

I hereby give notice that an ordinary meeting of the Engineering Services Committee will be held on:

**Date:** Thursday 2 May 2013  
**Time:** 9.30 am  
**Meeting Room:** Tasman Council Chamber  
**Venue:** 189 Queen Street  
 Richmond

## Engineering Services Committee ATTACHMENTS

### ATTACHMENTS UNDER SEPARATE COVER

ITEM	PAGE
<b>8.2 Moutere Highway/Waimea West Road/Golden Hills Road Safety Improvements</b>	
1. Appendix 1 - Police Traffic Investigation Report.....	5
2. Appendix 2 - Coroner's Report.....	79
3. Appendix 3 - Social Cost Data .....	83
4. Appendix 4 - Safety Audit and Decision Tracking Form .....	85
5. Appendix 5 - Proposed Layout Plan.....	137
6. Appendix 6 - Road Transport Association Correspondence.....	139
<b>8.3 Procurement Strategy 2010 - Professional Services Amendments</b>	
1. Appendix 1 - Procurement Strategy - Tracked Changes .....	149
<b>8.4 Tasman's Great Taste Trail - Mapua to Motueka Route Options Review</b>	
1. Appendix 1 - Nelson TAsman Cycle Trails Trust "Tasman's Great Taste Trail Mapua to Motueka Review" .....	189
<b>8.5 Action Sheet</b>	
1. Appendix 1 - Action List .....	213
<b>8.6 Jackett Island Interim Works Action Plan Update</b>	
1. Appendix 1 - Survey profiles of Jackett Island foreshore.....	215
2. Appendix 2 - Monitoring photographs of the Jackett Island foreshore .....	217

**8.7 Jackett Island Erosion Problem - Long Term Solution Project Update**

- 1. Appendix 1 - Report on Motueka spit survey..... 219

**8.10 Joint Waste Management with Nelson City Council - Update**

- 1. Minutes of Joint Waste Working Party Meeting 18 April 2013 ..... 221

**8.12 Engineering Reorganisation**

- 1. Appendix 1 - Key Performance Indicators ..... 227







FILE 2851  
12 JUL 2011  
TASMAN

# MEMORANDUM

TO: Engineering Manager, Tasman District Council

FROM: Insp. J. Richardson  
Tasman District RPM

DATE: 08/07/11

SUBJECT: Fatal Crash 29/05/11 Moutere Highway/Golden Hills Road

Attached is the crash analyst report for the above fatal crash.

In the report he has made some recommendations for you to consider in relation to the intersection involved.

I would appreciate it if you could keep me updated as to the progress of this matter.

A copy has been sent to the NZTA for their information.

For your information and further action as necessary.

INSP JENNI RICHARDSON  
ROAD POLICING MANAGER  
TASMAN POLICE DISTRICT

J:\road policing\generahp\fatal\report to road controlling authority.doc

02/7/11









### TRAFFIC CRASH REPORT

Page 1      Send what to      Land Transport New Zealand Regional Office      POL 555 07/07

1 Local Body: **TASMAN**      28 11717      Date: 09 : 04 : 08      Crash time: 1240

Locality or Urb: **Opake**      Crash road: **Moutere Highway**      Side road: **Golden Hills Road**      GPS: \_\_\_\_\_

Crash type:  Serious injury crash       Minor injury crash       Non-injury crash

Officer arrival time: **1250**      Didn't attend:       CODE: **1V**

SCNSTN SECTOR CODE: **R08140**      Where Stationed: **R06**

Reporting Member Initials/Reg No.: **PWD172**

3 CHECKED BY: \_\_\_\_\_      Date: \_\_\_\_\_      Initials: \_\_\_\_\_      Reg No: \_\_\_\_\_      Signature: \_\_\_\_\_      Date: \_\_\_\_\_

4 VEHICLE 1 Reg No: **009697**      T.S.L. No: \_\_\_\_\_      Owns veh:  Not owned:  Rental:  Unknown:

Category:  Caravan       Vehicle       Truck       Bus       School bus       Motor cycle       Scooter       Other

5 DRIVER 1 Name: \_\_\_\_\_      Address: **Main Road Spray Grove WAKESFIELD**      Phone Nos: **0212425386**

DOB: **17 : 08 : 75**      Sex:  Male       Female      Ethnicity:  European       Māori       Samoan       Asian       Tongan       Cook Islands       Niuean       Tokelauan       Other Pacific Island       Asian       Other

Occupation: **U/E**      Licence No: **BR 053206**      Status:  Learner       Restricted       Full       Never lic'd       For Bidden

class:  Disqualified       Overseas       UnKnown       Expired      Driver Country of Origin: \_\_\_\_\_      Driver Status:  Student       Immigrant       Visitor       UnKnown

Restraint worn:  Underside      Yes:  No:  Not Avail.      Injuries: (in detail) **Laceration to head**

Hospitalised at: **Nelson**      Alcohol:  Unknown       Not suspected       Suspected      Screen:  +       -      Blood:  +       -

6 DRIVER INTERVIEW NOTES:  
 I was following the Log Truck. I thought it was indicating a left turn into Waimea West. I started to pass and about when I got beside the Cab it started to turn right into Moutere Highway. I accelerated to try to clear it but the cab hit the back of my car and after that I lost control.  
 (Taken to A&E.)

7 ION/TON Nos: **361312**      OFFENCE/PREC CODE: **D502**      DRIVER: **McCleery**

ION/TON Nos: \_\_\_\_\_      OFFENCE/PREC CODE: \_\_\_\_\_      DRIVER: \_\_\_\_\_

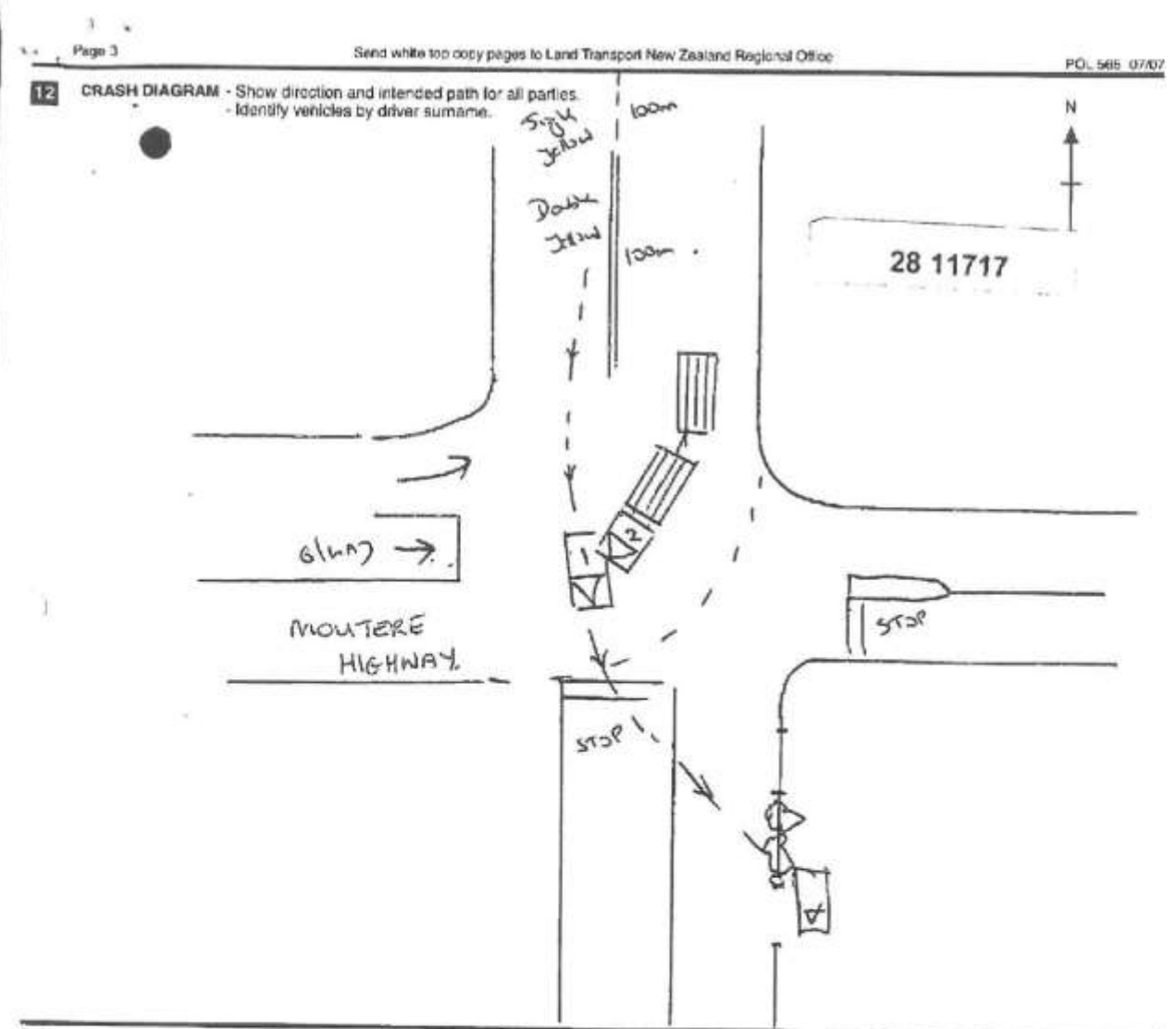
CARD EVENT No. **P001031288**      DOCLOC CASE No. **080418/1610**      OCCURRENCE ID: \_\_\_\_\_

Land Transport NZ COPY









**13 WHAT HAPPENED**

Vehicle 2 overtaking Loden Logtruck & trailer into intersection & over no passing lines. Logtruck Cab strikes left rear of car (overtaking) and car loses control and crashes into bank landing on roof.

**14 OBJECTS HIT:** CAR U TRUCK U BANK

OBU	MYMT	1	D	S	2	3	4	FAC	FAC	FAC
		G	E	C	S	2	T			

Land Transport NZ COPY



**15 WHY CRASH HAPPENED**  
 Driver factors: (Including, but not limited to, Fatigue, Distraction, Inexperience, etc.)  
 "Stupidity" 28 11717  
 believed truck indicated left but still overtook into an intersection and over yellow lines.  
 Road factors: Nil  
 Vehicle factors: Nil  
 Other factors: Nil

**16 DETAILS**  
 Speed limit: 100, Advisory speed: [ ], Temp. speed limit: [ ]  
 ROAD: 1-way, 2-way, Off rd. TOTAL LANES: 0, 1, 2, 3, 4, 5, 6  
 CURVATURE: (S) Right, Easy, Moderate, Severe  
 SURFACE: Sealed, Unsealed  
 SURFACE: Wet, Dry, Ice or snow  
 LIGHT: Bright sun, Overcast, Twilight, Dark  
 STREET LIGHTS: On, Off, None  
 MARKINGS: Ped. Xing, Raised Isl, Paint Isl, No Para Line, Centre Line, Nil  
 TYPE: Bridge, Mway Ramp, Rly Xing, Fly rd, Hit rd.  
 JUNCTION: Diverging, Roundabout, X, T, Y, Merging  
 CONTROL: Traffic signals, Signs, School Patrol, Nil  
 WEATHER: Fine, Mist/fog, Lt rain, Hvy rain, Snow, Frost, Six wind

**17 OTHER PERSONS INVOLVED EXCLUDING DRIVERS**

Foranames	Surname	Cyclist, Pedestrian, Passenger with...	Age	Sex	Ethnicity	Injury	LTNZ Use
1. Name:							Deceased Office Use
Address:				M		Fatal Serious Minor Nil	
Injuries:			yes	F			
2. Name:				M		Fatal Serious Minor Nil	
Address:				F			
Injuries:			yes	F			
3. Name:				M		Fatal Serious Minor Nil	
Address:				F			
Injuries:			yes	F			
4. Name:				M		Fatal Serious Minor Nil	
Address:				F			
Injuries:			yes	F			
5. Name:				M		Fatal Serious Minor Nil	
Address:				F			
Injuries:			yes	F			
6. Name:				M		Fatal Serious Minor Nil	
Address:				F			
Injuries:			yes	F			

European, NZ Maori, Samoan, Fijian, Tongan, Cook Islander, Niuean, Tokelauan, Other Pacific Island, Asian, Other (Specify)





18 INDEPENDENT WITNESSES OR OTHER NOTES

Name: [Redacted] Forenames: [Redacted] Surname: [Redacted]  
 Residential Address: [Redacted] Phone: [Redacted]  
 Business Address: Waimea Nurseries  
 Golden Hills Road. Phone: 0274 201280  
 didn't see much but car travelling really fast  
 passing log truck right at corner.  
 Signature: \_\_\_\_\_

Name: \_\_\_\_\_ Forenames: \_\_\_\_\_ Surname: \_\_\_\_\_  
 Residential Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Business Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Signature: \_\_\_\_\_

Name: \_\_\_\_\_ Forenames: \_\_\_\_\_ Surname: \_\_\_\_\_  
 Residential Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Business Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Signature: \_\_\_\_\_

19 Next of kin notified (when, where, by whom)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

20 SPECIAL PROJECTS: Office Use  
 1. Project Name: \_\_\_\_\_   
 2. Project Name: \_\_\_\_\_

Land Transport NZ COPY



Page 1 Send white top 28 11911 Regional Office POL 505 0712

1 Local Body: Tasman Crash date: 06.05.08 Crash time: 1433

Locality or suburb: Appleby Crash road: Moitere Highway Side road: Golden Hills Road

Crash road: Appleby Moitere Highway Side road: Golden Hills Road

2 Crash date: 06.05.08 Crash time: 1433

Officer arrival time: 1450 Didn't attend

SCNSTN SECTOR CODE: R0145 Where Stationed: R0145

Reporting Member initials/Reg No.: GRC721

3 CHECKED BY: Rank/Name: \_\_\_\_\_ Date: \_\_\_\_\_

4 VEHICLE 1 Reg No: PS3703 T.S.L. No: \_\_\_\_\_

Vehicle type: Motorcycle Make & Model: Toyota Hiace Year: 2000 CC rating: 2.4 WOF or COF: No Expiry date: 15.10.08

5 DRIVER 1 Name: \_\_\_\_\_ Address: 436 Moitere Highway Redwood Valley, R01 Phone No: 0273531803 DOB: 24.2.76 Ethnicity: European Licence No: B5362803 Licence status: Restricted Hospitalised at: Nelson

6 DRIVER INTERVIEW NOTES: I just misjudged him. He was going pretty quick.

7 ION/TON Nos: \_\_\_\_\_ OFFENCE/PREC CODE: \_\_\_\_\_ DRIVER: \_\_\_\_\_

CARD EVENT No. 1188052 OCCLOC CASE No. \_\_\_\_\_ OCCURRENCE ID \_\_\_\_\_

Land Transport NZ COPY



Page 2 Send white top copy pages to Land Transport New Zealand Regional Office PDL 565 07/07

**8 VEHICLE 2** Reg No. YW8360 T.S.L. No. 28 11911

Category:  SUV/4x4  Truck  Van  Motorcycle  Scooter  Moped

Towing:  Bug  Custom  Trailer  Semi-trailer  Annex  Rein.  Other

Make & Model: Mazda BOUNTY

Year: 2000 CC rating: \_\_\_\_\_

WOF or COF:  Yes  No Expiry date: 13:9:08

Speed before crash: 80-90 km/h  Parked  Reversing  Stationary

Too fast for conditions:  Yes  No  Uncertain

Total passengers: Front: \_\_\_\_\_ Rear: \_\_\_\_\_ Other: \_\_\_\_\_ (Not Drivers)

Damage severity:  Fire  Overturn  Expensive  Moderate  Nil

**DAMAGE LOCATION**

Diagram labels: F, D, P, R, 1, 2, 3, 4, 5, T

Driver's License: BW 302 816

Occupation: \_\_\_\_\_

License status:  Learner  Restricted  Full  Never held  Forfeited

Wrong class:  Discarded:  Overseas:  In Known:  Expired:

If driver holds Overseas licence: \_\_\_\_\_

Overseas Driver Country of Origin: \_\_\_\_\_

Overseas Driver Status:  Student  Immigrant  Visitor  Unknown

Restraint worn:  Uncertain  Yes  No  Not Avail.

Injuries: (in detail) \_\_\_\_\_

Fatal:  Serious:   Minor  Nil

Hospitalised at: \_\_\_\_\_

Alcohol:  Unknown  No suspected  Suspected  Screen  Evidential  Blood

Screen:  +  -

**10 DRIVER INTERVIEW NOTES:**

Going down this way (Moutee Highway) going to Golden Hills Road. Got to corner and van came from my right, failed to give way. I braked and just clipped the rear of the van, ended here.

Driver 2 signature

**11** If there is no further Police action, please state reason(s):

.....

.....

.....

Land Transport NZ COPY



Page 2 Send white top copy pages to Land Transport New Zealand Regional Office POL 505 0707

**12 CRASH DIAGRAM** - Show direction and intended path for all parties.  
Identify vehicles by driver surname.

**13 WHAT HAPPENED** ~~to~~ failed to give way

**14 OBJECTS HIT:** Van.

OSJ	MVMT	1	D	S	2	3	4	FAC	FAC	FAC
		H	A	U	N	I	V			

Land Transport NZ COPY





**15 WHY CRASH HAPPENED**  
 Driver factors: (Including, but not limited to, Fatigue, Distraction, Inexperience, etc)  
 Believed he could beat other vehicle  
 28 11911  
 Road factors: N.I.  
 Vehicle factors: N.I.  
 Other factors:

**16 DETAILS**  
 Speed limit: 100, Advisory speed: [ ], Temp. speed limit: [ ]  
 ROAD: 1-way,  2-way, Off rd. TOTAL LANES: 0 1  3 4 5 6  
 CURVATURE:  Straight, Easy, Moderate, Severe  
 MARKINGS:  Pav. Xing,  Road side,  Paint laid, No Pass Line,  ~~Other~~, Nil  
 SURFACE:  Sealed, Unsealed  
 TYPE:  Bridge,  M-way Ramp,  Fly Xing,  ~~Other~~, Hill rd.  
 SURFACE: Wet,  Ice or snow  
 JUNCTION:  Driveway,  Roundabout, T, Y, Multilane  
 LIGHT:  Day,  Overcast, Twilight, Dark  
 CONTROL:  Traffic signals,  Stop,  ~~Other~~,  Sign,  ~~Other~~, Nil  
 STREET LIGHTS:  On,  Off,  ~~Other~~  
 WEATHER:  Fine, Mist/fog, L: rain, H:vy rain, Snow, Frost, Str wind

**17 OTHER PERSONS INVOLVED EXCLUDING DRIVERS**

Forenames	Surname	Cyclist, Pedestrian, Passenger with...	Age	Sex	Ethnicity	Injury	LTNZ Use
							Causation
1. Name:							
Address:							
Injuries:							
2. Name:							
Address:							
Injuries:							
3. Name:							
Address:							
Injuries:							
4. Name:							
Address:							
Injuries:							
5. Name:							
Address:							
Injuries:							
6. Name:							
Address:							
Injuries:							

European, NZ Maori, Samoan, Fijian, Tongan, Cook Islander, Niuean, Tokelauan, Other Pacific Island, Asian, Other (Specify)

Land Transport NZ COPY



2811911

18 INDEPENDENT WITNESSES OR OTHER NOTES

Name: [Redacted]  
Residential Address: 170 Thorn Road Dovedale Phone: 0210238266

Business Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
I was following the ute towing the trailer  
we approached the corner from Appleby  
Highway. I can't recall if the ute and  
trailer were indicating but it appeared to  
be travelling through to Golden Hills Road.  
The ute and trailer were in the

Name: \_\_\_\_\_ Forenames \_\_\_\_\_ Surname \_\_\_\_\_

Residential Address: \_\_\_\_\_ Phone: \_\_\_\_\_

Business Address: \_\_\_\_\_ Phone: \_\_\_\_\_

middle of the intersection when  
the white van came from our  
right through the giveaway sign.  
The van had been clipped by the  
bull bar of the ute on the rear  
passengers side.

Name: \_\_\_\_\_ Forenames \_\_\_\_\_ Surname \_\_\_\_\_

Residential Address: \_\_\_\_\_ Phone: \_\_\_\_\_

Business Address: \_\_\_\_\_ Phone: \_\_\_\_\_

Signature: \_\_\_\_\_

19 Next of kin notified (when, where, by whom)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

20 SPECIAL PROJECTS:

Office Use

1. Project Name: \_\_\_\_\_

2. Project Name: \_\_\_\_\_

Land Transport NZ COPY



**TRAFFIC CRASH REPORT**

Page 1 Send white top copy pages to Land Transport New Zealand Regional Office PDL 565 07/07

1 Local Body: Tasman District Fatal  Crash date: 25.6.08 Crash time: 1440

Locality or district: Richmond 28 12312

Crash road: Golden Hills Road Officer arrival time: 1510  Didn't attend

At Intsn with OR: Metres Km N E S W CODE 1V

Side road: Montrose Highway SCNSTN SECTOR CODE RD 8140 Where Stationed RD

GPS: 0217 Reporting Member Initials/Reg No. DBY071

3 CHECKED BY: Rank/Name \_\_\_\_\_ Det./Sen./Sgt./Const. \_\_\_\_\_ Initials \_\_\_\_\_ Reg. No. \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

4 VEHICLE 1 Reg No. C2Q958 T.S.L. No. \_\_\_\_\_ Owns veh.  Not owned  Rental  Unknown

Category:  Car/van  SUV/4x4  Taxi  Van/min  Truck  Bus

Brand/Make: Toyota Corolla Year: 1996 CC rating: \_\_\_\_\_

WOF or COF:  Yes  No Expiry date 16.12.08

Speed before crash: \_\_\_\_\_ km/h  Parked  Reversing  Stationary

Too fast for conditions:  Yes  No  Unsure

Total passengers: Front: \_\_\_\_\_ Rear: \_\_\_\_\_ Other: \_\_\_\_\_

5 DRIVER 1 Name: \_\_\_\_\_ Address: 39 Edward Street  
Waharoa  
Phone Nos: 549770 0274539025  
DOB: 4.7.82 Male  Female

Ethnicity:  European  NZ Maori  Samoan  Fijian  Tongan  Cook Islands  Niuean  Tokelauan  Other Pacific Island  Asian  Other \_\_\_\_\_

Occupation: Silvercraft Licence No: DC611488

Licence status:  Learner  Restricted  Full  Never held  Forfeited  Wrong class  Disqualified  Overseas  Un-Known  Expired

If driver holds Overseas licence: \_\_\_\_\_ Overseas Driver Country of Origin: \_\_\_\_\_ Overseas Driver Status:  Student  Immigrant  Visitor  unKnown

Restraint worn:  Uncertain  Yes  No  Not Avail

Injuries: (in detail) \_\_\_\_\_

Damage severity:  Fire  Overturn  Extensive  Minor/moderate  Nil

DAMAGE LOCATION:

Barcode: \_\_\_\_\_ Serious  Minor  Nil

Alcohol:  Unknown  Not suspected  Suspected  Screen:  +  -  Evidential  Blood

6 DRIVER INTERVIEW NOTES:  
Note book statement attached

7 ION/TON Nos: \_\_\_\_\_ OFFENCE/PREC CODE: \_\_\_\_\_ DRIVER: \_\_\_\_\_  
ION/TON Nos: \_\_\_\_\_ OFFENCE/PREC CODE: \_\_\_\_\_ DRIVER: \_\_\_\_\_

CARD EVENT No. P 001479889 DOCLOC CASE No. 0806277878  
OCCURRENCE ID \_\_\_\_\_

Land Transport NZ COPY



Page 3      Send white top copy pages to Land Transport New Zealand Regional Office      POL 565 07/07

**12 CRASH DIAGRAM** - Show direction and intended path for all parties.  
- Identify vehicles by driver surname.

**13 WHAT HAPPENED**

Cyclist has failed to stop at stop sign intersection and has run into the side of the car.

**14 OBJECTS HIT:** Car

OBJ	MV/MT	1	D	S	2	3	4	FAC	FAC	FAC

Land Transport NZ COPY





**15 WHY CRASH HAPPENED**  
 Driver factors: (Including, but not limited to, Fatigue, Distraction, Inexperience, etc):  
 Inexperienced young rider failed to stop at sign while being in a hurry to get out of the rain.  
 28 12312  
 Road factors: Wet  
 Vehicle factors: Nil  
 Other factors: Nil

**16 DETAILS**  
 Speed limit: 100 Advisory speed: Temp. speed limit:  
 ROAD: 1-way 2-way 0 other TOTAL LANES: 1 2 3 4 5 6  
 CURVATURE:  Right  Easy  Moderate  Severe MARKINGS:  No Xing  Road-Edg  Paint-Edg  Ho-Pave-Line  Centre-line  Nil  
 SURFACE:  Sealed  Unsealed TYPE:  Bridge  Motor Road  Fly-Over  F.M.S.  Hill rd.  
 SURFACE:  Wet  Dry  Ice or snow JUNCTION:  Downway  Roundabout  X  T  Y  Merge  
 LIGHT:  Bright sun  Overcast  Twilight  Dark CONTROL:  Int-Signals  Stop  Give-way  Set-Point/Location  Nil  
 STREET LIGHTS:  On  Off  None WEATHER:  Fog  Mist/Haze  Rain  Hvy rain  Snow  Frost  Strong wind

**17 OTHER PERSONS INVOLVED EXCLUDING DRIVERS**

Forenames	Surname	Cyclist, Pedestrian, Passenger with	Age	Sex	Ethnicity	Injury	LTNZ Use
1. Name: [Redacted]				M	F	Fatal Serious Minor Nil	
2. Name: [Redacted]		Cyclist	15 yrs	F	E	Fatal Serious Minor Nil	S 1
3. Name: [Redacted]				M	F	Fatal Serious Minor Nil	Fax 321
4. Name: [Redacted]				M	F	Fatal Serious Minor Nil	
5. Name: [Redacted]				M	F	Fatal Serious Minor Nil	
6. Name: [Redacted]				M	F	Fatal Serious Minor Nil	

European NZ Maori Samoan Fijian Tongan Cook Islander Niuean  
 To Kelaun Other Pacific Island Asian Other (Specify)

Land Transport NZ COPY



**18 INDEPENDENT WITNESSES OR OTHER NOTES**

Name: [Redacted] Forenames: [Redacted] Surname: [Redacted] Date: 28/10/93  
 Residential Address: [Redacted] Phone: 54702246  
 Business Address: 28 12311 Phone: \_\_\_\_\_

We went to go through the intersection. [Redacted] was just in front of me, he went through I stopped, he just missed one car and looked like he realised he had done something wrong. He then hit the second car.

Signature: \_\_\_\_\_

Name: \_\_\_\_\_ Forenames: \_\_\_\_\_ Surname: \_\_\_\_\_  
 Residential Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Business Address: \_\_\_\_\_ Phone: \_\_\_\_\_

Signature: \_\_\_\_\_

Name: \_\_\_\_\_ Forenames: \_\_\_\_\_ Surname: \_\_\_\_\_  
 Residential Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Business Address: \_\_\_\_\_ Phone: \_\_\_\_\_

Signature: \_\_\_\_\_

**19** Next of kin notified (when, where, by whom)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**20 SPECIAL PROJECTS:**

1. Project Name: _____	Office Use <input type="checkbox"/>
2. Project Name: _____	<input type="checkbox"/>





**TASMAN DISTRICT  
CRASH INVESTIGATION UNIT**

**FATAL CRASH REPORT**

**CAR V TRUCK & TRAILER**

**MOUTERE HIGHWAY  
At intersection with  
GOLDEN HILLS ROAD**

**RICHMOND RURAL**

**Tasman Police District  
29<sup>th</sup> May 2011**

- This Copy
- FILE COPY
  - CORONER COPY
  - DISCLOSURE COPY
  - NZTA. (ex. LTNZ.) COPY
  - NZTA. / LOCAL ROADING AUTHORITY

COPY

Printed date: 30/06/2011.

**Safer Communities Together**

**TASMAN POLICE DISTRICT HEADQUARTERS**

Monro Building, Level 3, Bridge Street, Private Bag 39, Nelson 7042, New Zealand  
Telephone: (03) 546 3641 Facsimile: (03) 546 8962 www.police.govt.nz



**N.Z. POLICE  
TASMAN DISTRICT CRASH INVESTIGATION UNIT**

**REPORT ON FATAL VEHICLE CRASH**

**MOUTERE HIGHWAY  
at intersection with  
WAIMEA WEST ROAD**

**RICHMOND RURAL  
29/05/2011**

At approximately 3:40pm on Sunday the 29<sup>th</sup> of May 2011 a motor vehicle crash occurred at the intersection of the Moutere Highway with Waimea West Road and Golden Hills Road, west of Richmond.

The crash involved a collision between a Truck and Trailer heavy motor vehicle combination with a Mercedes sedan.

As a result of the crash the driver of the truck suffered minor injuries; however the driver of the Mercedes and his front seat passenger both suffered serious injuries which resulted in the death of the passenger later in Hospital.

There were no independent witnesses to the crash, which occurred during fine weather on a dry road.

Police and other emergency services attended the crash scene, securing it until my arrival as District Crash Investigator.

It was ascertained that, prior to the impact, the Mercedes had been travelling eastwards on the Moutere Highway (Redwoods straight) and was in the process of travelling straight ahead across the intersection with the intention of entering into Waimea West Road.

As the Mercedes crossed into the intersection, the truck and trailer unit which had been travelling southwards on the Moutere Highway from the direction of the State Highway, also entered the intersection with the intention of travelling into Golden Hills Road.





**THE CRASH SITE:**

The intersection where the crash occurred is known locally as RUSS Corner. The intersection has an unusual lay-out as it is situated on a corner where the Moutere Highway turns through ninety-degrees, making up two legs of a cross-intersection with Waimea West Road and Golden Hills Road.

The Moutere Highway carries a high volume of traffic servicing the Waimea basin and is considered a main road. As such it carries a right of way through the ninety-degree corner at this intersection and the other two intersecting roads are controlled by Stop signs.

The movement of eastbound traffic exiting from the Moutere Highway intending to travel across the intersection into Waimea West Road, is controlled by road-marking which has created a dedicated traffic lane marked solely for this purpose, and which is accompanied by a sign directing straight through traffic to Give Way.

The marked traffic lane extends partway around the intersection and has a broad painted white limit line marked in an area where drivers, intending to cross over into Waimea West Road, are able to view traffic approaching from the north.

Providing eastbound traffic is complying with the road markings, they are in effect making a right-turn across the Highway.



For traffic travelling **southwards**, from the State Highway sixty intersection at Appleby, the road markings allow for total right-of way following the centreline around the ninety-degree curve into the continuation of the Moutere Highway, or if travelling straight ahead to exit the Highway and to travel into Golden Hills Road.

*View facing southwards approaching intersection, showing advisory sign approximately 120-metres before intersection. Note shelterbelt trees on right.*



*View facing southwards at intersection showing the Trailer-Unit tyre abrasions into the impact area. (Photograph taken the following morning)*





In the case of **eastbound** drivers, (as was the direction of the Mercedes involved in this crash), situated approximately 128-metres from the corner there was a symbolic sign advising of a cross intersection ahead, this sign also advised a 35-km/h speed for traffic continuing around the left-hand corner into the Moutere Highway.

*View facing eastwards approaching intersection, showing advisory sign.*



*View facing eastwards approaching intersection, showing start of lane markings and Give-Way sign ahead. Note shelterbelt trees on left.*





*View facing eastwards approaching intersection, showing Give-Way sign and lane marking. Orange cone marks impact area.*



Approximately 16-metres from the corner a regulatory sign was situated, directing straight ahead southbound traffic to Give Way.

Inspection of the crash site found that the sealed road was in good condition and free from any substance or objects likely to have caused a loss of driver control.

The road markings and signage were in good repair and clearly visible to traffic approaching the intersection from all directions.

It was noticed that other than a small cut-back section near the corner itself, the entire north-west corner was lined with tall and dense shelter belt trees obscuring the view of drivers approaching from both directions on the Moutere Highway.

Measurements found that when approaching the intersection, eastbound drivers could not view southbound traffic until within 22 metres of the corner and the southbound drivers could not view eastbound vehicles until approximately 26 metres from the corner.





**MARKINGS FOUND AT THE CRASH SITE:**

Examination of the intersection found rubber abrasion markings, typical of heavy motor vehicle tyres under extreme braking, leading southwards into the intersection from the approach direction of the Truck and Trailer unit.

These braking marks continued to a point within the intersection where they abruptly changed direction and veered to the left, joining with a pattern of scratches and gouges leading across to the southeast corner of the intersection and into the raised garden and vegetation surrounding a corner chevron sign and concrete power pole.

It was apparent that the concrete power pole had been struck with considerable force as the pole shattered leaving the reinforcing steel rods lying flattened by the Trucks passing.

An oil trail commenced from the power pole position which, along with the scattered debris, showed the trail of the Truck and Trailer as it veered back into Golden Hills Road and eventually came to a halt.

Despite a careful inspection of the intersection, no pre-impact markings could be found relating to the approach of the Mercedes Car.

Rubber abrasion markings typical of vehicle tyres being pushed sideways, which developed into gouges in the road surface, were found and were later matched to the wheel positions of the Mercedes car, indicating its position immediately following impact.

These rubber abrasion markings joined with other scratches (later matched with underside damage to the Mercedes car), and showed the post impact direction of the car as it disengaged from the front of the Truck and travelled southwest into Golden Hills Road where the Mercedes came to an abrupt halt as the right front of the vehicle impacted into a tree.

The crash site was measured to produce a scale plan which is attached to this report.



View at impact area facing southwards towards Golden Hills Road.  
Departure marks from Truck                      Departure marks from Car



View at impact area facing southwards towards Golden Hills Road.  
Truck and Trailer stopped position  
Truck impact with pole.                      Car impact with tree (stopped position)





**THE VEHICLES:****The Truck and Trailer:**

The vehicle travelling **southwards** into the intersection was a 2002 DAF 4-Axle, twin-steer Curtain-side unit which, with its load at the time, weighed 16970-kgs.

The vehicle was towing a Roadmaster 4-axle trailer curtain-side unit which, with its load at the time weighed 9050-kgs.

Both Units were owned and operated by Headford Propagators Ltd, from Waimate and at the time of the crash was being used to transport gardening supplies to an establishment in Golden Hills Road.

The vehicle had suffered two independent sets of damage to the front of the Truck.

Notable was the damage to right-hand front of the truck resulting from the initial impact with the Mercedes, which included impact damage around the yellow painted towing pin.

The location of this damage indicated that the Mercedes Car had not proceeded completely across the front of the Truck when the impact took place.

The damage around the left-hand front had resulted from the secondary impact with the concrete power pole and raised vegetation surrounding it.  
*View showing front of truck.*



*Note the yellow tow pin.*

*Secondary damage from power pole.*



*View of trailer tyres showing signs of wheel lock-up (taken in situ).*



Both Units were inspected by an Automotive Vehicle Surveyor who found no faults likely to have been causative factors in the crash.

It was found that the accelerator pedal had become jammed partway on; however it was determined by the vehicle inspector that this had most likely as a result of the impact with the power pole.

The Truck had been fitted with a Global Positioning Unit which was made available to Police, and was able to provide information relating to the Trucks speed. (Referred to in the analysis).

The tyres were inspected and it was noticed that there were no discernable abrasion markings found on any of the truck tyres, however all of the tyres on the trailer unit had defined flat-spot tyre abrasions, indicating that they had all locked-up at one stage during the crash sequence.





The Mercedes Car:

The vehicle travelling **eastwards** into the intersection was a 1994 Mercedes-Benz 280 Saloon coloured dark grey.

The vehicle was owned by the driver at the time of the crash; however he had allegedly only purchased it a matter of days prior to the crash.

The vehicle had suffered extensive damage in two separate locations.

The most severe damage was caused by the impact from the truck, which affected the entire front left-hand side of the car up to an area about the front "A" pillar in front of the front seat passenger.

In particular it was noted that there was a clear transfer of damage from the yellow painted towing pin, located on the front of the truck, into the front left-hand guard of the Mercedes.

*View of Mercedes (recovered) showing yellow imprint from truck tow-pin.*



This determined that when the impact with the truck took place, the Mercedes had not proceeded completely across the front of the Truck.

The angle of the damage also indicated that at impact both vehicles were at or near right-angles to each other.

This was supported by the angular scratches found underneath the Mercedes which were matched with the scratching found on the road at the impact area.



*View of Mercedes (recovered).*



*Note: secondary damage caused by impact with tree.*

The extensive damage around the right-hand front had resulted from the secondary impact with the base of the tree, indicating that the Mercedes still had a substantial forward motion when it came to its abrupt halt.

At the time the vehicle had a current warrant of fitness and registration.

The vehicle was inspected by an Automotive Vehicle Surveyor who found that both front tyres were badly worn, however no other faults likely to have been causative factors were found.

The interior of the vehicle contained several empty cans which had contained a bourbon-cola mix and some empty beer bottles along with an unopened pack of beer cans.

Inquiries to date have yet to establish when the alcohol was consumed, and by whom.

**THE WITNESSES:**

To date there have been no persons identified as having witnessed this crash.



**THE DRIVERS:**

The driver of the Truck and Trailer Unit was a 22 year-old male who lives in Waimate and employed as a Truck Driver.

Although holding the necessary licences to drive the Truck and Trailer Unit, at the time of the crash he was currently disqualified from driving and driving pursuant to a Limited Licence for work purposes only.

Records show that in addition to two previous licence suspensions for speeding offences since 2005 and regaining his licence in 2009, the driver had received 5 speeding offence notices in the past 18-months.

The driver was checked for alcohol and passed a roadside screening test.

He received minor injuries only and was able to make a full statement to Police the following day in which he said;

*I have been driving this particular route regularly since about August last year. It is a scheduled Sunday trip which is done between the various drivers for Headfords.*

*On the Appleby Highway I turned left at the corner that takes you onto the Moutere Highway. At this time the road conditions were good and it was fine and maybe a wee bit windy. The road was dry.*

*When I turned onto the Moutere Highway I wasn't aware of any traffic ahead of me and on that stretch of road approaching the corner no vehicles overtook me. There may have been vehicles coming the other way.*

*"During that straight piece of road I would've had the truck up to a speed of about 90 km/h. As I approached the intersection I lowered my speed by clicking it down half a gear using my splitter as I normally do. I don't think I engaged the exhaust brakes at this stage.*

*I have driven through this intersection numerous times and part of the reason I lower my speed is that there is a bit of a bump or pot-hole as you go into Golden Hills Road. On a previous trip the trailer jumped around a bit going through this area and that why I've dropped my speed subsequently.*

*As I approached the intersection I think I can remember a car parked at the intersection to my left as if it was going to head through to Motueka. This car may have been blue. There may have been traffic behind me.*



*As I approached the intersection no vehicles passed across the intersection in front of me. I wasn't indicating in any way to go through this intersection as I was going to be going straight ahead.*

*It was only when I was right on the intersection that I saw this car shoot out across the intersection from my right. It definitely didn't stop or slow at the Give Way part of the intersection.*

*When I saw it I jammed on my brakes and I think that is both the right pedal and the left pedal for the exhaust brake.*

*The car collided with the front right of my truck and the cab seemed to rise up a wee bit. The impact knocked my truck to the left and the car bounced off to the right.*

*When the truck went left I could see that I was heading straight for a power pole which was directly in front of the cab. I managed to move the truck to the right but the truck still collided with the power pole on the left side of the cab. Part of the reason I managed to get the truck to the right was that we were on a sloping bank.*

*The truck continued another maybe 50 - 100 metres down the road before I could stop it. I thought that the throttle had jammed on but that may just have been me overlapping both the brake and throttle pedal with my right foot.*

*After the impact when we were careening along I'm sure we were still in gear because the truck was sort've jerking forward and I guess it's because I had my left foot on the exhaust brake.*

*When I managed to stop the truck I grabbed my cell phone and jumped out and ran back to the car. I called 111 and gave them some details but wasn't sure of the road I was in and I think I called it Golden Downs Road and they said that it didn't exist.*

*There is nothing I could have done to have avoided the collision.*

*I braked as soon as I saw the car come through the intersection and there was no way I could have avoided the impact.*





The driver of the Mercedes Car was seriously injured and once freed from the vehicle taken for immediate medical treatment.

A request for a blood sample to be taken for alcohol/drug analysis was refused by the attending medical staff on the grounds that it may affect the patient's recovery.

Accordingly there is no knowledge as to the actual involvement of alcohol in the driver's actions leading up to the crash.

To date (30/06/2011) the Driver remains in a serious condition with brain injury and is unable to be interviewed by Police.



**ANALYSIS:**

First impressions of the crash site suggest that the truck driver was skidding his vehicle for some distance before impacting with the Mercedes car.

However southbound tyre abrasion markings found on the roadway were determined to have been produced by the Trailer Unit, so allowance had to be made when analysing where the driver and the front of the truck was positioned when emergency braking took effect.

Because the trailer braking system allows for all trailer wheels to come on at the same time, the northern-most start of the southbound tyre abrasions are most likely to be where the rear trailer axle was positioned when the emergency braking took effect.

Taking the entire length of the combination into account, this positions the front of the truck approximately 4.3-metres past the impact point when the brakes locked-up.

It was ascertained from the GPS download that on its approach into the intersection the Truck and Trailer unit was travelling at 65.1-km/h which equates to a velocity of 18.2-metres/sec.

Utilising a driver reaction time of between 1.0 to 1.5-seconds between the driver first recognising an extreme hazards and initiating the trucks braking system, this would mean that the front of the truck had covered between 18.2 to 27.3-metres before the brakes took effect when the front of the truck was approximately 4.3 metres past the impact point.

Observations at the crash site found that visibility is obstructed on the northwest corner by a shelter belt of trees, obstructing southbound driver's view of any approaching eastbound vehicles.

It was found that this first point of visibility became available when approximately 27-metres from the impact point, or 31.3 metres before the braking took effect.

A calculation based on the truck driver using his first available point of observation to initiate a perception/reaction sequence leading to the application of emergency braking, suggests that his perception and reaction time was around 1.7-seconds in total.

This time indicates that the truck driver was alert, and perceived the Mercedes, immediately determined it to be a threat, and then promptly initiated an avoidance action by activating emergency braking.

There were no pre-impact avoidance marks found that were attributable to the Mercedes car, which at first suggest that the Mercedes driver did not see the approaching truck.



However the same visibility problem exists for the eastbound Mercedes because of the interference from the shelterbelt trees on the northwest corner of the intersection.

Had the Mercedes been able to carry past the front of the truck, it is most likely that it would have left abrasion markings on the road past the impact point as the drivers reactive action, which was already in process at impact, took effect.

Reasons to support that the Mercedes Driver was in the reactive process include Truck driver describing the car as, "shooting out across the intersection", and telling Police at the crash scene that he had glimpsed the occupants of the car, "bracing themselves".

(This implies that the car was travelling at least as fast as the truck, if not faster and that there was an occupant awareness at impact).

Had the Mercedes been travelling any slower, then there should have been time for the driver to initiate pre-impact braking and the subsequent forward throw of the debris spread should have been retained within the travel path of the truck.

The dissimilar weights of the separate vehicle units and their interrupted departure from the impact point combined with both of their subsequent second collisions with fixed objects makes determining any accurate speed at impact for the Mercedes problematic.

However applying the truck driver's observation of the Mercedes occupant's awareness at impact, with their limited visual opportunity to observe the truck before actual impact, an approximate speed can be calculated.

From the first observation position the truck travelling at 65km/h (18.2-m/sec.) took around 1.48-seconds to cover the 27 metres to impact.

In order to have been observed by the truck driver, the Mercedes had to have been within the field of observation limited by the shelterbelt trees to within 22 metres of the intersection or 27.5 metres from the impact point.

To cover 27.5 metres within 1.48 seconds the Mercedes had to have been travelling at least 18.5-metres/sec or around 66-km/h.

The analysis of the impact damage found that the two vehicles collided more or less at right-angle to each other and with only partial overlap by the front left-hand side of the Mercedes across the right-hand front of the Truck.

Examining this relationship at impact with the position of impact on the road, as determined by the corresponding markings left of the road surface, shows a clear trajectory or approach path used by the Mercedes to leave the Moutere Highway and arrive at the impact area, with the intention of continuing across into Waimea West Road.

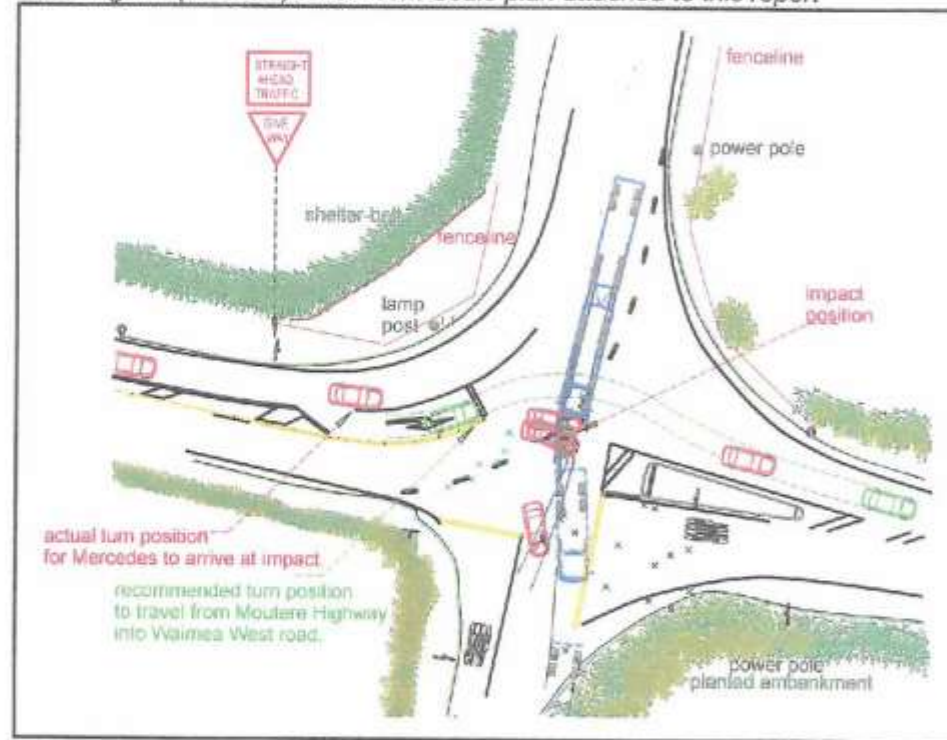


This path is shown in red on the attached illustrative Scale plan.

In contrast a pathway required to exit the turning lane on the Moutere Highway, travel across the limit lines marked on the roadway and turn into the approach required to travel onto Waimea West Road has been plotted and is shown in green on the attached illustrative plan.

It is clear that the Mercedes driver was never attempting to comply with the lane markings and a calculation based on the radius of turn required for a vehicle to remain within the correct pathway, (shown in green on the attached plan), shows that it could not be successfully completed at any speed above 35km/h without inducing a loss of control.

*This diagram (reduced) taken from Scale plan attached to this report*







**SUMMARY:**

There are three factors that contributed to this crash.

**The Mercedes Driver:**

The main factor is the action of the Mercedes Driver in proceeding into the intersection before the way was clear.

It is clear that, when travelling eastwards from the Moutere Highway into Waimea West Road, the Mercedes was required to Give way to straight ahead (southbound) traffic.

Examining the vehicle positioning at impact, relative to the actual impact position on the roadway, it is apparent that the Mercedes was not being driven in accordance with the actual lane markings.

There could be a number of reasons for the Mercedes failure to follow the correct alignment. However the most likely reason is a desire on the part of the driver to want to travel through the intersection at a speed faster than the 35-km/h restriction imposed by following the correct alignment.

It was calculated that the Mercedes was most likely travelling at around 66-km/h at impact.

Given that it had just travelled from a long 100-km/h straight, the 66-km/h speed within the intersection implies that the Mercedes driver was probably aware that there was some likelihood of conflict with other traffic, but clearly he did not give significant consideration to his ability to stop, if required to give way.

**The Truck Driver:**

The second factor is the approach speed of the Truck and Trailer unit.

While it is accepted that the Truck driver had the right-of-way and was legally entitled to free passage through the intersection into Golden Hills Road, His approach speed of 65.1-km/h was arguably too fast when consideration is given to the obvious restriction on visibility imposed by the shelterbelt trees to his right.

His failure to drive defensively meant that when he did see the Mercedes fail to give way to him, he was unable to react effectively in time.

This particular driver had a history of driving fast, and has now received a practical demonstration of reasons to slow down at intersections.

He was not exceeding any speed limit but, had he been driving slower than 65-km/h, his reaction process would have had more time to effect pre-impact braking which may not have prevented the collision, but would have lessened the force of impact.



#### The Road Layout:

The third issue is the intersection itself, which has effectively been overwhelmed by the increased traffic volume using Waimea West Road and in particular Golden Hills Road, since the increased development of both Horticultural and rural lifestyle blocks in the area.

Visibility issues apply to all four approaches to this intersection and extreme care is required from all directions.

At present the control of vehicles travelling as the Mercedes had intended, eastwards into Waimea West Road, is by way of a painted traffic lane, bringing traffic partway around the curve to allow them a better chance of viewing approaching southbound traffic, before crossing the highway by turning right.

This relies on drivers recognising the need to stay within the painted lines.

It is suggested that a copy of this report be forwarded to the Road Controlling Authority requesting that they re-examine the layout of this intersection with a view to consider installing some form of raised concrete edging to run around the outside of the turn lane to ensure compliance with it.

By providing a physical guide to traffic it would ensure traffic would have to slow to a maximum of 35-km/h and bring them to a place where unobstructed vision between themselves and southbound traffic exists.

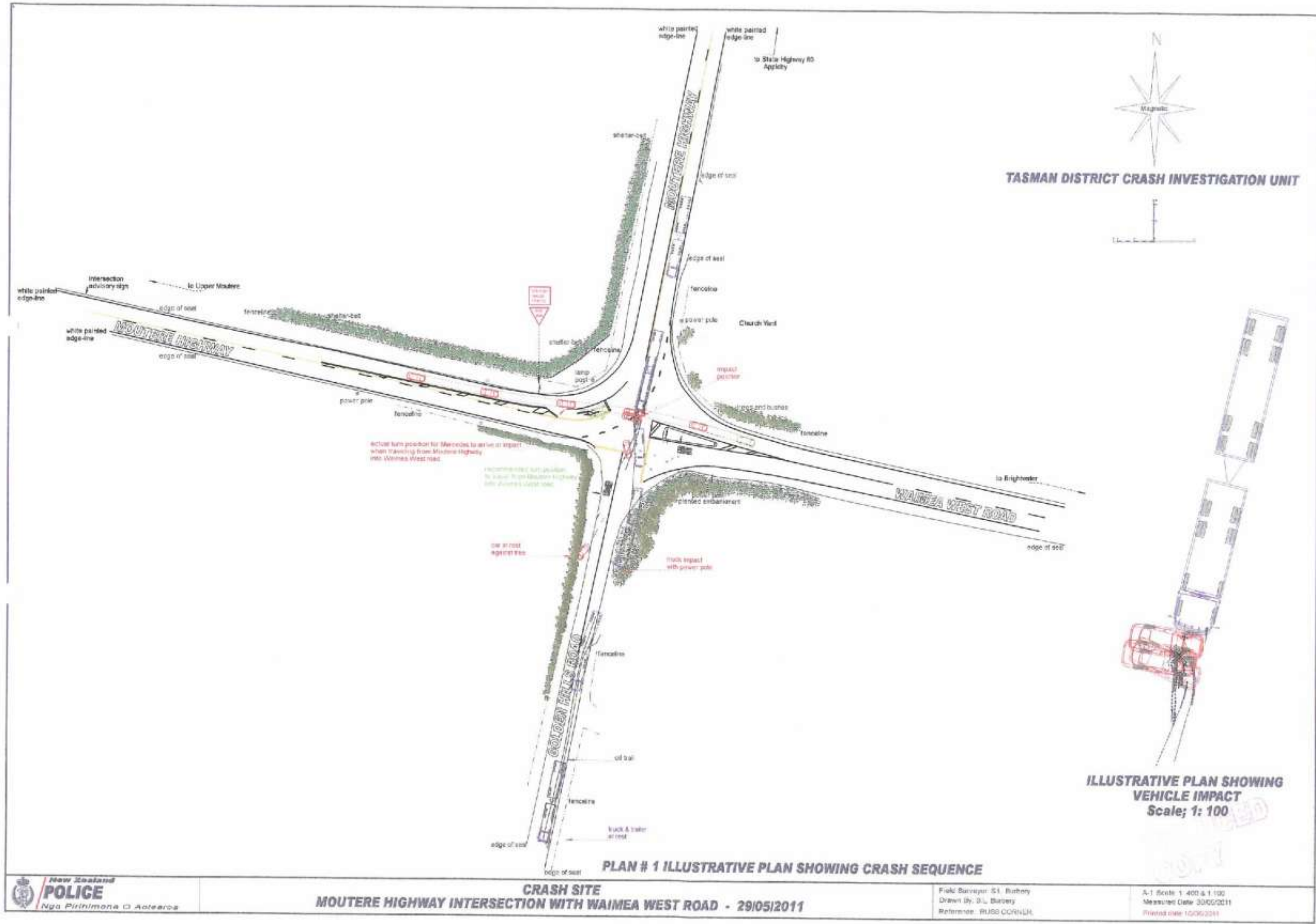
*(By way of an example, a diagram is attached on the following page.)*

Additionally it would be helpful to find some way of physically encouraging southbound traffic travelling into Golden Hills Road to slow to a more defensive speed when travelling through the intersection, or at the very least install an advisory sign warning of the possibility of crossing traffic.

Observations done at the crash site show some southbound road users travelling through at speeds close to the 100km/h speed limit into Golden Hills Road. Those drivers were completely reliant of the compliance of other road users, whom they could not even see.

While at the crash site several local drivers independently approached Police to complain at the speed of traffic crossing the intersection, many of whom are local lifestyle block residents who appear to have developed a complacency regarding the busy rural cross-road.









Car 7

COR REF: CSU-2011-CCH-000598

4. [REDACTED] travelling to a Brightwater address for an appointment that he and [REDACTED] were late for. At the intersection known locally as Russ Corner, and intending to go essentially straight ahead into Waimea West Road, [REDACTED] was required to slow and move into a dedicated lane requiring vehicles travelling straight ahead to give way to other traffic.
5. Also approaching the intersection at the time was a truck and trailer unit travelling on the Moutere Highway, and intending to travel straight across the intersection Golden Hills Road. This truck and trailer unit had right of way.
6. [REDACTED] failed to give way and instead drove across the intersection and collided with the front of the truck and trailer unit. The front passenger area of [REDACTED] vehicle took the brunt of the impact.
7. The impacted vehicles travelled together through the intersection before [REDACTED] vehicle disintegrated and came to rest in an orchard shelter belt. [REDACTED] and [REDACTED] had to be cut from the wreckage, and both were taken to Nelson Hospital. [REDACTED] died of his injuries approximately two hours later.
8. A post mortem examination confirmed the cause of [REDACTED] death to have been multiple injuries. The most severe of these was an extensive closed head injury, which the pathologist considered to have been the lethal injury.
9. [REDACTED] suffered severe injuries, including a serious brain injury, and was hospitalized for a lengthy period of time. When spoken to by police some five months after the crash [REDACTED] had no recollection of any events in the preceding two years. [REDACTED] was charged with dangerous driving causing [REDACTED] death, and in February 2012 he pleaded guilty to this charge. He was convicted and sentenced accordingly.

#### Avoiding future deaths in similar circumstances

10. The matters set out in section 57(2) of the Coroners Act 2006 that are to be established by a coronial inquiry were established in the District Court proceedings.
11. However, a further purpose of a coroner's inquiry is to make specified comments or recommendations that, in the coroner's opinion, may, if drawn to public attention, reduce the chance of the occurrence of future deaths in similar circumstances. An issue relevant to this purpose was identified in the Fatal Crash Report prepared by Senior Constable [REDACTED] of the Tasman District Crash Investigation Unit, and it relates to the layout of the intersection.
12. While the layout of the intersection in no way derogates from [REDACTED] culpability, in the context of considering how future deaths might be avoided, it is worth noting Senior Constable [REDACTED] analysis.
13. Senior Constable [REDACTED] described the intersection as having an unusual layout "as it is situated on a corner where the Moutere Highway turns through ninety degrees, making up two legs of a cross intersection with Waimea West Road and Golden Hills Road."
14. Senior Constable [REDACTED] noted that the intersection had become overwhelmed by increased traffic volume using Waimea West Road, and in particular Golden Hills Road, since increased development of both horticultural and rural life style blocks in the area. He noted visibility issues apply in all four approaches to the intersection, and that extreme care was required from all directions.



Cor 7

COR REF: CSU-2011-CCH-000598

15. [REDACTED] intended to travel straight ahead, but was required to give way to traffic approaching from his left. The intersection at the point [REDACTED] approached was controlled by signs (a give way sign and a sign stating straight ahead traffic give way), and painted traffic lanes which took traffic part way around the curve to allow them a better chance of viewing traffic approaching from the left, before crossing the highway by turning slightly right. As Senior Constable [REDACTED] noted, this relies on drivers recognizing the need to stay within the painted lines.
16. Senior Constable [REDACTED] suggested that the layout of the intersection be re-examined with a view to considering the installation of some form of raised concrete edging to run around the outside of the turn lane to ensure compliance with it. He also noted that it would be helpful to find some way of physically encouraging south bound traffic travelling into Golden Hills Road to slow to a more defensive speed when travelling through the intersection, or at the very least to instal advisory signs warning of the possiblilty of crossing traffic.
17. The issues with respect to the layout of the intersection were brought to the attention of the Tasman District Council.
18. Steve Elkington, transportation projects engineer, was familiar with the intersection and senior [REDACTED] report, and advised that the Tasman District Council, in its long term plan, had programmed the intersection to be upgraded in its 2015/16 financial year. However, he went on to state that "Council instead proposes to reconfigure the intersection with a rural roundabout in the current financial year 2012/13. This work is presently being planned and once a design safety audit has been completed, will proceed to construction. ... The work is anticipated to be completed early next year" (by letter dated 29 August 2012).
19. In llight of steps being taken by the Tasman District Council to improve safety of the intersection at issue in this case, I do not propose making any further comment or recommendations.
20. I extend my sympathy to [REDACTED] family and friends on their loss.

Signed at Palmerston North on 25 September 2012

  
Coroner Carla na Nagara



Site Summary Listing, run on 10 Apr 2013  
Page 1

CURB ROAD	STDS ROAD	2008 2009 2010 2011 2012 2013 TOTAL	Dist of Crashes								
6/111/18818	300	K	BLUETT EIGHT VALLEY ROAD	1	1	0	1	0	0	2	\$212116
MONTRES HIGHWAY	±		VALDEA WEST ROAD	3	1	1	1	1	1	7	94847242
6/225/11267	643	H	MOTTET VOLLEY ROAD	4	1	1	0	0	0	6	8169962
6/70/8921	T		MOUTHEE HIGHWAY	0	1	2	1	1	1	5	94520792
6/235/1374	1200	S	MORRIS VALLEY ROAD	1	0	1	0	0	0	2	\$417090
6/56/12078	1000	H	ROCKY CREEK ROAD	1	1	0	0	1	1	3	\$441190
ESSE HILL ROAD	2300	K	ROBERT TOWNSEND ROAD	0	0	2	0	0	0	2	\$437881
WAINWED ROAD	500	B	SCHWABE ROAD	0	1	0	1	0	0	2	\$437839
6/181/4241	6500	B	ROBERT TOWNSEND ROAD	0	0	1	0	0	0	1	\$434010
6/237/9622	390	K	HINDMARSH ROAD	0	0	1	0	0	0	1	\$434010
65/17/8108	1000	B	RUFFEL DRIVE WA	0	0	1	0	0	0	1	\$434010
ACALFA RIVER WEST BRIDGE	730	E	HERBERT STURMAN ROAD	0	0	1	0	0	0	1	\$434010
STOCK ROAD	560	K	ESSE TILT ROAD	0	0	1	0	0	0	1	\$434010
6/131/1059	510	B	ELUGBY EIGHT VALLEY ROAD	0	1	0	0	0	0	1	\$4264290
SAIR ROAD	500	H	COMMUNITY ROAD	0	1	0	0	0	0	1	\$4264290
ROBERT TOWNSEND ROAD	600	B	YOUNG ROAD	0	0	0	0	0	0	0	\$4264290
6/225/11407	1200	K	MOTTET VOLLEY ROAD	1	0	1	0	0	0	2	\$4264290
LABURNUM ROAD	±		LOWER CROWN ST	1	1	1	0	0	0	3	\$4264290
6/703/3235	50	W	OLIVE WA	2	0	0	0	0	0	2	\$4264290





**SAFETY AUDIT RESPONSE FORM**

**LOCATION :** Moutere Highway, Tasman District      **SAFETY AUDIT OF:** Moutere Highway/Waimea West/Golden Hills

**DATE:** October 2012      **AUDITORS:** Dave Peirrie, Ian Carlisle

ITEM	ISSUE	RECOMMENDATIONS	DESIGN TEAM RESPONSE	COUNCIL DECISION	ACTION FOR DESIGNER
4.1.1	Moderate : Small roundabout diameter results in restricted manoeuvrability for large vehicles	<ul style="list-style-type: none"> <li>consider increasing the inscribed diameter of the roundabout to improve the ability of heavy vehicles to negotiate it</li> <li>review the detailed tracking paths at the next stage of design with a view to providing a suitable skirt around the perimeter of the central island and increasing the inscribed diameter of the roundabout as needed</li> <li>consult with the local heavy transport industry during the design process</li> </ul>	<p>Agree, however an increased inscribed diameter will be cost prohibitive.</p> <p>Detailed tracking paths for a semi-trailer unit have since been undertaken using MX design package which indicates 10km/h semi-trailer tracking speeds. The turn radius will create considerable scrubbing forces on the surfsoe and will probably result in accelerated surface failure as previously advised.</p>	<p>Agree with designer.</p> <p>Agree with SAT solution providing a suitable skirt around the central island.</p> <p>Agree</p>	<p>Design the central island to have a mountable skirt.</p> <p>Consultation with local industries and transport operators in the way of a letter drop is to be undertaken. An offsite meeting to describe and discuss the project could be floated if sufficient interest, invite local residents and councillors.</p> <p>Proceed to design for balanced safe sight distances on all approaches from a view point 5metres back from the proposed limit lines. Negotiating speeds of the roundabout for trucks in particular are</p>
4.2.1	Significant: Sightline constraints rely upon slower approach speeds	<ul style="list-style-type: none"> <li>consider achieving better sightlines and ideally balance sightlines from each approach</li> </ul>	<p>Accept that current industry best practice provides sightlines from a minimum of 15m from the limit line as a balance between controlling approaches from a</p>	<p>Agree providing equal Safe Sight distances on all four approaches from a</p>	<p>Proceed to design for balanced safe sight distances on all approaches from a view point 5metres back from the proposed limit lines. Negotiating speeds of the roundabout for trucks in particular are</p>

ITEM	ISSUE	RECOMMENDATIONS	DESIGN TEAM RESPONSE	COUNCIL DECISION	ACTION FOR DESIGNER
4.3.1	Moderate: Inadequate width provided between kerbs on entry and exit	<ul style="list-style-type: none"> <li>■ review the approach widths (with consideration given to the effect on geometry) to ensure adequate width is provided for all traffic</li> </ul>	<p>speeds and providing sufficient advanced sight distance. The Concept Design uses 9m in order to minimise property purchase costs and impacts, with the design philosophy relying on a high level of delineation, signage and conspicuity of the roundabout to mitigate the reduction in advanced observation distance.</p> <p>Balanced sight lines should be confirmed during further design stages and property negotiations and optimised if necessary post construction.</p> <p>In adopting the Concept Design sight lines there is a real risk that driver behaviour (approach speeds) do not match design expectations. Further land purchase or other Engineering measures may be required to increase sight lines / slow vehicles.</p> <p>Agree, however given budget constraints it is considered that kerb and channel will only be provided at the immediate intersection (15m) and not be extended full length. Disabled vehicles will be able to use the unsealed shoulder and grass verge as they currently would.</p>	<p>point 9metres back from the limit line. By increasing the sight distances above that required for the design approach speed at this point will only increase driver confidence and hence approach and through speeds</p>	<p>expected to be particularly slow so it is important that entering speeds of all vehicles onto the roundabout are kept as slow as practicable.</p> <p>Kerb is only to be provided at the immediate intersection                      Approach lane widths are to be adequate width, with seal shoulders providing for cyclists.                      Provision for off road cycle lanes up for discussion.</p>

ITEM	ISSUE	RECOMMENDATIONS	DESIGN TEAM RESPONSE	COUNCIL DECISION	ACTION FOR DESIGNER
4.3.2	Significant: Approach Speed Controls	<ul style="list-style-type: none"> <li>■ increase the length of the splitter and adjacent shoulder kerb to meet stopping distance requirements and provide for kerb to extend for the full extent of the splitter islands</li> <li>■ raise profile of central island as far as practicable, including use of over-size chevrons</li> <li>■ consider gated directional signage with good sightlines</li> <li>■ consider use of vertical features within the splitter islands to accentuate their presence</li> </ul>	<p>Agree, the splitter island should be a minimum of 50m long, this ensures vehicles will track the approach curve as intended. Painted approach (flush median and no-overtaking lines) should extend 155m to the point where vehicles are expected to slow down from 100km/h.</p> <p>Agree that ideally kerb and channel should extend full length of the splitter island however this is likely to be cost prohibitive. A thick white line is proposed to mitigate this.</p> <p>Agree that central island profile should be raised, without creating a hazard. This could be achieved by landscaping.</p> <p>Agree that gated directional signs will increase their effectiveness in alerting the driver to the approaching intersection, however it is an incremental benefit that may not be best value for money. Gated advanced warning (PW-8), Giveaway signs and street lighting will be included.</p> <p>Agree – Delineator posts may provide a cost effective way to increase intersection</p>	<p>Agree with the extended splitter islands for the minimum length of the solid centre line required. The extent of kerb is to be limited to the intersection.</p> <p>Agree with raising the vertical profile of the roundabout inner circle, inside the skirt.</p> <p>Disagree that gated signage is necessary. The extended splitter island and enhancement of the roundabout in terms of raised height and possibly central mounted lighting as well as various gated signage will alert drivers of the roundabout ahead.</p>	<p>Extend splitter island to 50metres from the intersection.</p> <p>Give Way signage will be gated on the approach to the roundabout.</p> <p>Advanced roundabout signage PW 8 - Rotary Junction signs may be gated and if necessary over size signs of 900mm dia installed.</p> <p>Install map directional signage</p>

ITEM	ISSUE	RECOMMENDATIONS	DESIGN TEAM RESPONSE	COUNCIL DECISION	ACTION FOR DESIGNER
			visibility and warning. NZTA findings from trials should be reviewed when considering detail.	There is also a need to install white on blue advance directional map signage on all legs.	Recommend painting the splitter island mountable kerb front edge in reflective white paint.
4.3.3	Low: Narrow Pedestrian/Cycle cut-downs in the Splitter Islands	<ul style="list-style-type: none"> <li>consider increasing the width of the splitter island to accommodate cyclists</li> </ul>	Agree – detail design will maximise the width, without altering the geometry.	Agree that delineation marker posts would provide vertical illusion but this isn't felt necessary due to the delineation markings including lane line and RPPMs to be added along the edges of the splitter island.	
4.4.1	Low: Close proximity of power poles	<ul style="list-style-type: none"> <li>consider the need to protect all poles at or on the approaches to the roundabout</li> </ul>	Agree – Other poles in the clear zone should be entered in Council's Clear Zone Risk Assessment Tool and prioritised for treatment on a district wide basis.	Disagree to Agree with designer.	The splitter island should be of appropriate width and preferably of minimum width to discourage pedestrians and cyclists from using them as a refuge and instead to make the road crossing in one movement. Those poles to remaining in the clear zone are to be clearly delineated as per MOTSAM.  Network Tasman and Telecom should be approached to ascertain if they wish to install ducting through the intersection for future undergrounding Provide gap in median.
4.5.1	Comment: Access to church blocked by splitter island	<ul style="list-style-type: none"> <li>open up a suitable gap in the median</li> </ul>	Agree – to be included during further design	Agree with designer.	
4.5.2	Low: Closest driveway on Golden Hills Road is too	<ul style="list-style-type: none"> <li>that the closest driveway should be more clearly shut.</li> </ul>	Agree – The driveway looks unused by the owner and	The accessway shall remain open	Designer to discuss with property owner.



ITEM	ISSUE	RECOMMENDATIONS	DESIGN TEAM RESPONSE	COUNCIL DECISION	ACTION FOR DESIGNER
	close to proposed roundabout	with no kerb crossing provided, in conjunction with construction of this (or any) proposed improvement to the intersection	may be able to be formally closed. Requires property owner consultation.	unless the property owner agrees to close off.	In Council's TRMP it is noted that a road with a speed limit greater than 50kph may have installed a property access no closer than 20metres from an intersection.

Tasman District Council  
Moutere Highway/Waimea West Road  
(Russ' Corner) Proposed Roundabout

---

Concept Stage Safety Audit Report

---

October 2012

Traffic Design Group



Moutere Highway/Waimea West Road  
(Russ' Corner) Proposed Roundabout

---

Concept Stage Safety Audit Report  
Quality Assurance Statement

---

Prepared by:

**Dave Petrie**



Senior Associate

Reviewed by:

**Ian Carlisle**

Tauranga Branch Manager



Approved for Issue by:

**Dave Petrie**

Senior Associate



Status: Final Report

Date: 9 October 2012

PO Box 1140  
Nelson 7040  
New Zealand

P: +64 3 548 4041

[www.tdg.co.nz](http://www.tdg.co.nz)

Traffic Design Group

11802 Concept Safety Audit Report.docx

## Table of Contents

1. Introduction .....	1
2. Audit Process .....	2
3. General .....	3
3.1 Locality Plan .....	3
3.2 Documents Provided .....	3
3.3 Disclaimer .....	3
4. Identified Issues .....	5
4.1 Size of Roundabout .....	5
4.2 Sight Distance Constraints .....	6
4.3 Approach Geometry .....	7
4.4 Services .....	8
4.5 Driveways on Intersection Approaches .....	8
4.6 Drainage .....	10
4.7 Road Pavement Surfacing .....	11
4.8 Lighting .....	12
5. Auditors' Statement .....	13

1

## 1. Introduction

The intersection of Moutere Highway/Waimea West Road/Golden Hills Road as shown in the following photo panorama has been identified as a crash black spot and an area of concern by RISA Audits.



Photo 1: Panorama of Existing Intersection from Golden Hills Rd Approach

The existing intersection is a cross roads with an undesirable geometric form, with priority given to the Moutere Highway (arterial route) which turns through 90° at this intersection. This geometric form restricts traffic speeds for vehicles remaining on the Moutere Highway (around a 90° bend) to some 30 to 40km/h within an otherwise 100km/h speed environment. Traffic movements from the Moutere Highway to Golden Hills Road (straight through movement) have a give way control. Stop sign control is provided on the Waimea West approach and the Golden Hills approach.

The conspicuity of the intersection is relatively poor with all approaches being on long straights that take the driver's eye beyond the intersection. The existing road reserves are less than 20m width and there is evidence of considerable planting of shelter belts and the like within the road reserve itself.

The crash record clearly indicates that there is a safety issue at this intersection, which is understood to be the only "black spot" (greater than or equal to five injury accidents within five years) within the Tasman District. MWH, as network consultants to Tasman District Council have identified the issues as set out in Project Technical Memo Nos 1, 2 and 3 which outline a number of alternative intersection treatments to address the crash problem, mostly with high capital cost and the need for considerable land take. The preferred treatment is for a small roundabout and this option has been developed to a concept design stage. In view of both property constraints and potentially very high costs of a full size rural roundabout, the designers have recognised that full Austroads design standards cannot be met and this safety audit has been commissioned at the outset (concept stage), accordingly to identify any issues with the smaller roundabout proposed, that may impact on safety.

It is acknowledged by the safety audit team (SAT) that the concept of a roundabout treatment to address the identified crash problem at this location is an appropriate response and that the extent to which safety can be addressed by the proposed roundabout is the critical issue to be addressed.

The following report sets out the process and findings of the audit. A response form is included at Appendix A for documentation of the final decisions relating to the issues raised. It would be appreciated if a completed copy could be returned in due course for our record.

## 2. Audit Process

This Stage 1 (Concept Design) Safety Audit was undertaken by Dave Petrie, BE MS Transportation Berkeley, MIPENZ, and Ian Carlisle ME (Civil), MIPENZ, CPEng, with Chris Pawson BE (Civil) (Hons) in attendance as an observer.

This safety audit has included a detailed review of the concept plan provided by MWH and a review of the technical memos separately provided to Tasman District Council. The SAT were briefed by MWH in the presence of Steve Elkington from TDC prior to the detailed audit inspection of the existing intersection site in its environs in relation to the proposed concept design.

The safety audit has been carried out in accordance with the NZTA guideline Road Safety Audit Procedures for Projects November 2004. To assist in prioritising matters for further consideration and action, each of the issues identified has been assessed in accordance with a 'safe system approach' that identifies the likelihood of death or serious injury in relation to the probability of a crash outcome in the following matrix.

Likelihood of Death or Serious Injury Consequence	Probability of a Crash Outcome			
	Probable Frequent	Possible Quite Common	Remote Occasional	Improbable Infrequent
Very Likely >30%	Extreme	Extreme	Extreme	Significant
Likely 10-30%	Extreme	Extreme	Significant	Moderate
Unlikely 5 – 10%	Significant	Significant	Moderate	Low
Improbable Less than 5%	Moderate	Moderate	Low	Low

The issues identified have been ranked accordingly, from "Low" to "Extreme", or covered by way of "Comment" where they are either peripheral to the safety audit or unable to be audited at this phase of the design from the plan provided.

### 3. General

#### 3.1 Locality Plan

**Figure 1** is a locality plan showing the site of the proposed roundabout in the context of TDC's primary road network in the locality. As shown, the proposed roundabout is located at a 90° bend in the Moutere Highway (District Arterial route) where it intersects with Waimea West Road (Distributor) and Golden Hills Road (Access Road).

#### 3.2 Documents Provided

The following documents have been provided to the audit team in respect of this safety audit:

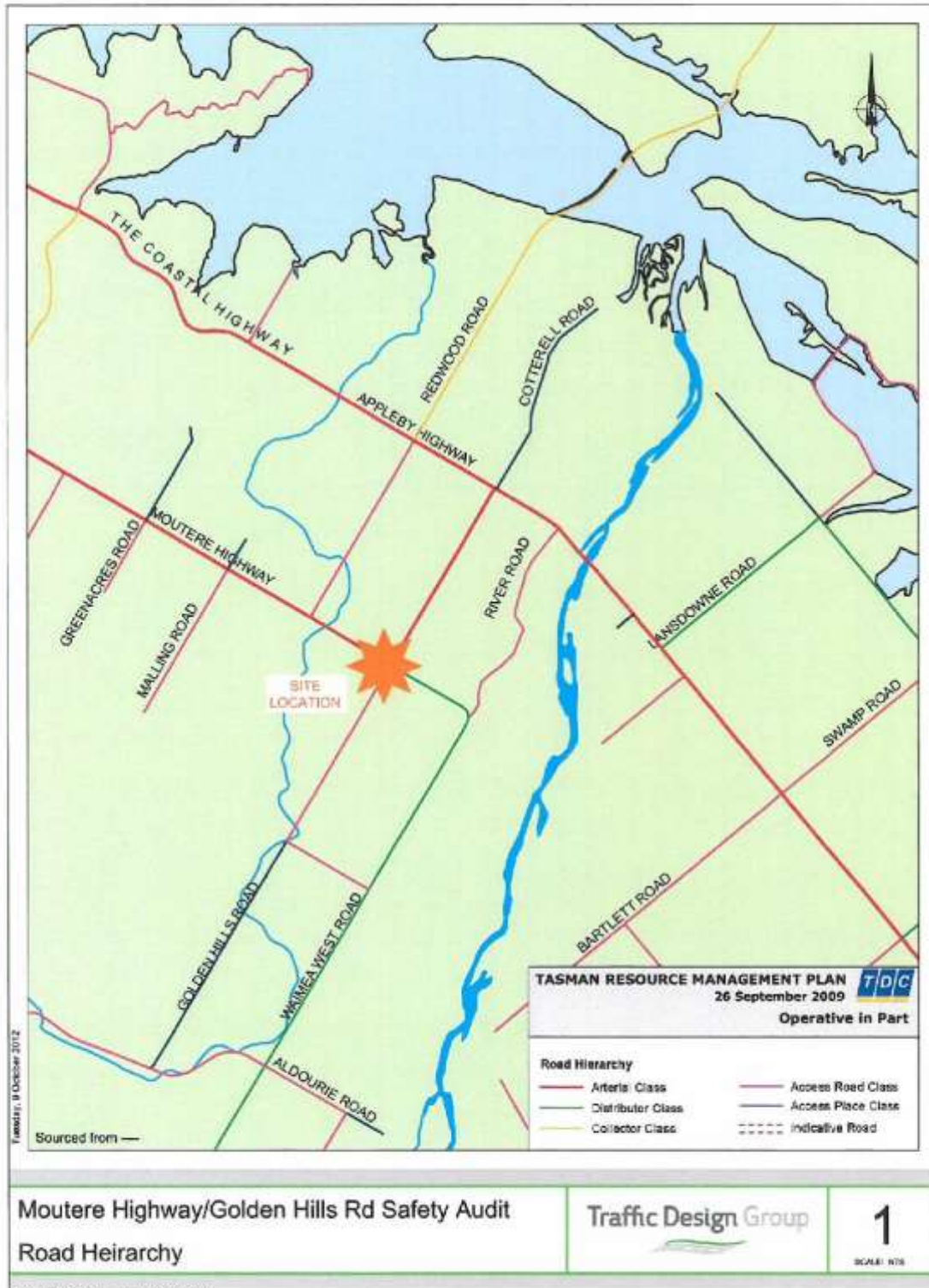
- hand drawn concept plan dated 6 September 2012 (1:250 scale at A3);
- tech memo 1;
- tech memo 2;
- tech memo 3.

For completeness, this documentation is appended to this report.

#### 3.3 Disclaimer

The findings, opinions, and recommendations in this report are based on an examination of the concept plan provided and the specified road and environs, and might not address all issues existing at the time of the audit. The report deals with technical matters and readers are urged to seek specific advice on particular matters and not rely solely on the report. While every effort has been made to ensure the accuracy of the report, it is made available strictly on the basis that anyone relying on it does so at their own risk without any liability to members of the audit team or their organisation.

In making recommendations, the safety audit team has been mindful of applying the test of reasonableness.



J:\11800-49\11802\dwg\ngm\11802A1A.dwg



## 4. Identified Issues

The following issues have been identified by the SAT for further consideration by the designer (MWH) and Council.

### 4.1 Size of Roundabout

#### 4.1.1 Moderate: Small Roundabout Diameter Results in Restricted Manoeuvrability for Large Vehicles

The SAT acknowledges that the constraints of the site have led to the concept design having a central island diameter of 13m and an inscribed circle of 30m. At the site, the SAT observed a particularly high proportion of large truck combinations making the right-turn manoeuvre from Waimea West Road onto the Moutere Highway northbound toward SH60. Most of these heavy vehicles are full length (7 or 8 axle) truck and trailer units or large semi-trailers carrying logs or timber products, together with sundry other vehicles such as petrol tanker combinations and the like. Each of these vehicles has a large swept path and takes up much of the existing intersection in making this particular manoeuvre. It is understood that an initial check of the swept paths of such vehicles using the proposed roundabout was made using turning templates. However, it is considered that this manoeuvre, effectively through 270° around the roundabout, will be "very tight" for large truck and trailer combinations and semi-trailers, and certainly tighter than the current manoeuvres with which the existing truck drivers are familiar. Heavy vehicles will only be able to negotiate the roundabout at very low speeds which increases the speed differential between circulating and entering traffic as well as increasing the potential for rollover single vehicle incidents.

A very careful check will need to be made once the design is prepared on CAD, allowing for the mandatory clearances from the swept paths in accordance with recognised practice. Even with these large vehicles coming to a stop or crawl on the approach to the roundabout, it is considered that the manoeuvre will be difficult for trucks, noting that the inscribed diameter of 30m is at the limit for a 15m radius turn without any additional clearance factors. This can be expected to put high stresses on the truck tyres and the pavement surface. It also needs to be recognised that there will be a small adverse camber across the circulating lane for drainage purposes, and will also affect the speed at which trucks in particular can negotiate the roundabout. This reverse camber needs to be kept to a minimum yet still providing positive drainage without ponding, and should not exceed 3%.

It is understood that the central island will include a skirt although such provision is not shown on the concept plan. Even with the potential easing of the path for right-turning trucks in particular that will result, it is considered that some increase in the inscribed diameter may be warranted, in view of the very high proportion of large right turning vehicles at this location. Acknowledging that the majority of drivers are expected to be local, and who have habitually driven this intersection in its current format, there may be a tendency for drivers to attempt to circulate around the roundabout at too great a speed. In this respect, it is noted that experience elsewhere has shown that this can lead to truck roll-over. For this reason, it may be prudent for Council to consult local transport operators with a view to education on the need for taking due care in negotiating the roundabout prior to its implementation.

**Recommendation**

- consider increasing the inscribed diameter of the roundabout to improve the ability of heavy vehicles to negotiate it;
- review the detailed tracking paths at the next stage of design with a view to providing a suitable skirt around the perimeter of the central island and increasing the inscribed diameter of the roundabout as needed;
- consult with the local heavy transport industry during the design process.

**4.2 Sight Distance Constraints****4.2.1 Significant: Sightline Constraints rely upon Slower Approach Speeds**

From the briefing, it was understood that sightlines were measured from 9m back from the stop-line, with the setting back of property boundaries shown so as to provide clear lines of sight of some 60m on three of the four approaches to the roundabout. Scaling of the concept plan suggests that the sightlines may only be available from a point some 7-8m back from the limit lines on three of the approaches. It is acknowledged that property constraints restrict the approach sightline to some 45-50m from the fourth (Golden Hills) approach, from a point 9m back from the limit line, even if the batter is completely cleared of existing vegetation, shown in Photo 2.



Photo 2: Panorama from Golden Hills Rd Approach showing vegetation on the Embankment

Even at 9m, this provides very limited stopping sight distance, noting that it would only be possible to come to stop on the approach from a speed of around 10km/h, in order to give way if required. On the other hand, it could be considered that this has the "benefit" of slowing vehicles down on the approach, provided that drivers are fully aware of the approaching roundabout under all conditions, and of the need to give way. Given that the sightlines on each of the other (major) approaches are in themselves relatively short, the SAT considers it highly desirable that all four approaches provide a similar available sightline to approaching vehicles from the right such that the approach speed to the roundabout on all legs is as consistent as possible for the appropriate judgement of acceptable gaps.

The available options to improve this situation appear to be either to negotiate further land with the land-owner in the southeast quadrant and/or to move the roundabout further to the north with

potential additional land requirements on the respective properties on the north side of the intersection. While a restricted sightline will assist in slowing vehicles on each approach, it is considered that the target sightline is based on the ability to stop once identifying an opposing vehicle, with a minimum target in the vicinity of 15m preferably, or 10m absolute minimum, from the limit line.

#### Recommendation

- consider achieving better sightlines and ideally balance sightlines from each approach.

### 4.3 Approach Geometry

#### 4.3.1 Moderate: Inadequate Width provided between Kerbs on Entry and Exit

Although not clearly identified by the concept plan, it is assumed that all approaches are kerbed. The SAT note that the approach lane widths scale at between 3.5 and 4m between kerbs. This is below the minimum width for an approaching vehicle to be able to pass a disabled vehicle (or a cyclist) on the approaches. It is considered that the approaches need to be widened accordingly. Options that could be considered include widening from the start of the splitter island to at least as far as the entry to the alternative cycle path (and this will likely assist with the design of the ramp transition for the cycle path). Alternatively, the cycle path might be extended back to the start of the splitter island.

#### Recommendation

- review the approach widths (with consideration given to the effect on geometry) to ensure adequate width is provided for all traffic.

#### 4.3.2 Significant: Approach Speed Controls

In acknowledging the sightline constraints of this site, the SAT consider that the most significant issue is to get the speed of approaching vehicles down to an acceptable level in order to give way to any approaching vehicles; ie provide for comfortable deceleration from approach speed to zero.

Achieving a reduction in speed will be contingent upon achieving a high level of conspicuity of the splitter islands and the roundabout in this rural locality. Although details are not provided, it will be important to maximise the conspicuity of the proposed new roundabout from each of the relatively high speed rural approaches.

The SAT considers that it will be important to provide a strong vertical profile on all of the high speed approaches and the roundabout itself by way of appropriate traffic management measures. Elements that might be considered include flexible, high-visibility posts along the splitter islands, longer splitter islands and possibly gated roundabout directional signs on the approaches. In relation to signage generally, it will be necessary to remove any trees that will have the potential to block visibility of any signs, over time.

The central island, inside the proposed skirt, will need to be raised as far as practicable. It is also suggested that a frangible central lighting column might usefully be located within the central island so as to assist with profile during both day and night-time (and will assist with breaking up the existing lines of lighting poles that take the driver's eye through this intersection).

Consideration should also be given to the use of over-size chevron signs facing each approach, to also assist with conspicuity and the need to significantly reduce speed at this intersection.

#### Recommendations

- increase the length of the splitter and adjacent shoulder kerb to meet stopping distance requirements and provide for kerb to extend for the full extent of the splitter islands;
- raise profile of central island as far as practicable, including use of over-size chevrons;
- consider gated directional signage with good sightlines;
- consider use of vertical features within the splitter islands to accentuate their presence.

#### 4.3.3 Low: Narrow Pedestrian/Cycle cut-downs in the Splitter Islands

The SAT acknowledges that the width of the cut-downs as shown in the concept plan is a function of the geometry of a small radius roundabout such as this. It is considered to be adequate for pedestrians but not sufficient to fully 'protect' a cyclist crossing the road. The SAT note the low volume of inexperienced cyclists and the likelihood that more experienced cyclists may stay on the carriageway.

#### Recommendation

- consider increasing the width of the splitter island to accommodate cyclists.

### 4.4 Services

#### 4.4.1 Low: Close Proximity of Power Poles

The SAT acknowledges the need for relocation of some poles as noted on the plan, and of the desire of the service company to maintain the existing pole alignment. As a consequence, it is observed that some poles will remain close to the carriageway. Although recognising that this is generally an improvement on the existing situation, they will all be relatively close to the intersection.

#### Recommendation

- consider the need to protect all poles at or on the approaches to the roundabout.

### 4.5 Driveways on Intersection Approaches

#### 4.5.1 Comment: Access to Church blocked by Splitter Island

It is noted that as currently shown on the concept plan, the splitter island will block vehicle access to/from the church driveway on the Moutere north approach, some 40m from the intersection, as shown in Photo 3.

9



Photo 3: Existing vehicle access to Church

**Recommendation**

- open up a suitable gap in the median.

**4.5.2 Low: Closest Driveway on Golden Hills Road is too close to Proposed Roundabout**

The closest access to the property on the Golden Hills approach (currently gated) is only some 25m from the intersection, just beyond the power pole shown in the following Photo 4.



Photo 4: Close proximity of first driveway on Golden Hills Road Approach

A second driveway is formed further from the intersection and appears to be in more common usage.

**Recommendation**

- that the closest driveway should be more clearly shut, with no kerb crossing provided, in conjunction with construction of this (or any) proposed improvement to the intersection.

**4.6 Drainage**

**4.6.1 Comment**

The SAT observed ponding of water within the road reserve adjoining this intersection, as evidenced in the previous Photo 4 and in the following Photos 5 & 6.



Photo 5: Ponding adjoining Existing Intersection



**Photo 6: Ponding at Existing Exit to Moutere Highway (north) and associated Pavement Deterioration**

In summary, there is little evidence of any positive drainage provisions associated with the existing intersection.

The proposed roundabout and approach kerbing will channelise the water and therefore a suitable drainage system will need to be identified at the detailed design phase. The shaping of the circulating lane will need to be outward sloping so as to provide adequate drainage on the one hand and minimise adverse camber, on the other.

## 4.7 Road Pavement Surfacing

### 4.7.1 Comment: Proposed Roundabout will require complete resurfacing

The existing pavement is showing significant signs of deterioration, with a pot-hole on the Golden Hills approach and cracking at the Moutere Highway (north) exit as shown in the previous Photo 6. Both of these are likely to be as a result of water ingress, reinforcing the need for positive drainage.

At the detailed design stage, there will also be a need to design the new surface to withstand the increased tyre/road stresses that will result from trucks in particular negotiating the roundabout. It is expected that a new A/C surface will be needed across the whole of the new roundabout and its approaches. Consideration should also be given to the use of a high friction surfacing on the approaches where, as previously noted, adequate inter-visibility sightlines are not achieved.

## 4.8 Lighting

### 4.8.1 Comment: Significant upgrade will be Required

It is recognised that the lighting design will come at the next phase of the design. The SAT notes however, that the lighting will need to meet the required standard across both the roundabout and the full extent of the approaches through to and including the nose of the splitter islands. Lighting immediately in advance of the nose of the splitter island will be critical to the safe operation of the roundabout in a high-speed rural environment such as this, as will lighting of the central island and circulating lane.



## 5. Auditors' Statement

We certify that we have reviewed the concept design plan for the design of the Russ' Corner roundabout. The auditors have inspected the existing intersection in relation to the concept plan, endeavouring to identify features which could be modified to improve safety. There are several existing issues that need to be addressed at the next phase of design, as described. It is acknowledged that the issues raised will require more detailed consideration by the designer and Council.

Signed:

Date: 9 October 2012

Dave Petrie  
Senior Associate  
Traffic Design Group



Ian Carlisle  
Senior Associate  
Traffic Design Group



---

Traffic Design Group

Moutere Highway/Waimea West Road, (Russ' Corner) Proposed Roundabout  
Safety Audit Report  
11802 Concept Safety Audit Report.docx



**SAFETY AUDIT RESPONSE FORM**

**LOCATION :** Moutere Highway, Tasman District      **SAFETY AUDIT OF:** Moutere Highway/Waimca West/Golden Hills  
**DATE:** October 2012      **AUDITORS:** Dave Petrie, Ian Cartisle

ITEM	ISSUE	RECOMMENDATIONS	DESIGN TEAM RESPONSE	COUNCIL DECISION	ACTION FOR DESIGNER
4.1.1	Moderate : Small roundabout diameter results in restricted manoeuvrability for large vehicles	<ul style="list-style-type: none"> <li>■ consider increasing the inscribed diameter of the roundabout to improve the ability of heavy vehicles to negotiate it</li> <li>■ review the detailed tracking paths at the next stage of design with a view to providing a suitable skirt around the perimeter of the central island and increasing the inscribed diameter of the roundabout as needed</li> <li>■ consult with the local heavy transport industry during the design process</li> </ul>			
4.2.1	Significant: Sightline constraints rely upon slower approach speeds	<ul style="list-style-type: none"> <li>■ consider achieving better sightlines and ideally balance sightlines from each approach</li> </ul>			
4.3.1	Moderate: Inadequate width provided between kerbs on entry and exit	<ul style="list-style-type: none"> <li>■ review the approach widths (with consideration given to the effect on geometry) to ensure adequate width is provided for all traffic</li> </ul>			
4.3.2	Significant: Approach Speed Controls	<ul style="list-style-type: none"> <li>■ increase the length of the splitter and adjacent shoulder/kerb to meet stopping distance requirements and provide for kerb to extend for the full extent of the splitter islands</li> <li>■ raise profile of central island as far as practicable, including use of over-size chevrons</li> </ul>			



Moutere Highway/Waimca West Road, (Rust Corner) Proposed Roundabout Safety Audit Report  
 11802 Concept Safety Audit Report.docx

ITEM	ISSUE	RECOMMENDATIONS	DESIGN TEAM RESPONSE	COUNCIL DECISION	ACTION FOR DESIGNER
4.3.3	Low: Narrow Pedestrian/Cycle cut-downs in the Splitter Islands	<ul style="list-style-type: none"> <li>■ consider gated directional signage with good sightlines</li> <li>■ consider use of vertical features within the splitter islands to accentuate their presence</li> <li>■ consider increasing the width of the splitter island to accommodate cyclists</li> </ul>			
4.4.1	Low: Close proximity of power poles	<ul style="list-style-type: none"> <li>■ consider the need to protect all poles at or on the approaches to the roundabout</li> </ul>			
4.5.1	Comment: Access to church blocked by splitter island	<ul style="list-style-type: none"> <li>■ open up a suitable gap in the median</li> </ul>			
4.5.2	Low: Closest driveway on Golden Hills Road is too close to proposed roundabout	<ul style="list-style-type: none"> <li>■ that the closest driveway should be more clearly shut, with no kerb crossing provided, in conjunction with construction of this (or any) proposed improvement to the intersection</li> </ul>			

---

## Appendix A

### MWH Technical Memos

---



## PROJECT TECHNICAL MEMORANDUM FOR TASMAN DISTRICT COUNCIL

Date: 7 May 2012

Correspondence Out No.: 23151

To: Tasman District Council

Project Technical Memo No.: 1

For the Attention of: Gary Clark

Project Stage: Concept

Project: Moutere Highway / Waimea West Road

Project Number: Z14489

Subject: Concept Design

Prepared by: Mike van Enter	Checked by: Rhys Palmer
Reviewed by: Geoff Ward	Authorised by: Alison Morrison

### 1 Introduction & Purpose of Report

The intersection of Moutere Highway / Waimea West Road / Golden Hills has been identified as a crash black spot and an area of concern by RISA audits.

The intersection is a cross roads intersection and has an undesirable geometric form. The intersection gives priority through a tight 90 degree bend to Moutere Highway through traffic. Waimea West Road and Golden Hills Road both intersect on the outside of the bend.

The geometric form allows through movements on Moutere Highway around a 90 degree bend at around 30-40km/h, this is out of context with the surrounding speed environment. The Moutere Highway southbound to Golden Hills Road movement is not restricted by geometry or priority control and as such can occur at 100km/h, this is significantly out of context with all other movements at the intersection. Further, the Stop (x2) and Giveaway priority control may cause some confusion. Any proposed improvements should ensure a high level of visibility and readability of the intersection.

This Memo outlines initial consideration of a mountable roundabout to enable further discussion and to allow a robust scope for improvement to be determined.

### 2 Investigations

#### 2.1 Traffic Volumes

Road Name	Hierarchy (TRMP)	Route position	Date	AADT (vpd)	Peak Hr (veh/hr)	Time	HCV %	85th % Speed
GOLDEN HILLS ROAD	ACCESS ROAD	0.065 <sup>1</sup>	25-Mar-10	413			9.0	
MOUTERE HIGHWAY	ARTERIAL	2.051 <sup>2</sup>	14-Sep-11	2,321	259	4-5pm	9.6	101.2
WAIMEA WEST ROAD	DISTRIBUTOR	5.168 <sup>3</sup>	24-Sep-11	1,623	191	3-4pm	13.3	104.0

- 65m beyond intersection.
- 500m beyond (West) of intersection. Prior to Redwood Road.
- Between Eves Valley Road and Challies Road.



## 2.2 Crash History

Description of Events	Crash Factors	Movement	Injury	Year	Natural Light	Involved Golden Hills
Cyclist on Waimea West Road (turning right onto Moutere Highway northbound) failed to stop and collided with car southbound on Moutere Highway (travelling into Golden Hills Road)	Cyclist did not stop at stop sign	Crossing, Turning	Minor	2008	Overcast	Yes
SUV Southbound on Moutere Highway (travelling into Golden Hills) hit Van crossing at right angle from right	Van failed to give way at give way sign, misjudged speed of right of way vehicle	Crossing, No turns	Minor	2008	Bright	Yes
Car eastbound on Moutere Highway missed intersection and hit tree	Fatigue	Missed intersection	Minor	2009	Bright	No
Car southbound on Moutere Highway (travelling into Golden Hills) overtaking hit truck making right turn	Car overtaking at no passing line / intersection, misjudged intentions of other party	Turning vs. same direction	Minor	2008	Bright	Yes
Car turning right from Waimea West (at Stop) turned in front of car eastbound on Moutere Highway travelling through to Waimea West (at Give way)	Car failed to give way at stop sign	Right turn against	Minor	2010	Dark	No
Car eastbound on Moutere Highway (travelling through to Waimea West) failed to give way and collided with truck southbound on Moutere highway (travelling through to Golden Hills)	Car failed to give way, didn't see/look when required, alcohol suspected	Crossing, No turns	Fatal	2011	Bright	Yes

The table shows that four crashes involved the movement into Golden Hills Road. Two vehicles missed the intersection (fatigue and alcohol/drugs suspected also a factor) and one involved priority confusion.

## 3 Options

Three mini roundabout sizes have been sketched (SK01-SK03) to check tracking and sight distance feasibility.

SK01 identifies that a 20m inscribed diameter will be too tight to allow two opposing semi-trailer units to make the 90 degree Moutere Hwy – Moutere Hwy bend and that approach splitter islands cannot be used. SK02 shows that a 25m inscribed diameter will allow opposing semi-trailer units. SK03 identifies that a 30m inscribed diameter would allow a non-mountable roundabout of 13m diameter.



Sight distance for a 5 second gap at 50km/h approach speed (70m) have been shown from the limit line. SK03 shows that Criterion 3 sight lines are not easily achievable. On this basis the sketch SK02 & SK03 also show sight distance on approach from 9m behind the limit line as a minimum. Sight distance 9m from the limit line is generally expected to allow a vehicle to approach at 10km/h. Sight distances on approach need to be carefully considered to control / allow appropriate approach speeds. There are land purchase considerations in providing appropriate sight distances.

#### 4 Discussion Items

- Sight distance:
  - Appropriate sight distance to achieve desired speeds
  - Land requirements,
- Safety:
  - Currently the out of context curve limit speed to 30-50km/h.
  - Priority Controls limit straight through speeds with the exception of Moutere Highway to Golden Hills, this movement can occur at high (100km/h) speed,
  - Roundabout may provide limited physical control of straight through speeds, but does limit through speeds of compliant drivers by the need to give way,
  - Drivers travelling from Moutere Highway straight through to Waimea West Road may not slow as much as drivers on other approach legs, as the likelihood of needing to give way to Golden Hills traffic could be perceived to be relatively low.
- Intersection visibility:
  - Requires highly visible (large size retro reflective) map type advanced direction signs to ensure drivers understand there is a roundabout
  - Splitter islands which will add some physical control of through speeds and turning movements should ideally be lit along with intersection and its immediate approaches,
- General:
  - Would adding additional delineation signage and lighting to the existing layout achieve similar safety gains for less cost than a roundabout.
- Cost Estimate:

Item	Description	Unit	Quantity	Rate	Amount
1.1	Map direction signs		3	10-15K	30-45K
1.2	Regulatory and Warning signs		20	\$250	5K
1.3	Mountable Roundabout & Splitter Islands		1	25-40K	25-40K
1.4	Kerb, Channel & Minor Pavement			25K	25K
1.5	Lighting		6	30K	30K
1.6	Land Purchase & Legal		4	4-20K	16-80K
1.7	Fees	%	10-20		13-26K
1.8	Contingency	%	30		39K
	<b>TOTAL ROC</b>				<b>183K – 290K</b>

#### 5 Recommendation

That MWH and Council meet to discuss the three options presented plus the discussion items in this report and use the findings to set the scope of the next stage.

*This Project Technical Memorandum has been prepared for the benefit of Tasman District Council. No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person.*



*This disclaimer shall apply notwithstanding that the Project Technical Memorandum may be made available to Tasman District Council and other persons for an application for permission or approval or to fulfil a legal requirement.*







## PROJECT TECHNICAL MEMORANDUM FOR TASMAN DISTRICT COUNCIL

**Date:** 15 August 2012  
**To:** Tasman District Council  
**Attention:** Steve Elkington  
**Copy:** Gary Clark  
**Project:** Moutere Highway / Waimea West Road / Golden Hills Road  
**Subject:** Project Feasibility Report

**Correspondence Out No.:** 23843  
**Project Technical Memo No.:** 2  
**Project Stage:** Concept  
**Project Number:** Z1448916

Prepared by: Mike van Enter	Checked by: Rhys Palmer
Reviewed by: Rhys Palmer 	Authorised by: Alison Morrison 

### 1 Introduction

The intersection of Moutere Highway / Waimea West Road / Golden Hills Road has been identified as a crash black spot and an area of concern by RISA audits.

The intersection is a cross roads intersection and has an undesirable geometric form. The intersection gives priority through a tight 90 degree bend to Moutere Highway through traffic. Waimea West Road and Golden Hills Road both intersect on the outside of the bend.

The geometric form allows through movements on Moutere Highway around a 90 degree bend at around 30-40km/h, this is out of context with the surrounding speed environment. The Moutere Highway southbound to Golden Hills Road movement is not restricted by geometry or priority control and as such can occur at 100km/h, this is significantly out of context with all other movements at the intersection. Further, the Stop (x2) and Giveaway priority control may cause some confusion. Any proposed improvements should ensure a high level of visibility and readability of the intersection.

Initial concepts have been developed for the options listed below. They have not been considered further as Council has advised that the cost of these options is prohibitive. The estimated project costs have been included for information:

- Tight channelized seagull layout, including closure of Golden Hills Road. Total project cost \$833,520.
- Ease Moutere Highway radius and construct new tee-intersection: Total project cost \$954,960.
- High speed roundabout: Total project cost \$1,208,640.

Technical Memorandum No. 1 dated 7 May 2012 provides discussion points on mini roundabout options (concept sketch attached). From this discussion, MWH were instructed that the 30m inscribed diameter option should be progressed to land owner consultation and project feasibility stage.

The economic evaluation on this option was completed using Simplified Procedures (SP5) Isolated Intersection Improvements as outlined in the NZ Transport Agency's (NZTA) Economic Evaluation Manual (EEM). Time zero is 1 July 2012.



## 2 Investigations

### 2.1 The Site

The existing site is described as follows:

- The intersection of Moutere Highway / Waimea West Road / Golden Hills Road has been identified as a crash black spot and an area of concern by RISA audits.
- The form of the intersection is a cross roads, with priority given to Moutere Highway Traffic through a 90 degree bend. Both Waimea West Road and Golden Hills Road are on the outside of the tight bend with Stop priority control.
- The existing 90 degree bend is an out of context curve with advisory speed of 35km/h with 100km/h straight approaches in all four directions.

### 2.2 Options

The economic evaluation assesses the following options:

- The do minimum is continued annual and periodic maintenance.
- Option 1 is to alter the intersection to a roundabout.

### 2.3 Traffic Volumes

Traffic data has been summarised in Technical Memorandum No.1.

### 2.4 Crash History

Crash history has been summarised in Technical Memorandum No.1.

For the purposes of the economic evaluation we have ignored the January 2009 crash in which the driver missed the intersection as the driver had fallen asleep. The installation of a roundabout is unlikely to reduce this crash type.

## 3 Project Benefits

It is expected that Option 1 will improve safety by slowing the currently unrestricted Moutere Highway – Golden Hills Road movement and provide for greater intersection visibility.

### 3.1 Travel Time and Operating Costs

The predominant movement is along the Moutere Highway through a 90 degree bend at the intersection. This is negotiated at 30-40km/h. The proposed upgrade will increase delays for these motorists with a corresponding decrease in delay to movements from Waimea West. At this preliminary stage of the project it has been determined that the changes to vehicle operating costs and travel time are negligible and an evaluation of these disbenefits has not been completed.

### 3.2 Crash Costs

Although the installation of a roundabout is a fundamental change to the intersection, a crash rate analysis has not been undertaken as the proposed upgrade does not meet the criteria for a "high speed roundabout". The crash history at the intersection is sufficient to complete a crash by crash analysis. This has been completed using a 30% reduction for all turning movements at the intersection.



## 4 Project Costs

### 4.1 Capital Costs

MWH have estimated the rough order costs to be in the range of \$183,000 to \$290,000 as outlined in Technical Memorandum No.1.

### 4.2 Maintenance Costs

The proposed upgrade will largely occupy the same carriageway area as the current intersection, with only marginal lane widening needed to accommodate the turning movements. There will be a need for additional raised traffic islands and additional street lighting. It is expected that three of four additional street lights are needed. At this preliminary stage of the project it has been determined that the changes to annual maintenance and operating costs are negligible and an evaluation of these costs has not been completed.

## 5 Economics

The option benefit cost ratio (BCR) is 4.7 and the first year rate of return is 34%. The economic evaluation worksheets are attached.

## 6 Feasibility

The design has previously been discussed as outlined by Technical Memorandum No.1 dated 7 May 2012. Since that memo, consultation with property owners has commenced. From initial communications it is likely that all property purchase to ensure sight lines will proceed with the exception of No. 3 Golden Hills Road. This property has an earth bund immediately inside the property boundary to give privacy, noise reduction and safety to the owners. The owners do not wish to remove this however, they are happy for vegetation to be cleared on the road side. It has been assessed that this will give around 50m visibility from 9m behind the limit line on Golden Hills Road. This is less than the 70m achievable on all other legs.

The Concept sketch and semi-trailer tracking check completed using Auto-Turn identifies that the power pole on the southwest corner will be too close to the carriageway. Network Tasman has indicated that the power pole on the southwest corner can be moved at reasonable cost, to allow suitable clearance. This also allows sufficient off-set to install guardrail.

The installation of a roundabout will create greater stresses on the existing pavement. A pavement assessment and design should be undertaken to understand effects on pavement life and surface. At this stage the estimate does not include pavement strengthening.

## 7 Conclusion

Given that the alternative options considered are cost prohibitive, then the proposed roundabout option should be progressed. Although the concept does not meet design guidelines for a 100km/h environment, it is agreed that the concept offers safety improvements to the status quo. Economic analysis shows a positive BCR of 4.7 and the concept is feasible to construct.



## 8 Recommendation

- Arrange independent safety audit to concept level.
- Commence detail design stage.
- Undertake pavement assessment.
- Proceed with land purchase after safety audit.

*This Project Technical Memorandum has been prepared for the benefit of Tasman District Council. No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person.*

*This disclaimer shall apply notwithstanding that the Project Technical Memorandum may be made available to Tasman District Council and other persons for an application for permission or approval or to fulfil a legal requirement.*

Moutere Highway Intersection Improvements  
Roundabout

SP5 Isolated intersection improvements

Evaluation Summary

Worksheet 1

1 Evaluator(s) KT Blackie  
Reviewer(s) \_\_\_\_\_

2 Project/package details  
Approved organisation name Tasman District Council  
Project/package name Moutere Highway Intersection Improvements  
Your reference \_\_\_\_\_  
Project description \_\_\_\_\_  
Describe the problem to be addressed \_\_\_\_\_

3 Location  
Brief description of location \_\_\_\_\_

4 Alternatives and options  
Describe the do minimum \_\_\_\_\_  
Summarise the options assessed  
Option name Roundabout  
Description \_\_\_\_\_

5 Timing  
Time zero (assumed construction start date) 1/07/2012  
Expected duration of construction (months) 3

6 Economic efficiency  
Date economic evaluation completed 22/06/2012  
Base date for costs and benefits 1/07/2011  
Discount rate (%) 8.0  
Analysis period (years) 30  
AADT at time zero 2,379.0  
Traffic growth rate at time zero (%) 2.44  
Traffic volume entering the intersection 4,357 in the year 1/07/2011  
Posted speed limit 100km/h near rural

7 PV cost of do minimum \$ 0 A

8 PV cost of the preferred option \$ 279,258 B

9 Benefit values from worksheet 4, 5 and 6

PV travel time cost savings	<u>\$ 0</u>	C × Update factor <sup>100</sup>	<u>1.33</u>	=	<u>\$ 0</u>	W
PV VOC and CO2 savings	<u>\$ 0</u>	D × Update factor <sup>100</sup>	<u>1.04</u>	=	<u>\$ 0</u>	Y
PV accident cost savings	<u>\$ 1,114,099</u>	E × Update factor <sup>100</sup>	<u>1.17</u>	=	<u>\$ 1,303,495</u>	Z

10 BCRN =  $\frac{\text{PV net benefits}}{\text{PV net costs}} = \frac{W + Y + Z}{B - A} = \frac{\$ 1,303,495}{\$ 279,258} = \mathbf{4.7}$

11 FYRR =  $\frac{\text{PV 1st year benefits}}{\text{PV net costs}} = \frac{[(W+Y)/DF(\text{voc}) + Z/DF(\text{ac})] \times 0.93}{B - A} = \mathbf{34\%}$

Moutere Highway Intersection Improvements

SP5 Isolated intersection improvements

Cost of do minimum

Worksheet 2

**1 Historic maintenance cost data** (Indicate whether assessed or actual)

Maintenance costs for the site over the last 3 years

	Year 1	\$ 0		
	Year 2	\$ 0		
	Year 3	\$ 0		
		Maintenance costs for the site this year	\$ 0	
		Assumed future maintenance costs	\$ 0	

**2 PV of annual maintenance costs**

Total = \$ 0 × 11.70 = \$ 0 (a)

**3 PV of periodic maintenance costs**

Periodic maintenance will be required in the following years

Year	Type of maintenance	Amount \$	SPPWF	PV
Sum of PV of periodic maintenance				

(b)

**4 PV of annual operating costs**

Total = \$ 0 × 11.70 = \$ 0 (c)

**5 PV of total do minimum costs**

(a) + (b) + (c) = \$ 0 A

Transfer total to A on worksheet 1

Comments

Moutere Highway Intersection Improvements  
Roundabout

SP5 Isolated intersection improvement

Cost of the option Worksheet 3

- 1 PV of works as per attached estimate sheets  
 $\$ 290,000 \times 0.93 = \$ 268,519$  (a)
- 2 PV of maintenance cost in year one  
 (enter actual dollar amount) =  $\$ 0$  (b)
- 3 PV of annual maintenance cost from year 2 - 30 (following completion of works)  
 $\$ 1,000 \times 10.74 = \$ 10,740$  (c)
- 4 PV of periodic maintenance costs
 

Year	Type of maintenance	Amount \$	SPPWF	Present Value
Sum of PV of periodic maintenance				\$0 (d)
- 5 PV of annual operating costs (separate to maintenance costs)  
 (years 2 to 30 inclusive)  $\$ 0 \times 10.74 = \$ 0$  (e)
- 6 PV of total costs of option  
 $(a) + (b) + (c) + (d) + (e) = \$ 279,258$  B

Comments

Moutere Highway Intersection Improvements

Worksheets A6: Accident cost savings

Accident by accident analysis - do minimum

Worksheet 6.2

Project option	Moutere Highway Intersection Improvements		
Movement category	Overtaking	Vehicle movement	Truck
1 Do minimum mean speed	35.0 km/h	Road category	
Posted speed limit	100km/h near rural	Traffic growth rate	2.44%

Do minimum	Severity			Non-Injury
	Fatal	Serious	Minor	
3 Number of years of typical accident rate records	1/01/2007 to 31/12/2011 = 5.0 Years			
4 Number of reported accidents over period	0	0	1	0
5 Fatal/Serious severity ratio (tables A6.19 (a) to (c))	0.14	0.66		
6 Number of reported accidents adjusted by severity (4) x (5)	0.00	0.00	1.00	0.00
7 Accidents per year = (6)/(3)	0.00	0.00	0.20	0.00
8 Adjustment factor for accident trend (table A6.1 (a))	1.04			
9 Accidents per year = (7) x (8)	0.00	0.00	0.21	0.00
10 Under-reporting factors (table A6.20(a) and (b))	1.0	1.9	4.5	18.5
11 Total estimated accidents per year = (9) x (10)	0.00	0.00	0.93	0.00
12 Accident cost, 100 km/h limit (tables A6.21(e) to (h))	3,100,000	425,000	27,000	7,400
13 Accident cost, 50 km/h limit (tables A6.21(a) to (d))	3,150,000	330,000	26,000	5,900
14 Mean speed adjustment = ((1) - 50)/50	-0.20			
15 Cost per accident = (13) + [(14) x (12) - (13)]	3,160,000	311,000	25,800	5,600
16 Accident cost per year = (11) x (15)	0	0	24,117	0
17 Total cost of accidents per year (sum of columns in row (16) fatal + serious + minor + non-injury)	\$ 24,117			

07/09/2012 12:23:42

NZ Transport Agency Economic Evaluation Software Part 1 Version: 5.2.6



Worksheets A6: Accident cost savings

Accident by accident analysis - do minimum

Worksheet 6.2

Project option	Moutere Highway Intersection Improvements		
Movement category	Crossing, direct	Vehicle movement	Truck
1 Do minimum mean speed	35.0 km/h	Road category	
Posted speed limit	100km/h near rural	Traffic growth rate	2.44%

	Do minimum	Severity			Non-Injury
		Fatal	Serious	Minor	
3	Number of years of typical accident rate records	1/01/2007 to 31/12/2011 = 5.0 Years			
4	Number of reported accidents over period	1	0	0	0
5	Fatal/Serious severity ratio (tables A6.19 (a) to (c))	0.25	0.75		
6	Number of reported accidents adjusted by severity (4) x (5)	0.25	0.75	0.00	0.00
7	Accidents per year = (6)/(3)	0.05	0.15	0.00	0.00
8	Adjustment factor for accident trend (table A6.1 (a))	1.04			
9	Accidents per year = (7) x (8)	0.05	0.16	0.00	0.00
10	Under-reporting factors (table A6.20(a) and (b))	1.0	1.9	4.5	18.5
11	Total estimated accidents per year = (9) x (10)	0.05	0.30	0.00	0.00
12	Accident cost, 100 km/h limit (tables A6.21(e) to (h))	4,400,000	390,000	31,000	7,600
13	Accident cost, 50 km/h limit (tables A6.21(a) to (d))	3,100,000	375,000	31,000	5,900
14	Mean speed adjustment = ((1) - 50)/50	-0.20			
15	Cost per accident = (13) + [(14) x (12) - (13)]	2,840,000	372,000	31,000	5,560
16	Accident cost per year = (11) x (15)	147,488	110,118	0	0
17	Total cost of accidents per year (sum of columns in row (16) fatal + serious + minor + non-injury)	\$ 257,606			

Routere Highway Intersection Improvements

### Worksheets A6: Accident cost savings

#### Accident by accident analysis - do minimum

#### Worksheet 6.2

Project option	Routere Highway Intersection Improvements		
Movement category	Crossing, direct	Vehicle movement	Car, van, other
1 Do minimum mean speed	35.0 km/h	Road category	
Posted speed limit	100km/h near rural	Traffic growth rate	2.44%

	Do minimum	Severity			Non-Injury
		Fatal	Serious	Minor	
3	Number of years of typical accident rate records	1/01/2007 to 31/12/2011 = 5.0 Years			
4	Number of reported accidents over period	0	0	1	0
5	Fatal/Serious severity ratio (tables A6.19 (a) to (c))	0.25	0.75		
6	Number of reported accidents adjusted by severity (4) x (5)	0.00	0.00	1.00	0.00
7	Accidents per year = (6)/(3)	0.00	0.00	0.20	0.00
8	Adjustment factor for accident trend (table A6.1 (a))	1.04			
9	Accidents per year = (7) x (8)	0.00	0.00	0.21	0.00
10	Under-reporting factors (table A6.20(a) and (b))	1.0	1.9	4.5	18.5
11	Total estimated accidents per year = (9) x (10)	0.00	0.00	0.93	0.00
12	Accident cost, 100 km/h limit (tables A6.21(e) to (h))	3,650,000	460,000	29,000	2,500
13	Accident cost, 50 km/h limit (tables A6.21(a) to (d))	3,400,000	395,000	24,000	1,900
14	Mean speed adjustment = ((1) - 50)/50	-0.20			
15	Cost per accident = (13) + [(14) x (12) - (13)]	3,350,000	382,000	23,000	1,780
16	Accident cost per year = (11) x (15)	0	0	21,500	0
17	Total cost of accidents per year (sum of columns in row (16) fatal + serious + minor + non-injury)	\$ 21,500			

07/09/2012 12:23:42

NZ Transport Agency Economic Evaluation Software Part 1 Version: 5.2.6

## Worksheets A6: Accident cost savings

### Accident by accident analysis - do minimum

### Worksheet 6.2

Project option	Moutere Highway Intersection Improvements		
Movement category	Crossing, turning	Vehicle movement	Push cycle
1 Do minimum mean speed	35.0 km/h	Road category	
Posted speed limit	100km/h near rural	Traffic growth rate	2.44%

	Do minimum	Severity			Non-Injury
		Fatal	Serious	Minor	
3	Number of years of typical accident rate records	1/01/2007 to 31/12/2011 = 5.0 Years			
4	Number of reported accidents over period	0	0	1	0
5	Fatal/Serious severity ratio (tables A6.19 (a) to (c))	0.15	0.85		
6	Number of reported accidents adjusted by severity (4) x (5)	0.00	0.00	1.00	0.00
7	Accidents per year = (6)/(3)	0.00	0.00	0.20	0.00
8	Adjustment factor for accident trend (table A6.1 (a))	1.04			
9	Accidents per year = (7) x (8)	0.00	0.00	0.21	0.00
10	Under-reporting factors (table A6.20(a) and (b))	1.0	1.9	4.5	16.5
11	Total estimated accidents per year = (9) x (10)	0.00	0.00	0.93	0.00
12	Accident cost, 100 km/h limit (tables A6.21(e) to (h))	3,100,000	325,000	17,000	1,200
13	Accident cost, 50 km/h limit (tables A6.21(a) to (d))	3,100,000	325,000	16,000	1,000
14	Mean speed adjustment = ((1) - 50)/50	-0.20			
15	Cost per accident = (13) + ((14) x (12) - (13))	3,100,000	325,000	15,800	960
16	Accident cost per year = (11) x (15)	0	0	14,770	0
17	Total cost of accidents per year (sum of columns in row (16) fatal + serious + minor + non-injury)	\$ 14,770			

Moutere Highway Intersection Improvements

Worksheets A6: Accident cost savings

Accident by accident analysis - do minimum

Worksheet 6.2

Project option	Moutere Highway Intersection Improvements		
Movement category	Crossing, turning	Vehicle movement	Car, van, other
1 Do minimum mean speed	35.0 km/h	Road category	
Posted speed limit	100km/h near rural	Traffic growth rate	2.44%

	Do minimum	Severity			Non-Injury
		Fatal	Serious	Minor	
3	Number of years of typical accident rate records	1/01/2007 to 31/12/2011 = 5.0 Years			
4	Number of reported accidents over period	0	0	1	0
5	Fatal/Serious severity ratio (tables A6.19 (a) to (c))	0.15	0.85		
6	Number of reported accidents adjusted by severity (4) × (5)	0.00	0.00	1.00	0.00
7	Accidents per year = (6)/(3)	0.00	0.00	0.20	0.00
8	Adjustment factor for accident trend (table A6.1 (a))	1.04			
9	Accidents per year = (7) × (8)	0.00	0.00	0.21	0.00
10	Under-reporting factors (table A6.20(a) and (b))	1.0	1.9	4.5	18.5
11	Total estimated accidents per year = (9) × (10)	0.00	0.00	0.93	0.00
12	Accident cost, 100 km/h limit (tables A6.21(e) to (h))	3,750,000	420,000	27,000	2,400
13	Accident cost, 50 km/h limit (tables A6.21(a) to (d))	3,100,000	370,000	23,000	2,000
14	Mean speed adjustment = ((1) - 50)/50	-0.20			
15	Cost per accident = (13) + [(14) × (12) - (13)]	2,970,000	350,000	22,200	1,920
16	Accident cost per year = (11) × (15)	0	0	20,752	0
17	Total cost of accidents per year (sum of columns in row (16) fatal + serious + minor + non-injury)	\$ 20,752			

Summary of do minimum

Total do minimum accident costs for all accident groupings

\$ 338,746

Moutere Highway Intersection Improvements

### Worksheets A6: Accident cost savings

#### Accident by accident analysis - option

Worksheet 6.3

Project option	Moutere Highway Intersection Improvements		
Option mean speed	50.0 km/h		
Posted speed limit	100km/h near rural		
Movement category	Crossing, direct	Vehicle involvement	Car, van, other

Option	Severity			Non-Injury
	Fatal	Serious	Minor	
Option name Roundabout:				
18 Percentage accident reduction	0.0	0.0	30.0	0.0
19 Percentage of accidents 'remaining' [100 - (18)]	100.0	100.0	70.0	100.0
20 Predicted accidents per year (11) × (19)	0.00	0.00	0.65	0.00
21 Accident cost, 100 km/h limit (tables A6.21(e) to (h))	3,650,000	460,000	29,000	2,500
22 Accident cost, 50 km/h limit (tables A6.21(a) to (d))	3,400,000	395,000	24,000	1,900
23 Mean speed adjustment ((2) - 50)/50	0.00			
24 Cost per accident = (22) + [(23) × (21) - (22)]	3,400,000	395,000	24,000	1,900
25 Accident cost per year = (20) × (24)	0	0	15,704	0
26 Total cost of accidents per year (sum of columns in row (25) fatal + serious + minor + non-injury) \$	15,704			

Project option	Moutere Highway Intersection Improvements		
Option mean speed	50.0 km/h		
Posted speed limit	100km/h near rural		
Movement category	Crossing, direct	Vehicle involvement	Truck

Option	Severity			Non-Injury
	Fatal	Serious	Minor	
Option name Roundabout:				
18 Percentage accident reduction	30.0	30.0	0.0	0.0
19 Percentage of accidents 'remaining' [100 - (18)]	70.0	70.0	100.0	100.0
20 Predicted accidents per year (11) × (19)	0.04	0.21	0.00	0.00
21 Accident cost, 100 km/h limit (tables A6.21(e) to (h))	4,400,000	390,000	31,000	7,600
22 Accident cost, 50 km/h limit (tables A6.21(a) to (d))	3,100,000	375,000	31,000	5,900
23 Mean speed adjustment ((2) - 50)/50	0.00			
24 Cost per accident = (22) + [(23) × (21) - (22)]	3,100,000	375,000	31,000	5,900
25 Accident cost per year = (20) × (24)	112,694	77,704	0	0
26 Total cost of accidents per year (sum of columns in row (25) fatal + serious + minor + non-injury) \$	190,398			

07/09/2012 12:23:44

NZ Transport Agency Economic Evaluation Software Part 1 Version: 5.2.6

Routere Highway Intersection Improvements

Worksheets A6: Accident cost savings

Accident by accident analysis - option

Worksheet 6.3

Project option	Moubere Highway Intersection Improvements		
Option mean speed	50.0 km/h		
Posted speed limit	100km/h near rural		
Movement category	Crossing, turning	Vehicle involvement	Car, van, other

Option	Severity			Non-Injury
	Fatal	Serious	Minor	
Option name Roundabout				
18 Percentage accident reduction	0.0	0.0	30.0	0.0
19 Percentage of accidents 'remaining' [100 - (18)]	100.0	100.0	70.0	100.0
20 Predicted accidents per year (11) × (19)	0.00	0.00	0.65	0.00
21 Accident cost, 100 km/h limit (tables A6.21(e) to (h))	3,750,000	420,000	27,000	2,400
22 Accident cost, 50 km/h limit (tables A6.21(a) to (d))	3,100,000	370,000	23,000	2,000
23 Mean speed adjustment ((2) - 50)/50	0.00			
24 Cost per accident = (22) + [(23) × (21) - (22)]	3,100,000	370,000	23,000	2,000
25 Accident cost per year = (20) × (24)	0	0	15,050	0
26 Total cost of accidents per year (sum of columns in row (25) fatal + serious + minor + non-injury) \$	15,050			

Project option	Routere Highway Intersection Improvements		
Option mean speed	50.0 km/h		
Posted speed limit	100km/h near rural		
Movement category	Crossing, turning	Vehicle involvement	Push cycle

Option	Severity			Non-Injury
	Fatal	Serious	Minor	
Option name Roundabout				
18 Percentage accident reduction	0.0	0.0	30.0	0.0
19 Percentage of accidents 'remaining' [100 - (18)]	100.0	100.0	70.0	100.0
20 Predicted accidents per year (11) × (19)	0.00	0.00	0.65	0.00
21 Accident cost, 100 km/h limit (tables A6.21(e) to (h))	3,100,000	325,000	17,000	1,200
22 Accident cost, 50 km/h limit (tables A6.21(a) to (d))	3,100,000	325,000	16,000	1,000
23 Mean speed adjustment ((2) - 50)/50	0.00			
24 Cost per accident = (22) + [(23) × (21) - (22)]	3,100,000	325,000	16,000	1,000
25 Accident cost per year = (20) × (24)	0	0	10,470	0
26 Total cost of accidents per year (sum of columns in row (25) fatal + serious + minor + non-injury) \$	10,470			

07/09/2012 12:23:44

NZ Transport Agency Economic Evaluation Software Part 1 Version: 5.2.6

Moutere Highway Intersection Improvements

### Worksheets A6: Accident cost savings

#### Accident by accident analysis - option

Worksheet 6.3

Project option	Moutere Highway Intersection Improvements		
Option mean speed	50.0 km/h		
Posted speed limit	100km/h near rural		
Movement category	Overtaking	Vehicle Involvement	Truck

Option	Severity			Non-Injury
	Fatal	Serious	Minor	
Option name Roundabout				
18 Percentage accident reduction	0.0	0.0	30.0	0.0
19 Percentage of accidents 'remaining' [100 - (18)]	100.0	100.0	70.0	100.0
20 Predicted accidents per year (11) x (19)	0.00	0.00	0.65	0.00
21 Accident cost, 100 km/h limit (tables A6.21(e) to (h))	3,100,000	425,000	27,000	7,400
22 Accident cost, 50 km/h limit (tables A6.21(a) to (d))	3,150,000	330,000	26,000	5,900
23 Mean speed adjustment ((2) - 50)/50	0.00			
24 Cost per accident = (22) + [(23) x (21) - (22)]	3,150,000	330,000	26,000	5,900
25 Accident cost per year = (20) x (24)	0	0	17,013	0
26 Total cost of accidents per year (sum of columns in row (25) fatal + serious + minor + non-injury) \$	17,013			

**Summary of option** Roundabout

Total option accident costs for all accident groupings \$ 248,635

## Worksheets A6: Accident cost savings

### Analysis input variables

#### Project level inputs

Project name Moutere Highway Intersection Improvements  
 Location \_\_\_\_\_  
 Organisation name Tasman District Council  
 Time zero 1/07/2012

#### Project traffic

AADT: 2,321 at 1/07/2011 equates to 2,379.03 at Time Zero  
 Growth rate = 2.50% equates to 2.44% at Time Zero  
 Site category = 100km/h near rural

#### Accident rate inputs - do minimum

Name Accident rate model  
 Model type 7 General high speed cross and T Intersections, >=80km/h  
 Model detail Priority - T  
 Table used Table A6.8(a) and (b)  
 Posted speed limit 100km/h near rural  
 Q<sub>major</sub> The highest two-way link volume (AADT) = 2,321 (50 - 26,000)  
 Q<sub>minor/side</sub> The lowest two-way link volume (AADT) = 413 (50 - 9,000)  
 From (0.00) to (0.00) = 0.00  
 (1.00)  
 (1.00)  
 = 0.00 = 0.00  
 = False = False

#### Accident history

Accident period start date = 1/01/2007  
 Accident period end date = 31/12/2011  
 The Project contains only CAS recorded Accidents.  
 The accident site mean speed = 35.0 km/h

Movement	Vehicle	F	S	M	N-I	Comments
Crossing (vehicle turning), JA	Push cycle	0	0	1	0	
Crossing, no turns, HA	Car, van, other	0	0	1	0	
Turning versus same direction, GE	Truck	0	0	1	0	
Crossing, no turns, HA	Truck	1	0	0	0	
Right turn against, LB	Car, van, other	0	0	1	0	
		1	0	4	0	



---

*Moutere Highway Intersection Improvements*

## Worksheets A6: Accident cost savings

### Analysis input variables

---

#### Accident by accident analysis - option reductions

##### Option Roundabout

Movement	Vehicle	F	S	M	N-I
Crossing (vehicle turning), JA	Push cycle	30 %	30 %	30 %	30 %
Crossing, no turns, HA	Car, van, other	30 %	30 %	30 %	30 %
Turning versus same direction, GE	Truck	30 %	30 %	30 %	30 %
Crossing, no turns, HA	Truck	30 %	30 %	30 %	30 %
Right turn against, LB	Car, van, other	30 %	30 %	30 %	30 %


07/09/2012 12:23:47

NZ Transport Agency Economic Evaluation Software Part 1 Version: 5.2.6



 <b>MWH</b>	<b>Client Gateway A Checklist</b> Concept and Feasibility – Preferred Solution Agreed
--	--

Project Name: Russ Corner - Roundabout	Project Number : Z1448916
Client: Tasman District Council	Project Manager: Alison Morrison

	Yes	No	NA
1) Has the Client's requirements been clearly documented?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Has a preferred solution been identified that the client approves? How has client shown approval:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Have we prepared a consultation plan?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Have we documented the risks associated with the preferred solution?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Have we determined that the preferred solution is feasible in terms of the following:			
a) it is constructable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) it is maintainable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) it is consentable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) the risks are manageable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) it can be completed within the client's budget	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) it can be completed within the client's timeframe	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) it is sustainable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Have we planned out the subsequent Project stages?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Has there been a review of:			
a) the top-down cost estimate	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) the feasibility report	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) the risk project register	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) Has potential areas of land purchase or easement been identified and discussed with the client Property Manager?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) Has funding been confirmed (eg NZTA Cat 2 funding , subsidy) to the degree necessary?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10) Does the Project Require a Risk Committee review (MWH Risk Management Policy)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11) Have we checked with other Council departments and utility companies to determine whether there are project clashes or opportunities to integrate projects?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12) Have we agreed upon a procurement strategy?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Have we progressed sufficiently to proceed to Stage 2?</b>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Comments:</b> 5(d): The traffic safety risk is difficult to quantify. The design is not as per Austroads Design Guide for a roundabout in a 100km/h area, however at this relatively low traffic volume site the design is expected to have benefits over the existing.			
<b>Programme Manager:</b> Signature:  Name: Rhys Pollock 818112			
<b>Client Manager:</b> Signature: _____ Name: _____ 11			



Tasman District Council Risk Assessment

Project Name: Russ Corner  
Project Number: Z1448915

Project Phase: Concept / Feasibility

Risk Identification				Risk Response Measures				Risk Monitoring			
No.	Risk Description	Likelihood	Consequence	Raw Risk Rating	Risk Owner	Response Strategy	Response Measures	Effectiveness	Rating	Residual Risk	Risk Monitoring
1	Comparison of Detailed Design in conjunction with Safety Audit likely to be a success.	Could happen	Minor effect	0.3	TDC	Accept			1	0.3	
2	The project will cost more than the \$20,000 Minor Improvements allowance	Could happen	Moderate effect	0.5	TDC	Accept			1	0.5	Detailed Design will improve the accuracy of cost estimate
3	Early pavement failure. Runoff will concentrate/accelerate traffic load	Will probably happen	Moderate effect	0.5	TDC	Accept			1	0.5	Prepared assessment during detailed design stage to gain understanding of potential life span
4	The intersection upgrade does not improve safety	Unlikely to happen	Significant effect	0.8	TDC	Accept			1	0.8	Safety Audit will give an independent perspective of the safety issues.
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											

**Likelihood**

Highly unlikely	0.1
Unlikely to happen	0.3
Could happen	0.5
Will probably happen	0.8
Will happen	1

**Consequence**

No effect	0.1
Minor effect	0.3
Moderate effect	0.5
Significant effect	0.8
Catastrophic	1

**Response Effect**

Excellent	0.1
Effective	0.3
Moderate	0.5
Low effectiveness	0.7
Ineffective	0.9

**Response Strategy Phase:**


Accept	Concept / Feasibility
Avoid	Preliminary Design
Mitigate	Detailed Design
Transfer	Construction
Close-out	Close-out



## PROJECT TECHNICAL MEMORANDUM FOR TASMAN DISTRICT COUNCIL

**Date:** 12 September 2012  
**To:** Tasman District Council  
**Attention:** Steve Elkington  
**Copy:** Gary Clark  
**Project:** Moutere Highway / Waimea West Road / Golden Hills Road  
**Subject:** Project Feasibility Report

**Correspondence Out No.:** 24095  
**Project Technical Memo No.:** 3  
**Project: Stage:** Concept  
**Project Number:** Z1448916

Prepared by: Mike van Enter	Checked by: Rhys Palmer
Reviewed by: Rhys Palmer	Authorised by: Alison Morrison 

### 1 Introduction

This Technical Memorandum outlines a further concept design iteration to the roundabout proposed for Russ Corner (Moutere Highway / Waimea West Road). The key amendment to the design is to offset the approach legs to constrain the entry path radius (whilst retaining the small inscribed diameter and central island) as recommended by MWH's senior Road Safety Auditor during an informal peer review of the Concept work.

Off road cycle paths have been added. It is intended to use existing seal where it will become redundant, or if the budget is restricted, add crusher dust to the unsealed shoulder to provide a rideable surface. In conjunction with cycle traversable kerbs this will provide an emergency run off space if a cyclist feels threatened by approaching vehicles or an alternative cycle path if the rider prefers not to negotiate the roundabout.

### 2 Investigations

#### 2.1 Visibility

Sight distance can be achieved to easily identify the intersection as a roundabout, observe other vehicles at the intersection and observe an acceptable gap. Austroads criterion 3 visibility has not been provided, however the visibility is balanced on all legs with the exception of visibility from Golden Hills Road. Visibility from this leg will be restricted to around 50m by the earth bund on the #3 Golden Hills Road property. Visibility from the remaining legs will be around 70m, this provides visibility of around five seconds, which allows suitable gap selection.

The restricted criterion 3 visibility is one tool that is intended to control and balance approach speeds.

Property will be purchased to provide sight distance as shown by "proposed property boundary" on the Concept Sketch. Landscaping will be undertaken to restrict visibility, so that it is not greater than intended. In the first instance, this will be achieved by relocating the private shelter belts. If the property owner is not agreeable, landscaping will need to be provided by Council on Road Reserve to achieve the designed sight distances. Temporary sight shielding may be required, depending on the size of shelter belt planted.



## 2.2 Entry Geometry and Approach Speed

The offset approach legs with an initial curve to the right, allows the entry path radius to meet the Austroads desirable of 55m. The exact entry geometry is to be determined during detail design as per Austroads (55m radius).

The roundabout speed environment is out of context with the 100km/h speed environment along Moutere Highway and Waimea West Roads. As is the current situation (with out of context 90 degree bend), large advanced intersection warning signage and intersection visibility is relied on to reduce approach speeds.

Large map type Advanced Direction Signs are not shown on the Concept Sketch, but will be included during detailed design, as per MOTSAM.

## 2.3 Design Vehicle

The Design Vehicle will be a 19m semi-trailer. The actual central island size and mountable concrete apron will be determined by vehicle swept paths during detailed design.

## 2.4 Cyclists

It is intended to provide off road, alternative path for cyclists. This will utilise existing seal where the new intersection geometry makes it redundant, new seal if budget allows, or simply provide an unsealed surface by utilising the unsealed shoulder. Kerbs will not be Tasman District Council standard. It is proposed that they are easily mountable and traversable by cyclists.

Due to restricted width available, the crossing points for cyclists provided in the splitter island will not be the desirable width. The "cut through" the splitter island will be offset at a 45 degree angle. This will encourage cyclists to wait offset, thus minimising cycle overhang into the lanes.

## 2.5 Lighting

Lighting has not been shown on the Concept Sketch. Lighting design will be undertaken to light the intersection and splitter islands to V3.

## 2.6 Utility Poles

One power pole will be relocated on Moutere Highway, on the south western corner. This can only be moved along its existing alignment and as such will remain close to the carriageway on the exit leg. The Concept Sketch includes guard rail protection of this power pole. Detailed Design and further design by Network Tasman Limited will confirm the actual clearance that can be achieved.

## 3 Recommendation

It is recommended to proceed with the Concept Design shown by SK04 to detailed design stage.

*This Project Technical Memorandum has been prepared for the benefit of Tasman District Council. No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person.*

*This disclaimer shall apply notwithstanding that the Project Technical Memorandum may be made available to Tasman District Council and other persons for an application for permission or approval or to fulfil a legal requirement.*











RD3544  
 Writer's Direct Dial No. (03) 543 8575  
 E-mail: steve.elkington@tasman.govt.nz

13 March 2013

Road Transport Association NZ  
 C/- Derek Nees – Branch President, Nelson  
 Private Bag 72008  
 Richmond 7050

Dear Derek

**Proposed Roundabout – Russ' Corner**

Thank you for your letter of 7 March 2013 and subsequent e-mail correspondence.

Firstly, attached for your information are A3 copies of the proposed roundabout layout incorporating the swept paths of both semi-trailer and B-trains for both right and left turns for all approaches.

Under New Zealand Transport Agency (NZTA) design criteria the minimum or worst case scenario which we design for is that of a four-axle semi-trailer also referred to as quad-semi. All other axle combinations and unit configurations will fit within the semi trailer swept path including the 20metre B-Train.

In relation to your letter we note the following response (in order as per your letter):

1. The recent notification to a number of transport operators including RTANZ was sent out on the 18 February 2013 and included suitable drawings which had only become available. Whilst there were concept drawings available before this time, it was felt that these were not suitable in clarity and detail for consultation.
2. Council staff are aware of this point and I personally made a call to the Eves Valley mill and spoke to the gatehouse staff about who the cartage contractors were. We also used a list of cartage contractors that are involved in Council's Forestry Impact Strategy.
3. The proposal has been designed as a cost effective safety solution. Land has been acquired from neighbouring properties for the proposal. The design has been subject to an independent safety audit which stated *"It is acknowledged by the safety audit team (SAT) that the concept of a roundabout treatment to address the identified crash problem at this location is an appropriate response"*.
4. The roundabout has been designed based on a four-axle semi-trailer referred to as the reference vehicle for such designs in NZTA's Road and Traffic guidelines *"RTS 18 New Zealand on-road tracking curves for heavy motor vehicles"*. In regard to HPMV vehicles, NZTA has published a number of fact sheets and carried out presentations on these. In their May 2011 presentation it included *"Over-length: Proforma HPMVs ... Low speed tracking based on that of a quad-semi"*. Russ'

C:\Users\robvyns\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\70V2130E\RD3544-Road Transport Assn NZ-2013-03-13.docx



Corner is designed on the quad semi, therefore HPMVs will, at low speed, be able to negotiate the roundabout.

5. The proposed roundabout has been designed as a low speed configuration with a 10-15km/h operating speed. The pavement cross-fall which is required for drainage is relatively flat with a minimum 2% cross-fall. The resulting 2% adverse cross-fall for a turning vehicle should not create any issues and is typical for slow speed roundabouts. Changing to inward cross-fall presents comparable issues, particularly over such short distances.
6. Yes, the lanes are intentionally designed tight, the kerb and channel is mountable so this will allow close tracking and therefore some overhang is likely to occur. The signs are shown indicatively (not to scale) on the drawings and a few appear to overhang the lane and are not set back sufficiently. Council staff will ensure that all signage that is very close to the traffic lanes is positioned on-site with tracking in mind to ensure appropriate clearance and visibility.
7. The Russ' Corner roundabout has a 30metre inscribed diameter with an 8metre non-mountable central island. Kerbs are mountable enabling some deviation in drivers approach angles and therefore designed to be workable but tight. The Bateup/Wensley roundabout with an approximate 26.5metre inscribed diameter with non-mountable kerb and channel and a 10metre diameter non-mountable central island, will not permit a quad axle semi-trailer to be able to turn around it in one continuous manoeuvre.
8. There has been significant effort in finding a cost-effective safety solution. The design ensures that all drivers approaching the intersection are required to give way and that negotiating speeds through the intersection are deliberately slow for safety.

I am available to further discuss the concept with the association however it is planned to tender the work shortly to ensure completion before winter.

Yours sincerely

Steve Elkington  
Transportation Projects Engineer

Encl.

C:\Users\robvns\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\70V2130E\RD3544-Road Transport Assn NZ-2013-03-13.docx



LETTER ACKNOWLEDGED

Steve Elkington  
 Transportation Projects Engineer  
 Tasman District Council  
 Private Bag 4  
 Richmond

7 March 2013

Steve,

Re: Proposed Roundabout – Russ Corner

I refer to your letter dated 18 February which enclosed plans of the proposed roundabout at Russ Corner.

Members of the Nelson Branch of the Road Transport Association of New Zealand (RTANZ) have some concerns with the effectiveness and safety of the proposed changes to this intersection which are best summarized as:

1. The Road Transport Industry do not appear to have been consulted on this proposal
2. This intersection is widely used by many forms of heavy transport operation to service a variety of commercial activity in the area not the least of which is the CHH Wood Products plant at Eves Valley requiring large numbers of vehicle movements of logs in and finished product out of the area
3. It would appear that the proposal has been designed to fit within current TDC land ownership rather than provide a safe and effective intersection
4. The proposed roundabout is approximately 30 metres in diameter which, even with a drive-over apron around the centre of the roundabout is not providing enough space for current or new generation heavy vehicles to safely negotiate the roundabout.
5. The number of the proposed structure is leaning out which is not ideal for heavy vehicles laden and at full height of 4.25 metres
6. Lanes and signage provide a narrow approach and departure for heavy vehicles, even those at standard legal width of 2.5 metres (not including mirrors)
7. As a model for comparison, I have looked closely at the Bateups Rd/Wesley Rd/Paions Rd roundabout. That roundabout is approximately 28 metres in diameter and has a raised drive-over apron around the middle of the roundabout. There is not sufficient room in that roundabout for current heavy vehicles to turn safely, let alone the new generation of HPMV vehicles that will become common over the next few years.
8. The proposal is far more costly than other possible and more effective upgrades of this intersection would be.

The Association believes that, if the project has to fit current land ownership, a less costly and safe solution could be found in tree removal, surface improvement, signage and calming measures and general "tinting" up of the environment around this as well as some other TDC intersections.

For your urgent consideration, if you have any questions or need clarification regarding the matters raised, please do not hesitate to call me at the number above.

Yours sincerely,



Derek Nees  
 President



Principal Road Transport Association NZ Inc. Sponsors



ROAD TRANSPORT  
 ASSOCIATION **NZ**

Derek Nees - Branch President, Nelson  
 Private Bag 72008  
 Richmond, Nelson  
 Phone: 03 5464823  
 Cellphone: 0274 752817  
 E-mail: [derek.nees@tni-group.co.nz](mailto:derek.nees@tni-group.co.nz)











