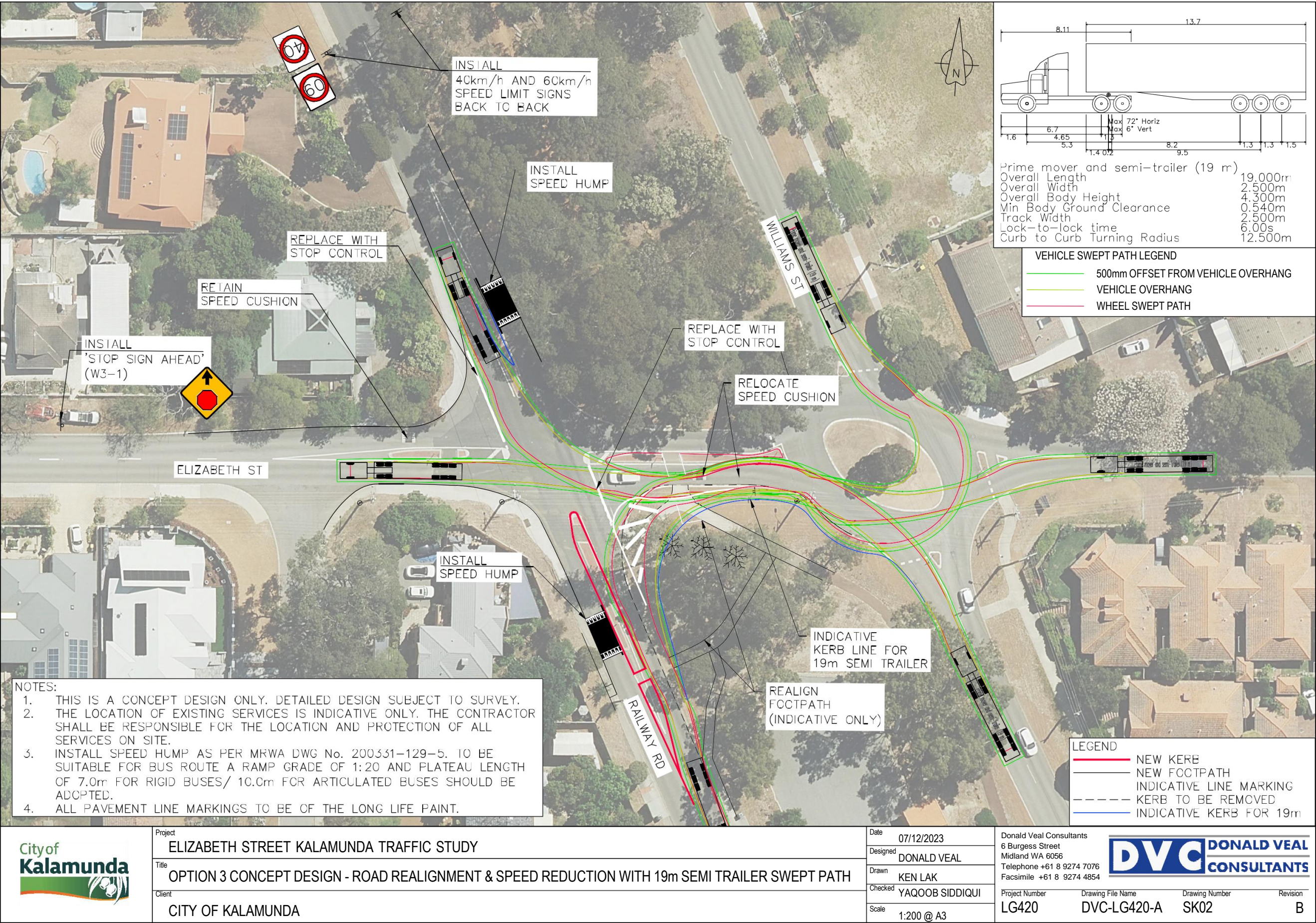
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APPENDIX B: CONCEPT DESIGN – OPTION 3






Client: City of Kalamunda

Project: Elizabeth St Kalamunda Traffic Study



APPENDIX C: COMMUNITY FEEDBACK

Date	Comments	Response
20-Jun-23	<p>I write to raise my concerns about the Council’s proposal to close Elizabeth Street between Railway and Williams Streets due to a number of accidents occurring on this corner.</p> <p>The current proposal to close the road, will NOT prevent the ongoing issue of accidents on this corner which are primarily caused by cars speeding along Kalamunda Road and a “blind” corner on the southern side of Elizabeth Street / Railway Road junction when heading east towards the hospital. After witnessing several accidents on this corner, the ones I have seen have been caused by cars turning right onto Railway Rd towards Kalamunda and not seeing vehicles heading North towards Gooseberry Hill due to the blind corner.</p> <p>Closure of the proposed section of Elizabeth Street will: Cause disruption to St Johns Ambulance having quick and direct access to Kalamunda Hospital or to Kalamunda Road via Elizabeth Street (Stirk Park).</p> <p>Cause disruptions to all residents on Williams Street wishing to travel down Kalamunda Road</p> <p>Divert traffic through the City Centre via Mead or Haynes Streets; and Railway Road between Mead and Stirk Streets. Both exits of Mead and Haynes Streets onto Canning Road are already slow to cross and this would disrupt traffic even more. Further, Railway Road between Mead and Stirk Street’s is planned to become part of the Central Kalamunda development with reduced traffic speeds and more pedestrian traffic. With more vehicles travelling through this area, it would increase the risk of pedestrian accidents.</p> <p>Not prevent accidents on the Elizabeth/ Railway roads corner due to cars turning right onto Railway Road towards Kalamunda.</p> <p>Increase traffic down Williams Street (between Elizabeth and Spring Street) which is already choked with buses & cars visiting the History Village and cyclists / visitor cars on the weekends.</p> <p>Although a roundabout on the Elizabeth/ Railway Road corner is the obvious answer, there are also other actions that can be taken: STOP signs on Elizabeth Street exits to Railway Road rather than Give Way signs.</p> <p>Islands and warning signage to reduce speed on Railway Road prior to the Elizabeth Street junction both on the north and south sides of the junction which are clearly lit at night.</p> <p>Clearing obstacles on the verge of Railway Road and Elizabeth St South section (on the right when driving up Elizabeth St towards the Hospital where they reduce visibility towards Kalamunda).</p> <p>As long-term residents of Kalamunda and of Williams Street we see no benefits in the proposal to close this section of Elizabeth Street.</p>	Disagree
24-Jun-23	<p>We believe we read recently that there are plans to close that part of Elizabeth Street which lies between Railway Road and Williams Street, i.e. the section which crosses the Railway Reserve.</p> <p>The stated grounds relate to the perceived number of vehicle accidents at that location. I also recall that some years ago, a lot of work was done to improve the safety there. Has this made a significant difference?</p> <p>Now, if this plan comes to fruition - and from my perspective it is short -sighted - it will create all kinds of problems with respect to access to and from the Kalamunda Hospital Precinct, such as Mead Medical, the adjacent Pharmacy, the Pathology Laboratory, the Radiology Facility and the hospital itself, not to mention the St John Ambulance unit.</p> <p>Please reconsider this action!</p>	Disagree
23-Jun-23	<p>My comments, on the said road closure. Whilst I have no problem with the road closure, why haven't the local residents been notified on the impact of this road closure.</p> <p>Obviously with redirected increased traffic via Headingly Road from Kalamunda Rd will cause/impact with the same problems associated as with Railway/Williams Streets. After crossing Railway to Williams, this intersection has more blind traffic sightings. What are the proposed traffic management controls to be put in place?</p> <p>As there will not be a need for the existing roundabout on Williams, will the roundabout be removed?</p> <p>This proposal appears to be a catch 22.</p>	Neutral
20-Jun-23	<p>We are just making enquiries in relation to the alleged closure of William St and Elizabeth St intersection.</p> <p>We have some major concerns over this as this will hinder ambulance and patient entrance to both Mead Medical and the hospital site.</p> <p>Can you please advise the status of this change.</p>	Disagree
1-Jun-23	No objection to closure	Agree
31-May-23	No objection to closure	Agree
20-Jun-23	No Objection on condition a fire appliance to be able to get through if required. Will there be bollards installed?	Agree
19-Jun-23	No Objection	Agree
13-Jun-23	<p>Optus has no objections to the proposal.</p> <p>The only thing I wish to raise is that we do have an existing manhole in the vicinity that contains an optical fibre splice joint, to which we need to maintain unrestricted access. From what I can make out, I don’t see the planned works impacting on this access.</p>	Agree
26-Jun-23	<p>Thank you for talking to me on the phone this morning about the proposed closure of Elizabeth Street between William St and Railway Rd. I forgot to leave my email address with you after you said you would find out some information for me.</p> <p>Just to remind you, I wanted to know when was the last traffic study of the city centre was carried out by a consultancy?</p> <p>Could you please provide me with a direct link to the document/s because I find the CoK website very laborious and ineffective when searching for documents.</p> <p>As I said I am concerned about the congestion that is going to increase when vehicles have to access Railway Rd via Williams Rd and Spring Rd. The Spring Rd and Railway Rd intersection already gets congested quite often.</p> <p>The planned pedestrian/vehicle shared zone on Railway Rd near Spring Rd will cause even more congestion on both streets.</p> <p>Added to that is the plan to close this zone during large events.</p> <p>I was surprised to hear you say that you don’t know about the planned pedestrian/vehicle shared zone on Railway Rd.</p> <p>I think we need a clear traffic plan for the whole town centre before there are any more changes. And it needs to be available when we are asked to comment on a proposal.</p>	Disagree
4-Jul-23	<p>I wish to comment on the proposed closure of the section of Elizabeth St, between Williams & Railway Rds. I recognise this move is for safety reasons however, in my opinion this could be solved in a much more cost effective way in both dollars and convenience to the local ratepayers by replacing the existing give-way signs with STOP signs AND putting speed humps on all four entrances to the intersection. Road users will then be forced to slow down on approach to the intersection. Yes, people will complain but they’ll get used to it as they have the ones on Canning at the Lesmurdie Rd roundabout.</p> <p>Closing this stretch of road will be very inconvenient for homeowners from the Williams/Elizabeth St area wishing to access Kalamunda Road or Stirk St. The extra traffic being fed into Railway via Spring Rd would at times be chaotic with cars exiting the Library Car Park and the street parking at the Visitor Centre and then having to exit onto an already busy section of Railway with vehicles coming and going from the Coles car park and the drive-in bottle shop and on top of that just regular traffic coming from Haynes St and from the North on Railway Rd. Can I suggest that someone go up to this intersection on the Saturday morning and ‘observe’ In my opinion you will be just swapping one problem area for another .</p>	Disagree
4-Jul-23	<p>As local owners and soon to be residents of [REDACTED], my husband and I fully support the proposed closure of the intersection of Railway Rd & Elizabeth St - this will make it safer for all and, just as important, the proposal is an environmentally friendly solution.</p> <p>Thank you for the proposal and notice.</p>	Agree

Date	Comments	Response
5-Jul-23	<p>Thank you for this information and opportunity to comment, received today. [REDACTED], here.</p> <p>I am in agreement with this proposal. It may be inconvenient for those in Elizabeth St and perhaps close by.</p> <p>However, my brother-in-law, was the victims of one of the “too many” accidents, about 7 years ago. Preventing vehicle accidents is so important on so many levels.</p> <p>I am sure you will have it looking good, as soon as plants establish and grow.</p> <p>I have forwarded this letter to our property manager for our tenants information.</p> <p>Thank you again for all your work and running of our Shire.</p>	Agree
5-Jul-23	<p>We are strongly opposed to the proposed closure of Elizabeth St between Railway Rd and Williams St as outlined in your correspondence dated 29th June 2023.</p> <p>We understand the need to reduce the incidents at the intersection of Railway Rd and Elizabeth St, however the proposal to use the intersection of Railway Rd & Spring Rd for access to Elizabeth St East would increase traffic flow on Railway Rd between Haynes St and Mead St which is already congested with through traffic and access to Kalamunda Central and the Kalamunda Hotel. Likewise to utilise the intersection at Railway Rd and Headingly Rd for access to the east relocates the problem at Railway Rd & Elizabeth St to Headingly Rd with the traffic approaching the intersection on Railway Rd from the south travelling at 60km/h around a bend not easily visible from Headingly Rd.</p> <p>An alternative option which we believe would be beneficial and address the concerns above would be to close the approach of Elizabeth St to Williams St on the west side of Williams St but allow vehicles to turn west into Elizabeth St from Railway Rd (or cross Railway Rd from the east on Elizabeth St from a stop – see diagram).</p>	Strongly Disagree
5-Jul-23	<p>I received the letter requesting feedback on the closure of Elizabeth St at Railway Rd. I appreciate the consultation with community and hope it is thoroughly considered.</p> <p>I strongly oppose the closure of this section of road, it provides a simple straight connection through to the hospital and Mead Medical and it’s closure will funnel more traffic through a busy intersection at Spring Rd/Railway Rd and William St. William St near the library has a significant amount of roadside parking which will become more hazardous to pull out from if traffic is increased, this is already challenging. The intersection of Spring Rd/Railway Rd is also already very busy and complicated with the pub parking opposite and squeezed between Kalamunda Central entry/exit and Haynes St which are all busy, I think it is far wiser to spread the traffic around rather than force more onto limited intersections. I realise some traffic would also use Headingly Rd but believe that would be less.</p> <p>I do agree the intersection could be safer, and that could be achieved through the clearance of vegetation to help sight lines.</p> <p>Looking towards Gooseberry Hill vegetation should be removed, more specifically shrubs removed/pruned back, and trees under pruned or removed. This would provide far better visibility down Railway Rd to see oncoming traffic.</p> <p>Looking towards Kalamunda the removal of vegetation on the verge would also provide far better visibility of traffic coming over the crest.</p> <p>Picture</p> <p>Vegetation on the other verges should also be pruned to keep it back from the road, and below or above sight lines but I didn’t think you needed a photo of every single angle. It would be beneficial if the City of Kalamunda maintained verge vegetation in such locations.</p> <p>I hope the City of Kalamunda chooses not to close the section of road</p> 	Strongly Disagree
6-Jul-23	<p>Thankyou for your letter.</p> <p>We are in favour of your proposal and think an excellent initiative on the part of city of Kalamunda.</p>	Agree
7-Jul-23	<p>In response to letter dated 29 June re closure of Elizabeth St between Railway Rd and Elizabeth st.</p> <p>I currently live at [REDACTED] which sits on the intersection under review.</p> <p>I welcome the road closure. I have witnessed multiple crashes and near misses (two misses just this morning).</p> <p>There is also a significant amount of foot traffic at that intersection with people using the nearby bus stops and the heritage track.</p> <p>I can only see foot and road traffic increasing with the upgrade to Stirk park due for completion and adding further pressure to an already dangerous intersection.</p> <p>I would fully support the closure in the interest of public safety.</p>	Agree
7-Jul-23	<p>In my opinion the overarching issue is vehicles speeding on Railway Road. The speed limit of 60km/h is too high given the fact that this is a residential street with many blind corners, and most cars exceed 60km/h. Cars commonly travel closer to 70km/h, with some exceeding this. Please consider:</p> <ol style="list-style-type: none">1. Reducing the speed limit on Railway road to 50km/h between Kalamunda centre and Gooseberry Hill Road. This would only require removing 60km/h speed limit signs (I believe there are only two) and would have negligible impact on travel time.2. Installing devices to slow vehicles at areas of concern (eg speed humps before intersections). Same as are installed in Kalamunda centre.3. Installation of fixed speed cameras on Railway Road to advise motorists of their speed (raise awareness of speed).4. Enforce the speed limit. If this is not within CoK remit then CoK should be directly engaging with WAPOL to prioritise enforcement of speed limit on Railway Road. <p>The speeding on Railway Road is actually very dangerous, particularly with many driveways, side roads and pedestrians (the footpath being alongside the road).</p> <p>Closing Elizabeth St is a band-aid that does not address the underlying issue, and the same issue will arise in other areas along Railway Road.</p>	Disagree
10-Jul-23	<p>I live at [REDACTED] and experience the traffic trauma first hand caused by the intersection of Railway Road and Elizabeth Street.</p> <p>I believe the proposed changes are the only way this can be resolved and totally approve of the road closure.</p> <p>I just wanted to add however, that speed is also an issue for traffic mainly coming from Kalamunda centre, especially in the evenings, and I think this could increase with the proposed changes. I am proposing a reduced speed limit or adding speed humps to help alleviate this potential hazard.</p> <p>The amount of accidents or close misses happen daily, far more than the documented 24 crashes, and everyone living in close proximity to this intersection would also know this, Thank you for reviewing and proposing these changes as I believe it is the only way to resolve this continuing issue.</p> <p>Thank you for actioning this change, I hope it is accepted and can be completed as soon as possible.</p>	Agree

Date	Comments	Response
10-Jul-23	<p>In response to your call for community feedback, I am writing to lodge my disagreement with the proposal to close the section of Elizabeth Street. This is the most direct access to Mead Medical Centre, to other side roads along William Street, to the Fire Department and to the Hospital.</p> <p>Vehicle access along William Street around the library car park is already quite dangerous with the street parking and vehicles trying to get in and out, and traffic would increase considerably along this area if Elizabeth Street is closed.</p> <p>The Spring Road access was clearly never designed to be the primary access, being so close to Railway Road, and sight lines are already not great in this area, which is also heavily trafficked by pedestrians, walking between Kalamunda Central, Haynes Street and the library, café, History Village, etc.</p> <p>Based on all these reasons, I strongly oppose the closing of the section of Elizabeth Street. Perhaps more foresight should have been given to the traffic before encouraging pedestrian access by building the arts centre, café, etc alongside the library – which I personally think are great assets, but not designed for increased road traffic in this area.</p> <p>Whilst on a similar topic, please consider parking options for all the tourists and bike users who visit Kalamunda on the weekends. Given the significant reductions in car parking spaces over the years (particularly along Barber Street), and the increasing population of the hills area, we need dedicated parking added, not removed. Market days it's almost impossible to find parking at Kalamunda Centro, for all your local residents who live here. I am all for tourism and love showcasing our natural assets (Bibbulmun and other bike and walking tracks) and economic assets (the various markets), but please provide the infrastructure to support it. Perhaps expanding the parking near the tennis courts?</p> <p>I hope you genuinely consider the feedback being provided in response to your call for comments, and that this closure is not simply a fait accompli.</p>	Disagree
10-Jul-23	<p>We are writing to voice our strong disapproval to the closure of part of Elizabeth Street between William Street and Railway Road in Kalamunda. This closure would cause major inconvenience to the public and emergency vehicles driving to Kalamunda Hospital, Mead Medical Centre, The Pharmacy and Clinipath Blood testing centre.</p> <p>A solution could be to install Traffic Calming Devices on all four access points to the current intersection, and put STOP signs on both Elizabeth Street entrances to the intersection.</p> <p>This would slow traffic down, thus reducing accidents, and allow the current easy access to the important Medical services at the top of Elizabeth Street.</p> <p>We look forward to your response.</p>	Strongly Disagree
10-Jul-23	<p>With respect to this proposal. All drivers proceeding off Kalamunda Rd to the Hospital (I assume Ambulances also) usual go via Elizabeth St via the roundabout at the top of Kalamunda RD. Once closed the next closest Access is Haines St. or dodge up Stirk St. Either way it will be interesting for emergency ambulances, I have been using Elizabeth St for 40 years to get to the Hospital, no problem. Put those speed bumps on railway road as you have done on the roundabout cross of Canning R and Lesmurdie road roundabout. As your article says it's a question of speeding motorists. Slow them down don't create more traffic elsewhere</p> <p>For your Consideration</p>	Disagree
10-Jul-23	<p>I live in [REDACTED]</p> <p>I am responding to and seeking more information regarding the proposed closure of Elizabeth Street between Railway Road and Williams Street.</p> <p>1/ I think this is a good idea.</p> <p>2/ Elizabeth Street carries a lot of traffic :- Besides all the folk who live in this area, there is all the traffic for The Hospital, The X Ray dept, The Medical Centre, The Pharmacy, The Clinipath collection centre. All very busy places most week days.</p> <p>Elizabeth Street also carries traffic for :- The History Village. The Zigzag Cultural Center. Mason and Bird Cafe. The Library All very busy places also. Williams Street after the closure I expect will become a much busier road.</p> <p>3/ Headingly Road. Hopefully this Street will take most of the traffic. However :- I ask that thought be given to the corner of Headingly Road and Railway Road.....this is a curved road with fast traffic and vegetation obstructed visibility.....Elizabeth Street problems might just be moving north ??</p> <p>The Vegetation, Some thinning, trimming, and possible removal of some lower vegetation maybe all that is needed, to see the traffic coming from the southI expect there will be new hospital direction signs, street signs and road markings happening in the area to make all as safe as possible</p> <p>Landscaping :- Looking forward to the new footpath and planting in the closed off area.and wondering if it could extend across Elizabeth street and especially at the back of the ambulance center along Williams Street. Such a tired sad ?? area. I expect all the above you already know ! Thank you for giving this letter your time.</p>	Agree
10-Jul-23	<p>We are in receipt of your letter outlining the Road Safety Treatment and proposed closure of part of Elizabeth Street.</p> <p>Although we agree with your concern over the safety of the junction in question we do not agree with your plans how to alleviate it.</p> <p>We understand that the problem is mainly caused by vehicles on Railway Road approaching the junction at high speed and cars coming up Elizabeth Street which are unsighted by the rising ground and restricted view to their left.</p> <p>In our opinion this proposed change will be just moving the problem to another junction. Traffic from East of this junction, including very heavy traffic from the Mead Health Centre and cars, as well as ambulances going to and from Kalamunda Hospital, will be obliged to turn left into William Street traverse behind the Library, turn right and attempt to join Railway Road opposite the Hotel. There is always heavy traffic entering the Shopping Centre at that section of the road. A right hand turn onto Railway Road into a busy stream of traffic would be problematic.</p> <p>William Street has an accident record already with vehicles reversing from the Library parking area.</p> <p>Turning right from Elizabeth Street at the roundabout (ovalabout) onto William Street then left into Headingly Road in order to access Railway Road still leaves drivers facing an entry to Railway Road and the faster moving traffic and many visitors to the Hospital will be unaware of this route.</p> <p>A cheaper and better solution would be to extend the 40Kph stretch of Railway Road back to before the problem junction and the addition of some traffic calming features, resembling those already installed on the small part of Elizabeth Street facing closure. Better signage with one indicating that drivers are approaching an accident “black spot”, along with the speed reduction, would be far less confusing and more acceptable than the closure as mentioned above.</p> <p>We request that this opinion be included in your deliberations regarding the future of this junction.</p>	Disagree
10-Jul-23	<p>I think this road closure is a good solution to the problem but in the meantime I think the advertising signs that are placed on this corner should be removed as they block your vision up Railway rd.</p> <p>Although I do agree with the rd closure I see that the redirection of traffic to Spring rd will more than likely cause problems with people reversing out of the library car parking bays on Williams st.</p>	Agree

Date	Comments	Response
10-Jul-23	<p>I would like to comment on the intended closure of the small section of Elizabeth Street between Williams Rd round-about and Railway road. I am very aware of the number of accidents that continue to occur at the intersection due to driver impatience and inattention. However, I think closing that exit from Williams Road on to Railway Road and funneling all the traffic towards Spring Road would be a bad decision. It is already very difficult to exit the parking bays at the library and the increase in traffic will exacerbate the problem – and cause accidents there!. A bottleneck of traffic trying to turn either way into Railway Road from the Spring Road intersection exists already. Traffic exiting the Spring Road Child Care Centre make that road quite busy at certain times of the day and the additional traffic trying to exit Williams Road will cause frustration and dangerous risk taking. Considering the proximity of the Coles carpark exit, the drive through from the Kalamunda Hotel and the small parking area in front of the fish and chips shop, it would be a traffic nightmare to include extra traffic from the hospital. Drivers already take risks existing the shopping centre carpark, particularly trying to turn right.</p> <p>I agree that another round-about at Elizabeth and Railway Roads would not be practical and would cause a backlog across both round-abouts as there would not be enough distance between the two.</p> <p>There is already a frustrating scenario at the top of Haynes Street, trying to turn right into Railway Road with a continuous flow of traffic and if more traffic is diverted from Spring Road that intersection will become impossible to exit.</p> <p>Has any consideration been given to changing the right of way to the traffic driving on Elizabeth Street? Instead of those intersections having “Give Way” signs on them, could those signs be placed on Railway Road ? Perhaps even make them “Stop” signs. Obviously drivers will need education with mobile electric flashing signs for at least 6 months. That stretch of road is 50km and has speed humps leading up to Elizabeth Street from Kalamunda and would need more on the Gooseberry Hill Side. There is an ample distance of road leading up to the intersection for cars to slow down and either give way or perhaps stop altogether.</p> <p>It will be very frustrating to drive down from the hospital and have to turn left back into the town, then try to turn right and head back down to Haynes St, Stirk Street and Kalamunda Road.</p>	Disagree
10-Jul-23	<p>I suggest putting speed humps in both directions at the intersection of Railway Rd & Elizabeth St to enforce drivers to slow down automatically.</p> <p>As regards all roundabouts in the shire, kindly stop planting hedges on them, because they block drivers seeing the indicator lights of approaching vehicles.</p> <p>The one at Elizabeth St & Williams St is already a problem ??</p> <p>If you still decide to go ahead with your planned enclosure I have no problem with it.</p>	Agree
10-Jul-23	<p>I am a resident of [REDACTED] and I have received a letter about the possible road closure of the section of Elizabeth Str.</p> <p>I absolutely support this 110%.</p> <p>I drive this road every day and It is such a tricky intersection to navigate at times.</p> <p>I think closing this section of the road is the best idea and planting it would be a great idea.</p>	Agree
10-Jul-23	<p>I would like to oppose the current proposal of closing the section of road on Elizabeth Street.</p> <p>My concern is the additional volume of traffic that will go past the library/kindy and try and turn opposite the Kalamunda Hotel which is already an issue due to the Coles carpark entrance (which should have been a roundabout.</p> <p>My proposed solution is to make traffic only able to turn left on Elizabeth Street travelling in both directions at Railway Road. This would eliminate the blind crossing of Railway road. Traffic on Railway road should still be able to turn towards the hospital from both directions but heading towards the city should only allow traffic turning left. Ie traffic travelling along Railway Road towards Kalamunda should not be able to turn right.</p> <p>This not only facilitates the safety concerns but also saves rate-payers dollars too – a win-win for all.</p> <p>Please strongly consider this proposal.</p> <p>I do not want to see additional traffic heading towards the Kindy/Kalamunda Hotel/library carpark.</p> <p>I am writing with regards to you letter proposing the closure of the section of road Railway Road and Elizabeth Streets, Kalamunda.</p> <p>My husband and I have serious concerns regarding this possible closure, and the unsafe outcomes which we feel may occur.</p> <p>Our concerns are:</p> <p>If this section of road is closed, all traffic coming from the section of road around Stirk Park, Kalamunda Road & the lower section of Elizabeth Street will be forced to turn left or right at Railway Road.</p> <p>For people who want to access Mead Medical Centre and Kalamunda hospital that have no option than to use one of the side streets. These streets would be Spring Road, and Headingly Rd onto William Street Kalamunda.</p> <p>The vehicles coming along Railway Road in either direction, and who want to access the Medical Centre and Hospital would no longer be able to use the Railway Road and Elizabeth Street and would also be forced to use Spring Road and Headingly Road and the William Street.</p> <p>As stated in your correspondence, there have been 24 right angle crashes since 2017. That averages to 3.7 per year.</p> <p>We feel that by directing the traffic onto Railway Road and forcing cars into a very busy section of Kalamunda central, then turning left into Spring Road and almost immediately left again into William Street, then continue until Elizabeth Street where they can turn right and access the medical centres the accident rate may increase to a much higher than at this current time.</p> <p>We would like to bring the following points to your attention as we have real safety concerns for this area.</p> <p>The following safety concerns are from the section of William Street (where you want to direct the traffic to) between Elizabeth Street and Spring Street.</p> <ul style="list-style-type: none">• There are 16 residential driveways.• 2 driveways at the ambulance depot – 1 ambulance & 1 staff parking.• An access driveway at the Community Memorial Building• A service entrance to the History Village.• The carpark entrance/exit (on corner Spring Rd & William St) next to library.• 2 large bus bays. One in front of the library and one in front of the History village.• A 15 bay perpendicular carpark in front of library.• A 8 bay perpendicular carpark in front of History village.• Drivers have to reverse onto William Street in both of these carparks.• Dixon Road entry into William Street. <p>Other Sections of concern are the cars coming from Elizabeth Street and heading to Spring Rd to access Railway Road.</p> <ul style="list-style-type: none">• Spring Road may become congested waiting for cars to turn into Railway Road, which may also make it difficult for cars turning right for William Street into Spring Street. This will most likely cause a backup of cars at Railway and Spring Rd intersection.• There is an entry and exit for the liquor store at the hotel onto Railway Road.• Entrance to the Coles Shopping Centre – where already busy times, traffic is held up in front of the hotel. This may make it difficult to turn left from Spring Street onto Railway Road.• This will increase the cars in that busy section of Railway Road.• In that section of road there are two car parks which entry and exit onto Railway Road.• There are also cars turning from Haynes Street and cars coming from Railway Rd Gooseberry Hill trying to access the Coles Shopping Centre.• On church days you have the additional traffic from the church carpark on Spring Road.• There is street parallel parking to the left of the Railway Rd and Spring Road intersection.• Vehicles also coming in and out of a small church carpark on to Railway Road.• On market days cars are parked on the verge in front of houses in Williams Street even though there are signs saying no standing. <p>On Saturday morning 8th July, I decided to park in view of the traffic at Elizabeth Street and Railway Road intersection.</p> <p>I was there from 8:30am to 9:00am (half an hour). In that time, which is not the busiest time by any means, this is what I found.</p> <ul style="list-style-type: none">• There were 13 cars that came from the Stirk Park side of Elizabeth Street continuing straight ahead to the medical centre.• There were 18 cars turning left from Elizabeth Street onto William Street heading to Spring Road.• There were 29 cars driving from Gooseberry Hill into Kalamunda.• There were 3 cars parked perpendicular at the library at 8:30. When I went past at 9am there were 12 cars.• There were 5 cars already parked in the car parking bays at the History village at 8:30am. The were 6 cars at 9am.• There were several people out walking along the footpath on Williams Street.• There were several cars in the carpark on the corner of Spring and William Street. There were two cars unloading push bikes, a couple preparing to take their dogs for a walk, one lady with a shopping trolley crossing the road walking to the shops. <p>When I tried turning right from Williams Street into Spring Road, two cars were turning right into the gravel carpark at the Church on Spring Road.</p> <p>As you can see this area is extremely busy and that isn’t even accounting for the market days.</p>	Disagree
9-Jul-23		Strongly Disagree

Date	Comments	Response
	<p>There could be many serious incidents to pedestrians or their vehicles in that area by closing the small section of Elizabeth Street and diverting the traffic.</p> <p>I ask that the Council to please do a thorough (wait and watch) assessment (at different times) on this area before making a decision that may not be in the best interest for the residents and the community of Kalamunda.</p> <p>After having a good look at the intersection and watching the traffic in the area I think an option that could be trailed would be to replace the “giveway signs” on Elizabeth Street to a “stop sign”. People would have to stop and look before making their turn. It could be a simple solution to this problem.</p> <p>Could you please present my letter for discussion at the next Councillors meeting and I would like a response please.</p>	
14-Jul-23	<p>As a local resident I understand the traffic problem at this intersection.</p> <p>However I don't think the closure of this section of Elizabeth street will alleviate the problem.</p> <p>Traffic coming up Elizabeth will have to turn left, in which case the problem will be at the turn at Headingly which is on a bend of Railway Road and at the next turn the sight is restricted</p> <p>If the traffic turns right it will have to turn left at Spring Road and onto Williams which are both quite busy intersections at certain times of the day.</p> <p>It seems the residents of Williams Street will be the losers with the increase of traffic and the speed limit will be disregarded in the rush to the hospital.</p> <p>The problem seems to rest with the drivers. I walk my dog most days and see the give way signs and stop signs being disregarded. Once the roundabout is negotiated it's foot down up the hospital. I take my life in my hands stepping off the curb there.</p> <p>I hope this can be resolved quickly and with consideration to the local residents.</p>	Disagree
11-Jul-23	<p>I live off [REDACTED] and have only just been made aware of the proposed changes at the Railway Road - Elizabeth Street intersection... so I thought I'd provide my feedback before it's too late :) Unfortunately, we didn't receive any notifications via mail etc.. so I only came across this by luck.</p> <p>Whilst I'm all for providing safer roads and improved traffic flow, my only concern with this is that this is the preferred route for many residences coming via Spring Road and down towards Kalamunda Rd. Unfortunately, the intersection of Spring and Railway Rd is very busy - due to it being right in town, close to many thoroughfares and amenities. Wait times and traffic build up at this intersection is large/long - hence the preference to travel via the Elizabeth Street - Railway road intersection instead.</p> <p>If this proposed solution is to go ahead, then we may need to consider how to alleviate the traffic (plus increased traffic) at the Spring Rd intersection. Would slow points/speed bumps on Railway Rd before / after the Elizabeth - Railway intersection work better than a roundabout?</p> <p>Thanks for considering my comments.</p>	
13-Jul-23	<p>Thank you for your letter informing us.</p> <p>I believe the closure will be great as it will improve the safety. We travel along Railway Road to Gooseberry Hill and we always slow down at the intersection as we have seen too many accidents there.</p>	Agree
14-Jul-23	<p>I have read the letter relating to the closure of the road between Elizabeth St and Railway Rd and whilst I admit that there has been a large number of crashes at this intersection a couple of points occur to me when considering the alternative routes.</p> <p>Firstly there is quite a lot of traffic into and out of the Mead group and the hospital on a daily basis, not all of it local, and I wonder how confusing the new routes will be for those unfamiliar with the area and the impact this will have on the surrounding residential areas.</p> <p>I also have serious concerns for the route past the library into Spring St. All locals know how many cars back out of the library bays and how slowly one must negotiate this area as a result. The Spring St intersection is also tricky in that cars can appear suddenly around the corner from lower Spring St and at school times there is a backlog of cars waiting to enter Railway Rd. If this becomes a much more frequently used road how will these issues play out, especially with people less familiar with the area?</p> <p>I have noted that since the traffic slowing devices were introduced approaching the intersection of Elizabeth and Railway roads cars have been much more cautious in this area. I wonder too whether the give way sign on Headingly Rd intersection with Elizabeth followed by a stop sign at Railway Rd is confusing and encourages drivers to continue through the second intersection?</p> <p>Thank you for the opportunity to express an opinion, this is a difficult problem and I hope a satisfactory solution can be found taking into consideration all the contributing factors.</p>	Neutral
14-Jul-23	<p>I refer to the proposed closure of Elizabeth Street between Railway Road and William Street.</p> <p>My family and I live on [REDACTED] and use either this intersection or the Spring road/ Railway road intersection several times a day. In the mornings I generally turn right from Spring road onto Railway road to head down Kalamunda Road. Sometimes there are too many cars and so I turn left and then go around the roundabout and back down Railway Road towards Gooseberry Hill. Some mornings I turn from spring road onto William Street and turn at the Elizabeth round about and go down past Stirk Park. Taking this option away will mean so much more traffic being funnelled through an already busy intersection.</p> <p>In the afternoon I come up Kalamunda Road and turn left at the roundabout near Caltex to travel up Elizabeth street to cross onto William street. I go this way to avoid having to drive through Kalamunda, which can get busy in the afternoons. If this closure goes ahead it would mean having to travel along railway road to spring road, again adding more traffic to an already busy road and intersection. The other option would be to turn left from Elizabeth street onto Headingly Street and using the crossing there to get to William Street. This will bring more traffic along Headingly street and another congested intersection with other problems that haven’t been considered yet.</p> <p>I have always thought it was a mistake that the Headingly street/Elizabeth street intersection is a stop sign whilst the busier, harder-to-see-around intersection at Railway/ Elizabeth is a give way sign. It never made sense.</p> <p>Before the decision to totally close this intersection is made, some other options could be considered. The give way signs could be replaced with stop signs. Speed bumps could be placed along Railway road on either side of this intersection or a section of one- lane carriage way could be installed on Railway road.</p> <p>I feel other options should be explored rather than moving the problem to another section of these roads.</p>	Disagree
15-Jul-23	<p>The proposed closure of a small proportion of Elizabeth Street from Williams Street to Railway Road is an imposition on the local residents using this section of the road.</p> <p>Through the thoughtless action of a few, possible people who do not live in the area, this will penalize the majority of North Ward residents mainly living on the Northern side of Gooseberry Hill. A few years ago entry into Kalamunda Road via Headingley Road and Railway Road was closed. Now another road could be going.</p> <p>I am aware it is a busy and sometimes dangerous area.</p> <p>Questions</p> <p>1. Can you put Stop signs at every intersection on Elizabeth Street from Kalamunda Road? This part of Elizabeth Street has only Give Way Signs.</p> <p>2. Can you make the speed bumps higher?</p> <p>3. Can you consider putting a Speed sign at the intersection of Railway Road and Headingly Road? This would slow the traffic down. I can not understand why Williams Road is 50 and Railway Road with many houses, intersections, and buses is 60.</p>	Disagree
17-Jul-23	<p>As a resident of Williams street, my concern with the proposal to close Elizabeth street between Railway Road and Williams Street would be the increased volume of traffic along Williams Street.</p> <p>The traffic to the Hospital and Medical centre along Williams Street is already considerable, plus the traffic visiting the Library and Mason and Bird café is very heavy.</p> <p>I realise this a difficult situation to manage.</p>	Neutral
17-Jul-23	<p>I think this is a bad idea.</p> <p>I have lived here for 12 years, for many years going through this way every day, now at least 3 times a week. Never had a problem</p> <p>I have spoken to residents and visitors who have never had a problem.</p> <p>The only section to be wary of is coming up the hill the view to the right into Railway is restricted and becomes a problem because of the speed of traffic.</p> <p>Observations.</p> <p>You are simply moving the problem elsewhere.</p> <p>You will not improve driving standards.</p> <p>It is the main route to the hospital etc.</p> <p>Where does the traffic go? Headingly, bad rh turns, Canning/Haynes/Mead/Railway/Spring forcing traffic into already congested areas</p> <p>IF we accept there is a problem it can be dealt with by a) Making the intersection Railway/ Elizabeth, as stated above, a stop sign, and move it forward say 2 meters, making a deviation on Railway to improve the view. This would also help reduce traffic speed.</p> <p>b) put an island at the junction.</p> <p>I do not believe cost should be a factor, rather have a solution that benefits all</p>	Disagree

Date	Comments	Response
17-Jul-23	<p>I would like to place my objection to closing Elizabeth Street between Railway Road and William Street for the following reasons: If closed there would substantially increase in traffic at the following intersections which I believe would only shift the problem that now exists.</p> <ul style="list-style-type: none">Williams Street and Spring RoadSpring Road and Railway RoadHeadingly Road and Williams StreetProbably Headingly and Railway <p>Also, the increase in traffic along Williams Street near the library and History Village would create serious problems as there are drive in front parking bays. That means that they back out into much increased traffic and increased possibility of accidents. Also, the entry and exit to the library carpark which is only about 10 meters from Spring Road on Williams Street would see problems with an increase in traffic.</p> <p>Further there are two bus bays which are not large enough for many of the tourist buses now. When parked in the bus bay they still hang out into the lane and traffic can only pass very slowly or one lane at a time.</p> <p>The corner of Headingly Road and Williams Street is more than 90 degrees when turning and is about 20 meters from a bend in Williams Street which vehicles regularly take at around 50km per hour. Most of the traffic at this intersection now goes left into Williams Street or straight ahead from Headingly Road.</p> <p>I believe that the following options would be preferred, and that closure of Elizabeth Street between Railway Road and Williams Street should only be considered as a last resort – if at all.</p> <p>The problem appears to be the steep rise when coming up Elizabeth Street (from Headingly Road) the vision is compromised, particularly when looking to your right.</p> <p>If you close Elizabeth Street as proposed, you are not fixing the problem as traffic would still not see clearly.</p> <p>Option 1. Make Elizabeth Street a Cul-de-sac at Railway Road where Elizabeth Street comes from Headingly. As I understand it most if not all accidents were using this part of Elizabeth Street. (This would only impact one – maybe 2 residents and only in a minor way)</p> <p>Option 2. Reduce the speed limit in Railway to 40km per hour.</p> <p>Option 3. And/or install Road humps, like those already installed in Railway Road in the centre on Kalamunda.</p> <p>I have lived in Gooseberry Hill for over 37 years and have used the roads around this intersection and as such I feel I understand what it is like to travel using these roads and streets.</p> <p>I strongly suggest you do not close Elizabeth Street between Railway Road and Williams Street and you give my options serious considerations. The problem is the view of Elizabeth Street at Railway Road (coming from Headingly Road). Your suggestion won't solve the problem and in fact will cause many more.</p>	Disagree
19-Jul-23	<p>I realise there has been accidents at the intersection of Elizabeth of William Streets but this is a main road to Kalamunda Hospital and other services . Closure would mean major detours to these public facilities and cause more accidents when people try to get directly to these.</p>	Disagree
18-Jul-23	<p>Thank you for the information about the proposed closure of Elizabeth St between Railway Rd and Williams St. I am in support of the closure. As a result of the closure there is likely to be an increase of traffic on Railway Rd. At the moment, turning right onto Railway Rd from Stirk St is difficult as there is limited visibility when cars are parked in the street parking bays. I think it would be a good idea if the City removed the last one or two parking bays closest to Stirk St which will give drivers more time to see approaching vehicles.</p>	Agree
19-Jul-23	<p>I'd like to comment on the proposed road closure of Elizabeth Street. I understand the safety concerns however I'd suggest the reason car crashes are high here is the volume of traffic. Closing it will push traffic to Headingly Road which has poorer sight lines due to the bend in Railway Road to the south and car crashes here will then rise. Alternatively traffic will continue on William Street to Spring Road. The Spring Road/Railway intersection is at capacity at times- almost impossible to turn right out of Spring Road and a difficult intersection as it is with the shopping centre and bottleshop traffic entering from the opposite side.</p> <p>Other options should be investigated- for example, putting a barrier island along the centreline on Railway would allow for left turn only out of Elizabeth and greatly reduce vehicle interactions and yet allow traffic to leave Williams without clogging up Spring Road or forcing them to use the more dangerous Headingly Road.</p> <p>If it is closed, then it should be done with temporary barriers before the road is ripped up to see the impact of its closure.</p>	Disagree
20-Jul-23	<p>Yes, I do agree with you that the intersection of Railway Road and Elizabeth Street, Kalamunda has had many serious accidents and needs to be modified but I do not agree with the way to solve the problem. Yes, it is inconvenient for the hospital, doctors, ambulance, hearses, blood collection as well as the chemists business. My concern is the problem will not be fix but moved.</p> <p>1 To the North, entry on to Railway Road by Headingly is hindered for visibility by a bend in Railway Road from Kalamunda. 2 To the South, the junction of William St, Spring St and Railway Road has the library car park, child care centre and the church car park within metres before the corner is turned and a build up for cars turning into the Coles and hotel car park. Busy now without any further traffic.</p> <p>Coming up Kalamunda Road from Perth, instead of cars turning into Elizabeth St and up the hill they will continue on turning into Stirk St or Haynes St through the middle of Kalamunda back into Railway Road.</p> <p>Railway Road is the problem, not the side streets. Through Kalamunda Central the speed limit for Railway Road is 40km. Continue that past Elizabeth Street with speed humps of any other slowing device you are aware of. Railway Road needs to be made safer not the side streets.</p> <p>As for the Railway Heritage Trail (which I walk along part and think it is beautiful) it disconnects after Elizabeth and people walk the footpaths until connecting back after Mundaring Weir Road so that is not an argument.</p>	Disagree
20-Jul-23	<p>In relation to the closure of this section of Elizabeth Street, I would like to express my disfavor for this course of action. We live in the area and frequent the facilities at the Mead Medical Centre and this would make the travel more difficult. What about a couple of speed humps to slow cars going along Railway Road before this intersection? I would appreciate you taking my suggestion into consideration and hope this remains open for future use.</p>	Disagree
21-Jul-23	<p>While I think the above proposed closure would certainly fix the problem of the regular accidents at the intersection of Railway/Elizabeth Street. And aesthetically would be a lovely addition .</p> <p>I have a very large concern about making the problem of the intersection of Railway/Spring road very much worse. This is already a difficult area to leave from the library carpark or Coles carpark particularly if you wish to turn across the traffic.</p> <p>I would like you to rethink this plan and perhaps find a way to cope with both these congested areas and addressing some of the parking problems in Kalamunda. I don't believe there is a quick and easy answer to this, but it really needs to be more carefully addressed.</p>	Disagree
21-Jul-23	<p>I do not support the road closure. I understand the previously considered round-about was not accepted at that time, but this would be the better solution. It matches the situation at Gooseberry Hill Rd and Railway Rd. Road closure will force more traffic to the Spring Road & Railway Rd intersection, decrease accessibility to the hospital and increase traffic along William. I'm sure that in time, the council will then be looking for ways to resolve the safety situation at Spring Road which will be transferred from Elizabeth St.. Please revisit the round-about solution. Appreciate the opportunity to comment.</p>	Disagree

Date	Comments	Response
21-Jul-23	<p>Further to the abovementioned proposed closure.</p> <p>We have lived in Kalamunda for over 30 years and have used this intersection almost daily and have never encountered any issues with this intersection as it currently stands; either entering or exiting Railway Road or Williams Street from Elizabeth Street.</p> <p>The changing of the 'Stop' sign to a 'Give Way' which was done several years ago makes no sense at all. We always stop at this intersection as giving way would not allow clear view or time to make a safe exit.</p> <p>Further, as the intersection is now, we have never experienced any stacking between Railway Road and Williams Street roundabout. We feel a roundabout would be a better option as it would enable traffic to flow smoothly, as this is what roundabouts were designed for.</p> <p>Access via Spring Road onto Railway Road, is already a hazardous intersection. With traffic entering from the parking lots abutting the Kalamunda Hotel; the exit from the carpark behind the Kalamunda Hotel onto Railway Road heading north; traffic exiting from the Coles shopping centre onto Railway Road heading south; and, traffic exiting the row of shops (fish & chip, mosaic shop, garden nursery etc). This is already a heavy traffic intersection and the closure of the intersection between Railway Road and Williams Street will create an even heavier traffic flow creating the stacking of traffic and potentially more accidents.</p> <p>Two options for consideration:</p> <ul style="list-style-type: none">- Reducing the speed limit on Railway Road to 50km beyond Elizabeth Street- Installing a roundabout or reinstating the 'Stop' sign <p>This would deal with the vehicle speed and misjudging approaching traffic; and would not cause more congestion at the Spring Road Railway Road intersection.</p>	Disagree
22-Jul-23	<p>I am writing to raise my concerns about the Council’s proposal to close of Elizabeth street between Railway road and Williams street due to accidents. I think it is ridiculous spending this kind of tax payers money \$99.000 when it has been recognised as a black spot and the Government would fully fund a round about at this location. Also it would cause huge traffic concerns at Spring road and into Railway road. It also makes challenges for ambulance getting to the hospital . I hope you take note of us as residents in William street. It also could be solved with a Stop sign and the removal of obstructions which doesn’t help with a clear look at what’s coming . I really hope you take note of what we are saying.</p>	Disagree
24-Jul-23	<p>I wish to submit my objection to this proposal on the basis that Elizabeth Street is an essential main thoroughfare and this closure will cause enormous inconvenience to residents of the area.</p> <p>I live in [REDACTED] and use this “back route” for access to the Mead Medical Group and I am sure I am not the only resident using this access. Elizabeth Street also allow easy access to the Kalamunda History Village and the residential area of Gooseberry Hill.</p> <p>It does save having to drive through the centre of Kalamunda to access these areas.</p> <p>A suggestion, would installation of a STOP SIGN not solve the problem??</p>	Disagree
24-Jul-23	<p>I wish to make comments on the proposal as a resident in [REDACTED]. I will try and be brief.</p> <p>Personally, I will say this is the most direct road for me to and from my property. It would not burden me greatly as there is a viable alternative.</p> <p>However, I will say that residents around Dixon Road and other surrounding roads will be most inconvenienced, and secondly visitors to and from the Kalamunda Hospital will also be inconvenienced.</p> <p>Despite these my biggest objections are around the intersection itself. Having been in the local town Fire Brigade for almost 40 years, I have attended a large proportion of those accidents at that intersection.</p> <p>Firstly, it beggars belief that the Railway Rd/Elizabeth Street has only a Give Way sign despite it being a very well known, notorious hotspot. This is despite the Elizabeth Rd/Headingly Road having a Stop sign and with a far better record of traffic incidents. Wouldn’t it have been easier to have a Stop sign at Railway/Elizabeth. The intersection has very poor visibility travelling East as Railway curves to the left and garden vegetation and small trees hinder that visibility.</p> <p>Secondly, and my main objection is that closing the Railway/Elizabeth intersection WILL ONLY SHIFT THE PROBLEM TO RAILWAY/HEADINGLY with visibility travelling north hindered by the curve in Railway Road and other vegetation. This is exacerbated by the speed cars travel (and reducing the speed limit will NOT fix that issue).</p> <p>In conclusion, I feel closing Railway/Elizabeth is taking the cheap, easy and lazy option. The reasons stated of vehicles stacking on a roundabout are a furphy. I would consider a roundabout encompassing the two intersections would be a viable alternative despite losing some vegetation, it is far better than losing lives at Railway/Elizabeth or Railway/Headingly.</p>	Disagree
24-Jul-23	<p>I Live in [REDACTED], and am not in favour of the intended closure.</p> <p>I use this intersection most days of the week to go anywhere in the Perth direction, down Elizabeth St to Kalamunda Rd.</p> <p>If it were closed I would need to go past the Library to Railway Rd, and down Haynes St, adding more congestion to central Kalamunda. Alternatively in the opposite direction the entrance to Railway Rd is not the best with the Railway Rd traffic.</p> <p>A simple suggestion I think would be speed humps, on Railway Rd either side of Elizabeth St.</p>	Disagree
25-Jul-23	<p>I would like to advise of my objection to the closing of part of Elizabeth Street.</p> <p>If this is done it would cause more traffic to move along Williams St towards Spring Road where there are several traffic hazards. Buses parked for the History village, parking for the coffee shop, exit from the library car park and then when turning onto Spring road traffic from the Church and Kindergarten. One would then have to negotiate getting out of Spring road to Railway Road with traffic from both ways and the Coles and BWS entrances nearby. Also at certain times bike rides use this route. There is also traffic to consider coming and going from the Hospital and Dr Surgery including ambulances.</p> <p>Perhaps a suggestion that the speed on Railway road be reduced down from 60 to at least 50 as it is in Williams Street. Also Stop Signs in Elizabeth Street.</p> <p>I think more consideration should be given to this proposal</p>	Disagree
25-Jul-23	<p>I wish to protest most strongly at this proposal. The staff, volunteers and visitors to the History Village will now have to either use Spring road or Shelley roads to access Williams St and the History Village. This road is also used by residents going to either the Mead medical group or the Hospital and any closure will effect them heavily.</p> <p>Firstly why increase the congestion that is already there at Spring road by adding all this additional traffic.</p> <p>Secondly forcing traffic to turn right out of Shelley Road into a blind bend is ludicrous and far more hazardous than Elizabeth St.</p> <p>Surely the change from a give way to a stop sign at the junction of Elizabeth and Railway should be the first approach.</p>	Strongly Disagree
22-Jul-23	<p>Not a very bright idea to block off Elizabeth Street as it’s a main access point to the medical centre and the hospital. You will force emergency access vehicles to have to traverse a greater distance and go over the hideous bumps (all while managing an ill person on the back of an ambulance)!!</p> <p>The logical thing to do is. Round about and potentially slow points, not dips or humps!!!!</p>	Disagree
22-Jul-23	<p>1. I write to raise my serious concerns and to comment about the City’s proposal to permanently close Elizabeth Street between Railway Road and Williams Street.</p> <p>2. Reasoning by the City presented for this closure is 24 right-angle crashes since 2017 at the junction of Railway Road and Elizabeth Street with vehicle speed and driver misjudgement of approaching traffic being two factors contributing to the incidents. As a very frequent user of this intersection at all times of the day I have had no problems with driver misjudgement and have noticed occasions of speeding along Railway Road in both directions.</p> <p>3. It is interesting to note that the eastward transit of Elizabeth Street provides a direct and straightforward access to the Kalamunda Hospital and a number of essential medical services used by Kalamunda residents and others.</p> <p>4. By the City’s admission, in the circulated letter “Railway Road Elizabeth Street – Road Safety Treatment and Proposed Closure” to residents by the Project Manager – Asset Delivery, closure of Elizabeth Street access between Williams Street and Railway Road is to be via the existing intersections:</p> <p>i) to the south at Railway Road and Spring Road, and</p> <p>ii) to the north at Railway Road and Headingly Road.</p> <p>5. Consequently as determined in para 4.i) above traffic will be directed into areas of conflict with the City’s Kalamunda Town Centre Landscape Master Plan Figure 3, namely the proposed:</p> <p>i) Town Square – “a shared space with the ability to be closed to traffic for large events”,</p> <p>ii) Public art focal point,</p> <p>iii) Shared Street (“shared pedestrian and vehicle zone”), and</p> <p>iv) Heritage/Civic precinct.</p> <p>6. In my opinion, closure of the proposed section of Elizabeth Street will not prevent the ongoing issue of right-angle road crashes at the intersection in question as there are no changes to the road layout for vehicles transiting Railway Road and for vehicles turning right from Elizabeth Street into Railway Road towards Kalamunda. Furthermore, no serious and planned traffic calming for north/south traffic is mentioned in the proposal which appears to continue to maintain the environment which has contributed to the past vehicle smashes, particularly vehicle speed along Railway Road.</p> <p>7. The establishment of a roundabout at the Railway Road/Elizabeth Street intersection would be an obvious solution for this intersection. The City has appeared to have taken a somewhat short sighted and easy option in rejecting a roundabout and I comment on the City’s reasons as put forward by the Project Manager – Asset Delivery in his letter (para 4 above) as follows:</p> <p>i) <u>Cost prohibitive</u> –</p> <p><i>The City’s proposal appears to have ignored a Commonwealth-funded Blackspot Project that would have kept Elizabeth Street open by constructing a roundabout on Railway Road at the intersection.</i></p> <p>ii) <u>Removal of several mature trees</u> –</p> <p><i>Admittedly, some tree removal may be required, however removal and trimming, where required, can be kept to a minimum. The roundabout shape may be considered to be able to contribute to this.</i></p> <p>Further comment is made with respect to the following:</p> <p>iii) <u>Vehicle speed</u> –</p> <p><i>This appears to be an important factor at this intersection, particularly for vehicles travelling north and south along Railway Road. The following suggestions are presented:</i></p>	Strongly Disagree

City of Kalamunda

Date	Comments	Response
	<p>As a resident of 24 years at our address on [REDACTED] just down from the hospital, I have noticed that many problems which have resulted from the placement of Mead Medical near the hospital, not only the accidents on Railway Road but also the speed at which vehicles race up and down past our unit. Furthermore, at least 10 times a day, vehicles drive past, realise they have gone the wrong way and end up turning round at Poets Lane and heading back towards Railway Road. GPS must be giving them wrong directions or they are just lost.</p> <p>I can see 2 options to resolve the traffic problems:</p> <p>1. Close Elizabeth Street completely before Railway Road and make it a NO THROUGH ROAD. I don't see that closing the pathway will stop accidents from happening as cars will still be coming up Elizabeth Street from Stirk Park and wanting to turn right or left. My husband and I never come up Elizabeth Street from down hill as we know how dangerous it is. We always go along Kalamunda Road, turn left at the roundabout at Stirk Street, turn left onto Railway Road and the right into Elizabeth Street. Visions of oncoming traffic is good there. That is not a big detour. As I have said, I have been using that route ever since we moved here.</p> <p>Another sensible thing to prevent accidents happening at the Stirk Street/Railway Road intersection would be to have a NO STOPPING section between Haynes and Stirk Streets so that vision of oncoming traffic is not compromised. Obviously the bus stop should remain as is on that section.</p> <p>Traffic could also be directed to the hospital via Kalamunda Road, left onto Elizabeth Street and left into Lindsay Street, then right onto Railway Road. That would have the added benefit of diverting traffic away from the children's playground area of Stirk Park, therefore making it a safer precinct.</p> <p>2. Leave Elizabeth Street open but place a 40KPH sign on Railway just after Headingly Road on the approach to Kalamunda town centre. Also make Elizabeth Street and Railway Road a STOP street. Also please speed humps on Railway Road just before Elizabeth Street. Again, place a speed hump just before Elizabeth Street on the departure from Kalamunda towards Gooseberry Hill.</p> <p>From my experience, most of the accidents are directly related to speed coming from the Gooseberry Hill direction and a complete disregard for the speed limits, both along Railway Road and Williams Street and that nasty blind spot coming up from Stirk Park.</p>	Disagree
22-Jul-23	<p>Thankyou for the response. I do note that it does not address the points I have raised, are these still to be considered?</p> <p>It do note the number of crashes, and that closing the side road would eliminate all but one of the crashes. By that logic we should ban cars from the entirety of the CoK. This would reduce the number of accidents to zero.</p> <p>I do not believe CoK have done sufficient investigation into the root cause of the crashes. Particularly how many crashes was speed a factor, and how many crashes would have been prevented if the speed limit was reduced from 60km/h to 50km/h (or the 40km/h zone extended). Or some other means of slowing cars was in place (roundabout, speed bump, slow point, reduced speed limit).</p> <p>It does not address the more general concern with the speed limit on railway road, and the fact that:</p> <p>1. People drive in excess of the 60km/h speed limit.</p> <p>2. 60km/h is too high for Railway Road.</p> <p>It does not discuss or acknowledge alternative means to slow cars on Railway Road. Which will continue to be a problem.</p> <p>So far nothing has been provided which shows that the CoK understand the root cause. Apart from drawing the conclusion that if cars are eliminated from Elizabeth St they can't have an accident at Elizabeth St.</p> <p>It has also not been demonstrated that traffic taking alternate routes won't create another blackspot somewhere else on Railway Road.</p> <p>The CoK should outline how success will be measured. As an example, success would be no increase in the frequency of accidents on Railway Road or the streets surrounding Elizabeth Street (ie show that the accidents are not just happening somewhere else...). Elimination of accidents on Elizabeth St in isolation does not indicate success.</p> <p>The CoK should, as a matter of priority, gather data on the speed vehicles are travelling on Railway Road. This is very simple to do and would provide valuable data to inform the forward plan. And in my opinion would assist with identifying speed as an issue.</p> <p>At the moment I do not feel the CoK have shown that a robust investigation process has been undertaken that identifies the root cause.</p>	Disagree
24-Jul-23	<p>In reference to the proposed road closure by the City of Kalamunda of Elizabeth Street between Railway Rd & William St, this has us gravely concerned that the majority of the traffic that currently uses this intersection which is predominately through traffic travelling from the Kalamunda hospital and Mead Medical centre to Kalamunda Road and vice versa will use Headingly St or Lyndsey St instead.</p> <p>The alternative route that the City of Kalamunda has already identified as being the intersection at Railway Rd & Headingly St already has limited traffic capabilities due to this being an angular intersections and it is noted that all of this additional traffic will greatly increase this dangerous intersection and will potentially become a new blackspot that would require significant future upgrades and remedial actions to make this area safe for road & pedestrian access from the significant increased traffic.</p> <p>It should be noted that the Federal Government does not support the current City of Kalamunda proposed plan of closing Elizabeth Street between Railway Road & Williams Street. This new plan by the city of Kalamunda replaces a Commonwealth funded blackspot project that would have kept Elizabeth St open by constructing a roundabout on Railway road at the intersection.</p> <p>The justification that the City of Kalamunda have listed in their letter dated 29/06/23 even indicates there is a significant amount of traffic that use this area by stating that they believe there will be queuing of vehicles across Williams St, I don't believe that the Council has carried any actual on site traffic counting to adequately assess the traffic modelling to support these claims and welcome the council to provide the recorded traffic movements through this area with actual movements recorded from Monday to Sunday clearly showing the time of day that traffic is travelling through this area ad direction.</p> <p>Without this detailed traffic records to support road traffic modelling alternatives, I don't believe that a change to the Commonwealth approved blackspot roundabout solution can be justified and changed by the City of Kalamunda.</p> <p>The proposed plan by the City of Kalamunda does not meet any of the key areas that road improvement projects should meet for improved quality of like to the community such as,</p> <ul style="list-style-type: none">Increased safetyReduced Travel timeImproved connectivityImproved Walking & Cycling connectionsReduce motorist congestion.Support more efficient and sustainable transportation in the area. <p>We strongly recommend that the City of Kalamunda doesn't pursue this alternative and remain with the significant safer original Commonwealth supported solution of a Roundabout at Railway Rd & Elizabeth Street.</p>	Strongly Disagree
25-Jul-23	<p>Opposes the closure of Elizabeth Street.</p> <ul style="list-style-type: none">Main access for hospital staff.Sight line need trimming at Headingly Railway intersection.Main access for ambulanceRoundabout is the preferred treatment.A roundabout at Elizabeth and Railway intersection will stop hooning in and out of town centre.Don't shift problem to another intersection.Don't move the problem to Spring Street.	Disagree

Date	Comments	Response
26-Jul-23	<p>I would consider this project to create a number of issues, moving the problem from one place to another.</p> <p>1. There will be considerably more traffic going past Mason and Bird café and library carpark. This is a hazardous area with cars reversing onto the road and trying to get out of the carpark complete with high pedestrian traffic.</p> <p>2. Turning right onto Spring Rd to go to town will inevitably lead to a traffic jam, then having to turn left soon after, to Coles, will be an issue with people trying to get into the carpark. Those who wish to go right onto Railway (to go onto Haynes St and/or to Kalamunda Hill) will also cause further congestion bearing in mind this area has many pedestrians of a mature nature and young families with prams.</p> <p>3. Access to the medical centre Hospital and Pharmacy will become a circuitous route adding to the general congestion in the town.</p> <p>4. Railway/Headingly/Williams link (to gain access to hospital houses etc) is no different to Elizabeth St/Railway Rd and likely to be fraught with the same problems.</p> <p>5. Interesting to note the “give way” signs Elizabeth crossing Railway but the next junction towards Gooseberry Hill, Shelley across Railway is a “Stop” where is the logic?</p> <p>1. Has the cause of the accidents been thoroughly researched? It is only <u>suggested</u> speed is a probable cause in which case move the 40km/hr further down Railway away from the town. Do we have available the accident causes (driver inattention, speed, lack of visibility)?</p> <p>2. Has there been any traffic movement survey in the whole area to ascertain the best solution? Can this be made public?</p> <p>Cost effective solutions could be</p> <p>1. Move the 40km/hr zone further N along Railway Rd to slow traffic down if speed is a problem.</p> <p>2. Make the ‘Give way’ signs STOP signs on Elizabeth St at this junction both ways forcing motorists to be more careful. Currently it is a “Give Way”</p> <p>3. Ensure better visibility by under pruning bush (not removing trees) along Railway Rd.</p> <p>4. Make Elizabeth St the priority road with traffic stopping on Railway Rd in the ‘new’ extended 40km/hr zone both ways.</p> <p>I would be grateful if you could send me your replies to all the above questions and suggestions.</p>	Disagree
26-Jul-23	<p>Hello, [REDACTED]. We are both concerned about the closure of the section of Elizabeth Street between Railway and William streets.</p> <p>We understand that there have been many accidents and see the need for a solution but feel the closure is not the best option.</p> <p>The factors that we see cause the accidents are:</p> <p>Speeding on Railway Road</p> <p>Increased traffic to Mead medical</p> <p>Cars coming up Elizabeth Street go through the intersection at Railway Road as they are looking at the give way signs at the roundabout.</p> <p>Poor vision approaching Railway Road coming up Elizabeth Street</p> <p>Poor driving habits, when crossing Railway Road heading east I have had cars coming up Elizabeth Street turn right in front of me.</p> <p>This change will direct traffic up Stirk, Haynes or Mead streets which are already busy then turning right or left to get to Spring Street. Around past the Library which again has cars backing in and out creating more dangerous situations. Or they go down to Headingly Road making the intersection with Railway the new danger area.</p> <p>The roundabout is still the best option as it would stop cars going through Railway Road without stopping and slow down cars on Railway Road. The investigation into the roundabout sighted restricting turning movements, this means slowing cars down which would be good. Reduced sight lines, it hopefully would be better than it is now which is poor. And cause vehicle stacking which already happens now, the roundabout should be smoother.</p> <p>In conclusion we feel that closing this section is not the best solution as it will only shift the problem elsewhere.</p>	Disagree
27-Jul-23	<p>Hello, I am by no means an authority on road alignments, but.....</p> <p>I believe the closure option of this portion of Elizabeth St. will cause accidents to be transposed to the junctions of Hedingly Road, Railway road & Williams street. And what’s worse, actually increase the speeding along Railway road and not help those motorists turning right or left from Elizabeth street at all.</p> <p>It will also increase the density of traffic at the junction of Railway road & Spring road which is already regularly grid locked from the present roundabout at Mead street / Mundaring Weir road.</p> <p>I would suggest that the main reason for the appalling number of accidents at the Elizabeth street junction is the total lack of driver education and speed.</p> <p>As there is no way to re educate drivers, I feel the very best option would be to realign Railway road slightly towards the East when leaving Kalamunda at the Elizabeth junction, and then use double mini roundabouts at this junction to slow traffic and force drivers to obey the speed limit again.</p> <p>I would also suggest that a visual survey of traffic behaviour be undertaken at the same time of day as the accidents that have occurred previously.</p> <p>When I lived in the UK 50 years ago, mini roundabouts were just starting to be introduced, I was not involved in their design or implementation but knew someone who was..... the main requirement was to watch and understand where vehicles came from and where they needed to go.</p> <p>Then the road was temporarily realigned and surfaced with temporary lane markings.</p> <p>It was then noted that vehicles had marked the road surface and this enabled the alignment of the 3 mini roundabouts for the ultimate results.</p> <p>That road was a major junction of 3 major roads, and 1 minor road which is the main access into a city. To this day that junction is still in the very same configuration despite a huge additional population in the area and city.</p> <p>I have added this interesting report for your information:-</p> <p>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/561491/mini-roundabouts-report.pdf</p> <p>Hope you will consider this alternative idea</p>	Disagree
27-Jul-23	<p>Elizabeth Street is the most direct route for people living in Forrestfield, High Wycombe and Maida Vale to access Kalamunda Hospital, the pathology clinic and Mead Medical Centre. Some seriously ill and elderly people need to travel there on a regular basis.</p> <p>Elizabeth Street/Railway Road is also a way that many people access Stirk Park, which the council is spending a lot of money on upgrading.</p> <p>I believe there is no reason to close Elizabeth Street at Railway Road and that by closing Elizabeth Steet the council is inconveniencing many people and adding time to their journey.</p> <p>If council don't want to put a roundabout there, which would be the best option, why not put stop signs on Elizabeth Street so people need to stop and have a good look before crossing Railway Road and some form of traffic calming devices on Railway Road to slow down traffic on that road.</p>	Disagree
27-Jul-23	<p>I would like to comment on the proposed partial closure of Elizabeth Street, Kalamunda. I will preface my comments by saying that my family lived nearby for over 35 years, so I am very familiar with this intersection as well as the pointless Elizabeth Street and Williams Street roundabout.</p> <p>1. The partial closure of Elizabeth Street will create a discontinuous road which is not ideal and has the potential to cause confusion for emergency services, residents, and visitors alike. Google Maps and in car GPS systems are often not updated. Is the City planning to rename and readdress one portion of Elizabeth Street?</p> <p>AS/NZS 4819:2011 Australian/New Zealand Standard Rural and urban addressing states: Landgate’s Policies and Standards for Geographical Naming in Western Australia Version 03:2017:</p> <p>2. The section of Williams Street from the library to the history village gets quite congested already. This proposal would only add more vehicles trying to get to Mead Medical or the hospital.</p> <p>3. Could the give way signs at Elizabeth Street and Railway Road be changed to Stop signs like the Elizabeth Street and Headingly Road intersection?</p> <p>4. Could the 40km speed limit on Railway Road be extended to the other side of Elizabeth Street? This would help slow down approaching vehicles as vehicle speed is noted as a contributing factor in previous accidents.</p>	Disagree

Date	Comments	Response
27-Jul-23	<p>I wish to lodge my objection to the closure of Elizabeth St between Railway Rd and William St.</p> <p>It would be particularly inconvenieint to me as my frequent visits to Mead Medical and the Kalamunda hospital where the carparks are practically full most of the time. As usual you are punishing the majority when the vocal few who have had accidents due to inattention to their driving habits is no doubt the problem. It seems to me that you will now place all of this traffic via Kalamunda township and it doesn’t make sense to me. Also if that intersection is so bad then it should have traffic lights installed.</p>	Disagree
27-Jul-23	<p>In regards to feedback about the proposed closure of Railway Road, Elizabeth Street, Kalamunda, we are very strongly opposed to the closure and cannot believe that this is even being suggested.</p> <p>We would like to see a roundabout being installed instead of the road closure. There is plenty of space for this if you change the layout of the junction and widen the space. This route brings a lot of traffic in from Kalamunda Road and onto Elizabeth Street, from:-</p> <p>Ambulances, hospital staff, hospital visitors/patients Pathwest staff and patients Doctors surgery Mead Medical staff and patients Pharmacy, hearing specialists, medical skin and laser etc. Ambulances driving to the depot situated between Williams Street and Railway Road Several very large coaches also take school children and coach visitors to Kalamunda History Village every week Library staff and customers Mason and Bird Cafe staff and customers Spring Road Community Kindergarten staff and parents All residents who live in that large area.</p> <p>If the proposed road closure went ahead, then all these drivers would then have to use all the roads backwards and forwards through Kalamunda Town Centre instead, making the town centre very unsafe for pedestrians, there would also be large vehicles going through such as coaches and ambulances etc and there would be congestion and large queues through the town. It is already very difficult turning right from all roads in Kalamunda Centre onto Canning Road to go down Kalamunda Road, and there are already long waits to turn and chances sometimes have to be taken to get across and this would make it far, far, worse with the extra traffic.</p> <p>The traffic would also use Railway Road by the town centre, in front of the library and Kalamunda Hotel (which is already extremely busy) and then use the top of Spring Road to get to Williams Street.</p> <p>We have lived [REDACTED] for 14 years and know all the roads extremely well. Turning right out of Spring Road onto Railway Road (opposite the Kalamunda Hotel) is very difficult as the traffic is always constant along there and there are many near misses trying to get out. Another blackspot is when travelling down Spring Road, the traffic coming out from Williams Street often pull out in front of you expecting you to turn left, although you are going straight on and this has happened multiple times, so you have to be ready to do an emergency stop every time you pass.</p> <p>To avoid the problem above, (finding it very hard to turn right from Spring Road onto Railway Road) which is extremely bad in the mornings with long waits to turn right, we use Williams Street instead but this also has many problems with accidents. The entrance from Spring Road into Williams Street is very narrow and at an angle. Also, people leaving the car park on the left, just before the library often pull out in front of you as they have bad visibility due to the bend on their right, but even worse is that the cars in the parking spaces outside the library face their cars inwards and then when leaving they suddenly reverse out in front of you as they have no visibility of the road until they are already out, and there have been multiple near misses. There are also people driving along by the library who suddenly brake and stop in front of you and you have to do an emergency stop to avoid an accident, and some people start driving normally and then suddenly brake over and over again, as you are driving behind them which is extremely dangerous. These people are obviously looking for car parking spaces outside the library and cafe but they do not check their mirrors and realise that anyone is right behind them.</p> <p>I, myself, had an accident outside the library and Mason and Bird Cafe when after slowly following a car along the road for a while, the elderly gentleman in front of me, suddenly pulled in and stopped on the lefthand side of the road so it appeared that he had decided to park there, so I indicated to overtake and as I did so, the man suddenly set off again turning immediately to the right across the road and crashed right into my car as I was overtaking which was a huge shock and very upsetting. He had apparently decided to turn around but had not indicated right and was not even aware I was right behind him the whole way down the road and that I was overtaking him. I had many witnesses from the cafe, and the man apologised but it took me months sorting it out with our insurance companies to get my car repaired and it was totally inconvenient.</p> <p>We therefore do not wish for this area to get even worse with a very large amount of extra traffic. If this was to go ahead there would be huge problems with the traffic being diverted through Kalamunda town centre. Railway Road by the town would be far too busy to be able to turn into from the roads leading to it and it would require roundabouts or traffic lights, and by using the dangerous Spring Road and Williams Street junction and the area by the library, cafe and Kalamunda History Village (where many children visit every week) would cause far more accidents than the ones at the proposed closure area.</p> <p>Railway Road and Elizabeth Street junction diverts traffic away from the town to keep it safe and it keeps the traffic moving freely around the area. A lot of town centres use or build roads such as these, to keep traffic out of the town centre and they would not divert more traffic into the town centre by closing roads around it, so this proposal does not make any sense.</p> <p>To solve this problem, you could reduce the size of the new roundabout (in the UK they use mini roundabouts painted on the road) so a reduced size roundabout in the middle would work, with plenty of signs to warn of road changes, but I believe a normal size roundabout would fit if you widened the area anyway.</p> <p>Another solution, would be to put traffic lights on the junction of Railway Road and Elizabeth Street with the lights allowing a few cars through at a time with a sensor, to keep traffic flowing in all directions.</p> <p>Out of all the roads in Kalamunda, despite using it regularly, we have never had any problems with the Railway Road and Elizabeth Street junction so could not understand why you would propose this.</p> <p>We feel that a roundabout if not traffic lights, would work far better than any closure which would be a huge mistake. Take a look on the Perth Hills Chat on Facebook to see that everyone has voted for a roundabout and are totally against road closure for the same reasons we have mentioned above</p>	Strongly Disagree
28-Jul-23	<p>We are in complete agreeance with the proposed closure of the section of Railway Road & Elizabeth Street as we have witnessed numerous accidents & close calls, in that area, over the past few years.</p> <p>We would also hope that consideration be given to installing road bumps on Railway Road to slow down the traffic along Railway Road, due to human access of this area to walk to Stirk Park.</p>	Agree
31-Jul-23	<p>I think the proposed changes are a waste of ratepayers money & an inconvenience to many people using this area when all it would need to cut down on accidents is to “swap” the Stop sign at Headingly/Elizabeth Street, & the Give Way at Railway Rd./Elizabeth Street intersection! Many of us have been commenting for years on how ludicrous & dangerous the existing signs are.</p>	Disagree

Date	Comments	Response
31-Jul-23	<p>Thank you for the letter informing us of the proposed Railway Rd Elizabeth St- road safety and proposed closure.</p> <p>As residence of [REDACTED] we are agree it certainly needs a change at the Elizabeth St entering Railway Rd. We find it dangerous with limited vision, with the 24 crashes recorded since 2017 I could confidently say we have also witness quite a few other near misses.</p> <p>Entering onto Railway Rd from Elizabeth St coming up the hill has very limited vision for traffic coming along Railway Rd from both directions. Not only this, stopping at the intersection being on a steep climb makes the movement difficult causing hesitation as well as rushed decisions.</p> <p>We strongly believe the roundabout is the only option and safer option. A roundabout greatly reduces the potential for collisions, slows traffic down, reduces congestion.</p> <p>We would also suggest to move the 40km speed limit to the north side of Elizabeth St (it is currently near the ambulance/ railway museum).</p> <p>By closing the road and changing it to a T junction we do not think will be the safe option for the traffic along Railway Rd and traffic from Elizabeth St.</p> <p>In saying that we do like the option of closing the road section of the Heritage trail. Would it be possible to put a 3 way roundabout in? Bearing in mind access to the ambulance and hospital will be affected and we are mindful of this with the flow of emergency services being important.</p> <p>Note: highlighted suggestions priorities from us</p>	Neutral
31-Jul-23	<p>I would like to provide comment on the proposed closure of part of Elizabeth St here Road Safety Treatment and Proposed Closure - Railway Road Elizabeth Street, Kalamunda Engage Kalamunda</p> <p>While there have been accidents on the intersection, the proposed solution does not address the risk factors mentioned of the speed of drivers along Railway Road, or that crossing vehicles are not judging the crossing and space correctly. If this section were to close, there would be more traffic on Lindsay, Headingly and Stirk Streets, which will just move the problem intersections rather than increasing the safety of residents and motorists.</p> <p>I can not see how closure of the section of road will achieve the outcomes required. It would also increase traffic on the surrounding residential streets.</p>	Disagree
31 July 2023	<p>Thank you for ensuring local residents are informed on potential changes to the roads by way of letterbox drop.</p> <p>In your decision making process I hope you can consider the following:</p> <p>a. In the event of a bush fire in Jorgensen Park/Kalamunda National Park residents living on Spring road as well as Crocus, Robusta and Coreen may be urgently trying to leave the area in their vehicles. Ideally they would exit from the Spring Rd/Railway Rd intersection, but if that is too busy, having additional exit points (such as William St to Elizabeth St) would reduce the risk to lives.</p> <p>b. During lunchtimes, school drop off/pick up hours and weekends the Spring Rd/Railway Rd intersection is already quite busy from customers of BWS and the Coles shopping centre. If the Railway Road/Elizabeth St exit is closed, this will no doubt increase the congestion further as residents from Spring road/Crocus/Robusta/Coreen wishing to leave the area and access Kalamunda Rd can't bypass it efficiently like they normally would via William St to Elizabeth St.</p>	Neutral
31-Jul-23	<p>Closing the road as per existing proposal would cause added problems of;</p> <p>1. Access for ambulances/Kalamunda hospital traffic being interfered with. 2. Possible diverting of traffic to the single lane Poets Lane.</p> <p>A cheaper, quicker and much easier solution of the high accident problem area would be; Extend the 40 kph speed limit currently applied to Railway road by the ambulance station to reach the junction of Railway Road Elizabeth Street with speed humps on town centre approach only.</p>	Disagree
31-Jul-23	<p>I'd like to express my concern at these proposals.</p> <p>1) <u>Railway Rd & Headingly Rd cross roads.</u></p> <p>There is a blind bend on Railway Road on the south side of the cross roads. Traffic travelling on Railway Road seemingly travel faster than the 60KPH limit. Vehicles crossing Railway on Headingly do not know what is coming round the bend nor how fast it is going, so have to cross trusting to luck. Increasing traffic trying to cross at this junction will result in accidents.</p> <p>This junction is not lit at night, making it difficult to navigate.</p> <p>Travelling on Headingly Rd up the hill from Stirk Park the stop signage at the cross roads is overlooked/not seen by drivers & I have personally seen vehicles passing straight through the junction without stopping. While signage may meet the minimum required by Australian Standards, it is evidently inadequate; the white line at the junction is largely hidden from view until you're on top of it. More would need to be done to highlight this junction and make it more noticeable.</p> <p>2) <u>Williams & Headingly cross roads.</u></p> <p>There is a blind bend on Williams on the south side of this cross roads, making it difficult for drivers travelling north on Williams coming round this bend as they can find vehicles half way over the junction or just pulling out of Headingly and suddenly have to break to avoid a collision.</p> <p>This junction is not lit at night making it difficult to navigate.</p> <p>Williams St narrows on the south side of this junction and it is not uncommon to find oncoming traffic over the wrong side of the white line on the blind bend. Due to the narrowness of the road on the bend increasing traffic volumes will very likely result in collisions.</p> <p>3) <u>In General</u></p> <p>Traffic on Williams St travels much faster than the 50KPH limit. This the Shire would know as mobile electronic signs have been used on this road - reminding drivers of the speed limit. This has not changed drivers habits of travelling faster than the limit and the prospect of increasing the volume of traffic along Williams will only exacerbate the problem. Traffic calming measures along Williams would be required to mitigate the existing problem.</p> <p>Making changes as indicated in this proposal does not guarantee to cure the problem and would likely result in only moving it from one place to another and conceivable making it worse, due to the blind bends close to both cross roads and further pushing more traffic onto 50KPH roads not designed for the potential volumes of traffic.</p>	Disagree

Date	Comments	Response
30-Jul-23	<p>Understanding the limited options available to correct this situation, we would propose the following:</p> <p>Temporary closure for period of 3 months to evaluate the flow on effect of such an event.</p> <p>Issue 1 – Increased traffic congestion outside library, as vehicles park and reverse into William Street traffic (both ways).</p> <p>Issue 2 – Increased traffic congestion as traffic on William Stret endeavour to enter right into Spring Road. Spring Road will experience a significant increase due to closure.</p> <p>Issue 3 – Corner of Spring Road and Railway Road. Even now traffic is congested and banks up at times. Great difficultly turning right (crossing traffic).</p> <p>Issue 4 – Customers in cars exiting from Drive Through Bottle shop area. This traffic just comes straight out and as it is not a gazetted road, many of these drivers do not apply the road rules.</p> <p>Issue 5 – Increased traffic at Hayne Street, meeting Railway Road. Due to 2 crosswalks (necessary) traffic congestion already exists and will increase.</p> <p>Issue 6 – Traffic coming up Elizabeth Street meeting Railway Road. Increase in traffic turning right. This traffic will have the same degree of danger as if they were going straight across Railway Road.</p> <p>What about if the Haynes Street redevelopment goes ahead?</p> <p>RE: Not considering a roundabout to solve the situation</p> <p>We consider and love our trees, however balanced against what is being proposed, losing several trees (you have not specified a number) is a small price to pay for “human safety”. Especially in light of how quickly a tree was demolished in Hayne Street recently.</p> <p>We trust you will take these issues into consideration.</p>	Neutral
31-Jul-23	<p>I am writing to object to the proposed closure of the access from Elizabeth St onto Railway Rd in Kalamunda.</p> <p>My parents house is [REDACTED]. I grew up there, live in [REDACTED] and visit several times per week. Both my parents are active and use their cars daily. I have been driving this route for 40 years and them slightly longer and more frequently. During the whole time we have used this junction I am the only one to have been involved in an accident - in this case, about 10 years ago, I was driving from Embers straight on Railway Rd to pick up children from school and a car turning right from Elizabeth onto Railway failed to give way to me.</p> <p>I have a few points I’d like to make:</p> <p>1. The problem (as we see it) is people failing to give way – they need to stop and look. There is a similar problem with people exiting the Hospital car park since Mead Medical moved there – we have had many near misses due to people failing to give way to traffic going straight on Elizabeth St. We have noticed though that regular maintenance of the Stop sign and the white lines on the road at the hospital exit do make a difference – when the line fades, there are more near misses. So maintenance of the junctions are important. Why is Elizabeth/Railway a GIVE WAY rather than STOP?</p> <p>2. Why was the round about put on Elizabeth/Williams? It would have made far more sense for it to be at the Railway Rd/Elizabeth St junction. Now it makes it impossible to have a round about as an option at Elizabeth/Railway.</p> <p>3. If the junction is closed it will cause traffic exiting Elizabeth St or nearby streets to be redirected. In order for them to get to Kalamunda Rd that entails either:</p> <p>1. Exiting Elizabeth St by turning left onto Williams St, turning right at Spring, turning right at Railway, then left onto Haynes and right onto Canning.</p> <p>2. Turning right onto Williams, left onto Headingly, cross Railway Rd there to reach Elizabeth, turn right onto Elizabeth and go to the roundabout outside Caltex. OR coming off Headingly turn right onto Railway Rd then Left onto Lindsay and right onto Elizabeth close to the Caltex roundabout.</p> <p>Both of these options will cause traffic problems elsewhere.</p> <p>With option 1 there are lots of right turns in areas which can be very busy with traffic. It is hard enough turning right at the top of Haynes St or out of the shopping centre car park onto Railway without adding to the traffic there. Turning right onto Canning Rd is not easy either from Haynes St or Mead St.</p> <p>Another problem with option 1 is the street parking outside of Kalamunda library. Whenever I travel this route I inevitably have to stop and wait for a car to pull in, out or adjust their parking. I prefer to travel along Railway.</p> <p>With Option 2 the cars have the same problem as Elizabeth except there is also a bend in the road leading up to it and obstructing view of traffic coming along Railway Rd from Kalamunda. I tried this route yesterday to go to my parents house (they are currently away) and found I couldn’t see around the corner – I didn’t feel the junction was safe and believe it would be far more dangerous to have traffic going that route.</p> <p>I think the traffic calmers which have been placed on Elizabeth are a good step. The Give Way sign should be changed to a Stop sign and solid white line with both being maintained to ensure they are obvious to drivers. If the City of Kalamunda believes people speeding on Railway is a problem then perhaps additional speed humps along Railway Rd approaching that junction would help or regular speed traps/checks.</p>	Disagree
1-Aug-23	<p>Would like to suggest a single roundabout that encompasses the existing roundabout down to railway road</p> <p>Query - being a black spot is this eligible for state or federal funding</p>	Disagree
1-Aug-23	<p>I am writing in response to requests for community input regarding the proposed road closure.</p> <p>I understand that there have been numerous accidents at this intersection over the last 5 years and the Council would view closure of Elizabeth Street as one way that would definitely have prevented those incidents.</p> <p>However the closure poses a few issues on surrounding routes including, but not exclusive to:</p> <p>1. If traffic were diverted along Railway to Spring Road then this would create further issues around the library car park and neighbouring cafe. Entering and exiting both the car park and roadside bays is already hazardous - I have seen many near misses and my partner has been hit by someone leaving a bay - and increased traffic levels would only increase the danger. Note also that many bicycle groups use Williams Street as their primary exercise route and this already also creates havoc with traffic, let alone increased volumes.</p> <p>2. This diversion also means extra traffic past the Stirk Street/railway Road intersection which I already consider more dangerous than Elizabeth St due to poor visibility with parked cars along the roadside. And the traffic will have to travel over speed bumps and through an area that is heavily pedestrianised with people crossing from the library area to the Haynes St shopping precinct and Kalamunda Hotel.</p> <p>3. The closure would mean that ambulance traffic could not take a direct route down Elizabeth St to Kalamunda Road increasing attendance times to incidents, and increasing return trips to Kalamunda Hospital.</p> <p>4. The closure will create many inconveniences to residents on the Williams Street side of Railway Road as Elizabeth St is a main entrance and egress route to Kalamunda Road this would force more traffic down Gooseberry Hill Road, in turn increasing inconvenience to residents along that route.</p> <p>If the proposed roundabout solution is vetoed (and the reasoning in your publication citing not enough space and the need to remove mature trees does not hold true as there does indeed appear sufficient space to implement a small roundabout) then why would not moving the existing 40kmph zone a further 500m along Railway Road and putting stop signs at the intersection rather than the existing give ways not suffice to reduce incidents? I note that all other intersections to the north along Railway have stop signs.....</p> <p>I certainly hope that Council takes feedback seriously and consider ALL options.</p>	Disagree
1-Aug-23	<p>Hope all is well with you.</p> <p>Just got home from a short holiday in England/Italy and the proposed road works was put in my face!!!</p> <p>I have lived [REDACTED] for nearly 20 years now and that intersection is a problem!!!</p> <p>Just thought I would do a quick sketch to show you(idea only) to see what you think!!!</p> <p>My gut feeling is that by closing that section of road, will send an increased number of cars up the southern end Williams street intersection(adjacent the Pub)!!!</p> <p>This is already a busy intersection.</p> <p>A possible way to reduce that car volume is to provide a “one way only” entry point to Railway road.</p> <p>Hope sketch makes sense!!!</p> <p>Keep well and safe.</p>	Disagree

Date	Comments	Response
1-Aug-23	<p><u>Proposed permanent closure of section of Elizabeth St between Railway Rd and Williams St</u></p> <p>I support the proposed permanent closure for the reasons stated in the City of Kalamunda notice.</p> <p>While living in Lesmurdie, and so not affected with access convenience as some residents close to the intersection may be, I drive past it regularly. It is a crossroads I always approach with caution because of the careless driving behaviour I have experienced there. I agree that sometimes speed speed can be an issue, and there have been occasions when drivers crossing Railway Road apparently do not see me approaching. As a volunteer member working on the Railway Heritage Trail, I have noticed the difficulty some pedestrians have crossing that piece of road. Vehicles can just suddenly appear and sweep around the corner.</p> <p>If the closure does proceed, and the former road area is revegetated and footpaths installed, could consideration be given to how the footpaths are aligned? A while ago the <i>Friends of the Railway Reserve</i> presented a submission to formalise the footpath on the eastern side of Railway Road, between Elizabeth St and the town centre next to the railway wagon. It could even remain a gravel surface. It would be helpful if it was immediately obvious when exiting the Heritage Trail that one footpath branch swung off to Williams Road and the other branch to Railway Road.</p>	Agree
1-Aug-23	<p>I would like to comment on this proposed road closure as I am [REDACTED].</p> <p>I wonder whether a better solution would be to reduce the speed limit on Railway Road approaching this intersection and introduce speed humps to slow traffic before Elizabeth Street.</p> <p>If the road closure occurs, I would anticipate traffic would build up at the intersecting of Williams Street onto Spring Road and then Spring and Railway Road and vehicles crashes might start occurring more regularly at these intersections.</p> <p>Furthermore I would like to add that the proposed road closure will impact emergency services such as ambulance and fire and would stop police accessibly from conducting routine patrols and will allow even more youth to congregate up and down Williams Street especially during the evening hours.</p>	Disagree
1-Aug-23	<p>I sent some feedback about the Elizabeth Street rd closure but upon thinking about it some more I've changed my opinion.</p> <p>I don't think the rd closure will change the amount of crashes there as when I lived in that area I saw numerous crashes and had alot of near misses that were mainly caused from people going straight through the give way sign coming up Elizabeth Street.</p> <p>Also I think the redirection of traffic to Headingly will just move the problem to that section as visibility is very poor there.</p> <p>I think the best solution would be a roundabout!!!</p>	Disagree
27-Jul-23	<p>I have lived in [REDACTED] for the last 10 years and previously in Gooseberry Hill for 13 years so I am very familiar with the intersection of Elizabeth Street and Railway Road and have used it frequently as a driver of a car.</p> <p>There are problems with the way this intersection is currently set up:</p> <ul style="list-style-type: none">- Elizabeth St has “Give way” signs rather than “Stop” signs. It really needs to have “stop” sign there. I always stop my car as the visibility requires one to stop in order to make sure it is safe to cross or turn into Railway Rd. This applies to crossing in both directions. Only having a “Give Way” sign there is an invitation for serious accidents to occur for people who are unfamiliar with the intersection and don’t take due care. A “Stop” sign would go a long way to improving peoples careful driving.- The Speed limit along that section of Railway Rd is 60km/h. This is way too fast for this intersection and should be changed to 50km/h, or even extending the 40km/h speed limit which is just 100 metres further along Railway Rd towards the town centre. Cars are frequently driving at more than 60km/h along Railway Rd towards Kalamunda and it is hard to judge their speeding until it is too late. As well as dropping the speed limit along this section of Railway Rd (from Stirk St to 100metres north of Elizabeth St), some speed humps on Railway Rd near Elizabeth St would force traffic to slow down without the need of a roundabout. Slowing the traffic along this section of Railway Rd would also improve safety and security for pedestrians walking along Railway Rd between Elizabeth St and Stirk St. I do not feel safe walking along this section and avoid it whenever possible. <p>If Elizabeth St was closed between Railway Rd and Williams St, it would then shift the safety issues and problems to the other three intersections. These intersections being Headingly Rd and Railway Rd, Headingly Rd and Williams St, and Spring St and Williams St. Again, I am very familiar with these intersections, and I can see some serious problems with the increasing the traffic at these places.</p> <ul style="list-style-type: none">- The visibility at Headingly Rd and Railway Rd is <u>very poor</u>, especially if one is driving north along Headingly Rd and crossing Railway Rd towards Williams St. The traffic coming along Railway Rd from Kalamunda towards Headingly Rd is not visible until it is almost there, and usually going quite fast. I try and avoid this manoeuvre whenever possible, especially at bust times like when school traffic is around.- The visibility at Headingly Rd and Williams St is also very poor. Again, it is the traffic coming from Kalamunda along Williams St towards Headingly St that isn’t visible until it is almost there. Increasing the amount of traffic using these two intersections is likely to cause serious accident.- Increasing the amount of traffic using the third intersection of Sprin St and Williams St also has many problems. While turning into and out of Railway Rd into Spring St may take a while and cause frustration, it is the section of Williams St that goes past the Library and History Village that has problems. It is currently very difficult to use the car park in the street outside the library, as often when one tries to reverse out of the parking bays, one cannot see what is coming along Williams St from Spring S because of other parked cars and SUVs blocking the view. It is difficult now and if traffic was increased then it is going to cause more problems. Also, with many children visiting the History Village there is a risk to children’s safety if traffic is increased along that section of Williams St. <p>If Elizabeth St is closed between Railway Rd and Williams St there is still the potential for serious accidents to occur there for any vehicles turning right out of Elizabeth St and into Railway Rd.</p> <p>I strongly recommend that Elizabeth St remains open but increased measures are taken to slow the traffic along Railway Rd and “Stop” signs be installed on Elizabeth St.</p>	Strongly Disagree
1-Aug-23	<p>Apologies for the delay in sending my comments and suggestions, I didn't realise the due date for feedback and comments was 4pm 1st August, and I hope my suggestions are allowed to progress for consideration.</p> <p>In regards to the proposed road closure of Elizabeth St Kalamunda between Railway Rd and Williams St, I would recommend keeping the road open and installing a roundabout. The reason for this is due to that road being part of the service road to the Kalamunda Hospital for visitors and patients. It is already difficult for people visiting their relatives and friends to find the hospital, and the closure would make it more difficult.</p> <p>I would also recommend reducing the blind spot by putting up signs guiding drivers to drive slowly at this and all intersections. Many times the options are too black and white in regards to these issues, and it seems to me the matter would benefit with more guidance around these hot spots with plain signage, which is a form of education on the road and the use of the road.</p> <p>Thank you for your time and consideration.</p>	Disagree

Date	Comments	Response
3-Aug-23	<p>It is great news that something has been done about the intersection of Elizabeth and Railway road .</p> <p>As I live [REDACTED] I use this bit of Elizabeth st every single day and have so for 13 years .</p> <p>It is a well used bit of road from my experience .</p> <p>I'm NOT in favour of closing this piece of road !</p> <p>I have always loved roundabouts for traffic flow and can see no reason why it won't work well here .</p> <p>We have lots of examples of good roundabouts in kalamunda and surrounding areas</p> <p>Woolworths drive and Hale road in Forrestfield was one similar to this situation with car accidents and two roundabouts have been constructed and works very well .</p> <p>I can go on with examples but you get my point!</p> <p>It is great that the Shire has road counters down to receive information and would be interested in the information you have collected to way you've come to this decision.</p> <p>I relise this may not have been a easy decision and a lot of thought has been put into this .</p> <p>Thanks for the opportunity to have a voice in this .</p>	Disagree
3-Aug-23	<p>As a resident in the immediate area living on [REDACTED], I would like to propose an alternate method to improve the safety of the intersection of Railway road and Elizabeth Street.</p> <p>Most of the traffic accidents are caused by right turning traffic. Therefore I would propose terminating the right turn option ,by closing Railway road from Elizabeth Street to to Mead street.</p> <p>The bus route along Railway road can be diverted into William Street and returned to Railway road via the roundabout at the junction at Elizabeth Street.</p> <p>I have spoken to other residents who feel that the current proposal, that of closing Elizabeth Street will move the problem to the blind spot at the junction of Railway road and Headingley road.</p> <p>I feel the alternate proposal would be more cost effective and eliminate an accident black spot that mars our beautiful suburb.</p> <p>I hope my proposal meets with your approval.</p> <p>I thank your for your time and consideration</p>	Disagree
3-Aug-23	<p>My name is [REDACTED] working at Kalamunda Hospital building up our Palliative Care Unit for the past 13 years, but I write in a personal capacity, as I understand my superiors at Armadale Kalamunda Group may be providing their own submission.</p> <p>My main concern is that through closing this intersection, people will be forced down one of two alternate routes:</p> <p>1. Up Headingly Rd, crossing Railway Road then Williams Road, both of which take you across lanes of fast moving traffic coming round 2 blind corners. This route would lead almost everybody to the back of our hospital rather than the front, where most need to access it (along with Mead Medical GPs).</p> <p>2. Or some convoluted route through the centre of Kalamunda & then back up Williams Road past the Library & numerous geriatric & paediatric patrons. The latter route would also involve vehicles needing to do almost a complete circuit of the 'not very round' roundabout at Williams Street.</p> <p>Route 1 poses an increased risk to the drivers by placing them in front of relatively high speed oncoming traffic on the drivers side of their cars.</p> <p>Route 2 poses an increased risk to pedestrians in the Library/Zig Zag Arts Centre precinct by increasing traffic through the area.</p> <p>Both to me will lead to an increased risk of death (and I know a lot about death, if not necessarily road safety!).</p> <p>Secondary concerns (that my colleagues may address in their own submission) are around hospital access. Every patient transferred to & from Royal Perth, SJOG Midland, Sir Charles Gairdner & probably Fiona Stanley Hospitals would currently use Roe Highway/Kalamunda Road/Elizabeth Street as the access. This change would send them on a very circuitous route through the streets of Kalamunda.</p> <p>I agree that the intersection has its issues (indeed I got one of our local living members of staff to complain about a shrub - now gone with my thanks!) that was blocking the view to the left coming up the hill a year or two ago). However, I'm not sure that closing it solves them, & may create even more problems.</p> <p>Thank you for listening to my concerns.</p>	Disagree
26-Jul-23	<p>I do not believe that the proposed closure of Elizabeth St west bound at Railway Rd is the right solution.</p> <p>The closure will affect motorists who travel to and from Kalamunda Hospital, the several other businesses in that precinct, and all the residents who live in that area. They will still have to cross Railway Rd at Headingley Rd or have to navigate through the CBD and use the Spring Rd intersection with Railway Rd.</p> <p>This will potentially move the accidents to those intersections. Because they will have to negotiate more and busy intersections through the CBD, it has the potential to actually cause more accidents.</p> <p>Vehicles on Railway Rd travel much faster at the Headingley Rd intersection than the Elizabeth St intersection and therefore accidents could be worse, possibly fatal. There has not been a fatal accident at the Railway Rd and Elizabeth St intersection at least in the last seven years and, from memory, many years before that.</p> <p>If motorists aren't capable of safely crossing Railway Rd from Elizabeth St, then they are unlikely to do so at the Headingley Rd and Spring Rd intersections with Railway Rd.</p> <p>I disagree with some of the statements in the document titled, <i>"Railway Road Elizabeth Street - Road Safety Treatment and Proposed Closure"</i>, which states, in part,</p> <p><i>"As part of the design process several treatments at this intersection were considered, including a possible roundabout. However once detailed analysis and design was complete, it showed that a roundabout restricted certain turning movements, reduced vehicle and pedestrian sight lines, and caused vehicles to stack between Railway Road and Williams Street queuing into Williams Street roundabout."</i></p> <p>I used a photo editing program to overlay a copy of the Elizabeth St and Williams St roundabout onto the Elizabeth St and Railway Rd intersection. (See attached before and after overlay images). With some adjustment to its shape and the removal of a few trees, it would easily fit into the intersection.</p> <p>With the right design, it would not, <i>"restrict certain turning movements"</i>, it would not, <i>"reduce vehicle and pedestrian sight lines"</i> (it would be much safer than the dangerous Hawtin Rd/Berkshire Rd roundabout) and it would not, <i>"cause vehicles to stack between Railway Road and Williams Street queuing into Williams Street roundabout"</i>, because a roundabout would clear traffic far more effectively and efficiently than the current give way signs do. I also transposed the roundabout at Reynolds Rd and Azurite Ct in Forrestfield onto the intersection and it too easily fits. (See attached image)The overlay images are the same scale as the unaltered image of the Railway Rd and Elizabeth St intersection.</p> <p>I think the statement, <i>"The construction of a roundabout would be cost prohibitive and require the removal of several mature trees."</i>, is emotive, misleading and disingenuous.</p> <p>The City publishes a document titled, <i>'Kalamunda Connect Winter Edition 2021, Edition10'</i>. Under the heading 'Major Projects 2021 – 2022' on page 3, there is a line item under the 'Roads' sub-heading, <i>"Railway Rd and Elizabeth St \$740K"</i>. On page 7, a small article titled, <i>"Black Spot Funding – Railway Rd"</i>, states, <i>"The City has received Black Spot funding to upgrade and install a roundabout at the intersection of Railway Road and Elizabeth Street. The City will provide more information as the project start date approaches in 2022."</i> The City has received \$91,500 Black Spot funding for the closure of Elizabeth St.</p>	Disagree

Date	Comments	Response
	<p>What has happened to all this allocated and budgeted funding?</p> <p>The City has over 25 roundabouts; why is it now suddenly too expensive or too restrictive to build one at this intersection? It would only require a small roundabout which would not be cost prohibitive and would have a minor impact on the surrounding trees.</p> <p>With reference to the statement, “... <i>the removal of several mature trees.</i>”, what is the definition of a mature tree and why have these ones been singled out in this manner? Most, if not every, tree in Kalamunda would be considered mature. Using the city’s excuse of not wanting to remove mature trees means no development could occur anywhere that there are mature trees.</p> <p>The safety of motorists has to outweigh any construction costs or the removal of a few trees.</p> <p>I ask the City to consider the following options;</p> <ol style="list-style-type: none">1. Build a small roundabout like the one at Reynolds Rd and Azurite Ct in Forrestfield and place signage on it directly in front of motorists to make it obvious. This could be designed to allow semi-trailers to navigate the roundabout.2. Put stop signs and full width speed bumps on Elizabeth St in both directions.3. Slow down north bound vehicles on Railway Rd by extending the 40kmh speed limit to the north of the intersection.4. Install full width speed bumps on Railway Rd just before the intersection.	
8-Aug-23	<p>I am writing to express my deep concerns regarding the proposed solution to redirect traffic towards the intersection of Headingly Rd and Railway Rd. As a resident of [REDACTED] and an active volunteer with the Kalamunda Volunteer Fire and Rescue Service (KVFRS), I feel compelled to voice my thoughts on this matter.</p> <p>One of the most alarming concerns for this proposed solution is the safety hazards associated with pulling out of Headingly Rd onto Railway Rd. There have been multiple near misses and close calls at this intersection, and it is evident that bringing additional traffic to this area would only exacerbate the problem. Given the history of incidents at the intersection in question, it is only a matter of time before a serious accident occurs at Headingly/Railway intersection.</p> <p>Rather than merely shifting the traffic problem to another intersection, I implore you to reconsider this approach and explore alternative solutions that prioritize the safety of residents and motorists. Enhancing visibility, improving signage, and implementing traffic calming measures could help mitigate the risks associated with the Elizabeth St and Railway Rd intersection.</p> <p>I understand the need for a comprehensive solution to address traffic concerns in our community, but it is essential that any proposed changes are thoroughly evaluated for their potential impact on safety. The wellbeing of our residents and the preservation of our community's safety should remain paramount in our decision-making process.</p> <p>I appreciate your attention to this matter and kindly request that you reconsider the proposed solution for the Elizabeth St and Railway Rd intersection. As an active member of the Kalamunda Volunteer Fire and Rescue Service and a resident deeply invested in the safety of our community, I believe that collaborative efforts can lead to a safer and more effective solution.</p>	Strongly Disagree
8-Aug-23	<p>Road Safety Treatment and Proposed Closure - Railway Road Elizabeth Street, Kalamunda Comments:</p> <p>We feel that the notice of this proposed road closure has been rather limited and perhaps done inadvertently BY STEALTH. The majority of the people that are affected by this proposal are those visiting the Kalamunda Hospital or the Mead Medical Centre. These people will not be viewing social media or scanning the City’s web site. Why was this proposal not advertised at the site with a large information board? By closing this section of road all traffic (coming along Railway Road or Elizabeth Street) will be diverted via Spring Street or by Headingly Road. The Spring Street/Railway Road intersection is already overloaded and forcing this extra traffic past the Library and café is a recipe for another disaster. Reversing out of the parking bays in front of the Library is already extremely difficult. The existing intersection at Railway Road/Elizabeth Street is by no means a right angle intersection. The sight lines are not clear and speed along Railway Road may be a factor in the crashes reported. We have noticed that only recently have there been traffic counters installed on the associated roads. Perhaps this should have been done prior to any design considerations. We would respectfully suggest that a better solution would be to</p> <ul style="list-style-type: none">• Close Elizabeth Street to the west of Railway Road• Reconstruct the intersection of Elizabeth Street and Railway Road to a correct right angle intersection (to improve the sight lines) and install a Stop sign.• Provide appropriate signage to direct the Kalamunda Hospital/Mead Medical Centre traffic along Kalamunda Road to Stirk Street and then via Railway Road to the Elizabeth Street intersection. <p>All this work can be done for a minimal cost and cause less disruption to the existing road usage.</p>	Disagree
31-Aug-23	<p>1. The construction of a roundabout, although as pointed out has certain negative factors, could still be a LONG TERM solution. Any changes to traffic flow now will impact on other intersections.</p> <p>2. Another option – close Elizabeth St going east at Railway Rd. Although we don’t have statistics for which direction is causing the most grief, it is disconcerting to watch and observe driver behaviour when vehicles approach Railway Rd going east at the give way sign.</p> <p>There are so many false starts to move into the intersection – YES, No, YES, STOP, GO NOW, WAIT, TRY AGAIN, MAYBE GO NOW !!! – just waiting for an accident to happen.</p> <p>Reduced visibility and on a uphill gradient don’t help to make the intersection safe.</p> <p>Commercial vehicles (and they are frequent users) also have difficulty moving off again after stopping there.</p> <p>Just a few thoughts over quite a time.</p>	Disagree
7-Aug-23	<p>I do not support this proposal as it will increase traffic along Headingly Rd which is already an intersection that has quite a few near misses. This idea will only move the problem to another street.</p>	Disagree
7-Aug-23	<p>I do not support this proposal because it is already difficult to get out of Headingly Rd onto Railway Rd. It’s on a bend and traffic coming from the south is upon you before you can get up to speed. If you proposal goes ahead I fear it will be a worse black spot than Elizabeth and Railway.</p>	Disagree
9-Aug-23	<p>My letter to you is in response to the proposed works. In response to safe traffic solution, I must agree that a roundabout at Railway Rd and Elizabeth Street is not practical, due to space restrictions and traffic congestion. I’m a pedestrian around the area at least twice a day. I have noted the current traffic island and speed humps at Elizabeth at Elizabeth and Railway and have had a marked effect on driver behaviour. The 24 crashes before 2017 happened prior to the calming measures being put in. As mentioned in your letter, closure will result in redirecting of traffic to an area that is already congested. This is problematic. There are blind bends on the approach to Headingly and Shelley. I feel that Headingly, Shelley and Railway Roads would require traffic islands. Are we simply transferring any bad driving habits from one intersection to another? Lastly, I’d like to mention that St John’s use both entrances to their station. Thanks you for the opportunity to comment.</p>	

Client: City of Kalamunda

Project: Elizabeth St Kalamunda Traffic Study



APPENDIX D: COST ESTIMATE FOR EACH OPTION

ELIZABETH STREET ROAD SAFETY INVESTIGATION
COST ESTIMATE

OPTION 1 - ELIZABETH STREET EAST CLOSURE

Item	Description	Unit	Qty	Rate	Amount	Comments
1	Preliminaries					
1.1	Site Mobilisation	Item	1	1,200	1,200	
1.2	Traffic Management Plan	Item	1	2,740	2,740	Assume 8*\$200, 4*150, 2*270
1.3	Final Clean-up and sweep	m2	1,000	1	1,000	
1.4	Dispose of rubbish offsite	m3	4	100	400	
1.5	Project Management	Item	1	50,000	50,000	Estimate 16 weeks - assume \$150k/year
1	Signs and Lines					
1.1	Intersection signs and lines	No.	4	\$2,247	\$8,989	Elizabeth St/Railway Road, Headingly Rd/Railway Rd & Spring St/William St
1.2	Midblock signs	No.	2	\$5,000	\$10,000	Sign provision on Headingly and William St
2	Pedestrian & Cyclists					
2.1	Remove obsolete/broken footpath	m	140	\$90	\$12,584	assume 20% of the whole length (700m)
2.2	New path	m	140	\$135	\$18,876	20% of the whole length (700m)
2.3	Install new pedestrian ramp	No.	5	\$562	\$2,809	3 north of Elizabeth St, 2 south of Elizabeth St, 1 on Headingly
2.4	Install new pedestrian crossing	No.	1	\$13,000	\$13,000	1 on Headingly
3	Lighting					
3.1	Upgrade street lighting	No.	7	\$3,933	\$27,528	3*Lightpoles - Headingly Rd, 1* Lightpole - Spring, 3 along William St
4	Roadworks					
4.1	Tree removal	No.	20	\$899	\$17,978	Widening on William St (2 x 3.5m lanes) & Railway Rd south of Headingly
4.2	Kerb Removal	m	700	\$34	\$23,596	Widening on William St (2 x 3.5m lanes)
4.3	Reinstall Kerb	m	700	\$45	\$31,461	Assume widening on one side of William St
4.4	Road Widening	m2	1,050	\$112	\$117,978	700m x 1.5m (William St widening to 3.5m in each direction)
4.5	Pavement	m2	910	\$140	\$127,810	
4.6	Remove Existing Asphalt	m2	400	\$34	\$13,483	Elizabeth St between William St and Railway Rd
4.7	Install Speed Hump	Item	4	\$5,618	\$22,472	2 x Speed humps on Railway/Elizabeth & 2 x Speed humps on Railway/Headingly
4.8	Raised median	m2	20	\$249	\$4,989	Pedestrian crossing at Headingly
4.9	excavate pipe trench (0-2m deep) incl backfill and compaction	m	350	\$79	\$27,528	
5.0	Supply and install 450mm RCP	m	350	\$200	\$70,000	Assume 450mm RCP required. Assume 50% of length of William St requires stormwater pipe to be relocated/replaced. Rates based on Cardno Report (2021).
5.1	Supply and install precast pit to suit 375mm pipe	No.	10	\$3,500	\$35,000	Estimated approximately 10 pits on William St. Rates based on Cardno Report (2021)
5	Traffic Management Provisional Amount	week	16	\$7,500	\$120,000	Assume 4 months of construction including services relocation
6	Underground Services Relocation	Item	1	\$50,000	\$50,000	Assume nominal amount - will need to be reviewed based on Service Investigation
7	Miscellaneous	%	20%	\$812,000	\$162,400	
8	Design	%	10%	\$974,000	\$97,400	
	TOTAL				\$1,071,220	

**ELIZABETH STREET ROAD SAFETY INVESTIGATION
COST ESTIMATE**

OPTION 2 - CHANGE PRIORITY OF ELIZABETH STREET AND RAILWAY ROAD

Item	Description	Unit	Qty	Rate	Amount	Comments
1	Preliminaries					
1.1	Site Mobilisation	Item	1	1,200	1,200	
1.2	Traffic Management Plan	Item	1	2,740	2,740	Assume 8*\$200, 4*150, 2*270
1.3	Final Clean-up and sweep	m2	20	1	20	
1.4	Dispose of rubbish offsite	m3	1	100	100	
1.5	Project Management	Item	1	10,000	10,000	
2	Signs and Lines					
2.1	Intersection signs and lines	No.	1	\$2,247	\$2,247	Intersection of Elizabeth St/Railway Road
2.2	Midblock Signs	Item	2	\$5,000	\$10,000	Additional signs on Railway Rd to reinforce priority of Elizabeth St
3	Roadworks					
3.1	Tree removal	No.	3	\$899	\$2,697	
4	Traffic Management Provisional Amount	Item	1	\$7,500	\$7,500	
5	Miscellaneous	%	20%	\$37,000	\$7,400	
5	Design	%	10%	\$44,000	\$4,400	
	TOTAL				\$48,304	

**ELIZABETH STREET ROAD SAFETY INVESTIGATION
COST ESTIMATE**

OPTION 3 - ROAD REALIGNMENT (ELIZABETH STREET BETWEEN RAILWAY ROAD AND WILLIAM STREET)

Item	Description	Unit	Qty	Rate	Amount	Comments
1	Preliminaries					
1.1	Site Mobilisation	Item	1	1,200	1,200	
1.2	Traffic Management Plan	Item	1	2,740	2,740	Assume 8*\$200, 4*150, 2*270
1.3	Final Clean-up and sweep	m2	1,000	1	1,000	
1.4	Dispose of rubbish offsite	m3	4	100	400	
1.5	Project Management	Item	1	50,000	50,000	
2	Signs and Lines					
2.1	Intersection signs and lines	No.	1	\$2,247	\$2,247	Elizabeth St/Railway Rd
3	Pedestrian & Cyclists					
3.1	Remove obsolete/broken footpath	m	15	\$90	\$1,348	assume 20% of the whole length
3.2	New path	m	25	\$135	\$3,371	20% of the whole length
3.3	Install new pedestrian ramp	No.	3	\$562	\$1,685	
4	Lighting					
4.1	Upgrade street lighting (intersection)	No.	1	\$3,933	\$3,933	
5	Roadworks					
4.1	Tree removal	No.	4	\$899	\$3,200	
4.2	Kerb Removal	m	80	\$34	\$2,697	
4.3	Reinstall Kerb	m	80	\$45	\$3,596	
4.4	Road Widening	m2	130	\$112	\$14,607	
4.5	Pavement	m2	130	\$140	\$18,259	
4.6	Remove Existing Asphalt	m2	200	\$34	\$6,742	
4.7	Red Asphalt Pavement	m2	200	\$62	\$12,360	
4.8	Install Speed Hump	Item	2	\$2,247	\$4,494	
4.9	Relocate power pole	No.	1	\$15,000	\$15,000	
4.10	Raised median	No.	1	\$14,607	\$14,607	Cardno Report (2021)
4.11	Supply and install precast pit to suit 375mm pipe	No.	2	\$3,500	\$7,000	2 x pits on Railway Road requiring relocation. Rates based on Cardno Report (2021)
6	Traffic Management Provisional Amount	week	16	\$7,500	\$120,000	
7	Underground Services Relocation	Item	1	\$50,000	\$50,000	Assume nominal amount - will need to be reviewed based on Service Investigation
8	Miscellaneous	%	20%	\$341,000	\$68,200	
9	Design	%	10%	\$409,000	\$40,900	
TOTAL					\$449,584	

Client: City of Kalamunda

Project: Elizabeth St Kalamunda Traffic Study



APPENDIX E: BCR CALCULATION FOR EACH OPTION

OPTION 1: Road Closure (Elizabeth Street between Railway Road and William Street)							
2019-2023	Crash Quantity	Crash Unit Cost (Built-up)	Crash Cost (Built-up)	Countermeasure Crash Modification Factor (1-CRF)	Crash Cost After Treatment	Assumed Crash Reduction Factor (CRF)	Comment
RUM 11	17	77800	\$1,322,600	0.5	\$661,300	0.5	Only crashes involving vehicles travelling E/W (or W/E) through/through on Elizabeth St colliding with vehicles travelling N/S (or S/N) through/through on Railway Rd considered, because countermeasure stops vehicles from moving in E/W (or W/E) direction on Elizabeth. As per CRF, treatment is Street closure (one leg of cross)
RUM 12	1	31679	\$31,679	0.5	\$15,840	0.5	Only crashes involving vehicles travelling E/W (or W/E) through/through on Elizabeth St colliding with vehicles travelling N/S (or S/N) through/through on Railway Rd considered, because countermeasure stops vehicles from moveing in E/W (or W/E) direction on Elizabeth. As per CRF, treatment is Street closure (one leg of cross)
Total (5 years)			\$1,354,279		\$677,140		
Total (1 year)			\$270,856		\$135,428		
				Present Value using discount rate of 5% over 20 year life			
Total crash costs over 20 years without countermeasures				\$3,375,461.95			
Total crash costs over 20 years with countermeasures				\$1,687,730.98			
Annual Operating Expenditure				\$300.00			As per CRF
Total Operating Expenditure				\$3,738.66			
BCR			= Total Benefits / Total Costs				
			\$1,687,730.98		NPV =	\$612,772.31	
			\$1,074,958.66				
BCR			1.57				

OPTION 2: Change Priority of Elizabeth Street and Railway Road							
2019-2023	Crash Quantity	Crash Unit Cost (Built-up)	Crash Cost (Built-up)	Countermeasure Crash Modification Factor (1-CRF)	Crash Cost After Treatment	Assumed Crash Reduction Factor (CRF)	Comment
RUM 11	11	77800	\$855,800	0.8	\$684,640	0.2	Only crashes involving vehicles travelling E/W (or W/E) on Elizabeth St colliding with vehicles travelling N/S (or S/N) on Railway considered. Countermeasure provides priority for Elizabeth St traffic, with Railway Rd vehicles needing to give way. Therefore crashes involving Railway Rd traffic colliding with Elizabeth St traffic still probable. As per CRF - Install a GIVE WAY sign at X-intersection.
RUM 12	1	31679	\$31,679	0.8	\$25,343	0.2	Only crashes involving vehicles travelling E/W (or W/E) on Elizabeth St colliding with vehicles travelling N/S (or S/N) on Railway considered. Countermeasure provides priority for Elizabeth St traffic, with Railway Rd vehicles needing to giving way. Therefore crashes involving Railway Rd traffic colliding with Elizabeth St traffic probable. As per CRF - Install a GIVE WAY sign at X-intersection.
Total (5 years)			\$887,479		\$709,983		
Total (1 year)			\$177,496		\$141,997		
				Present Value using discount rate of 5% over 5 year life			
Total crash costs over 5 years without countermeasures				\$768,463.93			
Total crash costs over 5 years with countermeasures				\$614,771.14			
Annual Operating Expenditure				N/A			As per CRF
Total Operating Expenditure				N/A			
BCR			= Total Benefits / Total Costs				
			\$153,692.79		NPV =	\$105,388.79	
			\$48,304.00				
BCR			3.18				

OPTION 3: Road Realignment (Elizabeth Street between Railway Road and William Street)							
2019-2023	Crash Quantity	Crash Unit Cost (Built-up)	Crash Cost (Built-up)	Countermeasure Crash Modification Factor (1-CRF)	Crash Cost After Treatment	Assumed Crash Reduction Factor (CRF)	Comment
RUM 11	12	77800	\$933,600	0.7	\$653,520	0.3	Only crashes involving vehicles travelling E/W or W/E on Elizabeth colliding with N/S on Railway considered, because countermeasure impacts these movements. As per predeflection CRF - Stagger cross intersection (right-left)
RUM 12	1	31679	\$31,679	0.44	\$13,939	0.56	CRF - Speed limit reduction: 60km/h to 40km/h
RUM 11	3	77800	\$233,400	0.44	\$102,696	0.56	CRF - Speed limit reduction: 60km/h to 40km/h
RUM 11	6	77800	\$466,800	0.5	\$233,400	0.5	CRF - Traffic Calming: Vertical Features - i.e. full width road humps, raised pedestrian crossings, raised intersections etc. (excl. speed cushions) - Spacing between traffic calming features of 80-120m
RUM 34	1	51438	\$51,438	0.5	\$25,719	0.5	CRF - Traffic Calming: Vertical Features - i.e. full width road humps, raised pedestrian crossings, raised intersections etc. (excl. speed cushions) - Spacing between traffic calming features of 80-120m
Total (5 years)			\$1,198,679		\$770,155		
Total (1 year)			\$239,736		\$154,031		
				Present Value using discount rate of 5% over 20 year life			
Total crash costs over 20 years without countermeasures				\$2,987,637.97			
Total crash costs over 20 years with countermeasures				\$1,919,566.12			
Annual Operating Expenditure				\$100.00			As per CRF
Total Operating Expenditure				\$1,246.22			
BCR			= Total Benefits / Total Costs				
			\$1,068,071.84		NPV =	\$574,135.62	
			\$493,936.22				
BCR			2.16				

OPTION 1	Travel Time Impact																			
					Using Traffic Count Data				Hours of Travel / Day			Australia Tranport Assessment and Planning			\$/day			\$/year		
	Pre-treatment (KM)	Post treatment (KM)	Additional Distance Travelled (KM)	Travel time (assume 50km/h average speed) (min)	PM Peak Hour Volume (Elizabeth St) (LV) (vph)	PM Peak Hour Volume (Elizabeth St) (HV) (vph)	Estimated Daily Traffic (LV)(10 x peak Hour)(vpd)	Estimated Daily Traffic (HV)(10 x peak Hour)(vpd)	LV (Private)	LV (Business)	HV	\$/Person-hour (Private vehicle)	\$/Person-hour (Business)	\$/Person-hour (HV - using Heavy Rigid Trucks)	\$/day Total (Private)(LV)	\$/day Total (Business)(LV)	\$/day Total (HV)	\$/year Total (Private)(LV)	\$/year Total (Business)(LV)	\$/year Total (HV)
	0.04	0.877	0.837	1.0044	168		1680	80	14.0616	14.0616	1.3392	\$ 14.99	\$ 48.63	\$ 26.19	\$ 210.78	\$ 683.82	\$ 35.07	\$ 76,935.94	\$ 249,592.70	\$ 12,801.88
																		\$958,791.81	\$3,110,476.69	\$159,539.74

OPTION 2 & 3 Neglible change to travel distance therefore negligible change to travel time and fuel consumption

OPTION 1	Fuel Consumption Impact											
	Australian Bureau of Statistics				\$/day			\$/year			\$/20year	
	Fuel Rate (ULP) (\$/l) (LV)	Fuel Rate (Diesel)(\$/l) (HV)	Fuel Economy (PV) (L/100km)	Fuel Economy (HV)(L/100km)	Fuel Cost (\$/day) (ULP) (Private)(LV)	Fuel Cost (\$/day) (ULP) (Business)(LV)	Fuel Cost (\$/day) (Diesel) (HV)	Fuel Cost (\$/year) (ULP) (Private)(LV)	Fuel Cost (\$/year) (ULP) (Business)(LV)	Fuel Cost (\$/year) (Diesel) (HV)	Fuel Cost (\$/20year) (ULP) (Private)(LV)	Fuel Cost (\$/20year) (ULP) (Business)(LV)
	\$1.47	\$1.48	11.10	28.60	\$114.72	\$114.72	\$14.14	\$41,873.37	\$41,873.37	\$5,162.08	\$521,834.75	\$521,834.75
												\$64,330.94

REFERENCES:

ABS:
https://www.abs.gov.au/statistics/industry/tourism-and-transport/survey-motor-vehicle-use-australia/latest-release

Australian Transport Assessment and Planning

https://www.atap.gov.au/parameter-values/road-transport/3-travel-time
https://www.vtpi.org/tca/tca0502.pdf
https://sites.google.com/site/benefitcostanalysis/benefits/travel-time/categories
https://www.transport.govt.nz/assets/Uploads/Paper/CostBenefit-Analysis.pdf

Net Countermeasure Benefit	BCR
\$1,687,730.98	0.32