

08 July 2009

The Chairman and Councillors
Infrastructure Committee

2008 CRASH REDUCTION STUDY

1. Reason for report

- 1.1. To agree outcomes from the 2008 Crash Reduction Study.

2. Background

- 2.1. Crash reduction studies are generally carried out every three years. The last one was undertaken in 2004/05. Crash reduction studies are 75% funded by the New Zealand Transport Agency.
- 2.2. Traffic Design Group undertook the latest study in November 2008. The objective of the study was to evaluate the causes of crashes at locations where there have been a high incidence of accidents in the last 5 years. The study identified low cost solutions that will eliminate or reduce the patterns of crashes and improve road safety. A copy of the Traffic Design Group report '2008 Crash Reduction Study' is provided in the Councillors lounge (RAD 742399). Figures provided as part of the study are provided in attachment 1.
- 2.3. The main contributing factors to crashes in the Nelson region were:
- Poor observation
 - Failure to give way
 - Crossing / turning
 - Rear end
 - Collisions with cyclists and motorcyclists
- Approx 80% of all crashes occurred at intersections.
- 2.4. As part of the study Traffic Design Group investigated crash data for the Nelson urban area in the last 5 years (2003-2007). The following ten intersections were identified as having an accident rate above the recognised threshold of 3 injury accidents or 10 accidents in total. These sites have been ranked in accordance to the social cost of the road crashes, as shown in Table 1 below.

Rank	Location	Accident type				Total	Cost (\$M)
		Fatal	Serious	Minor	Non Injury		
1	Waimea Road / Motueka Street	0	1	15	16	32	1.91
2	Haven Road / Halifax Street	0	2	5	8	15	1.74
3	Main Road Stoke / Annesbrook Drive	0	2	5	8	15	1.74
4	Main Road Stoke / Saxton Road	0	2	2	8	12	1.50
5	Bridge Street / Trafalgar Street	0	2	2	4	8	1.49
6	Waimea / Market / Boundary Road	0	0	9	5	14	0.74
7	Halifax Street / Paru Paru Road	0	0	6	8	14	0.50
8	Nile Street / Tasman Street	0	0	5	6	11	0.42
9	Waimea Road / Rutherford Street	0	0	5	3	8	0.41
10	Main Road Stoke / Songer Street	0	0	4	7	11	0.34

Table 1 Nelson's top 10 accident locations, in terms of social cost

2.5. Of the ten intersections, four have recently had improvement works completed:

- Main Road Stoke / Saxton Road (4) - roundabout installed
- Waimea Road / Rutherford Street (9) - traffic islands installed
- Main Road Stoke / Annesbrook Drive (3) - cycle and pedestrian safety improvements installed
- Main Road Stoke / Songer Street (10) recently had signal phasing adjusted.
- Halifax Street / Paru Paru Road (7) has improvements scheduled in the Central City Strategy and Bridge Street / Trafalgar Street (5) has had no recorded accidents since 2004, and improvements have been proposed as part of the Central City Strategy.

2.6 This report presents the outcomes of the study for the remaining intersections (shaded in the table above)

3. Consultation

3.1. Public Consultation

3.1.1. No public consultation has been undertaken at this preliminary stage. Once final designs are complete and approved consultation will be undertaken as required.

3.2. Iwi and Maori Consultation

3.2.1. No public consultation has been undertaken at this preliminary stage.

4. Funding

4.1. Funds will be allocated from within existing subsidised minor improvements and cycleway budgets. Funding for Waimea / Motueka intersection and Waimea / Market / Boundary intersection is identified in the 2009-19 Community Plan.

5. Views and preferences of interested or affected persons

- 5.1. No discussions have been undertaken with affected or interested parties, however because these projects are city-wide and in several different locations, many road users will be affected e.g. cyclists, pedestrians, school children, private motorists, trucking companies etc.

6. Significance of Decision

- 6.1. This is not considered a significant decision in terms of the Council's Significance Policy but is significant to those affected by the projects.

7. Relevant Council policies

- 7.1. These improvements are consistent with Council roading policies, the Road Safety Action Plan and Pedestrian and Cycling strategies.

7.2. Consideration of effects on Council policies

- 7.2.1. The effect of the Waimea Road intersection improvements on Council's strategic direction for the city's arterial routes is discussed in report (RAD 797883).

7.3. Sustainability Policy

- 7.3.1. Options considered align with the sustainability policy as they improve safety and encourage use by cyclists and pedestrians. They also improve traffic flow thus reducing vehicle emissions.

8. Waimea Road / Boundary Road / Market Road Intersection options

The intersection consists of a "staggered tee" with the side roads off Market Road and Boundary Road controlled by Give Way. Each intersection has line marked seagull islands on Waimea Road to accommodate right turning traffic from the side roads. Boundary Road is classified as a "local" road, Market Road is a "collector" and Waimea Road, an "arterial". Waimea Road has an average annual daily total of approx 25,000 vehicles per day. The crash history shows that there were 13 collisions, nine involving injury, in the past 5 years. Almost half involved failure to give way. At Market Road there are a high number of crossing / turning crashes often involving cyclists. The existing layout is shown in Figure 1.

8.1. Option A

Re-paint islands, traffic lanes and cycle lanes. Improve street lighting and trim vegetation as shown in figure 2.

Cost estimate \$19,000. Benefit / cost ratio 2.7.

(i) Advantages

- Is low cost,
- Improves visibility by trimming vegetation and upgrading signage,
- Improves safety for cyclists by marking the cycle lane (although cycle numbers are expected to reduce with the sealing of the railway reserve).

(ii) Disadvantages

- Does not provide traffic islands to separate traffic movements so good judgement skill required by drivers.

8.2. Option B

Close Boundary Road, adjust traffic lanes and improve lighting and signage as shown in figure 3.

Cost estimate \$81,000. Benefit / cost ratio 2.6.

(i) Advantages

- Improves visibility by trimming vegetation and upgrading signage,
- Improves safety for pedestrians,
- Improves traffic flows by physically defining lanes using traffic islands,

(ii) Disadvantages

- Provides only minor improvements for cyclists,
- The closure of Boundary Road will increase traffic at other intersections along Waimea Road and increase travel distances for local residents on Boundary Road and Kawai and Tipahi Streets heading south.

8.3. Staff Recommendation

8.3.1 Option A is the preferred option at this intersection in the short term. However a further option of signalising the intersection has been modelled as part of the Waimea Rd modelling project (refer RAD797883). The modelling shows that the signalising option will improve safety and congestion at the intersection. If longer term solutions are required to improve safety at this intersection then signalising the intersection has greater benefits over option B proposed in this study.

9. Waimea Road / Motueka Street Intersection option

This is a busy crossroads intersection controlled by Give Ways. Motueka Street is classified as a “collector” road. Waimea Road is classified as an “arterial” road. It is a heavily trafficked intersection with 33 reported crashes in the last 5 years, including 2 serious. Over half the accidents were caused by vehicles turning right from Motueka Street colliding with northbound vehicles on Waimea Road. Average annual daily total for this intersection is 25,000 vehicles per day. The existing layout is shown in figure 4.

9.1. Option A

Install partial signalisation, construct traffic islands and paint road markings, including cycle lane as shown in figure 5.

Cost estimate \$185,000. Benefit / cost ratio 11.0.

(i) Advantages

- Will reduce accidents and improve flows by giving vehicles dedicated turning movements,
- Will separate lanes with physical traffic islands,
- Creates lanes for cyclists and a partial crossing phase for pedestrians,

(ii) Disadvantages

- Will prevent right turns out of Motueka Street east,
- Waimea Road traffic modelling implies single lane entry to a controlled intersection on Waimea Road will increase congestion.

9.2. Staff Recommendation

- 9.2.1 The report acknowledges that there are no low cost safety improvements that would address the existing safety issues at this intersection, and, in the absence of modelling, proposed option A. Further options have been investigated as part of the Waimea Rd modelling project and it is recommended that more detailed information and outcomes be considered as part of that report.

10. Haven Road / Halifax Street Intersection options

This is a ‘T’ intersection controlled by a small roundabout with splitter islands. Halifax Street is classified as an “arterial” road, with an average annual daily total of 12,000 vehicles per day and links with Rutherford Street. Haven Road is classified as an “arterial” road to the north of the intersection and a “principal” road to the south. The average annual daily total is approximately 13,000 vehicles per day. A total of 18 crashes were reported in the last 5 years, including 2 serious. The majority of accidents were caused by southbound vehicles failing to give way. Vehicle speeds are high through the intersection due to lack of deflection caused by the small size of the central island. Five crashes involved cyclists, the majority of these approaching the intersection from the north on Haven Road. The existing layout is shown in figure 6.

10.1. Option A

Reconstruct roundabout island in an oval shape and increase its size, remark some traffic lanes as shown in figure 7.

Cost estimate \$20,000. Benefit / cost ratio 6.2.

(i) Advantages

- Is the cheapest option,
- Provides good deflection for traffic on Halifax Street,

(ii) Disadvantages

- Does not improve conditions for cyclists,
- Does not significantly improve vehicle deflections on Haven Road, therefore cannot expect significant reduction in vehicle speeds.

10.2. Option B

Reconstruct the roundabout island in an oval shape and increase its size, extend the size of the splitter islands, relocate traffic lanes and mark cycle lanes as shown in figure 8.

Cost estimate \$59,000. Benefit / cost ratio 4.2.

(i) Advantages

- Has a relatively low cost,
- Will increase the deflection on Haven Road and Halifax Street, by realignment of the traffic lanes,
- Does not require any Anzac Park land (which is on road reserve),
- Will improve safety for cyclists by improving cycle lanes.

(ii) Disadvantages

- Requires reconstruction of kerbs and islands,
- Has less deflection than Option C.

10.3. Option C

Relocate the centre of the intersection approximately 10m to the south east. Construct a large circular roundabout island and relocate the cycle lanes as shown in figure 9.

Cost estimate \$112,000. Benefit / cost ratio 6.7.

(i) Advantages

- Will improve cycle safety by the relocation and remarking of the cycle lanes,
- Will reduce traffic speed because the realignment of traffic lanes gives good deflection,
- Improves visibility.

(ii) Disadvantages

- Requires that a 3 to 4m wide strip of road reserve land be utilised (currently part of Anzac Park),
- May require reconfiguration for future traffic growth.

10.4. Option D

Replace roundabout with a signalised T intersection.

(i) Advantages

- Will improve cycle and pedestrian safety through separate phasing,
- Will reduce traffic speed,

(ii) Disadvantages

- Will slow down traffic
- Will have an increased construction cost.

10.5. Staff Recommendation

10.4.1 The report recommends the low cost options although funding for this would be from the already over subscribed minor improvements budget. It is considered that this intersection may have a change in traffic characteristics depending on the outcome of the arterial routes study and as such it is recommended that any decision on this intersection is postponed until completion of the study.

11. Nile Street / Tasman Street Intersection option

This is a crossroads intersection controlled by a roundabout with small splitter islands. Nile Street is classified as a “collector” road and provides a link between the Maitai Valley and the central city. Average Annual Daily Total is approximately 4,500 vehicles per day. Tasman Street is classified as a “collector” road to the south of the intersection and a “local” road to the north. It provides a link between the Brook Valley and the central city. Average Annual Daily Total is approximately 3,500 vehicles per day. The crash history shows that there were 12 collisions, five involving injury in the past 5 years. Observations show that speeds through the intersection are high, especially vehicles travelling straight through, east to west on Nile Street. The primary cause of the excessive speed is minimal deflection at the roundabout. The existing layout is shown in figure 10.

11.1. Option A

Install new traffic islands, widen existing islands and roundabout to increase deflections on Nile Street. Upgrade streetlights and signage. Improve road markings and paint traffic islands and remove Plane tree by 117 Nile Street as shown in figure 11.

Cost estimate \$61,000. Benefit / cost ratio 3.4.

(i) Advantages

- Will reduce speeds at roundabout because the traffic island modifications will increase deflection for through traffic on Nile Street,
- Will improve the crossing points for pedestrians on Nile Street,
- Will improve the visibility at night with new signs and reflective paint.

(ii) Disadvantages

- Will decrease the turning circle for large trucks who will find the intersection tighter to negotiate,
- Will result in the loss of a large Plane tree by 117 Nile Street,
- This is a moderately expensive option with widening of the centre island and the creation of smaller traffic islands.

11.2. Staff Recommendation

11.2.1 This was the only option offered by the review team. By enlarging the roundabout and installing traffic islands, vehicle deflection will increase, thus slowing traffic moving east –west on Nile Street.

12. Delegations Register reference

12.1. The Infrastructure Committee has delegated authority to carry out activities within its functions.

13. Recommendation

THAT the report is received and the safety issues are noted,

AND THAT intersection safety improvements at Waimea Road / Boundary Road / Market Road and Waimea Road / Motueka Street are considered as part of the Waimea Road modelling options,

AND THAT intersection safety improvements at Haven Road / Halifax Street intersection be postponed until decisions are made on the arterial traffic study,

AND THAT the intersection safety improvements proposed for the Nile Street / Tasman Street intersection are prioritised and funded through the minor improvements budget.

Keith Marshall
Chief Executive

LJD: AJ