Prepared For:
The community of Coburg and
Preston and all road users of the Bell

Street Bridge

18 October 2023

# Safe System Assessment (Rapid) Bell Street Bridge (Merri Creek), Coburg



#### **Project**

Bell Street Bridge (Merri Creek), Coburg

#### Prepared for

The community of Coburg and Preston and all road users of the Bell Street Bridge

Our reference 20520TG

Directory path

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| Version | Date       | Issue | Prepared by                     | Checked by   |
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## 1. The situation

#### 1.1. Introduction

The Bell Street Bridge study area provides a vital east-west connection in Melbourne's inner northern suburbs. It moves over 47,000 vehicles every day including private vehicles, heavy vehicles, buses, pedestrians and cyclists.

The bridge poorly services pedestrians, with no protection to traffic and very narrow paths on both sides of the road.

In fact, between 2018 and 2022, there was 16 crashes recorded that required attendance by emergency services. Of those crashes, 3 of these involved a pedestrian, 2 resulting in serious injuries requiring hospitalisation.

#### 1.2. The Merri Creek

The Merri Creek is a significantly important waterway due to it being an environmental, heritage and recreation corridor that connects a distance of approximately 60km from near Wallan in the north to the Yarra River at Dights Falls (Abbotsford) in the south.

Due to the Merri Creek traversing through a number of Melbourne's northern suburbs, it provides a key attraction for it's recreational and open space value.

The Merri Creek has important cultural significance and has been an important place for time well before European colonisation, notably as a place of gathering for special events such as Tanderrum. The creek and it's banks contain culturally significant Indigenous artifacts and scarred trees.





#### 1.3. Bell Street bridge in the early days

An early bridge was constructed across the Merri Creek on Bell Street in 1857 and was redeveloped in 1880 as a wrought iron lattice girder trusses bridge, which is unique in Victoria at the time of construction. The Bell Street bridge provided a vital connection between residential developments in Heidelberg and Pentridge.

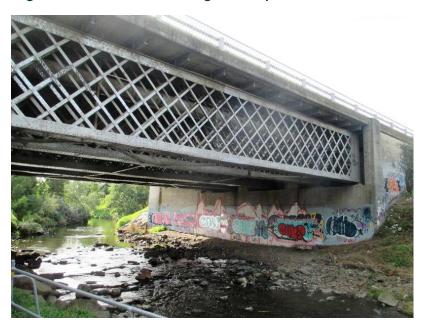
Figure 1.2:Bell Street Bridge in the Early Days



Source: https://www.merri-bek.vic.gov.au/globalassets/areas/heritagelib-7504/heritage-list/coburg---bell-street-bridge.pdf

Throughout the twentieth century the bridge was upgraded on a number of occasions, the bridge was widened in 1954 and again further reinforced in 1990 to resemble how it exists today.

Figure 1.3: Bell Street Bridge Today



Source: https://www.merri-bek.vic.gov.au/globalassets/areas/heritagelib-7504/heritage-list/coburg---bell-street-bridge.pdf

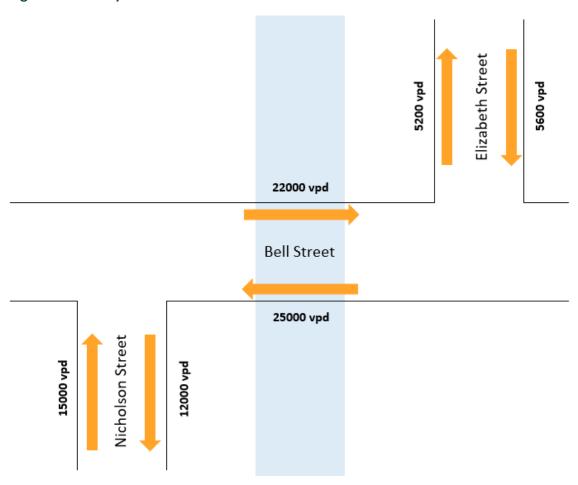
#### 1.4. Bell Street, the movement corridor

#### **Vehicle Movements**

Bell Street carries in the order of 47,000 vpd, with 5% of all traffic being heavy vehicles<sup>1</sup>. Bell Street being a major east-west movement corridor facilitates in addition to private vehicles also serves buses and people walking and riding between Preston and Coburg.

Figure 1.4 shows the daily traffic volumes for Bell Street, Nicholson Street, and Elizabeth Street at the bridge intersection.

Figure 1.4: Daily Traffic Volumes



Key nearby destinations include Coburg High School, and Coburg Major Activity Centre on Sydney Road.

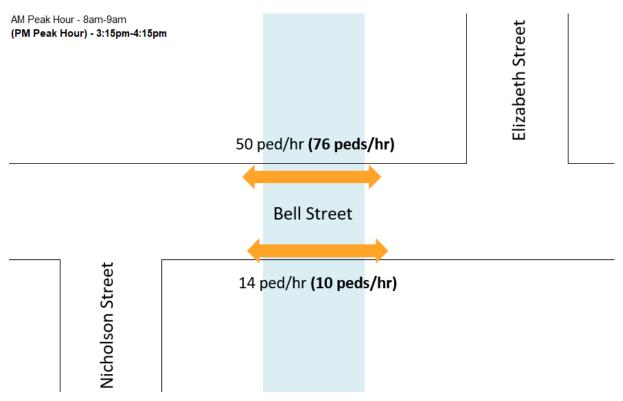
More broadly it connects the M80 ring road and Tullamarine Freeway in the west, to Preston, Bellfield and Heidelberg to the east.

<sup>&</sup>lt;sup>1</sup>Both volumes and HV% sourced from Department of Transport & Planning open data

#### **Pedestrian Movements**

Pedestrian origin and destinations surveys<sup>2</sup> were undertaken between Monday 9 May 2022 and Friday 13 May 2022 between 6:00am – 9:00am and 3:00pm – 6:00pm. An average of 250 pedestrians crossed the Bell Street Bridge (both sides) across the week long survey period. An average across the weekdays of the peak hour pedestrian movements across the Bell Street is presented in Figure 1.5.

Figure 1.5: Average Peak Hour Pedestrian Movements Across Bell Street Bridge



As shown in the preceding figure, the majority of pedestrians who cross Bell Street Bridge use the northern side of the bridge, which is wider and can be accessed via pedestrian signals on both sides of the bridge.

<sup>&</sup>lt;sup>2</sup> Provided by Merri-bek City Council

#### Crash history

A review of the Department of Transport and Planning crash history for the last 5 years of available data which is between 2018 and 2022 for the subject site was conducted to understand current safety operations of Bell Street bridge and adjacent intersections.

Table 1.1 details the crash history at the bridge and adjacent intersection, including severity and user type.

Table 1.1: Crash History for Last 5 Years of Available Data (2018-2022)

|       | Accident Severity |                 |                    | Person Severity      |                 |                |                          |
|-------|-------------------|-----------------|--------------------|----------------------|-----------------|----------------|--------------------------|
| Year  | Serious<br>Injury | Other<br>Injury | Total<br>Accidents | Seriously<br>Injured | Other<br>Injury | Not<br>Injured | Total Person<br>Involved |
| 2018  | 2                 | -               | 2                  | 3                    | 1               | 3              | 7                        |
| 2019  | -                 | 1               | 1                  | -                    | 1               | 1              | 2                        |
| 2020  | 1                 | 3               | 4                  | 1                    | 6               | 7              | 14                       |
| 2021  | 1                 | 6               | 7                  | 1                    | 7               | 9              | 20                       |
| 2022  | 1                 | 1               | 2                  | 1                    | 1               | 1              | 3                        |
| Total | 5                 | 11              | 16                 | 5                    | 16              | 21             | 46                       |

The data indicates that there have been 46 people involved in a total of 16 separate crashes in the last 5 years within the Bell Street bridge study area. Three of the accidents have involved pedestrians resulting in two 'serious injury' and one 'other injury' crash.

Two of these crashes have involved pedestrians crossing the road from the far side of the road and being struck by a driver travelling through an intersection, which both occurred at the intersection of Bell Street and Nicholson Street.

The first crash occurred in 2019 and involved the driver travelling north along Nicholson Street during at 9:47am in wet conditions and resulted in an 'other injury' for the pedestrian. The second crash occurred in 2020 and involved the driver travelling east along Bell Street and striking an elderly pedestrian approximately 30 metres west of the intersection at 2:16pm in dry conditions and resulted in a 'serious injury' for the pedestrian.

The other pedestrian crash occurred on Bell Street approximately 30 metres east of Elizabeth Street and resulted in a driver striking a 65 year old pedestrian who was 'playing, working lying, or standing on carriageway'. The accident occurred at 9:30pm on a weekday in 2018 and resulted in a 'Serious Injury' for the pedestrian.

#### 1.5. Recent improvements

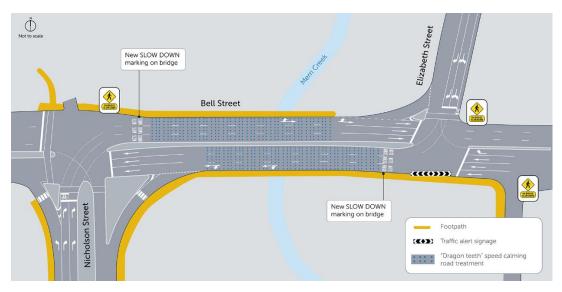
In 2022 the Department of Transport and Planning completed a number of safety improvements to Bell Street Bridge, which was funded by the Safe Travel in Local Streets Program.

The safety improvements which were introduced to Bell Street Bridge are as follows:

- 'SLOW DOWN' line marking on approach to bridge;
- Dragon teeth line marking to encourage slow speeds; and
- Pedestrian warning signs on the approach to Bell Street Bridge.

Figure 1.6 shows an excerpt of the recent road safety improvements the Department of Transport and Planning have made.

Figure 1.6: Excerpt of Recent Road Safety Improvements on Bell Street Bridge



Source: <a href="https://www.vicroads.vic.gov.au/planning-and-projects/melbourne-road-projects/bell-street-bridge-coburg-safety-improvement-works">https://www.vicroads.vic.gov.au/planning-and-projects/melbourne-road-projects/bell-street-bridge-coburg-safety-improvement-works</a>

Between 24 April and 5 May 2023, a post implementation community survey was open to the public to gauge the communities view on the success of the recent road safety improvements, 12 months after the improvements had been installed. Some of the key takeaways of the community survey are as follows:

- Over half of respondents feel that the current speed limit of 60km/h is inappropriate.
- Pedestrians and bike riders believe the line markings on the road are not enough to improve safety.
- Most people are aware of the signalised road crossings at Creek Pass Bridge or Harding Street Bridge, however they are unlikely to use them as they are perceived as too far away.

The community post-implementation surveys also identified some possible solutions to improve safety for pedestrians and cyclists such as reducing speed limits, widening footpaths, installing physical barriers and constructing a separate pedestrian / cyclist bridge.

Further information regarding the recent road safety improvements to Bell Street Bridge can be found on the VicRoads website at this link - <a href="https://www.vicroads.vic.gov.au/planning-and-projects/melbourne-road-projects/bell-street-bridge-coburg-safety-improvement-works">https://www.vicroads.vic.gov.au/planning-and-projects/melbourne-road-projects/bell-street-bridge-coburg-safety-improvement-works</a>

#### 1.6. Scope and purpose of this assessment

The subsequent sections of this report have been prepared to be consistent with the VicRoads Safe System Assessment template, publicly available online, and AustRoads guidance on completing a Safe System Assessment.

Information used in the preparation of this report include a range of survey and open data sources, Austroads guides, site visits, anecdotal and recorded evidence of crashes and road safety hazards within the study area.

The report is being prepared to understand how the Bell Street bridge aligns with the 'Safe System' and what treatments could be implemented to improve safety for all users of the bridge.

## 2. Assessment Details

#### 2.1. Type of Assessment

The Safe System Assessment (SSA) has been conducted to evaluate how conceptual option developed for the Bell Street bridge align with the Safe System principles.

A rapid SSA has been used in accordance with Austroads Safe System Assessment Framework guidelines as these options are high-level and conceptual only and are yet to proceed into functional or detailed design stages.

This report is based on, and generally follows, the Department of Transport and Planning Safe System Assessment (Rapid) report template available on the VicRoads website.

#### 2.2. Assessment Team

Table 2.1 sets out the team members involved in the preparation of this assessment including their relevant qualifications or certification.

#### **Table 2.1 Assessment Team**

| Name                                      | Qualifications / Certification   |
|---|--|
| Ben Krastins, Senior Associate: Transport | BEng(Civil)(Hons) RPEng(Civil) Qualified Safe System Assessor Senior Road Safety Auditor |
| Katie Harker, Senior Transport Engineer   | BEng(Civil)(Hons) Qualified Safe System Assessor   |
| Harry Jorgensen, Transport Planner        | BDes(Planning)   |

#### 2.3. Meetings and Site Inspections

To inform the preparation of this Safe System Assessment, a detailed site visit including walkthrough with community members was undertaken on 5 September 2023 between 8:30am and 10:00am.

## 3. Project Context and Description

#### 3.1. Overview

The following Section provides detail relating the project objectives and project background, including the road function, speed environment, and road users.

#### 3.2. Project Location

The Bell Street Bridge in Coburg, is approximately 7.7 kilometres north of the Melbourne CBD. Connecting Bell Street across the Merri Creek, the 6 lane bridge is a key arterial route running east-west throughout Melbourne's northern suburbs.

The Bridge is bounded by two signalised intersections:

- Bell Street / Nicholson Street to the west, and
- Bell Street / Elizabeth Street to the east.

Land to the north and south of the Bridge consists of public open green space, with De Chene Reserve to the north, and Bowden Reserve to the south. Nearby land uses include residential dwellings, Coburg Pine Ridge Cemetery, commercial land uses along Bell Street and Coburg High School to the north west.

The Bell Street Bridge and the surrounding land uses are shown in Figure 3.1 below.

Figure 3.1 Bell Street Bridge Locality and Surrounding Land Uses



#### 3.3. Project Context

The following Table 3.1 provides further project context as they relate to the Austroads AP-R509-16 prompts. Each prompt is provided with commentary as it related to the Bell Street Bridge.

**Table 3.1 Project Context** 

| Prompts   | Comments   |
|---|--|
| What is the reason for the <b>project</b> ? Is there specific crash type risk? Is it addressing specific issues such as poor speed limit compliance, road access, congestion, future  | <ul> <li>Concerns have been raised by the community regarding the safety of pedestrians and road users.</li> <li>There is an extensive crash history involving both vehicles and pedestrians at the bridge.</li> <li>This includes a high proportion of non-injury crashes resulting in property damage, which are not recorded by</li> </ul>  |
| traffic growth, freight movement, amenity concerns from the community, maintenance/asset renewal, etc.  | <ul> <li>DTP.</li> <li>Current footpaths along the Bridge are narrow with no protection provided between vehicles.</li> <li>Bell Street carries in the order of 47,000 vehicles per day.</li> </ul>  |
| What is the <b>function</b> of the road? Consider location, roadside land use, area type, speed limit, intersection type, presence of parking, public transport services and vehicle flows. What traffic features exist nearby (e.g. upstream and downstream)? What alternative routes exist? | <ul> <li>Bell Street is key arterial road within the suburbs of Coburg and Preston. Focusing primarily on the movement of vehicles in the east-west direction, Bell Street caters for Metro bus services and active transport movements.</li> <li>Two signalised T-intersections are located on either end of the bridge.</li> <li>Nearby main roads of Murray Road to the north and Moreland Road to the south provide alternative routes in an east-west direction.</li> <li>Alternative pedestrian routes are located to approximately 480metres to the north and 400 metres to the south, which are not feasible, nor acceptable as</li> </ul> |
| What is the <b>speed</b> environment? What is the current speed limit? Has it changed recently? Is it similar to other roads of this type? How does it compare to Safe System speeds? What is the acceptability of lowering the speed limit at this location?                                 | <ul> <li>Bell Street currently operates with a 60km/h speed limit, consistent with other similar arterial roads across Melbourne.</li> <li>There are high volumes of pedestrians on unprotected paths next to traffic lanes, and 6 school campuses within a 1km radius.</li> <li>The speed limit across bridge does not align with safe system speeds (30km/h) in its current configuration.</li> <li>It is understood that DTP are currently investigating lower speed limits on Bell Street and in the vicinity of the bridge.</li> </ul>  |

| Prompts  | Comments   |
|--|--|
|  | The Bell Street bridge services various road users including motorists, heavy vehicles (buses and trucks), pedestrians and cyclists.   |
| What <b>road users</b> are present? Consider the presence of elderly pedestrians, school children and cyclists. Also note what facilities are available to vulnerable road users (e.g. signalised crossings, bicycle lanes, school speed limits, etc.) | — There is a number of school aged children who use the<br>bridge every day as there 6 schools within 1 kilometre of<br>Bell Street bridge. School zone catchments encompass<br>suburbs on either side of the Merri Creek, resulting in<br>children being required to cross the bridge to travel<br>to/from school and home. |
|  | <ul> <li>Signalised crossings are provided on all approaches,<br/>with zebra crossings provided across slip lanes on the<br/>northern and southern approach turn lanes.</li> </ul>   |
|  | — There are no bicycle facilities however cyclists were observed using the bridge (on-road) during site visits. It is not part of the Strategic Cycling Corridor network, which is unusual given the directness of the link and surrounding land uses in the wider area.   |
| What is the <b>vehicle</b> composition? Consider the presence of heavy   | <ul> <li>Bell Street bridge carries in the order of 47,000 vehicles<br/>per day.</li> </ul>  |
| vehicles (and what type), motorcyclists and other vehicles using the roadway.  | — Approximately 5% of all vehicular traffic being Heavy<br>Vehicles (including buses).   |

#### 3.4. Existing Conditions

A detailed description of existing conditions is outlined in Section 1.4 of this report.

Photos showing key elements of the bridge are shown in **Appendix A.** 

#### 3.5. Proposed Works

As this is an independent assessment of existing conditions, as opposed to project based assessment by a road authority, the approach included first undertaking the existing conditions assessment, and using the findings to establish a range of options.

A total of five (5) options were developed, as well as assessing the existing conditions ('do nothing').

The options developed included a range of intersection improvements at Nicholson Street and Elizabeth Street, including:

- Improved pedestrian crossings / on-road cycling facilities;
- Realignment of slip lane on South-West corner;
- Line marking improvements; and
- Raised safety platforms on Bell Street.

As a part of options 4 and 5 safety improvements include the provision of a separated, protected pathway, which will require the widening of the existing bridge, or construction of a new bridge.

The options tested, including common and unique features are outlined in Table 3.2 below.

Table 3.2: Options Assessed in the Bell Street Bridge Road Safety Assessment

| Option   | Description                         | Intersection<br>Improvements | 40km/h<br>(school<br>times) | 40km/h<br>(all<br>times) | Protected<br>Path<br>(2 metres<br>wide) | Protected<br>Shared Path<br>(3 metres<br>wide) |
|----------|-------------------------------------|------------------------------|-----------------------------|--------------------------|---|--|
| Existing | Do nothing                          |                              |                             |                          |   |  |
| Option 1 | Safety improvements                 | <b>√</b>                     |                             |                          |   |  |
| Option 2 | Speed reduction during school times | ✓                            | <b>√</b>                    |                          |   |  |
| Option 3 | Speed reduction at all times        | ✓                            |                             | <b>√</b>                 |   |  |
| Option 4 | Protected pedestrian path           | <b>√</b>                     |                             | <b>√</b>                 | <b>√</b>                                |  |
| Option 5 | Protected shared path               | <b>√</b>                     |                             | <b>√</b>                 |   | <b>√</b>                                       |

The range of potential road safety improvements which could be made to the Bell Street bridge intersection to improve safety for all users are spatially shown in Figure 3.2.

Figure 3.2: Proposed Road Safety Improvements to Bell Street Bridge



1: Raised Safety Platform



2: Improvements to Cyclist and Pedestrian Visibility

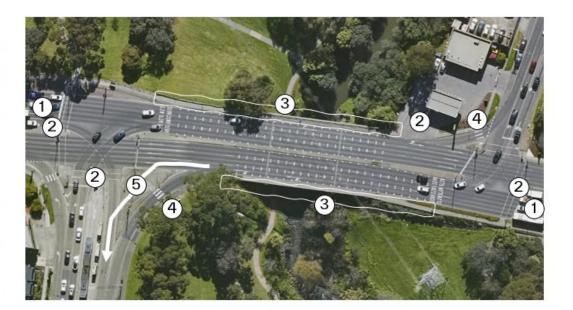


3: Protected and Widened Paths Over Bell Street Bridge



4: Raised Crossing on Slip Lane

5: Realignment of Slip Lane (to reduce speeds)



# 4. Assessment of Project Design Options

#### 4.1. Assessment Summary

The Safe System Assessment Matrix scores for the existing conditions and the proposed design options are shown in Table 4.1.

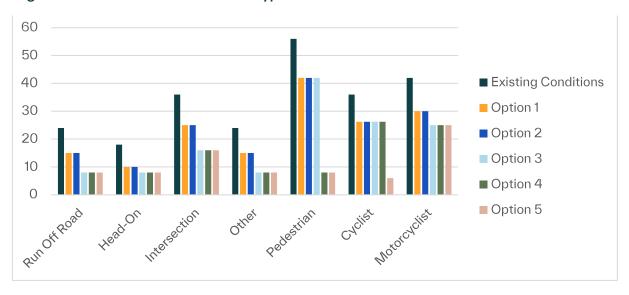
The scores for each **crash type** are shown in Figure 4.1.

The detailed assessments are presented in Appendix B of this report.

Table 4.1 SSA Matrix Scores for the Project

| Option              | Score     |
|---------------------|-----------|
| Existing conditions | 236 / 448 |
| Design Option 1     | 163 / 448 |
| Design Option 2     | 163 / 448 |
| Design Option 3     | 133 / 448 |
| Design Option 4     | 99 / 448  |
| Design Option 5     | 79 / 448  |

Figure 4.1 SSA Scores for Crash Types



#### 4.2. Key Findings

The complete Safe System Assessment results are provided in **Appendix B, with key findings presented below:** 

#### **Existing Conditions**

Under existing conditions and the 'do nothing' approach, alignment with Safe System principles is poor, in particular for pedestrians (56/64).

Key factors that resulted in this score included the high number of pedestrians using the bridge (**exposure**), the existing speeds of traffic (**severity**) and lack of separation or protection from errant vehicles in the instance of a vehicle losing control or being pushed off the road carriageway (**likelihood**).

It is further highlighted that the current pedestrian volumes could potentially be supressed due to the level of safety / comfort of using the bridge.

#### **Option 1: Safety Improvements**

By implementing a range of safety improvements to further reduce speeds to within safe system thresholds (**severity, likelihood**), the overall score reduces from 236 to 163 (or approx. 30%).

The change in scores is relatively consistent across all crash types.

In saying this, implementation of these safety improvements outlined in Option 1 will result in moderate improvements to safety but will not be highly consistent with Safe System principles.

#### Option 2 and 3: Speed Limit Reductions

Reductions to speed limits have been included given it is understood that this is being considered by DTP currently.

Under the Safe System Assessment framework, speed reductions for part of the day only are not considered to have any material change to the bridges alignment with Safe System principles (**Option 3**).

Speed reductions across all hours of the day (**Option 4**) will only be effective in improving alignment with Safe System principles at this location if accompanied by other traffic calming measures such as those outlined in **Option 1**.

Reduced speeds however will improve the road and bridge design with Safe System principles, including at intersection and for run-off road crash types (likelihood, severity).

#### Option 4 and 5: Protected and Separated Paths

Implementation of protected and separated paths will result in significant improvements to pedestrian and cyclist safety across the bridge. Subject to an appropriate barrier design, this treatment would effectively eliminate the potential of a collision across the bridge (likelihood, severity).

Creating a shared path (**Option 5**) would result in an improved alignment with Safe System principles for cyclists as well, however design would need to consider how cyclists arrive on and depart the path back onto the road crossing given there is no other shared path infrastructure provided along Bell Street.

High speed cyclists could also pose a potential risk to pedestrians and path widths would need to consider off-sets to fencing and other barriers that pose risks to cyclists.

## Treatments to Improve the Safe System Alignment

Table 5.1 and Table 5.2 list treatments that will improve the Safe System alignment of the project.

**Primary treatments** are those measures that have the potential to eliminate or come close to eliminating the risk of fatal and serious injury (FSI) crashes.

**Supporting treatments** are effective in reducing the risk of FSI crashes but not to the extent of a primary treatment (i.e. there is a residual moderate or significant FSI crash risk). Implementation of a primary treatment should be given priority over a supporting treatment that may be targeting a similar crash risk.

**Note:** as described in Section 3.5, the options presented in this report already consider a range of primary and supporting treatments to improve alignment with the Safe System. These improvements (outlined in Option 1), were applied consistently across all Options to better understand how reduction in speed limit, and improvements to pedestrian protection rate against each other and existing conditions.

As such, the following suggestions are applicable over-and-above Options 1-5.

**Table 5.1: Primary Treatments** 

| Treatments for consideration   | Influence: E = Exposure L = Likelihood S = Severity | Project response                              |  |
|--|---|---|--|
| Reduced number of traffic lanes across bridge to reduce the overall throughput of vehicles on Bell Street.  (would need supporting alternative routes and unlikely given primary arterial road classification of Bell Street). | E, L  | Not applicable, at<br>preliminary stage only. |  |
| Closing slip lanes on SW and NE corners.   | E, L, S   |   |  |
| Fully separated shared path crossing bridge, and close path on existing Bell Street bridge (already considered under Option 4,5).  | E, L  |   |  |
| Median barrier to prevent head-on collisions   | L, S  |   |  |

Table 5.2: Supporting Treatments

| Treatments for consideration   | Influence: E = Exposure L = Likelihood S = Severity | <del>Project response</del>               |
|--|---|---|
| Refresh / update line marking (some faded, missing or non-standard line marking observed on site)      | L   |   |
| Improvements to drainage (ponding visible during site visits along pedestrian crossings on road)       | L   |   |
| Pedestrian fencing to prevent crossings at informal crossing locations (intersection)                  | L   |   |
| Interim speed limit reductions (while options 1-5 are investigated further)                            | L, S  | Not applicable at this preliminary stage. |
| Electronic speed limit signs as part of long term solutions  | L, S  |   |
| Red light / speed cameras  | L, S  |   |
| On-road cycle lanes  | L   |   |
| Improved street lighting (understood to have been knocked over by vehicle, so location should changed) | L   |   |

## 6. Conclusions

The preceding Safe System Assessment has identified that under existing conditions, the Bell Street Bridge has poor alignment with the principles that underpin the Safe System.

The Bell Street bridge carries in the order of 47,000 vehicles per day, of which 5% are heavy vehicles. At the same time, there are in the order of 250 pedestrian across the peak periods. As such, under the Safe System approach, all crash types had a very high 'exposure'.

The bridge has a range of other complexities in its design, which overall contribute to a higher 'likelihood' of a crash occurring.

These include the gradient on approach to intersections, slight deviation on western approach, and signalised t-intersection on both approaches with dual right turn lanes.

From the existing conditions assessment, a range of 'options' were developed including improvements to safety and visibility of pedestrians / cyclists, speed environment changes, and protection and separation of pedestrians from vehicles.

Of all options assessed, Option 5 (fully protected and separated shared path across the bridge) had the best alignment with Safe System principles. However, the design of a shared path would potentially have a range of other impacts on pedestrian safety as well as project cost.

Option 4 (fully protected and separated pedestrian path across the bridge) also had a significant improvement on existing conditions and excellent alignment with Safe System principles.

Options 4 and 5 however do not address in full, the crash risk across within the broader area including at the signalised intersections. Further primary and supporting treatments have also been developed (shown in Section 5) to reduce exposure, severity and likelihood, which should be considered in further project development.

## Appendix A: Site Photos



Southern footpath in south-east aspect facing west



Narrow footpath on southern side facing west



Damaged collision barrier on north-west aspect



School children crossing Elizabeth Street



Nicholson Street intersection facing east



Nicholson Street western slip lane (Bell Street left into Nicholson Street movement)



Bell Street southern side facing east



Bell Street northern side facing east

# Appendix B Safe System Assessment Matrices

Sheet: Existing Conditions

No Data, assume 1% of AADT

|                                      |   |  |   |   |   |   | 1% Vehicle   |
|--------------------------------------|---|--|---|---|---|---|--|
| Crash Type                           | Run-off road  | Head-on  | Intersection  | Other   | Pedestrian  | Cyclist   | Motorcyclists  |
| Exposure Comments:                   | 47,000 vpd  | 47,000 vpd   | 47,000 vpd  | 47,000 vpd  | 250 across a 6 hour period.   | Unknown - For this purpose of this study, cyclist volimes are assumed to be beween 50 and 100 per day.        | 470  |
| Exposure Score: (#/4)                | Factors that increase the likelihood include:                                       | Factors that <u>increase</u> the likelihood include: | Factors that <u>increase</u> the likelihood include:  | Factors that <u>increase</u> the likelihood include:  | Factors that <u>increase</u> the likelihood include:  | Factors that <u>increase</u> the likelihood include:  | Factors that <u>increase</u> the likelihood include:   |
|                                      | Speed - 60km/h  | Speed - 60km/h                                       | Speed - 60km/h  | Speed - 60km/h  | Speed - 60km/h  | Speed - 60km/h  | Speed - 60km/h   |
|                                      | Multiple lanes of traffic (<3.5m width) with lane changing across bridge            | No barrier within median                             | Signalised Intersections with 3 Left<br>Turn Slip Lanes   | Short distance between intersections and turning movements resulting in higher lane changing.                 | Clearance to traffic lanes less than 1.5 metres, approximately 1.1m at entry point to Bell St Bridge (SW corner).  Minor change in direction / deflection | No Cycling Facilities - Shared Vehicle Lane   | Downhill approach from both east and west, loss of control   |
|                                      | No shoulder provided  |  | Proximitey of traffic signals may result in a see-through affect.   |   | on western approach to bridge, and downhill approaches increase risk of vehicle run off road into pedestrian area.  | Downhill approach from both east and west, loss of control  | No Street Lighting along Bridge  |
| Likelihood Comments:                 | No street lighting along Bridge (existing lighting has been knocked over / removed) |  | Short distance between intersections and turning movements resulting in higher lane changing.                     | Proximitey of traffic signals encourages  | No protection / barrier between pedestrians and vehicles. High speed slip lane with Zebra   | No Street Lighting along Bridge   |  |
|                                      | Minor change in direction / deflection on western approach to bridge.               |  | Faded line marking  |   | crossing set back from Bell Street at SW corner of bridge.  | No treatments to increase visibility of cyclists at intersections   |  |
|                                      |   |  |   | Downhill approach from both east and west, increasing difficulty for emergency braking in poor conditions     |   |   |  |
|                                      | Factors that <u>decrease</u> the likelihood include:                                | Factors that <u>decrease</u> the likelihood include: | Factors that <u>decrease</u> the likelihood include:  | ,   | Factors that <u>decrease</u> the likelihood include:  | Factors that <u>decrease</u> the likelihood include:  | Factors that <u>decrease</u> the likelihood include:   |
|                                      | Median provided   | Median provided                                      | Street Lighting at turning areas  | Street Lighting at turning areas  | Pedestrian priority crossings (zebra / POS)   | Street Lighting at turning areas  | Street Lighting at turning areas   |
|                                      | ·   | ·  | All movements (except left turns) fully   |   | Street Lighting at turning / crossing   |   |  |
|                                      |   | Line Marking   | controlled  | Hounds Teeth  | areas   |   |  |
| 1 11-111-1-1 0 (#/4)                 | Dragon Teeth  | Dragon Teeth   |   |   | Dragon Teeth  |   |  |
| Likelihood Score: (#/4)              | Factors that increase the severity  | Factors that <u>increase</u> the severity            | Factors that increase the severity  | Factors that increase the severity  | Factors that <b>increase</b> the severity   | Factors that <u>increase</u> the severity   | Factors that <u>increase</u> the severity  |
|                                      | include:  |  | include:  | include:  | include:  | include:  | include:   |
|                                      | Speed - 60km/h  | Speed - 60km/h                                       | Speed - 60km/h  | Speed - 60km/h  | Speed - 60km/h  | Speed - 60km/h  | Speed - 60km/h   |
|                                      | Large fixed unsheilded hazards throughout the study area.                           | 5% Heavy Vehicles                                    | Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements | 5% Heavy Vehicles   | Downhill approach from both east and west, possible higher speeds   | Downhill approach from both east and west, possible higher speeds   | Shared traffic lanes mean if a rider falls, they will slide into vehicles infron or behind, or nearby traffic lanes. |
|                                      |   |  | Downhill approach from both east and west, possible higher speeds   |   | 5% Heavy Vehicles   | 5% Heavy Vehicles   | 5% Heavy Vehicles  |
| Severity Comments:                   | Downhill approach from both east and west, possible higher speeds                   |  |   |   |   |   |  |
|                                      | Factors that decrease the severity  | Factors that <u>decrease</u> the severity            | Factors that <b>decrease</b> the severity   | Factors that <b>decrease</b> the severity   | Factors that <b>decrease</b> the severity   | Factors that <u>decrease</u> the severity   | Factors that <b>decrease</b> the severity  |
|                                      | include:  | include:   | include:  | include:  | include:  | include:  | include:   |
|                                      | Median provided   |  | Impact speed likely to be low during periods due to siganlised intersections on either end of the study area.     | Impact speed likely to be low during periods due to siganlised intersections on either end of the study area. | Impact speed likely to be low during periods due to siganlised intersections on either end of the study area.   | Impact speed likely to be low during periods due to siganlised intersections on either end of the study area. | Impact speed likely to be low during periods due to siganlised intersections on either end of the study area.        |
|                                      | Crash Barriers provided on north and  | l  |   |   |   |   |  |
|                                      | south of bridge   | Likely crash angle impact                            |   |   |   |   |  |
| Severity Score: (#/4)                |   |  | 3   | 2   |   |   | 3  |
| Severity Score: (#/4) Product (#/64) | south of bridge  2  24  | 3  | 3   | 24  | 4 56  | 4   | 3.   |

Project: Bell Street Bridge (Merri Creek), Coburg
Sheet: Option 1

| Crash Type                                  |   |  |  |   |  |  |  |
|---|---|--|--|---|--|--|--|
|   | Run-off road  | Head-on  | Intersection   | Other   | Pedestrian   | Cyclist  | Motorcyclists  |
| Exposure Comments:                          | 47,000 vpd  | 47,000 vpd   | 47,000 vpd   | 47,000 vpd  | 250 across a 6 hour period.  | Unknown - For this purpose of this study, cyclist volimes are assumed to be beween 50 and 100 per day.   |  |
| Exposure Score: (#/4)                       |   | · ·  | 4  | 4   | . 4  | 3  | 3  |
|   | Factors that increase the likelihood  | Factors that increase the likelihood   | Factors that increase the likelihood   | Factors that increase the likelihood  | Factors that increase the likelihood   | Factors that increase the likelihood   | Factors that increase the likelihood   |
|   | include:  | include:   | include:   | include:  | include:   | include:   | include:   |
|   | <del>Speed - 60km/h</del>   | <del>Speed - 60km/h</del>  | <del>Speed - 60km/h</del>  | <del>Speed - 60km/h</del>   | Speed - 60km/h   | Speed - 60km/h   | <del>Speed - 60km/h</del>  |
|   | ,   |  |  | ,   |  |  |  |
|   | Multiple lanes of traffic (<3.5m width)   |  | Signalised Intersections with 3 Left   | Short distance between intersections and turning movements resulting in   | Clearance to traffic lanes less than 1.5 metres, approximately 1.1m at entry   | No Cycling Facilities - Shared Vehicle   | Downhill approach from both east a   |
|   | with lane changing across bridge  | No barrier within median   | Turn Slip Lanes  | higher lane changing.   | point to Bell St Bridge (SW corner).  Minor change in direction / deflection   | Lane   | west, loss of control  |
|   |   |  |  |   | on western approach to bridge, and downhill approaches increase risk of  |  |  |
|   |   |  | Proximitey of traffic signals may result   |   | vehicle run off road into pedestrian   | Downhill approach from both east and   |  |
|   | No shoulder provided  |  | in a see-through affect.   | in a see-through affect.  | area.  | west, loss of control  | No Street Lighting along Bridge  |
|   | ·   |  |  | -   |  |  |  |
|   | No street lighting along Bridge   |  | Short distance between intersections   |   |  |  |  |
|   | (existing lighting has been knocked   |  | and turning movements resulting in   |   | No protection / barrier between  |  |  |
|   | over / removed)   |  | higher lane changing.  | Proximitey of traffic signals encourages  |  | No Street Lighting along Bridge  |  |
|   |   |  |  |   | High speed slip lane with Zebra  |  |  |
|   | Minor change in direction / deflection on both approaches to bridge.  |  | Faded line marking   | Lane Widths < 3.5m  | crossing set back from Bell Street at SW corner of bridge.   | No treatments to increase visibility of cyclists at intersections  |  |
| Likelihood Comments:                        |   |  |  | Downhill approach from both east and west, increasing difficulty for  |  |  |  |
|   |   |  |  | emergency braking in poor conditions  |  |  |  |
|   | Factors that decrease the likelihood  | Factors that <u>decrease</u> the likelihood  | Factors that <u>decrease</u> the likelihood  |   | Factors that <u>decrease</u> the likelihood  | Factors that <b>decrease</b> the likelihood  | Factors that decrease the likelihoo  |
|   | include:  | include:   | include:   | •   | include:   | include:   | include:   |
|   | Speed likely to be reduced due to   | Speed likely to be reduced due to  | Speed likely to be reduced due to  | Speed likely to be reduced due to   | Speed likely to be reduced due to  | Speed likely to be reduced due to  | Speed likely to be reduced due to  |
|   | raised safety platform on approach to   | raised safety platform on approach to  | raised safety platform on approach to  | raised safety platform on approach to   | raised safety platform on approach to  | raised safety platform on approach to  | raised safety platform on approach   |
|   | the Bridge  | the Bridge   | the Bridge   | the Bridge  | the Bridge   | the Bridge   | the Bridge   |
|   |   |  |  |   | Pedestrian priority crossings (zebra /   |  |  |
|   | Median provided   | Median provided  | Street Lighting at turning areas   | Street Lighting at turning areas  | POS)   | Street Lighting at turning areas   | Street Lighting at turning areas   |
|   |   |  | All movements (except left turns) fully  |   | Charact Limbian at the major of annual and   | Cyclist storage boxes and painted  |  |
|   |   |  |  |   |  |  |  |
|   | Line Marking  | Line Marking   |  |   | Street Lighting at turning / crossing  | treatment will improve cyclist visability  |  |
|   | Line Marking  | Line Marking   | controlled   | Hounds Teeth  | areas  | throung the area   | Tighten up slip lanes and providing  |
|   | Line Marking  | Line Marking   | controlled  Tighten up slip lanes and providing  | Hounds Teeth Tighten up slip lanes and providing  |  | throung the area  Tighten up slip lanes and providing  |  |
|   | Line Marking  | Line Marking   | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to  | Hounds Teeth<br>Tighten up slip lanes and providing<br>raised pedestrian crossing are likely to   |  | throung the area Tighten up slip lanes and providing raised pedestrian crossing are likely to  | raised pedestrian crossing are like  |
|   |   | Ü  | controlled  Tighten up slip lanes and providing  | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed   | areas  | throung the area  Tighten up slip lanes and providing  | raised pedestrian crossing are like  |
|   | Line Marking  Dragon Teeth  | Line Marking  Dragon Teeth   | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed  | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed   |  | throung the area Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed  | raised pedestrian crossing are like improve sightlines and reduce spe  |
|   |   | Ü  | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed  | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed   | areas  Dragon Teeth  | throung the area Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection   | raised pedestrian crossing are like improve sightlines and reduce spe  |
|   |   | Ü  | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed  | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed  | throung the area Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection   | raised pedestrian crossing are like improve sightlines and reduce spe  |
|   |   | Ü  | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed  | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to  | throung the area Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection   | raised pedestrian crossing are like improve sightlines and reduce spe  |
| Likelihood Score: (#/4)                     |   | Dragon Teeth   | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection   | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection   | throung the area Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection   | raised pedestrian crossing are likel<br>improve sightlines and reduce spe-<br>through intersection   |
| Likelihood Score: (#/4)                     | Dragon Teeth  | Dragon Teeth   | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection   | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection   | throung the area Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection   | improve sightlines and reduce specthrough intersection   |
| Likelihood Score: (#/4)                     | Dragon Teeth  | Dragon Teeth   | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5  | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0  | throung the area Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.6 Factors that increase the severity include:  | raised pedestrian crossing are likel improve sightlines and reduce spethrough intersection   |
| Likelihood Score: (#/4)                     | Dragon Teeth  2.5 Factors that increase the severity  | Dragon Teeth  1.1 Factors that increase the severity   | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity   | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity  | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity   | throung the area Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5  | raised pedestrian crossing are like improve sightlines and reduce spethrough intersection  Factors that increase the severity  |
| Likelihood Score: (#/4)                     | Dragon Teeth  2.5 Factors that increase the severity include:   | Dragon Teeth  1.1 Factors that increase the severity include:  | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h   | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include:   | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include:  | throung the area Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.6 Factors that increase the severity include:  | raised pedestrian crossing are like improve sightlines and reduce spethrough intersection  Factors that increase the severity include:  Speed - 60km/h   |
| Likelihood Score: (#/4)                     | Dragon Teeth  2.5 Factors that <u>increase</u> the severity include: Speed - 60km/h   | Dragon Teeth  1.1 Factors that increase the severity include:  | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h Impact angles are high - particularly for   | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include:   | areas  Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  | throung the area Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h   | raised pedestrian crossing are like improve sightlines and reduce spethrough intersection  Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a ride  |
| Likelihood Score: (#/4)                     | Dragon Teeth  2.5 Factors that increase the severity include: Speed - 60km/h  Large fixed unsheilded hazards  | Dragon Teeth  1.1 Factors that <u>increase</u> the severity include: Speed - 60km/h  | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h Impact angles are high - particularly for intersection slip lanes and right turning   | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  | areas  Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and  | throung the area  Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and  | raised pedestrian crossing are like improve sightlines and reduce spethrough intersection  5 Factors that increase the severity include: Speed - 60km/h Shared traffic lanes mean if a ride falls, they will slide into vehicles in  |
| Likelihood Score: (#/4)                     | Dragon Teeth  2.5 Factors that <u>increase</u> the severity include: Speed - 60km/h   | Dragon Teeth  1.1 Factors that increase the severity include:  | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h Impact angles are high - particularly for intersection slip lanes and right turning   | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  | areas  Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  | throung the area Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h   | raised pedestrian crossing are like improve sightlines and reduce spetthrough intersection  Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a ride   |
| Likelihood Score: (#/4)                     | Dragon Teeth  2.5 Factors that increase the severity include: Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.   | Dragon Teeth  1.1 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles  | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  | areas  Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and  | throung the area  Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and  | raised pedestrian crossing are like improve sightlines and reduce spetthrough intersection  5 Factors that increase the severity include: Speed - 60km/h Shared traffic lanes mean if a ride falls, they will slide into vehicles in   |
| Likelihood Score: (#/4)                     | Dragon Teeth  2.5 Factors that increase the severity include: Speed – 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of   | Dragon Teeth  1.1 Factors that increase the severity include: Speed – 60km/h  5% Heavy Vehicles  Downhill approach from both east and  | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and  | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles   | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  | throung the area  Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds   | raised pedestrian crossing are like improve sightlines and reduce spetthrough intersection  Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a ride falls, they will slide into vehicles in or behind, or nearby traffic lanes.   |
| Likelihood Score: (#/4)                     | Dragon Teeth  2.5  Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  | Dragon Teeth  1.1 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles  | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles   | areas  Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and  | throung the area  Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and  | raised pedestrian crossing are like improve sightlines and reduce spetthrough intersection  5 Factors that increase the severity include: Speed - 60km/h Shared traffic lanes mean if a ride falls, they will slide into vehicles in   |
| Likelihood Score: (#/4)                     | Dragon Teeth  2.5  Factors that increase the severity include:  Speed ~ 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and  | Dragon Teeth  1.1 Factors that increase the severity include: Speed – 60km/h  5% Heavy Vehicles  Downhill approach from both east and  | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and  | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles   | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  | throung the area  Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds   | raised pedestrian crossing are like improve sightlines and reduce spetthrough intersection  Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a ride falls, they will slide into vehicles in or behind, or nearby traffic lanes.   |
| Likelihood Score: (#/4)                     | Dragon Teeth  2.5  Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds   | Dragon Teeth  1.1 Factors that increase the severity include: Speed – 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds   | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds   | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles   | areas  Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  | throung the area  Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.6  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  | raised pedestrian crossing are like improve sightlines and reduce spethrough intersection  Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a ride falls, they will slide into vehicles in or behind, or nearby traffic lanes.  5% Heavy Vehicles   |
|   | Dragon Teeth  2.5  Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity   | Dragon Teeth  1.0 Factors that increase the severity include: Speed – 60km/h  5% Heavy Vehicles Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity  | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity   | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles  Factors that decrease the severity   | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity   | throung the area  Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.6  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity  | raised pedestrian crossing are like improve sightlines and reduce spetthrough intersection  Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a ride falls, they will slide into vehicles ir or behind, or nearby traffic lanes.  5% Heavy Vehicles  Factors that decrease the severity  |
| Likelihood Score: (#/4)  Severity Comments: | Dragon Teeth  2.5  Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  | Dragon Teeth  1.0 Factors that increase the severity include: Speed – 60km/h  5% Heavy Vehicles Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:   | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles  Factors that decrease the severity include:  | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  | throung the area  Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:   | raised pedestrian crossing are like improve sightlines and reduce spetthrough intersection  Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a ride falls, they will slide into vehicles ir or behind, or nearby traffic lanes.  5% Heavy Vehicles  Factors that decrease the severity include:   |
|   | Dragon Teeth  2.5  Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Speed likely to be reduced due to                                       | Dragon Teeth  1.0 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include: Speed likely to be reduced due to   | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include: Speed likely to be reduced due to  | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  Factors that decrease the severity include: Speed likely to be reduced due to   | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include: Speed likely to be reduced due to  | throung the area  Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Speed likely to be reduced due to  | raised pedestrian crossing are like improve sightlines and reduce spetthrough intersection  Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a ride falls, they will slide into vehicles in or behind, or nearby traffic lanes.  5% Heavy Vehicles  Factors that decrease the severity include:  Speed likely to be reduced due to  |
|   | Dragon Teeth  2.5  Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Speed likely to be reduced due to raised safety platform on approach to | Dragon Teeth  1.0 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include: Speed likely to be reduced due to raised safety platform on approach to            | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include: Speed likely to be reduced due to raised safety platform on approach to  | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed 60km/h  Factors that decrease the severity include: Speed likely to be reduced due to raised safety platform on approach to   | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include: Speed likely to be reduced due to raised safety platform on approach to            | throung the area  Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Speed likely to be reduced due to raised safety platform on approach to            | raised pedestrian crossing are like improve sightlines and reduce spetthrough intersection  Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a ride falls, they will slide into vehicles in or behind, or nearby traffic lanes.  5% Heavy Vehicles  Factors that decrease the severity include:  Speed likely to be reduced due to raised safety platform on approace   |
|   | Dragon Teeth  2.5  Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Speed likely to be reduced due to                                       | Dragon Teeth  1.0 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include: Speed likely to be reduced due to   | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include: Speed likely to be reduced due to  | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed 60km/h  Factors that decrease the severity include: Speed likely to be reduced due to raised safety platform on approach to   | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include: Speed likely to be reduced due to  | throung the area  Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Speed likely to be reduced due to  | raised pedestrian crossing are like improve sightlines and reduce spethrough intersection  Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a ride falls, they will slide into vehicles in or behind, or nearby traffic lanes.  5% Heavy Vehicles  Factors that decrease the severity include:  Speed likely to be reduced due to   |
|   | Dragon Teeth  2.5  Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Speed likely to be reduced due to raised safety platform on approach to | Dragon Teeth  1.0 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include: Speed likely to be reduced due to raised safety platform on approach to the Bridge | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include: Speed likely to be reduced due to raised safety platform on approach to the Bridge   | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed 60km/h  Factors that decrease the severity include: Speed likely to be reduced due to raised safety platform on approach to the Bridge  | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include: Speed likely to be reduced due to raised safety platform on approach to the Bridge | throung the area  Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Speed likely to be reduced due to raised safety platform on approach to the Bridge | raised pedestrian crossing are like improve sightlines and reduce spethrough intersection  Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a ride falls, they will slide into vehicles in or behind, or nearby traffic lanes.  5% Heavy Vehicles  Factors that decrease the severity include:  Speed likely to be reduced due to raised safety platform on approach the Bridge   |
|   | Dragon Teeth  2.5  Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Speed likely to be reduced due to raised safety platform on approach to | Dragon Teeth  1.0 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include: Speed likely to be reduced due to raised safety platform on approach to            | controlled Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include: Speed likely to be reduced due to raised safety platform on approach to the Bridge  Impact speed likely to be low during | Hounds Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5 Factors that increase the severity include: Speed – 60km/h  5% Heavy Vehicles  Factors that decrease the severity include: Speed likely to be reduced due to raised safety platform on approach to the Bridge  Impact speed likely to be low during | Dragon Teeth Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include: Speed likely to be reduced due to raised safety platform on approach to            | throung the area  Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  2.5  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Speed likely to be reduced due to raised safety platform on approach to            | raised pedestrian crossing are likel improve sightlines and reduce specthrough intersection  Factors that increase the severity include:  Speed – 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infor behind, or nearby traffic lanes.  5% Heavy Vehicles  Factors that decrease the severity include:  Speed likely to be reduced due to raised safety platform on approach the Bridge  Impact speed likely to be low durin |

Sheet: Option 1

| Crash Type            | Run-off road                         | Head-on                   | Intersection                        | Other                               | Pedestrian                          | Cyclist                                  | Motorcyclists                       |
|-----------------------|--------------------------------------|---------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|-------------------------------------|
|                       |                                      |                           |                                     |                                     |                                     |  | Tighten up slip lanes and providing |
|                       |                                      |                           |                                     |                                     |                                     | raised pedestrian crossing are likely to |                                     |
|                       | Crash Barriers provided on north and |                           | improve sightlines and reduce speed      | improve sightlines and reduce speed |
|                       | south of bridge                      | Likely crash angle impact | through intersection                | through intersection                | through intersection                | through intersection                     | through intersection                |
|                       |                                      |                           |                                     |                                     |                                     |  |                                     |
| Severity Score: (#/4) | 1.5                                  |                           | 2.5                                 | 1.5                                 | 3.5                                 | 3.5                                      | 3.0                                 |
| Product (#/64)        | 15                                   |                           | 10 25                               | 15                                  | 42                                  | 26.25                                    | 30                                  |
|                       |                                      |                           |                                     |                                     |                                     | TOTAL                                    | 163.25                              |

Sheet: Option 2

|                         |  |   |  |  |   |   | 1% Vehicle  |
|-------------------------|--|---|--|--|---|---|---|
| Crash Type              | Run-off road                                     | Head-on   | Intersection                                     | Other  | Pedestrian  | Cyclist Unknown - For this purpose of this  | Motorcyclists   |
| Exposure Comments:      | 47,000 vpd                                       | 47,000 vpd  | 47,000 vpd                                       | 47,000 vpd   | 250 across a 6 hour period.   | study, cyclist volimes are assumed to<br>be beween 50 and 100 per day.  |   |
| Exposure Score: (#/4)   | 4  | 1   | 4  | . 4  | 4   |   | 3   |
|                         | Factors that <u>increase</u> the likelihood      | Factors that <u>increase</u> the likelihood   | Factors that <u>increase</u> the likelihood      | Factors that <u>increase</u> the likelihood              | Factors that <u>increase</u> the likelihood   | Factors that <u>increase</u> the likelihood   | Factors that <u>increase</u> the likelihoo  |
|                         | include:   | include:  | include:   | include:   | include:  | include:  | include:  |
|                         | <del>Speed - 60km/h</del>                        | <del>Speed - 60km/h</del>   | <del>Speed - 60km/h</del>                        | <del>Speed - 60km/h</del>                                | <del>Speed - 60km/h</del>   | <del>Speed - 60km/h</del>   | <del>Speed - 60km/h</del>   |
|                         |  |   |  | Chart distance between interceptions                     | Classes to troffic lance lase than 1.5  |   |   |
|                         | Multiple lanes of traffic (<3.5m width)          |   | Signalised Intersections with 3 Left             | Short distance between intersections                     | Clearance to traffic lanes less than 1.5  | No Cycling Facilities - Shared Vehicle  | Downhill approach from both east  |
|                         | . ,  | No barrier within median  | Turn Slip Lanes                                  | and turning movements resulting in higher lane changing. | metres, approximately 1.1m at entry point to Bell St Bridge (SW corner).                                      | Lane  | west, loss of control   |
|                         | with latte changing across bridge                | No barrier within median  | Turn Oilp Lanes                                  | riigilei laile charigilig.                               | Minor change in direction / deflection  | Laile   | west, loss of control   |
|                         |  |   |  |  | on western approach to bridge, and  |   |   |
|                         |  |   |  |  | downhill approaches increase risk of  |   |   |
|                         |  |   | Proximitey of traffic signals may result         |  | vehicle run off road into pedestrian  | Downhill approach from both east and  |   |
|                         | No shoulder provided                             |   | in a see-through affect.                         | in a see-through affect.                                 | area.   | west, loss of control   | No Street Lighting along Bridge   |
|                         | ·  |   |  |  |   |   |   |
|                         | No street lighting along Bridge                  |   | Short distance between intersections             |  |   |   |   |
|                         | (existing lighting has been knocked              |   | and turning movements resulting in               |  | No protection / barrier between   |   |   |
|                         | over / removed)                                  |   | higher lane changing.                            | Proximitey of traffic signals encourages                 |   | No Street Lighting along Bridge   |   |
|                         | Minor change in direction / deflection           |   |  |  | High speed slip lane with Zebra-<br>crossing set back from Bell Street at-                                    | No treatments to increase visibility of   |   |
|                         | on both approaches to bridge.                    |   | Faded line marking                               | Lane Widths < 3.5m                                       | SW corner of bridge.  | cvelists at intersections   |   |
|                         | on both approaches to bridge.                    |   | I aded line marking                              | Lane Widths < 3.5m                                       | OVV comer or bridge.  | Cyclists at intersections   |   |
| Likelihood Comments:    |  |   |  | Downhill approach from both east and                     |   |   |   |
|                         |  |   |  | west, increasing difficulty for                          |   |   |   |
|                         |  |   |  | emergency braking in poor conditions                     |   |   |   |
|                         | Factors that decrease the likelihood             | Factors that <b>decrease</b> the likelihood   | Factors that <b>decrease</b> the likelihood      |  | Factors that decrease the likelihood  | Factors that <u>decrease</u> the likelihood   | Factors that decrease the likeliho  |
|                         | include:   | include:  | include:   | `  | include:  | include:  | include:  |
|                         | Speed likely to be reduced due to                | Speed likely to be reduced due to   | Speed likely to be reduced due to                | Speed likely to be reduced due to                        | Speed likely to be reduced due to   | Speed likely to be reduced due to   | Speed likely to be reduced due to   |
|                         | raised safety platform on approach to the Bridge | raised safety platform on approach to the Bridge  | raised safety platform on approach to the Bridge | raised safety platform on approach to the Bridge         | raised safety platform on approach to the Bridge  | raised safety platform on approach to the Bridge  | raised safety platform on approach the Bridge   |
|                         | the bridge                                       | the bridge  | trie bridge                                      | the Bridge   | Pedestrian priority crossings (zebra /  | ille Bridge   | the Bridge  |
|                         | Median provided                                  | Median provided   | Street Lighting at turning areas                 | Street Lighting at turning areas                         |   | Street Lighting at turning areas  | Street Lighting at turning areas  |
|                         |  |   |  |  |   | Cyclist storage boxes and painted   |   |
|                         |  |   | All movements (except left turns) fully          |  | Street Lighting at turning / crossing   | treatment will improve cyclist visability   |   |
|                         | Line Marking                                     | Line Marking  | controlled                                       | Hounds Teeth   | areas   | throuhg the area  |   |
|                         |  |   | Tighten up slip lanes and providing              | Tighten up slip lanes and providing                      |   | Tighten up slip lanes and providing   | Tighten up slip lanes and providin  |
|                         |  |   | raised pedestrian crossing are likely to         | raised pedestrian crossing are likely to                 |   | raised pedestrian crossing are likely to  |   |
|                         | D T #  |   | improve sightlines and reduce speed              | improve sightlines and reduce speed                      |   | improve sightlines and reduce speed   | improve sightlines and reduce spe   |
|                         | Dragon Teeth                                     | Dragon Teeth  | through intersection                             | through intersection                                     | Dragon Teeth Tighten up slip lanes and providing  | through intersection  | through intersection  |
|                         |  |   |  |  | raised pedestrian crossing are likely to  |   |   |
|                         |  |   |  |  | improve sightlines and reduce speed   |   |   |
|                         |  |   |  |  | through intersection  |   |   |
| Likelihood Score: (#/4) | 2.5  | 5 1.0   | 2.5  |  |   | 2.5   | 5   |
|                         | Factors that <u>increase</u> the severity        | Factors that <u>increase</u> the severity   | Factors that <u>increase</u> the severity        | Factors that increase the severity                       | Factors that increase the severity  | Factors that <u>increase</u> the severity   | Factors that increase the severity  |
|                         | include:   | include:  | include:   | include:   | include:  | include:  | include:  |
|                         | <del>Speed - 60km/h</del>                        | Speed - 60km/h  | Speed - 60km/h                                   | Speed - 60km/h   | Speed - 60km/h  | Speed - 60km/h  | Speed - 60km/h  |
|                         |  |   |  |  |   |   |   |
|                         |  |   | Impact angles are high - particularly for        |  |   | _ ,   | Shared traffic lanes mean if a ride   |
|                         | Large fixed unsheilded hazards                   | 50/ 11  | intersection slip lanes and right turning        |  |   | Downhill approach from both east and  | falls, they will slide into vehicles in   |
|                         | throughout the study area.                       | 5% Heavy Vehicles   | vehciles vs through movements                    | 5% Heavy Vehicles  | west, possible higher speeds  | west, possible higher speeds  | or behind, or nearby traffic lanes.   |
|                         | Fixed harrier >0.2 metres from edge of           | Downhill approach from both east and  | Downhill approach from both east and             |  |   |   |   |
|                         | traffic lane with semi-mountable kerb.           | west, possible higher speeds  | west, possible higher speeds                     |  | 5% Heavy Vehicles   | 5% Heavy Vehicles   | 5% Heavy Vehicles   |
|                         | Downhill approach from both east and             | 7.1   |  |  | 570 Floavy Volliolos  | o / o r loavy vornoics  | 070 Floavy volliolog  |
|                         | west, possible higher speeds                     |   |  |  |   |   |   |
| Coverity: Commercial    | Factors that <u>decrease</u> the severity        | Factors that <b>decrease</b> the severity   | Factors that <b>decrease</b> the severity        | Factors that <u>decrease</u> the severity                | Factors that <u>decrease</u> the severity   | Factors that <u>decrease</u> the severity   | Factors that decrease the severit   |
| Severity Comments:      | include:   | include:  | include:   | include:   | include:  | include:  | include:  |
|                         | Speed likely to be reduced due to                | Speed likely to be reduced due to   | Speed likely to be reduced due to                | Speed likely to be reduced due to                        | Speed likely to be reduced due to   | Speed likely to be reduced due to   | Speed likely to be reduced due to   |
|                         | raised safety platform on approach to            | raised safety platform on approach to   | raised safety platform on approach to            | raised safety platform on approach to                    | raised safety platform on approach to   | raised safety platform on approach to   | raised safety platform on approach  |
|                         | the Bridge                                       | the Bridge  | the Bridge                                       | the Bridge   | the Bridge  | the Bridge  | the Bridge  |
|                         |  |   |  |  |   |   | Ť   |
|                         | 3  | Impact speed likely to be low during  | Impact anod likely to be law during              | Impact speed likely to be low during                     | Impact around likely to be low during   | Impact speed likely to be low during  | Impact around likely to be law down   |
|                         | -  | Impact speed likely to be low during  | Impact speed likely to be low during             | Impact speed likely to be low during                     | Impact speed likely to be low during  | Impact speed likely to be low during  | Impact speed likely to be low duri  |
|                         | Median provided                                  | Impact speed likely to be low during periods due to siganlised intersections on either end of the study area. |  | periods due to siganlised intersections                  | Impact speed likely to be low during periods due to siganlised intersections on either end of the study area. | Impact speed likely to be low during periods due to siganlised intersections on either end of the study area. | Impact speed likely to be low duri periods due to siganlised intersection either end of the study area. |

Sheet: Option 2

| Crash Type            | Run-off road                         | Head-on                   | Intersection                        | Other                               | Pedestrian                          | Cyclist                                  | Motorcyclists                       |
|-----------------------|--------------------------------------|---------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|-------------------------------------|
|                       |                                      |                           | Tighten up slip lanes and providing      | Tighten up slip lanes and providing |
|                       |                                      |                           |                                     |                                     |                                     | raised pedestrian crossing are likely to |                                     |
|                       | Crash Barriers provided on north and |                           | improve sightlines and reduce speed      | improve sightlines and reduce speed |
|                       | south of bridge                      | Likely crash angle impact | through intersection                | through intersection                | through intersection                | through intersection                     | through intersection                |
|                       |                                      |                           |                                     |                                     |                                     |  |                                     |
| Severity Score: (#/4) | 1.5                                  |                           | 2.5                                 | 1.5                                 | 3.9                                 | 3.5                                      | 3.0                                 |
| Product (#/64)        | 15                                   |                           | 10 25                               | 15                                  | 42                                  | 26.25                                    | 30                                  |
|                       |                                      |                           |                                     |                                     |                                     | TOTAL                                    | 163.25                              |

Project: Bell Street Bridge (Merri Creek), Coburg
Sheet: Option 3

|   |  |   |  |  |   |  | 1% Vehicle   |
|---|--|---|--|--|---|--|--|
| Crash Type                                  | Run-off road   | Head-on   | Intersection   | Other  | Pedestrian  | Cyclist  | Motorcyclists  |
|   |  |   |  |  |   | Unknown - For this purpose of this   |  |
| Exposure Comments:                          |  |   |  |  |   | study, cyclist volimes are assumed to  |  |
|   | 47,000 vpd   | 47,000 vpd  | 47,000 vpd   | 47,000 vpd   | 250 across a 6 hour period.   | be beween 50 and 100 per day.  | 47   |
| Exposure Score: (#/4)                       | 1  | 4   | 4  | 4  | 1   | 3  |  |
| Exposure Score. (#/4)                       | Factors that <b>increase</b> the likelihood  | Factors that <b>increase</b> the likelihood   | Factors that <b>increase</b> the likelihood  | Factors that <b>increase</b> the likelihood  | Factors that <b>increase</b> the likelihood   | Factors that <b>increase</b> the likelihood  | Factors that <b>increase</b> the likelihood  |
|   |  |   | include:   |  |   |  |  |
|   | include:   | include:  |  | include:   | include:  | include:   | include:   |
|   | <del>Speed - 60km/h</del>  | <del>Speed - 60km/h</del>   | <del>Speed - 60km/h</del>  | <del>Speed - 60km/h</del>  | <del>Speed - 60km/h</del>   | <del>Speed - 60km/h</del>  | <del>Speed - 60km/h</del>  |
|   |  |   |  |  |   |  |  |
|   |  |   |  | Short distance between intersections   | Clearance to traffic lanes less than 1.5  |  |  |
|   | Multiple lanes of traffic (<3.5m width)  |   | Signalised Intersections with 3 Left   | and turning movements resulting in   | metres, approximately 1.1m at entry   | No Cycling Facilities - Shared Vehicle   | Downhill approach from both east an  |
|   | with lane changing across bridge   | No barrier within median  |  |  | point to Bell St Bridge (SW corner).  | Lane   | west, loss of control  |
|   | man and changing across smage  | The barrier within median   | Tam one Zamos  | ing.ioi iairo oriairgirigi   | Minor change in direction / deflection  | 24.13  |  |
|   |  |   |  |  | on western approach to bridge, and  |  |  |
|   |  |   |  |  | downhill approaches increase risk of  |  |  |
|   |  |   | Danimitary of traffic along the second   |  | • •   | D  |  |
|   |  |   |  |  | •   | Downhill approach from both east and   |  |
|   | No shoulder provided   |   | in a see-through affect.   | in a see-through affect.   | area.   | west, loss of control  | No Street Lighting along Bridge  |
|   |  |   |  |  |   |  |  |
|   | No street lighting along Bridge  |   | Short distance between intersections   |  |   |  |  |
|   | (existing lighting has been knocked  |   | and turning movements resulting in   |  | No protection / barrier between   |  |  |
|   | over / removed)  |   |  | Proximitey of traffic signals encourages   | pedestrians and vehicles.   | No Street Lighting along Bridge  |  |
|   | <u>'</u>   | +   | † " " " " " " " " " " " " " " " " " " "  |  | High speed slip lane with Zebra   |  |  |
|   | Minor change in direction / deflection   |   |  |  | crossing set back from Bell Street at   | No treatments to increase visibility of  |  |
|   | on both approaches to bridge.  |   | Faded line marking   | Lane Widths < 3.5m   | SW corner of bridge.  | cyclists at intersections  |  |
|   | on both approaches to bridge.  |   | raded line marking   | Lane Widths < 3.5m   | <del>3vv comer or bridge.</del>   | <del>cyclists at intersections</del>   |  |
|   |  |   |  | Davide III and the second of t |   |  |  |
|   |  |   |  | Downhill approach from both east and   |   |  |  |
| Likelihood Comments:                        |  |   |  | west, increasing difficulty for  |   |  |  |
|   |  |   |  | emergency braking in poor conditions   |   |  |  |
|   | Factors that <u>decrease</u> the likelihood  | Factors that <u>decrease</u> the likelihood   | Factors that <b>decrease</b> the likelihood  |  | Factors that <u>decrease</u> the likelihood   | Factors that <u>decrease</u> the likelihood  | Factors that <u>decrease</u> the likelihood  |
|   | include:   | include:  | include:   | ,  | include:  | include:   | include:   |
|   |  |   |  |  |   |  |  |
|   | Reducing the Speed to 40km/h at all  | Reducing the Speed to 40km/h at all   | Reducing the Speed to 40km/h at all  | Reducing the Speed to 40km/h at all  | Reducing the Speed to 40km/h at all   | Reducing the Speed to 40km/h at all  | Reducing the Speed to 40km/h at all  |
|   | and times and the introduction of  | and times and the introduction of   | and times and the introduction of  | and times and the introduction of  | and times and the introduction of   | and times and the introduction of  | and times and the introduction of  |
|   | raised safety platform on approach to  | raised safety platform on approach to   | raised safety platform on approach to  | raised safety platform on approach to  | raised safety platform on approach to   |  | raised safety platform on approach to  |
|   | the Bridge will reduce speeds to near  | the Bridge will reduce speeds to near   | the Bridge will reduce speeds to near  | the Bridge will reduce speeds to near  | the Bridge will reduce speeds to near   | the Bridge will reduce speeds to near  | the Bridge will reduce speeds to near  |
|   | safe Systems speeds (30km/h)   | safe Systems speeds (30km/h)  | safe Systems speeds (30km/h)   | safe Systems speeds (30km/h)   | safe Systems speeds (30km/h)  | safe Systems speeds (30km/h)   | safe Systems speeds (30km/h)   |
|   | sale Systems speeds (Sokmin)   | sale Systems speeds (SOKIII/II)   | sale Systems speeds (SOKIII/II)  | sale Systems speeds (SOKIII/II)  |   | sale Systems speeds (Sokmin)   | sale Systems speeds (SOKIII/II)  |
|   |  |   |  |  | Pedestrian priority crossings (zebra /  |  | 0  |
|   | Median provided  | Median provided   | Street Lighting at turning areas   | Street Lighting at turning areas   | POS)  | Street Lighting at turning areas   | Street Lighting at turning areas   |
|   |  |   |  |  |   | Cyclist storage boxes and painted  |  |
|   |  |   | All movements (except left turns) fully  |  | Street Lighting at turning / crossing   | treatment will improve cyclist visability  |  |
|   | Line Marking   | Line Marking  | controlled   | Hounds Teeth   | areas   | throung the area   |  |
|   |  |   | Tighten up slip lanes and providing  | Tighten up slip lanes and providing  |   | Tighten up slip lanes and providing  | Tighten up slip lanes and providing  |
|   |  |   | raised pedestrian crossing are likely to   | raised pedestrian crossing are likely to   |   | raised pedestrian crossing are likely to   | raised pedestrian crossing are likely t  |
|   |  |   | improve sightlines and reduce speed  | improve sightlines and reduce speed  |   | improve sightlines and reduce speed  | improve sightlines and reduce speed  |
|   | Dragon Teeth   |   |  |  |   | Illipiove signilines and reduce speed  | improve signification reduce speed   |
|   |  | Dragon Teeth  |  |  | Dragon Teeth  |  |  |
|   |  | Dragon Teeth  | through intersection   |  | Dragon Teeth Tighten up slip lanes and providing  |  | through intersection   |
|   |  | Dragon Teeth  |  |  | Tighten up slip lanes and providing   |  |  |
|   |  | Dragon Teeth  |  |  | Tighten up slip lanes and providing raised pedestrian crossing are likely to  |  |  |
|   |  | Dragon Teeth  |  |  | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed  |  |  |
|   |  |   | through intersection   | through intersection   | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection   | through intersection   | through intersection   |
| Likelihood Score: (#/4)                     | 2.0  | 0 1.0   | through intersection  2.0  | through intersection  2.0  | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0  | through intersection  2.5  | through intersection   |
| Likelihood Score: (#/4)                     | 2.0 Factors that <u>increase</u> the severity  | 0 1.0 Factors that <u>increase</u> the severity   | through intersection  2.0 Factors that increase the severity   | through intersection  2.0 Factors that increase the severity   | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase  | through intersection  2.5 Factors that increase the severity   | through intersection  2 Factors that increase the severity   |
| Likelihood Score: (#/4)                     | 2.0  | 0 1.0   | through intersection  2.0  | through intersection  2.0 Factors that increase the severity   | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0  Factors that increase the severity include:   | through intersection  2.5  | through intersection   |
| Likelihood Score: (#/4)                     | 2.0 Factors that <u>increase</u> the severity  | 0 1.0 Factors that <u>increase</u> the severity   | through intersection  2.0 Factors that increase the severity   | through intersection  2.0 Factors that increase the severity   | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0  Factors that increase the severity include:   | through intersection  2.5 Factors that increase the severity include:  | through intersection  2 Factors that increase the severity   |
| Likelihood Score: (#/4)                     | Factors that <u>increase</u> the severity include:   | 0 1.0 Factors that <u>increase</u> the severity include:  | through intersection  2.0 Factors that increase the severity include:  | through intersection  2.0 Factors that increase the severity include:  | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase  | through intersection  2.5 Factors that increase the severity include:  | through intersection  2 Factors that increase the severity include:  |
| Likelihood Score: (#/4)                     | Factors that <u>increase</u> the severity include:   | 0 1.0 Factors that <u>increase</u> the severity include:  | through intersection  2.0 Factors that increase the severity include: Speed – 60km/h   | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h   | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0  Factors that increase the severity include:   | through intersection  2.5 Factors that increase the severity include:  | through intersection  2 Factors that increase the severity include: Speed - 60km/h   |
| Likelihood Score: (#/4)                     | Factors that increase the severity include:  Speed - 60km/h  | 0 1.0 Factors that <u>increase</u> the severity include:  | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h Impact angles are high - particularly for   | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h   | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0  Factors that increase the severity include:  Speed - 60km/h   | through intersection  2.5 Factors that increase the severity include: Speed - 60km/h   | through intersection  2 Factors that increase the severity include: Speed - 60km/h  Shared traffic lanes mean if a rider   |
| Likelihood Score: (#/4)                     | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards  | Factors that increase the severity include:  Speed - 60km/h   | through intersection  2.0 Factors that increase the severity include: Speed – 60km/h Impact angles are high - particularly for intersection slip lanes and right turning   | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h   | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and   | 2.5 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and   | through intersection  2 Factors that increase the severity include: Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infro  |
| Likelihood Score: (#/4)                     | Factors that increase the severity include:  Speed - 60km/h  | 0 1.0 Factors that <u>increase</u> the severity include:  | through intersection  2.0 Factors that increase the severity include: Speed – 60km/h Impact angles are high - particularly for intersection slip lanes and right turning   | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h   | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0  Factors that increase the severity include:  Speed - 60km/h   | through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and   | through intersection  2 Factors that increase the severity include: Speed - 60km/h  Shared traffic lanes mean if a rider   |
| Likelihood Score: (#/4)                     | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements   | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h   | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and   | 2.5 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and   | through intersection  2 Factors that increase the severity include: Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infro  |
| Likelihood Score: (#/4)                     | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of   | Tactors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  F Downhill approach from both east and  | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and  | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles  | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  | through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  | Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infro or behind, or nearby traffic lanes.   |
| Likelihood Score: (#/4)                     | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  f Downhill approach from both east and west, possible higher speeds   | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements   | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles  | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  | through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  | Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infro   |
| Likelihood Score: (#/4)                     | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and  | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  f Downhill approach from both east and west, possible higher speeds   | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and  | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles  | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  | through intersection  2.5 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  | Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infroi or behind, or nearby traffic lanes.  |
| Likelihood Score: (#/4)                     | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  f Downhill approach from both east and west, possible higher speeds   | through intersection  2.0 Factors that increase the severity include: Speed – 60km/h Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds  | 2.0 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles  | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles   | 2.5 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles   | Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infro or behind, or nearby traffic lanes.  5% Heavy Vehicles  |
| Likelihood Score: (#/4)                     | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and  | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  f Downhill approach from both east and west, possible higher speeds   | through intersection  2.0 Factors that increase the severity include: Speed – 60km/h Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity   | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles  Factors that decrease the severity  | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity   | 2.5 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles   | through intersection  Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infro or behind, or nearby traffic lanes.   |
| Likelihood Score: (#/4)                     | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  f Downhill approach from both east and west, possible higher speeds   | through intersection  2.0 Factors that increase the severity include: Speed – 60km/h Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds  | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles  Factors that decrease the severity  | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles   | 2.5 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles   | through intersection  Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infro or behind, or nearby traffic lanes.  5% Heavy Vehicles  |
| Likelihood Score: (#/4)  Severity Comments: | Factors that increase the severity include:  Speed – 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity   | through intersection  2.0 Factors that increase the severity include: Speed – 60km/h Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity   | 2.0 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles Factors that decrease the severity   | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity   | 2.5 Factors that increase the severity include: Speed – 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity   | Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infro or behind, or nearby traffic lanes.  5% Heavy Vehicles  Factors that decrease the severity  |
|   | Factors that increase the severity include:  Speed – 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity   | through intersection  2.0 Factors that increase the severity include: Speed – 60km/h Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity   | through intersection  2.0 Factors that increase the severity include:  Speed – 60km/h  5% Heavy Vehicles  Factors that decrease the severity include:  | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity   | 2.5 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  | Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infro or behind, or nearby traffic lanes.  5% Heavy Vehicles  Factors that decrease the severity include:   |
|   | Factors that increase the severity include:  Speed – 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb. Downhill approach from both east and west, possible higher speeds Factors that decrease the severity include:  Reducing the Speed to 40km/h at all   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  f Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all   | through intersection  2.0 Factors that increase the severity include: Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all   | through intersection  2.0 Factors that increase the severity include:  Speed – 60km/h  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all   | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed – 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include: Reducing the Speed to 40km/h at all  | 2.5 Factors that increase the severity include: Speed – 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all   | through intersection  Factors that increase the severity include:  Speed – 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infro or behind, or nearby traffic lanes.  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all  |
|   | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb. Downhill approach from both east and west, possible higher speeds Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of   | through intersection  2.0 Factors that increase the severity include: Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles  Factors that decrease the severity include: Reducing the Speed to 40km/h at all and times and the introduction of   | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed – 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | through intersection  2.5 Factors that increase the severity include: Speed – 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                 | Factors that increase the severity include:  Speed – 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infro or behind, or nearby traffic lanes.  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of  |
|   | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb. Downhill approach from both east and west, possible higher speeds Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of raised safety platform on approach to | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  f Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of raised safety platform on approach to | through intersection  2.0 Factors that increase the severity include: Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of raised safety platform on approach to | through intersection  2.0 Factors that increase the severity include: Speed – 60km/h  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of raised safety platform on approach to  | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed – 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of raised safety platform on approach to | 2.5 Factors that increase the severity include: Speed – 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of raised safety platform on approach to | Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infror or behind, or nearby traffic lanes.  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of raised safety platform on approach to |
|   | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb. Downhill approach from both east and west, possible higher speeds Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of   | through intersection  2.0 Factors that increase the severity include: Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | through intersection  2.0 Factors that increase the severity include: Speed - 60km/h  5% Heavy Vehicles  Factors that decrease the severity include: Reducing the Speed to 40km/h at all and times and the introduction of   | Tighten up slip lanes and providing raised pedestrian crossing are likely to improve sightlines and reduce speed through intersection  3.0 Factors that increase the severity include: Speed – 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | 2.5 Factors that increase the severity include: Speed – 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of raised safety platform on approach to | Factors that increase the severity include:  Speed – 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infror or behind, or nearby traffic lanes.  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all   |

Sheet: Option 3

|                       |                                      |  |   |  |  |  | 1% Venicie                               |
|-----------------------|--------------------------------------|--|---|--|--|--|--|
| Crash Type            | Run-off road                         | Head-on                                | Intersection                              | Other                                    | Pedestrian                               | Cyclist                                  | Motorcyclists                            |
|                       |                                      |  |   |  |  |  |  |
|                       |                                      | Impact speed likely to be low during   | Impact speed likely to be low during      | Impact speed likely to be low during     | Impact speed likely to be low during     | Impact speed likely to be low during     | Impact speed likely to be low during     |
|                       |                                      | periods due to siganlised intersection | s periods due to siganlised intersections | periods due to siganlised intersections  | periods due to siganlised intersections  | periods due to siganlised intersections  | periods due to siganlised intersections  |
|                       | Median provided                      | on either end of the study area.       | on either end of the study area.          | on either end of the study area.         | on either end of the study area.         | on either end of the study area.         | on either end of the study area.         |
|                       |                                      |  | Tighten up slip lanes and providing       | Tighten up slip lanes and providing      | Tighten up slip lanes and providing      | Tighten up slip lanes and providing      | Tighten up slip lanes and providing      |
|                       |                                      |  | raised pedestrian crossing are likely to  | raised pedestrian crossing are likely to | raised pedestrian crossing are likely to | raised pedestrian crossing are likely to | raised pedestrian crossing are likely to |
|                       | Crash Barriers provided on north and |  | improve sightlines and reduce speed       | improve sightlines and reduce speed      | improve sightlines and reduce speed      | improve sightlines and reduce speed      | improve sightlines and reduce speed      |
|                       | south of bridge                      | Likely crash angle impact              | through intersection                      | through intersection                     | through intersection                     | through intersection                     | through intersection                     |
|                       |                                      |  |   |  |  |  |  |
| Severity Score: (#/4) | 1.0                                  |  | 2.0                                       | 1.0                                      | 3.5                                      | 3.5                                      | 2.5                                      |
| Product (#/64)        | 8                                    | 3                                      | 8 16                                      | 8  | 42                                       | 26.25                                    | 25                                       |
|                       |                                      |  |   |  |  | TOTAL                                    | . 133.25 /                               |

Sheet: Option 4

|                        |  |   |   |  |   |   | 1% Vehicle   |
|------------------------|--|---|---|--|---|---|--|
| Crash Type             | Run-off road   | Head-on   | Intersection  | Other  | Pedestrian  | Cyclist   | Motorcyclists  |
| Exposure Comments:     | 47,000 vpd   | 47,000 vpd  | 47,000 vpd  | 47,000 vpd   | 250 across a 6 hour period.   | Unknown - For this purpose of this study, cyclist volimes are assumed to be beween 50 and 100 per day.  |  |
| Exposure Score: (#/4)  | 4  | 1   | 4   | 4  | 4   | 3   |  |
|                        | Factors that <u>increase</u> the likelihood  | Factors that <u>increase</u> the likelihood   | Factors that <u>increase</u> the likelihood   | Factors that <u>increase</u> the likelihood  | Factors that <u>increase</u> the likelihood   | Factors that <u>increase</u> the likelihood   | Factors that increase the likelihoo  |
|                        | include:   | include:  | include:  |  | include:  | include:  | include:   |
|                        | <del>Speed - 60km/h</del>  | <del>Speed - 60km/h</del>   | <del>Speed - 60km/h</del>   | <del>Speed - 60km/h</del>  | <del>Speed - 60km/h</del>   | <del>Speed - 60km/h</del>   | <del>Speed - 60km/h</del>  |
|                        |  |   |   | Short distance between intersections   | Clearance to traffic lanes less than 1.5  |   |  |
|                        | Multiple lanes of traffic (<3.5m width)  |   | Signalised Intersections with 3-Left-   | and turning movements resulting in   | metres, approximately 1.1m at entry   | No Cycling Facilities - Shared Vehicle  | Downhill approach from both eas  |
|                        | . ,  | No barrier within median  | Turn Slip Lanes   | higher lane changing.  | point to Bell St Bridge (SW corner).  | Lane  | west, loss of control  |
|                        | With land changing across phage  | No partier within median  | Turri cup Lance   | ingher lane changing.  | Minor change in direction / deflection  | Zano  | Week, lees of control  |
|                        |  |   |   |  | on western approach to bridge, and  |   |  |
|                        |  |   |   |  | downhill approaches increase risk of  |   |  |
|                        |  |   | Proximitey of traffic signals may result  |  | vehicle run off road into pedestrian  | Downhill approach from both east and  |  |
|                        | No shoulder provided   |   | in a see-through affect.  | in a see-through affect.   | area.   | west, loss of control   | No Street Lighting along Bridge  |
|                        | No street lighting class Dridge  |   | Chart distance between interceptions  |  | No protection / barrier between   |   |  |
|                        | No street lighting along Bridge<br>(existing lighting has been knocked   |   | Short distance between intersections and turning movements resulting in   |  | pedestrians and vehicles at   |   |  |
|                        | over / removed)  |   |   | Proximitey of traffic signals encourages   | 1.  | No Street Lighting along Bridge   |  |
|                        | over / removed)  |   | riigher lane changing.  | Froximitey of tramic signals encodrages  | High speed slip lane with Zebra   | No Street Lighting along Bridge   |  |
|                        | Minor change in direction / deflection   |   |   |  | crossing set back from Bell Street at   | No treatments to increase visibility of   |  |
|                        | on both approaches to bridge.  |   | Faded line marking  |  | <del>SW corner of bridge.</del>   | cyclists at intersections   |  |
|                        |  |   | 1   |  | _   | -   |  |
| Likelihood Comments:   |  |   |   | Downhill approach from both east and   |   |   |  |
|                        |  |   |   | west, increasing difficulty for  |   |   |  |
|                        |  |   |   | emergency braking in poor conditions   |   |   |  |
|                        | Factors that <u>decrease</u> the likelihood  | Factors that <u>decrease</u> the likelihood   | Factors that <u>decrease</u> the likelihood   |  | Factors that <u>decrease</u> the likelihood   | Factors that <u>decrease</u> the likelihood   | Factors that decrease the likelih  |
|                        | include: Speed likely to be reduced due to   | include: Speed likely to be reduced due to  | include: Speed likely to be reduced due to  | Speed likely to be reduced due to  | include: Speed likely to be reduced due to  | include: Speed likely to be reduced due to  | include: Speed likely to be reduced due  |
|                        | raised safety platform on approach to  | raised safety platform on approach to   | raised safety platform on approach to   | raised safety platform on approach to  | raised safety platform on approach to   | raised safety platform on approach to   | raised safety platform on approa   |
|                        | the Bridge   | the Bridge  | the Bridge  |  | the Bridge  | the Bridge  | the Bridge   |
|                        | ino zinago   | and Emage   | and Emage   | a 2age   | Pedestrian priority crossings (zebra /  | and Dinage  | and analysis   |
|                        | Median provided  | Median provided   | Street Lighting at turning areas  | Street Lighting at turning areas   |   | Street Lighting at turning areas  | Street Lighting at turning areas   |
|                        |  |   |   |  | ,   | Cyclist storage boxes and painted   |  |
|                        |  |   | All movements (except left turns) fully   |  | Street Lighting at turning / crossing   | treatment will improve cyclist visability   |  |
|                        | Line Marking   | Line Marking  | controlled  |  | areas   | throuhg the area  |  |
|                        |  |   | Tighten up slip lanes and providing   | Tighten up slip lanes and providing  |   | Tighten up slip lanes and providing   | Tighten up slip lanes and providi  |
|                        |  |   | raised pedestrian crossing are likely to improve sightlines and reduce speed  | raised pedestrian crossing are likely to   |   | raised pedestrian crossing are likely to improve sightlines and reduce speed  | raised pedestrian crossing are li  |
|                        | Dragon Tooth   | Dragon Tooth  | through intersection  | improve sightlines and reduce speed through intersection   | Dragon Teeth  | through intersection  | improve sightlines and reduce s through intersection   |
|                        | Dragon Teeth   | Dragon Teeth  | tillough intersection   | through intersection   | Tighten up slip lanes and providing   | unough intersection   | tillough intersection  |
|                        |  |   |   |  | raised pedestrian crossing are likely to  |   |  |
|                        |  |   |   |  | improve sightlines and reduce speed   |   |  |
|                        |  |   |   |  | through intersection  |   |  |
|                        |  |   |   |  | Separate protected pedestrian path  |   |  |
|                        |  |   |   |  | will remove the conflcit between  |   |  |
|                        |  |   |   |  | pedestrians and vehicles along the bridge   |   |  |
| ikelihaad Caara: (#/4) | 2.0  | 1.0   |   | 2.0  |   | 2.5   |  |
| ikelihood Score: (#/4) | 20   |   |   |  | 4.4   |   |  |
| , ,                    | The state of the s |   |   |  |   |   |  |
| , ,                    | Factors that increase the severity   | Factors that increase the severity  | Factors that increase the severity  | Factors that <u>increase</u> the severity  | Factors that <u>increase</u> the severity   | Factors that increase the severity  | Factors that increase the sever  |
|                        | Factors that <u>increase</u> the severity include:   | Factors that <u>increase</u> the severity include:  | Factors that <u>increase</u> the severity include:  | Factors that <u>increase</u> the severity include:   | Factors that <u>increase</u> the severity include:  | Factors that <u>increase</u> the severity include:  | Factors that <u>increase</u> the sever include:  |
| , ,                    | Factors that increase the severity   | Factors that increase the severity  | Factors that increase the severity  | Factors that <u>increase</u> the severity include:   | Factors that <u>increase</u> the severity   | Factors that increase the severity  | Factors that increase the sever  |
| , ,                    | Factors that <u>increase</u> the severity include:   | Factors that <u>increase</u> the severity include:  | Factors that <u>increase</u> the severity include:  | Factors that <u>increase</u> the severity include:  Speed - 60km/h   | Factors that <u>increase</u> the severity include:  | Factors that <u>increase</u> the severity include:  | Factors that increase the sever include:  Speed - 60km/h  Shared traffic lanes mean if a ri  |
| , ,                    | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Large fixed unsheilded hazards   | Factors that <u>increase</u> the severity include:  Speed - 60km/h  | Factors that increase the severity include:  Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning  | Factors that <u>increase</u> the severity include:  Speed - 60km/h   | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Downhill approach from both east and  | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Downhill approach from both east and  | Factors that increase the sever include:  Speed - 60km/h  Shared traffic lanes mean if a rifalls, they will slide into vehicles  |
| , ,                    | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Large fixed unsheilded hazards   | Factors that <u>increase</u> the severity include:  | Factors that increase the severity include:  Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning  | Factors that <u>increase</u> the severity include:  Speed - 60km/h   | Factors that <u>increase</u> the severity include:  Speed - 60km/h  | Factors that <u>increase</u> the severity include:  Speed - 60km/h  | Factors that increase the sever include:  Speed - 60km/h  Shared traffic lanes mean if a rifalls, they will slide into vehicles  |
| , ,                    | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  | Factors that increase the severity include:  Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  | Factors that <u>increase</u> the severity include:  Speed - 60km/h   | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Downhill approach from both east and  | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Downhill approach from both east and  | Factors that increase the sever include:  Speed - 60km/h  Shared traffic lanes mean if a rifalls, they will slide into vehicles  |
| , ,                    | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of  | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and  | Factors that increase the severity include:  Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and  | Factors that <u>increase</u> the severity include:  Speed - 60km/h  5% Heavy Vehicles  | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  | Factors that increase the sever include:  Speed - 60km/h  Shared traffic lanes mean if a rifalls, they will slide into vehicles or behind, or nearby traffic lanes   |
| , ,                    | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds   | Factors that increase the severity include:  Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  | Factors that <u>increase</u> the severity include:  Speed - 60km/h  5% Heavy Vehicles  | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Downhill approach from both east and  | Factors that increase the sever include:  Speed - 60km/h  Shared traffic lanes mean if a rid falls, they will slide into vehicles  |
|                        | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and  | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds   | Factors that increase the severity include:  Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and  | Factors that <u>increase</u> the severity include:  Speed - 60km/h  5% Heavy Vehicles  | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  | Factors that increase the sever include:  Speed -60km/h  Shared traffic lanes mean if a rid falls, they will slide into vehicles or behind, or nearby traffic lanes  |
|                        | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds   | Factors that increase the severity include:  Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds   | Factors that <u>increase</u> the severity include:  Speed - 60km/h  5% Heavy Vehicles  | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles   | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles   | Factors that increase the sever include:  Speed - 60km/h  Shared traffic lanes mean if a rifalls, they will slide into vehicles or behind, or nearby traffic lanes  5% Heavy Vehicles  |
|                        | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and  | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity   | Factors that increase the severity include:  Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Factors that decrease the severity   | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity   | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity   | Factors that increase the sever include:  Speed - 60km/h  Shared traffic lanes mean if a rifalls, they will slide into vehicles or behind, or nearby traffic lane:  5% Heavy Vehicles  |
|                        | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds   | Factors that increase the severity include:  Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Factors that decrease the severity   | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles   | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles   | Factors that increase the sever include:  Speed - 60km/h  Shared traffic lanes mean if a rid falls, they will slide into vehicles or behind, or nearby traffic lanes  5% Heavy Vehicles  Factors that decrease the sever   |
|                        | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity   | Factors that increase the severity include:  Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Factors that decrease the severity   | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity   | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity   | Factors that increase the sever include:  Speed - 60km/h  Shared traffic lanes mean if a rid falls, they will slide into vehicles or behind, or nearby traffic lanes  5% Heavy Vehicles  Factors that decrease the sever include:  |
| Severity Comments:     | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | Factors that increase the severity include:  Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | Factors that increase the sever include:  Speed – 60km/h  Shared traffic lanes mean if a ric falls, they will slide into vehicles or behind, or nearby traffic lanes  5% Heavy Vehicles  Factors that decrease the sever include:  Reducing the Speed to 40km/h and times and the introduction of                                      |
|                        | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of raised safety platform on approach to   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of raised safety platform on approach to | Factors that increase the severity include:  Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of raised safety platform on approach to | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of raised safety platform on approach to | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of raised safety platform on approach to | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of raised safety platform on approach to | Factors that increase the severificulde:  Speed – 60km/h  Shared traffic lanes mean if a rid falls, they will slide into vehicles is or behind, or nearby traffic lanes  5% Heavy Vehicles  Factors that decrease the severinclude:  Reducing the Speed to 40km/h a and times and the introduction of raised safety platform on approa |
|                        | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | Factors that increase the severity include:  Speed – 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and west, possible higher speeds  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds  5% Heavy Vehicles  Factors that decrease the severity include:  Reducing the Speed to 40km/h at all and times and the introduction of                                       | Factors that increase the severit include:  Speed – 60km/h  Shared traffic lanes mean if a rid falls, they will slide into vehicles i or behind, or nearby traffic lanes.  5% Heavy Vehicles  Factors that decrease the severi   |

Sheet: Option 4

|                       |                                      |   |  |  |  |  | 1 /0 VEHICLE                             |
|-----------------------|--------------------------------------|---|--|--|--|--|--|
| Crash Type            | Run-off road                         | Head-on                                 | Intersection                             | Other                                    | Pedestrian                               | Cyclist                                  | Motorcyclists                            |
|                       |                                      |   |  |  |  |  |  |
|                       |                                      | Impact speed likely to be low during    |  | Impact speed likely to be low during     |
|                       |                                      | periods due to siganlised intersections | periods due to siganlised intersections  | periods due to siganlised intersections  | periods due to siganlised intersections  | periods due to siganlised intersections  | periods due to siganlised intersections  |
|                       | Median provided                      | on either end of the study area.        | on either end of the study area.         | on either end of the study area.         | on either end of the study area.         | on either end of the study area.         | on either end of the study area.         |
|                       |                                      |   | Tighten up slip lanes and providing      |
|                       |                                      |   | raised pedestrian crossing are likely to |
|                       | Crash Barriers provided on north and |   | improve sightlines and reduce speed      |
|                       | south of bridge                      | Likely crash angle impact               | through intersection                     |
|                       |                                      |   |  |  | Separate protected pedestrian path       |  |  |
|                       |                                      |   |  |  | will remove the conflcit between         |  |  |
|                       |                                      |   |  |  | pedestrians and vehicles along the       |  |  |
|                       |                                      |   |  |  | bridge                                   |  |  |
| Severity Score: (#/4) | 1.0                                  | 2.                                      | 0 2.0                                    | 1.0                                      | 2.0                                      | 3.5                                      | 2.                                       |
| Product (#/64)        | 8                                    |   | 8 16                                     | 8  |  | 26.25                                    | 2  |
|                       |                                      |   |  |  |  | TOTAL                                    | 99.2                                     |

Sheet: Option 5

No Data, assume 1% of AADT

|                         |   |   |  |  |  |  | 1% Vehicle   |
|-------------------------|---|---|--|--|--|--|--|
| Crash Type              | Run-off road  | Head-on   | Intersection   | Other  | Pedestrian   | Cyclist  | Motorcyclists  |
| Evenesius Comments:     |   |   |  |  |  | Unknown - For this purpose of this study, cyclist volimes are assumed to   |  |
| Exposure Comments:      | 47,000 vpd  | 47,000 vpd  | 47,000 vpd   | 47,000 vpd   | 250 across a 6 hour period.  | be beween 50 and 100 per day.  |  |
| Exposure Score: (#/4)   | 17,000 170  | 4 4   | 17,000 174   | 4  | 4  | 3  |  |
| Exposure decier (iii 1) | Factors that increase the likelihood  | Factors that <u>increase</u> the likelihood   | Factors that <u>increase</u> the likelihood  | Factors that <u>increase</u> the likelihood                                    | Factors that increase the likelihood   | Factors that <u>increase</u> the likelihood  | Factors that increase the likelihood   |
|                         | include:  | include:  | include:   | include:   | include:   | include:   | include:   |
|                         | <del>Speed - 60km/h</del>   | <del>Speed - 60km/h</del>   | Speed - 60km/h   | Speed - 60km/h   | <del>Speed - 60km/h</del>  | Speed - 60km/h   | Speed - 60km/h   |
|                         |   |   |  |  |  |  |  |
|                         |   |   |  | Short distance between intersections   | Clearance to traffic lanes less than 1.5   |  |  |
|                         | Multiple lanes of traffic (<3.5m width) with lane changing across bridge  | No beaution within medical  | Signalised Intersections with 3 Left Turn Slip Lanes   | and turning movements resulting in higher lane changing.                       | metres, approximately 1.1m at entry-<br>point to Bell St Bridge (SW corner).   | No Cycling Facilities - Shared Vehicle Lane  | Downhill approach from both east a west, loss of control   |
|                         | with lane changing across bridge  | No barrier within median  | Turr Silp Laries   | riigher lane changing.   | Minor change in direction / deflection   | Lane   | west, loss of control  |
|                         |   |   |  |  | on western approach to bridge, and   |  |  |
|                         |   |   |  |  | downhill approaches increase risk of   |  |  |
|                         |   |   | Proximitey of traffic signals may result   | Proximitey of traffic signals may result                                       | vehicle run off road into pedestrian-  | Downhill approach from both east and   |  |
|                         | No shoulder provided  |   | in a see-through affect.   | in a see-through affect.   | <del>area.</del>   | west, loss of control  | No Street Lighting along Bridge  |
|                         | No start limbia a desa Deidas (suistia  |   | Short distance between intersections   |  | No and diam / basis a batas as   |  |  |
|                         | No street lighting along Bridge (existing<br>lighting has been knocked over /   | 3   | and turning movements resulting in   |  | No protection / barrier between pedestrians and vehicles at  |  |  |
|                         | removed)  |   | higher lane changing.  | Proximitey of traffic signals encourages                                       | intersections  | No Street Lighting along Bridge  |  |
|                         |   |   | I source and a sou | I reximilely of traine eignate encearages                                      | High speed slip lane with Zebra  | The Street Lighting dieng Bridge   |  |
|                         | Minor change in direction / deflection  |   |  |  | crossing set back from Bell Street at  | No treatments to increase visibility of  |  |
|                         | on both approaches to bridge.   |   | Faded line marking   | Lane Widths < 3.5m   | SW corner of bridge.   | cyclists at intersections  |  |
|                         |   |   |  | B 1:11 1 f 1 f 1   |  |  |  |
|                         |   |   |  | Downhill approach from both east and west, increasing difficulty for           |  |  |  |
| Likelihood Comments:    |   |   |  | emergency braking in poor conditions   |  |  |  |
|                         | Factors that <b>decrease</b> the likelihood   | Factors that <b>decrease</b> the likelihood   | Factors that <b>decrease</b> the likelihood  | l l l l l l l l l l l l l l l l l l l  | Factors that <b>decrease</b> the likelihood  | Factors that <b>decrease</b> the likelihood  | Factors that <b>decrease</b> the likelihood  |
|                         | include:  | include:  | include:   | `  | include:   | include:   | include:   |
|                         |   |   |  |  |  |  |  |
|                         | Reducing the Speed to 40km/h at all   | Reducing the Speed to 40km/h at all   | Reducing the Speed to 40km/h at all  | Reducing the Speed to 40km/h at all  | Reducing the Speed to 40km/h at all  | Reducing the Speed to 40km/h at all  | Reducing the Speed to 40km/h at a  |
|                         | and times and the introduction of   | and times and the introduction of   | and times and the introduction of  | and times and the introduction of  | and times and the introduction of  | and times and the introduction of  | and times and the introduction of  |
|                         | raised safety platform on approach to the Bridge will reduce speeds to near   | raised safety platform on approach to the Bridge will reduce speeds to near   | raised safety platform on approach to the Bridge will reduce speeds to near  | raised safety platform on approach to the Bridge will reduce speeds to near    | raised safety platform on approach to the Bridge will reduce speeds to near  | raised safety platform on approach to the Bridge will reduce speeds to near  | raised safety platform on approach the Bridge will reduce speeds to nea  |
|                         | safe Systems speeds (30km/h)  | safe Systems speeds (30km/h)  | safe Systems speeds (30km/h)   | safe Systems speeds (30km/h)   | safe Systems speeds (30km/h)   | safe Systems speeds (30km/h)   | safe Systems speeds (30km/h)   |
|                         |   |   |  |  | Pedestrian priority crossings (zebra /   |  |  |
|                         | Median provided   | Median provided   | Street Lighting at turning areas   | Street Lighting at turning areas   | POS)   | Street Lighting at turning areas   | Street Lighting at turning areas   |
|                         |   |   |  |  |  | Cyclist storage boxes and painted  |  |
|                         | I to Maritima   | List Market   | All movements (except left turns) fully controlled   | l .  | Street Lighting at turning / crossing  | treatment will improve cyclist visability  |  |
|                         | Line Marking  | Line Marking  | Tighten up slip lanes and providing  | Hounds Teeth Tighten up slip lanes and providing                               | areas  | throung the area  Tighten up slip lanes and providing  | Tighten up slip lanes and providing  |
|                         |   |   | raised pedestrian crossing are likely to   | raised pedestrian crossing are likely to                                       |  |  | raised pedestrian crossing are likely  |
|                         |   |   | improve sightlines and reduce speed  | improve sightlines and reduce speed  |  |  | improve sightlines and reduce speed  |
|                         | Dragon Teeth  | Dragon Teeth  | through intersection   |  | Dragon Teeth   | through intersection   | through intersection   |
|                         |   |   |  |  | Tighten up slip lanes and providing  | Separate protected shared path will  |  |
|                         |   |   |  | 1  |  | to remove the conflcit between   |  |
|                         |   |   |  |  | , ,  |  |  |
|                         |   |   |  |  | improve sightlines and reduce speed  | pedestrians and vehicles along the   |  |
|                         |   |   |  |  | , ,  |  |  |
|                         |   |   |  |  | improve sightlines and reduce speed through intersection   | pedestrians and vehicles along the   |  |
|                         |   |   |  |  | improve sightlines and reduce speed through intersection Separate protected pedestrian path will remove the conflict between pedestrians and vehicles along the  | pedestrians and vehicles along the   |  |
|                         |   |   |  |  | improve sightlines and reduce speed through intersection Separate protected pedestrian path will remove the conflict between pedestrians and vehicles along the bridge   | pedestrians and vehicles along the bridge  |  |
| Likelihood Score: (#/4) | 2.0   |   |  |  | improve sightlines and reduce speed through intersection Separate protected pedestrian path will remove the conflict between pedestrians and vehicles along the bridge  1.0  | pedestrians and vehicles along the bridge  |  |
| Likelihood Score: (#/4) | Factors that increase the severity  | Factors that increase the severity  | Factors that increase the severity   | Factors that increase the severity   | improve sightlines and reduce speed through intersection  Separate protected pedestrian path will remove the conflict between pedestrians and vehicles along the bridge  1.0  Factors that increase the severity   | pedestrians and vehicles along the bridge  1.0 Factors that increase the severity  | Factors that <u>increase</u> the severity  |
| Likelihood Score: (#/4) | Factors that <u>increase</u> the severity include:  | Factors that <u>increase</u> the severity include:  | Factors that <u>increase</u> the severity include:   | Factors that <u>increase</u> the severity include:                             | improve sightlines and reduce speed through intersection  Separate protected pedestrian path will remove the conflict between pedestrians and vehicles along the bridge  1.0  Factors that increase the severity include:  | pedestrians and vehicles along the bridge  1.0 Factors that increase the severity include:   | Factors that <u>increase</u> the severity include:   |
| Likelihood Score: (#/4) | Factors that increase the severity  | Factors that increase the severity  | Factors that increase the severity   | Factors that increase the severity   | improve sightlines and reduce speed through intersection  Separate protected pedestrian path will remove the conflict between pedestrians and vehicles along the bridge  1.0  Factors that increase the severity   | pedestrians and vehicles along the bridge  1.0 Factors that increase the severity  | Factors that increase the severity   |
| Likelihood Score: (#/4) | Factors that <u>increase</u> the severity include:  | Factors that <u>increase</u> the severity include:  | Factors that <u>increase</u> the severity include:  Speed - 60km/h   | Factors that <u>increase</u> the severity include:  Speed - 60km/h             | improve sightlines and reduce speed through intersection  Separate protected pedestrian path will remove the conflict between pedestrians and vehicles along the bridge  1.0  Factors that increase the severity include:  | pedestrians and vehicles along the bridge  1.0 Factors that increase the severity include:   | Factors that <u>increase</u> the severity include:   |
| Likelihood Score: (#/4) | Factors that <u>increase</u> the severity include:  | Factors that <u>increase</u> the severity include:  | Factors that <u>increase</u> the severity include:   | Factors that <u>increase</u> the severity include:  Speed - 60km/h             | improve sightlines and reduce speed through intersection  Separate protected pedestrian path will remove the conflict between pedestrians and vehicles along the bridge  1.0  Factors that increase the severity include:  Speed – 60km/h  | pedestrians and vehicles along the bridge  1.0 Factors that increase the severity include: Speed - 60km/h  | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider   |
| Likelihood Score: (#/4) | Factors that <u>increase</u> the severity include:  Speed - 60km/h  | Factors that <u>increase</u> the severity include:  | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Impact angles are high - particularly for  | Factors that <u>increase</u> the severity include:  Speed - 60km/h             | improve sightlines and reduce speed through intersection  Separate protected pedestrian path will remove the conflict between pedestrians and vehicles along the bridge  1.0  Factors that increase the severity include:  Speed – 60km/h  | pedestrians and vehicles along the bridge  1.0 Factors that increase the severity include: Speed 60km/h  Downhill approach from both east and                                | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider   |
| Likelihood Score: (#/4) | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  | Factors that increase the severity include:  Speed - 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements   | Factors that increase the severity include:  Speed - 60km/h                    | improve sightlines and reduce speed through intersection  Separate protected pedestrian path will remove the conflict between pedestrians and vehicles along the bridge  1.0  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and                              | pedestrians and vehicles along the bridge  1.0 Factors that increase the severity include: Speed 60km/h  Downhill approach from both east and                                | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infro                                    |
| Likelihood Score: (#/4) | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of  | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and                              | Factors that increase the severity include:  Speed - 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles | improve sightlines and reduce speed through intersection  Separate protected pedestrian path will remove the conflict between pedestrians and vehicles along the bridge  1.0  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds | pedestrians and vehicles along the bridge  1.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infroor behind, or nearby traffic lanes. |
| Likelihood Score: (#/4) | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.                                       | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds | Factors that increase the severity include:  Speed - 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles | improve sightlines and reduce speed through intersection  Separate protected pedestrian path will remove the conflict between pedestrians and vehicles along the bridge  1.0  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds | pedestrians and vehicles along the bridge  1.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds | Factors that <u>increase</u> the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infro                                    |
| Likelihood Score: (#/4) | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.  Downhill approach from both east and | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds | Factors that increase the severity include:  Speed - 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles | improve sightlines and reduce speed through intersection  Separate protected pedestrian path will remove the conflict between pedestrians and vehicles along the bridge  1.0  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds | pedestrians and vehicles along the bridge  1.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds | Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infroor behind, or nearby traffic lanes.        |
| Likelihood Score: (#/4) | Factors that increase the severity include:  Speed - 60km/h  Large fixed unsheilded hazards throughout the study area.  Fixed barrier >0.2 metres from edge of traffic lane with semi-mountable kerb.                                       | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles  Downhill approach from both east and west, possible higher speeds | Factors that increase the severity include:  Speed - 60km/h  Impact angles are high - particularly for intersection slip lanes and right turning vehciles vs through movements  Downhill approach from both east and   | Factors that increase the severity include:  Speed - 60km/h  5% Heavy Vehicles | improve sightlines and reduce speed through intersection  Separate protected pedestrian path will remove the conflict between pedestrians and vehicles along the bridge  1.0  Factors that increase the severity include:  Speed - 60km/h  Downhill approach from both east and west, possible higher speeds | pedestrians and vehicles along the bridge  1.0 Factors that increase the severity include: Speed - 60km/h  Downhill approach from both east and west, possible higher speeds | Factors that increase the severity include:  Speed - 60km/h  Shared traffic lanes mean if a rider falls, they will slide into vehicles infroor behind, or nearby traffic lanes.        |

Sheet: Option 5

|                       |                                       |   |   |   |  |   | 176 Verlicie   |
|-----------------------|---------------------------------------|---|---|---|--|---|--|
| Crash Type            | Run-off road                          | Head-on   | Intersection  | Other   | Pedestrian   | Cyclist   | Motorcyclists  |
| Severity Comments:    | Speed likely to be reduced due to     | Speed likely to be reduced due to   | Speed likely to be reduced due to   | Speed likely to be reduced due to   | Speed likely to be reduced due to  | Speed likely to be reduced due to   | Speed likely to be reduced due to  |
|                       | raised safety platform on approach to | raised safety platform on approach to   | raised safety platform on approach to   | raised safety platform on approach to   | raised safety platform on approach to  | raised safety platform on approach to   | raised safety platform on approach to  |
|                       | the Bridge                            | the Bridge  | the Bridge  | the Bridge  | the Bridge   | the Bridge  | the Bridge   |
|                       | Median provided                       | Impact speed likely to be low during periods due to siganlised intersections on either end of the study area. | Impact speed likely to be low during periods due to siganlised intersections on either end of the study area. | Impact speed likely to be low during periods due to siganlised intersections on either end of the study area. | l.   | Impact speed likely to be low during periods due to siganlised intersections on either end of the study area. | Impact speed likely to be low during periods due to siganlised intersection on either end of the study area. |
|                       |                                       |   | Tighten up slip lanes and providing raised pedestrian crossing are likely to                                  | Tighten up slip lanes and providing raised pedestrian crossing are likely to                                  | Tighten up slip lanes and providing raised pedestrian crossing are likely to | Tighten up slip lanes and providing raised pedestrian crossing are likely to                                  | Tighten up slip lanes and providing raised pedestrian crossing are likely                                    |
|                       | Crash Barriers provided on north and  |   | improve sightlines and reduce speed   | improve sightlines and reduce speed   | improve sightlines and reduce speed  | improve sightlines and reduce speed   | improve sightlines and reduce spee   |
|                       | south of bridge                       | Likely crash angle impact   | through intersection  | through intersection  | through intersection   | through intersection  | through intersection   |
|                       |                                       |   |   |   | Separate protected pedestrian path will                                      |   |  |
|                       |                                       |   |   |   | remove the conflcit between  |   |  |
|                       |                                       |   |   |   | pedestrians and vehicles along the   |   |  |
|                       |                                       |   |   |   | bridge   |   |  |
| Severity Score: (#/4) | 1.0                                   | 2.0   | 2.0   | 1.0   | 2.0  | 2.0   |  |
| Product (#/64)        | 8                                     | 8   | 16  | 8   | 8  | 6   | 6  |
|                       |                                       |   |   |   |  | TOTAL   |  |