

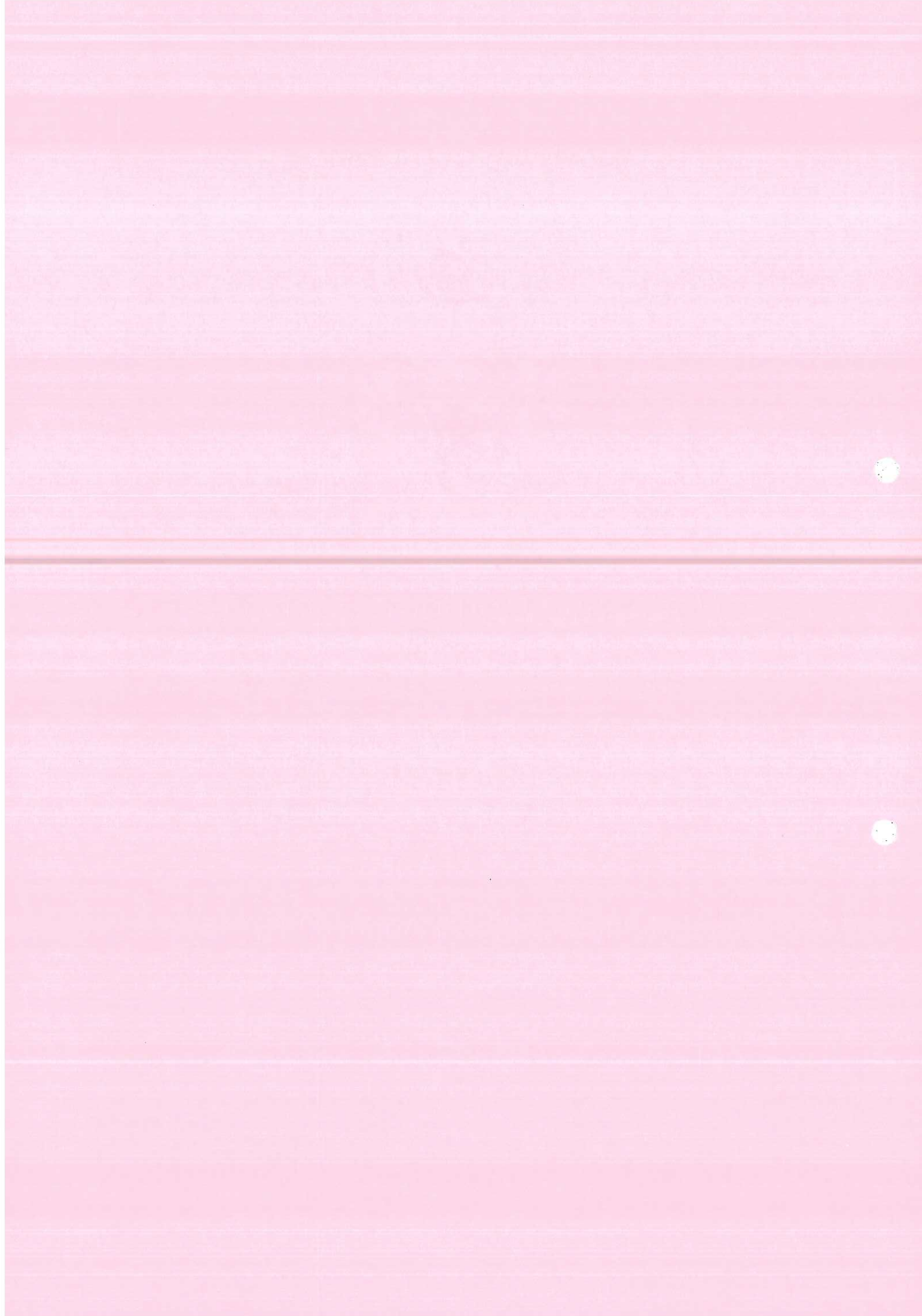
TOWN OF COTTESLOE



Works and Corporate Services  
Committee

**ATTACHMENT 10.2.3**

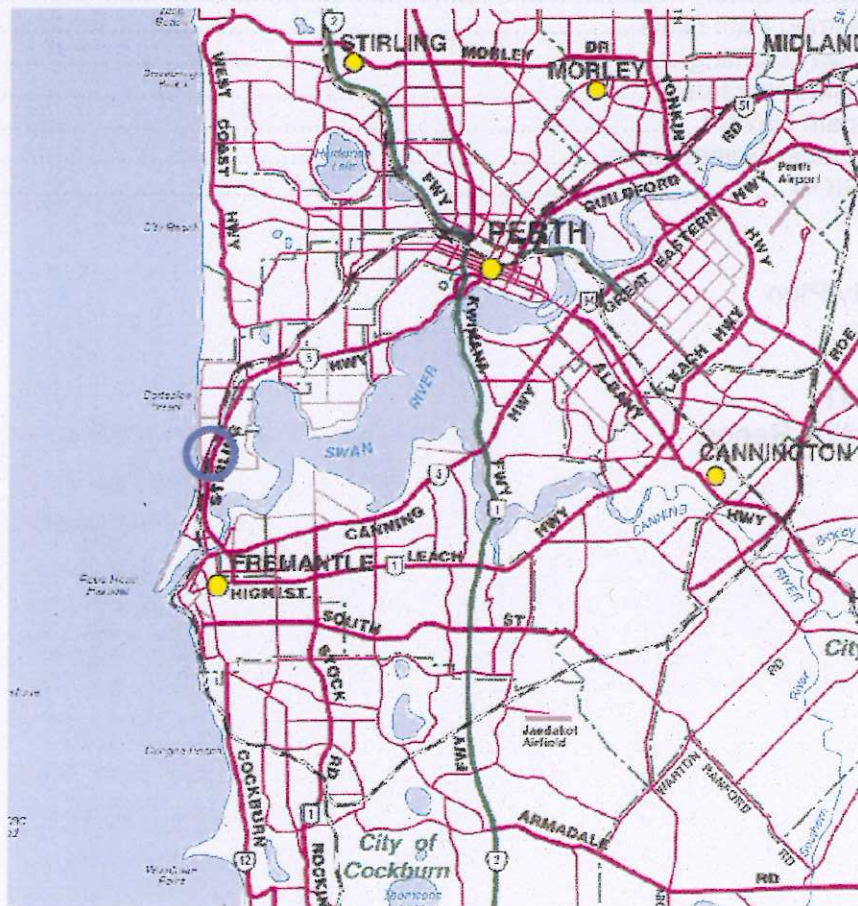
Meeting Date: 21 August 2012



# ROAD SAFETY REVIEW

## EXISTING ROAD

PREPARED FOR – TOWN OF COTTESLOE

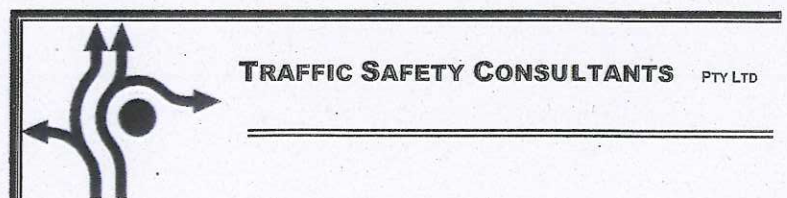


**Location** - Curtin Ave / Princes St  
**Suburb** - Cottesloe  
**LGA** - Town of Cottesloe  
**Date** - 8 July 2011

**Team:**

**Leader** - Franz Winkler  
**Member** - Brad Harris  
**Member** - Kimberly Brosztl

**TSC**  
**Porter Consulting**  
**KIST**



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### APPENDIX

- A. Locality Plan
- B. Photos

### ATTACHMENT

Corrective Action Report

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# 1 PROJECT AND SITE DETAILS

## 1.1 Site Description

Curtin Ave is a district distributor running approximately north-south parallel to the railway line. It provides a link between West Coast Hwy to the north and Port Beach Rd to the south and is a major route for traffic to the Port of Fremantle. It carries in excess of 17,500vpd (MRWA data 2007/08) with a high proportion of trucks, semi-trailers and multi-combination vehicles up to 27.5m long. At the location of this audit it is a sealed, kerbed, 2-lane single carriageway with on-road cycle lanes.

Concern has been expressed to the Town of Cottesloe over the safety of pedestrians crossing Curtin Ave to and from the Mosman Park railway station and the shopping precinct beyond.

## 1.2 Road Safety Audit

Road Safety Auditing is a formalised procedure which can be applied to all phases of a road project development or to an existing road system. The Auditor must be independent of the designer so that the design is viewed with "fresh eyes". The purpose of the report is not to rate the design, but rather to address any road safety concerns.

In reviewing the safety aspects of a road, the reporting procedure is not intended as a re-design process but to outline potential or pre-existing road safety issues and establish a basis upon which a design could produce an acceptable solution to the safety problem. The recommendations may indicate the nature or direction of a solution, rather than specifying the details of how to solve the problem.

The objectives of a road safety audit are -

- To review the design and background information and form conclusions about the safety performance and accident potential of the road.
- To evaluate the road in terms of interaction with its surrounds and nearby roads, and to visualise potential impediments and conflicts for road users.
- To report on the conclusions drawn and to make recommendations regarding aspects which involve unnecessary or unreasonable hazards.

Items which are considered to be of significantly greater potential hazard than most identified deficiencies are recorded as "IMPORTANT" or "SERIOUS" in the Audit Findings. Further, where other items are not so recorded it does not mean they are unimportant, but are simply considered to be of lesser hazard.

### **1.3 Auditors and Audit Process**

This report results from a road safety audit (existing road) based on the principles set out in AUSTRROADS Guidelines for Road Safety Audit.

The Audit team is listed on the front cover of this report.

The site inspection was carried out at 12 noon on 8 July 2011. Weather conditions were fine. A night inspection was undertaken by the team leader only.

### **1.4 Supporting Information**

Supporting information is included in the Appendices as listed under the Table of Contents.

### **1.5 Asset Owners to Be Informed**

This report may have ramifications for the ultimate owner(s) of the asset (eg Local Authority, Main Roads Western Australia and property owners). Copies of the relevant sections of this report (and the completed Corrective Action Responses with 'proposed' actions where appropriate) must be forwarded to the relevant responsible authorities for information and consideration prior to finalising the actions.

### **1.6 Distribution of Information**

The contents of this report are the property of the commissioning agency. Furthermore, individual sections are the property of the relevant authorities responsible for addressing the findings and recommendations.

Information within this report may be misleading if taken in isolation without reference to the follow-up actions.

No part of this report, or information derived from it, shall be released to third parties without express permission from the relevant stakeholders.

## 2 AUDIT FINDINGS AND RECOMMENDATIONS

### 2.1 Pedestrian Safety

During the site inspections it was noted that there was a considerable volume of traffic, including multi-combination vehicles, which resulted in significant periods with a lack of suitable gaps for pedestrians to cross (see photo 1). The lack of any pedestrian refuges forces pedestrians to find simultaneous gaps in both directions of traffic in order to cross in one continuous movement. Several pedestrians were observed to run across the road.

There is a slight crest south of Princes St which restricts sight lines to approaching vehicles (see photo 2).

There is an increased risk of pedestrian collisions, particularly with the frail and infirm.

#### Recommendation:

Install pedestrian refuge islands at the north and south paths emanating from the railway station.

*[NOTE: there is a path leading from the point where the southern angled path from the railway station meets the kerb through to the Princes St junction. This section of path results in pedestrians crossing anywhere along its length. Ideally the path should be removed and the new crossing located where the angled path meets the kerb. However, due to the numerous closely spaced crossovers on the western side of Curtin Ave it is considered impractical to construct a link from this location to the western footpath; hence it is recommended that the existing crossing location at Princes St be retained and, if practicable, move the eastern path away from the kerb in order to discourage pedestrians from crossing at any point other than the crossing facility.]*

### 2.2 Pedestrian Path Links

The northern angled path from the railway station meets the kerb at a ramp, but there is no corresponding ramp or paved link on the western side of Curtin Ave (see photo 3).

The southern angled path from the railway station is extended via a path to a ramp opposite the northern corner of Princes St. There is a ramp and short section of concrete path on the north-west corner, but no link to the western footpath network (see photo 4).

Aerial views (Nearmap) show that there was a link, but it was removed for drainage installation some time in April 2010 and never replaced (see photos 5 & 6).

#### Recommendation:

- a) Install links from the crossing points to the western footpath network.
- b) Ensure all paths and facilities are fully reinstated after any infrastructure works are undertaken.

### 2.3 Roadway Lighting

There is a long section of Curtin Ave, from just south of Salvado Rd to Gibney St, which has no roadway lighting except for a single light at Princes St. The northern crossing is in almost total darkness at night (see photo 7). The spill light from the Transperth sign is insufficient to light the crossing location.

#### Recommendation:

- a) Install an additional lighting pole near the northern crossing location.
- b) Review the need for consistent lighting along Curtin Ave between Salvado Rd and Gibney St.

### 2.4 Roadside Hazards

The pipe fence along the western side of Curtin Ave (see photo 8) is not crashworthy and is capable of spearing through a vehicle in a collision. The need for the fencing along the northern end is questionable, as there are no pedestrian facilities nearby.

#### Recommendation:

Remove a section of fence from the northern end to a point where the vertical difference between road and verge result in a negligible risk of collision by a vehicle. Alternatively replace the fence with a crashworthy type.

### 2.5 Footpath Hazard

The footpath along Princes St is constructed with concrete slabs (see photo 9). This type of path is prone to becoming uneven and may pose a trip hazard to pedestrians.

#### Recommendation:

Replace the slab footpath in Princes St with concrete or asphalt.

### 2.6 Vegetation Maintenance

Vegetation along Curtin Ave is encroaching up to, and over, the kerbline. Sight lines from the southern pedestrian crossing point are restricted.

#### Recommendation:

Trim all vegetation to provide clear sight lines from all pedestrian crossing points and side road holding positions.



### 3 CONCLUSION

This audit has been carried out for the sole purpose of identifying any features of the design which could be altered or removed to improve its safety. The team reviewed the documentation and inspected the site. The accompanying recommendations are forwarded for you to assess for implementation.

.....  
Franz Winkler  
(Senior Road Safety Auditor)

TSC

#### DISCLAIMER

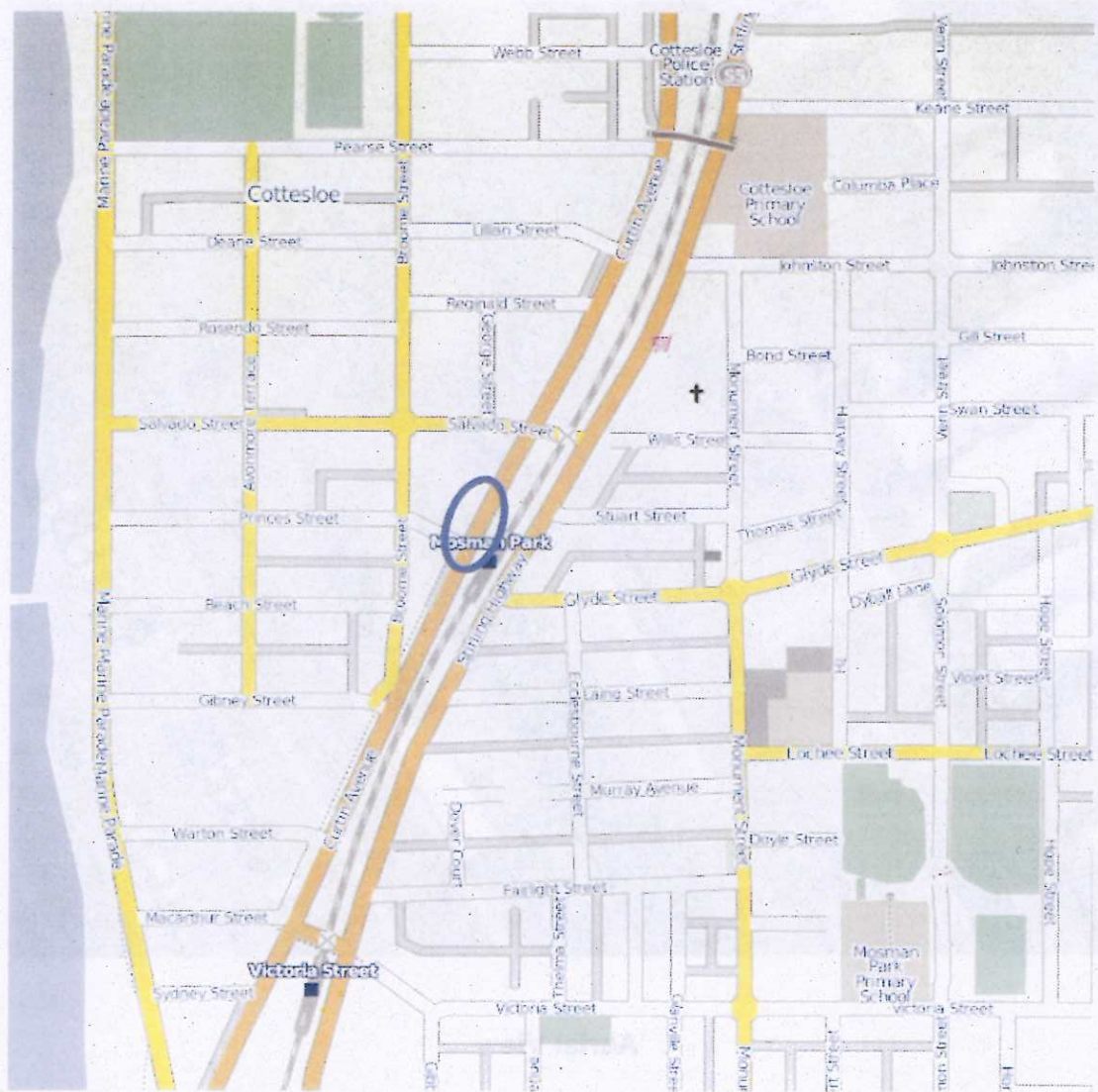
This final report contains the findings, opinions and recommendations of the audit team based on the examination of the site and/or documentation. As a consequence, the report may not identify all the deficiencies that may have existed before or after the audit. Neither Main Roads WA, nor the Local Government Authority, is bound by the contents of this report.

Notwithstanding that this report may contain statements in relation to technical matters, both of a general nature and in relation to specific issues, in no way should readers of the report rely solely on its contents, nor draw inferences to other sites. Readers must seek appropriate expert advice on their own particular circumstances and rely on such advice.

# APPENDIX A

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## **Locality Plan & Aerial View**



Locality Plan



**Aerial View**

# APPENDIX B

## Photos



**PHOTO 1**  
Curtin Ave at Princes St facing south  
Typical continuous traffic



**PHOTO 2**  
Curtin Ave just north of Princes St facing south  
Sight lines restricted by crest



**PHOTO 3**

Northern crossing point facing west  
No corresponding ramp or path on west side



**PHOTO 4**

Southern crossing point at Princes St facing west  
Path on north-west corner incomplete



**PHOTO 5**

Aerial view (Nearmap) 28 March 2010  
Materials ready for drainage installation; path in place



**PHOTO 6**

Aerial view (Nearmap) 8 May 2010  
Drainage completed and section of path missing





**PHOTO 7**

View from north-west corner of Princes St facing north  
Dark section in centre of photo is the location of the northern crossing;  
street lights are at Salvado Rd; sign is for Transperth



**PHOTO 8**

South-west corner of Princes St facing south  
Non-crashworthy fence capable of spearing through a vehicle



**PHOTO 9**  
Princes St facing west  
Slab footpath may become a trip hazard



**PHOTO 10**  
Curtin Ave facing south  
Bushes restrict sight lines,

# **Corrective Action Report**

**Curtin Ave / Princes St, Cottesloe  
Road Safety Review – Existing Road**

Audit Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason if Disagreeing	Proposed Action and Comments

**NOTE:** **THE FOLLOWING FINDINGS AND RECOMMENDATIONS ARE PRESENTED IN AN ABBREVIATED FORM IN THIS CAR; THEY MUST BE READ IN CONJUNCTION WITH THE FULL REPORT AND SHALL NOT BE CONSIDERED IN ISOLATION.**

<p><b>2.1 Pedestrian Safety:</b> Considerable volumes of traffic, including multi-combination vehicles, result in significant periods with a lack of suitable gaps for pedestrians to cross Curtin Ave. The lack of any pedestrian refuges forces pedestrians to find simultaneous gaps in both directions of traffic in order to cross in one continuous movement.</p>			
<p><b>Recommendation:</b> Install pedestrian refuge islands at the north and south paths emanating from the railway station.</p>			
<p><b>2.2 Pedestrian Path Links:</b> The northern angled path from the railway station meets the kerb at a ramp, but there is no corresponding ramp or paved link on the western side of Curtin Ave. The southern angled path from the railway station is extended via a path to a ramp opposite the northern corner of Princes St. There is a ramp and short section of concrete path on the north-west corner, but no link to the western footpath network. Aerial views (Nearmap) show that there was a link, but it was removed for drainage installation some time in April 2010 and never replaced.</p>			
<p><b>Recommendation:</b> a) Install links from the crossing points to the western footpath network. b) Ensure all paths and facilities are fully reinstated after any infrastructure works are undertaken.</p>			

**Curtin Ave / Princes St, Cottesloe  
Road Safety Review – Existing Road**

Audit Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason if Disagreeing	Proposed Action and Comments
<p><b>2.3 Roadway Lighting:</b> There is a long section of Curtin Ave, from just south of Salvado Rd to Gibney St, which has no roadway lighting except for a single light at Princes St. The northern crossing is in almost total darkness at night.</p> <p><b>Recommendation:</b> a) Install an additional lighting pole near the northern crossing location. b) Review the need for consistent lighting along Curtin Ave between Salvado Rd and Gibney St.</p>			
<p><b>2.4 Roadside Hazards:</b> The pipe fence along the western side of Curtin Ave is not crashworthy and is capable of spearing through a vehicle in a collision.</p> <p><b>Recommendation:</b> Remove a section of fence from the northern end to a point where the vertical difference between road and verge result in a negligible risk of collision by a vehicle. Alternatively replace the fence with a crashworthy type.</p>			
<p><b>2.5 Footpath Hazard:</b> The footpath along Princes St is constructed with concrete slabs. This type of path is prone to becoming uneven and may pose a trip hazard to pedestrians.</p> <p><b>Recommendation:</b> Replace the slab footpath in Princes St with concrete or asphalt.</p>			

**Curtin Ave / Princes St, Cottesloe  
Road Safety Review – Existing Road**

Audit Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason if Disagreeing	Proposed Action and Comments
<p><b>2.6 Vegetation Maintenance:</b> Vegetation along Curtin Ave is encroaching up to, and over, the kerblime. Sight lines from the southern pedestrian crossing point are restricted.</p> <p><b>Recommendation:</b> Trim all vegetation to provide clear sight lines from all pedestrian crossing points and side road holding positions.</p>			

**Curtin Ave / Princes St, Cottesloe  
Road Safety Review – Existing Road**

**NOTE**

- This corrective Action Report is to be read in conjunction with the full Road Safety Audit Report and its findings and recommendations.
- The asset owners (MRWA and/or LGA) must be informed of these findings, recommendations and proposed actions.
- Items not under the responsibility of this project representative must be forwarded to the persons / agencies who are responsible.

These findings and recommendations have been considered, and the actions listed will be taken accordingly.

..... <i>Responsible project representative</i> .....	..... <i>Porter Consulting</i> .....	..... <i>Position</i> .....	..... <i>Date</i> .....
..... <i>Asset Owner representative</i> .....	..... <i>Town of Cottesloe</i> .....	..... <i>Position</i> .....	..... <i>Date</i> .....





Our Ref: BIH/DJC/L441.11  
Job No: 11-3-40



13 July 2011

Chief Executive Officer  
Town of Cottesloe  
109 Broome Street  
COTTESLOE WA 6911

Level 2 Kishorn Court  
58 Kishorn Road  
Mount Pleasant WA 6153

PO Box 1036  
Canning Bridge WA 6153

Tel: (08) 9315 9955  
Fax: (08) 9315 9959  
Email: office@portereing.com.au  
www.portereing.com.au

**Attention: Mr Carl Askew**

Dear Carl

### 2012/13 BLACK SPOT FUNDING APPLICATIONS

Please find enclosed the completed Black Spot applications for the Town of Cottesloe for the 2012/13 financial year for your signature. These submissions have been prepared following our discussions and your agreement.

A comprehensive review was undertaken of all eligible sites in order to maximise the amount of Black Spot funding available to the Town of Cottesloe. This has resulted in the 4 submissions totalling \$519,000 in funding which are attached.

The following projects have been prepared for Black Spot funding submission:

Location	Treatment	Total Cost	Funding	BCR
Curtin Avenue/Princes Street	Intersection	\$135,000	National/ State	Audit
Eric Street/Curtin Avenue/ Florence Street	Intersection	\$276,000	National	2.99
Eric Street/Railway Street	Intersection	\$66,000	State	1.43
Marine Parade/Eric Street	Intersection	\$42,000	State	1.72

Attached is a copy of each submission with all the supporting information required. Please sign each submission in the two locations tagged and forward 4 copies to Main Roads WA by **Friday 15 July 2011**. Submissions need to be addressed to the Program Coordinator Metropolitan Region, Main Roads WA, 6<sup>th</sup> Floor Don Aitken Centre, Waterloo Crescent, East Perth.

We look forward to the opportunity of working with you on the design and project management of these projects if funding is successful.

Yours faithfully

**BRAD HARRIS**  
**MANAGER PROJECTS**



Please tick the relevant programme submissions: (Nominations can be submitted for consideration in both programs)

Nation Building Black Spot Program:

State Black Spot Program:

Non Staged Project:  
Y/N

Staged Project Stage One:  
Y/N

Staged Project Stage Two:  
Y/N

### Nominee Details

Reference No:  
(Main Roads use only)

1. Title: Dr/Mr/Mrs/etc:	Mr		
2. Surname:	Trigg		
3. Given Name:	Geoff		
4. Organisation:	Town of Cottesloe		
5. Position Title/ Occupation:	Manager Engineering Services		
6. Postal address:	Po Box 606		
	Cottesloe		
7. State:	WA	8. Postcode:	6911
9. Telephone Number:	9285 5000	10. Fax Number:	9285 5001
11. Email address:	mes@cottesloe.wa.gov.au		
12. Date of submission:	15/07/11		

### Site Nomination

1. Local government in which site nomination is located:	Town of Cottesloe		
2. Suburb:	Cottesloe	3. Postcode (of site):	6011
4. Site Description: (e.g. intersection, 5km road length, 20kms west of Smithville)	Intersection		
5. Road Name(s):	Curtin Avenue		
Primary Road:	Curtin Avenue		
Intersecting Road: (if applicable)	Near Princes Street		
6. Nature of Concern:	Pedestrians crossing busy Curtin Ave from Railway Station – no pedestrian refuge		

**ONLY TO BE COMPLETED BY STATE OR LOCAL GOVERNMENT ROAD AUTHORITIES**

**Site Assessment**

1. Road Classification:

National Land Transport Network:

State Road:

Local Road:

2. Geographic location (Geocode).

1: X:

Y:

2: X:

Y:

3. Intersection Number or Road No's & SLK's of intersection: (if applicable)

42699

4. Road No & Section SLK Start and SLK End: (if applicable)

5. Problem Diagnosis: (e.g. right turn crashes, rear end crashes)

Potential for pedestrian crashes

6. Traffic Count Report attached : Y/N

N

Traffic Count Date:

7. Summary of crash statistics attached (from Crash Factor Matrix in CRASHtool):

Y/N

Y

8. Measurement period of crashes (5 calendar years):

2006 - 2010

9. Total number of crashes:

-

10. Total number of casualties:

11. Total number of property damage/other crashes:

**Treatment Proposal**

1. Proposed Treatment: (eg install signs, modify signals, install roundabout)

- 1) Install pedestrian refuge islands
- 2) Additional lighting to be installed
- 3) New section of path and upgrade existing

2. Treatment Code: (if applicable – from CRASHtool)

S2

S7c

MR7

**Support of Nomination**

1. This nomination is supported by:

Roads Safety Audit (Y/N)

Y

Benefit Cost Ratio (BCR) calculation (Y/N)

N

**Road Safety Audit Supported Nominations.**

2. Is a copy of the relevant report (or section of the report) attached? (Y/N)

Y

Date of Road Safety Audit

8/7/2011

### Multiple Measure Modelling (BCR calculation) Supported Nominations

For Staged Projects BCR is to be calculated for the total estimated project cost

3. BCR/NPV calculations attached? Y/N  (Printout from CRASHtool or manual calculation)

4. Benefit Cost Ratio (BCR) (Total Estimated Cost to be used in calculating BCR)

5. Net Present Value:

(This is the difference between the present value of benefits and the present value of costs.)

### Estimated Cost

#### Nation Building Program (if applicable)

1. Nation Building Program Contribution:

2. Contribution by others:

3. Total Estimated Project Cost:

#### State Black Spot Program (if applicable)

#### Non-Staged Projects

4. State Black Spot Program contribution:

5. Local Government 1/3 contribution (only applies to Local Government nominations):

6. Contribution by others:

7. Total Estimated Project cost:

#### Staged Projects - total estimated cost of all stages:

8. State Black Spot Program contribution:

9. Local Government 1/3 contribution (only applies to Local Government Nominations):

10. Contribution by others (specify):

11. Total Estimated Project Cost:

### Estimated Cost of Stage One

12. State Black Spot Program contribution:

13. Local Government 1/3 contribution (only applies to Local Government nominations):

14. Contribution by others (specify):

15. Total Estimated cost of Stage One:

### Estimated Cost of Stage Two

16. State Black Spot Program contribution:

17. Local Government 1/3 contribution (only applies to Local Government nominations):

18. Contribution by others (specify):

19. Total Estimated cost of Stage Two:

Note: This cost may be different to the original estimate when applying for stage Two funds (refer to the Guidelines)

### Clearances and Utility Providers

1. Heritage clearances required? Y/N

2. Heritage clearances already obtained? Y/N

3. Environmental clearances required? Y/N

4. Environmental clearances already obtained? Y/N

5. Other clearances/permits required? Y/N

(Specify)

6. Other clearances/permits already obtained? Y/N

7. Works required by utility providers:

Western Power/Horizon Power: Y/N

Telecommunications: Y/N

Gas: Y/N

Water Corporation: Y/N

Others: Y/N

### Contact Details

Contact Person:

Organisation:

Telephone Number:

Facsimile Number:

Email Address:

Print Name:

Position/Title:

Signature:

Date:

**PLEASE FORWARD NOMINATION FORM TO YOUR REGIONAL ROAD GROUP OR MAIN ROADS WESTERN AUSTRALIA FOR ASSESSMENT**

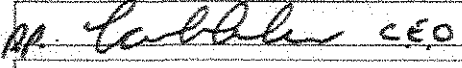


## NOMINATION CHECKLIST NON STAGED PROJECTS

**All nominations for State and Nation Building Black Spot Programs must have this checklist completed and attached.  
Incomplete submissions will be returned.**

- |    |  |                                     |                              |                              |  |
|----|--|-------------------------------------|------------------------------|------------------------------|--|
| 1. | Completed nomination form  | <input checked="" type="checkbox"/> |                              |                              |  |
|    | <ul style="list-style-type: none"> <li>• Select/tick the appropriate Black Spot Program submission box: NBBS, STATE or both (nominations can be submitted for consideration in both programs).</li> <li>• Nature of concern, problem diagnosis and proposed treatment must be filled in; do not leave blanks and refer to attachments.</li> <li>• Estimated Cost.</li> </ul> |                                     |                              |                              |  |
| 2. | Locality map (e.g. photocopy of street directory or regional map with location marked)   | <input checked="" type="checkbox"/> |                              |                              |  |
| 3. | Drawing/sketch of proposal<br>(for items such as shoulder sealing, skid resistant surface etc. Provide sketch showing extent of work)  | <input checked="" type="checkbox"/> |                              |                              |  |
| 4. | Nomination Supplementary Form  | <input checked="" type="checkbox"/> |                              |                              |  |
| 5. | CRASHtool Reports  |                                     |                              |                              |  |
|    | <ul style="list-style-type: none"> <li>• Crash Factor Matrix (for all nominations)</li></ul>   | <input type="checkbox"/> N/A        | <input type="checkbox"/> N/A | <input type="checkbox"/> N/A |  |
|    | <b>AND</b>   |                                     |                              |                              |  |
| 5a | Road Safety Audit Report (by independent senior auditor)<br>(Proposed treatments must follow from the recommendations of the report)   | <input checked="" type="checkbox"/> |                              |                              |  |
|    | <b>OR</b>  |                                     |                              |                              |  |
| 5b | Multiple Countermeasure Modelling (BCR/NPV calculations)   | <input type="checkbox"/> N/A        |                              |                              |  |
| 6. | Evidence of MRWA approval (in principle) for regulatory devices<br>(e.g. traffic signals, STOP or GIVE WAY control etc.)   | <input type="checkbox"/> N/A        |                              |                              |  |
| 7. | Heritage/environmental clearances (where applicable)   | <input type="checkbox"/> N/A        |                              |                              |  |
| 8. | Traffic count report (optional)  | <input type="checkbox"/> N/A        |                              |                              |  |
| 9. | Both Forms have been signed (Nomination Form and Nomination Checklist)   | <input checked="" type="checkbox"/> |                              |                              |  |

**I confirm that the above items have been completed, checked and are attached to the submission, and that the contact person will be available during the submission evaluation period.**

PRINT NAME:	Geoff Trigg
POSITION:	Manager Engineering Services
SIGNATURE:	 CEO
DATE:	14/07/11

**NOMINATION SUPPLEMENTARY FORM**

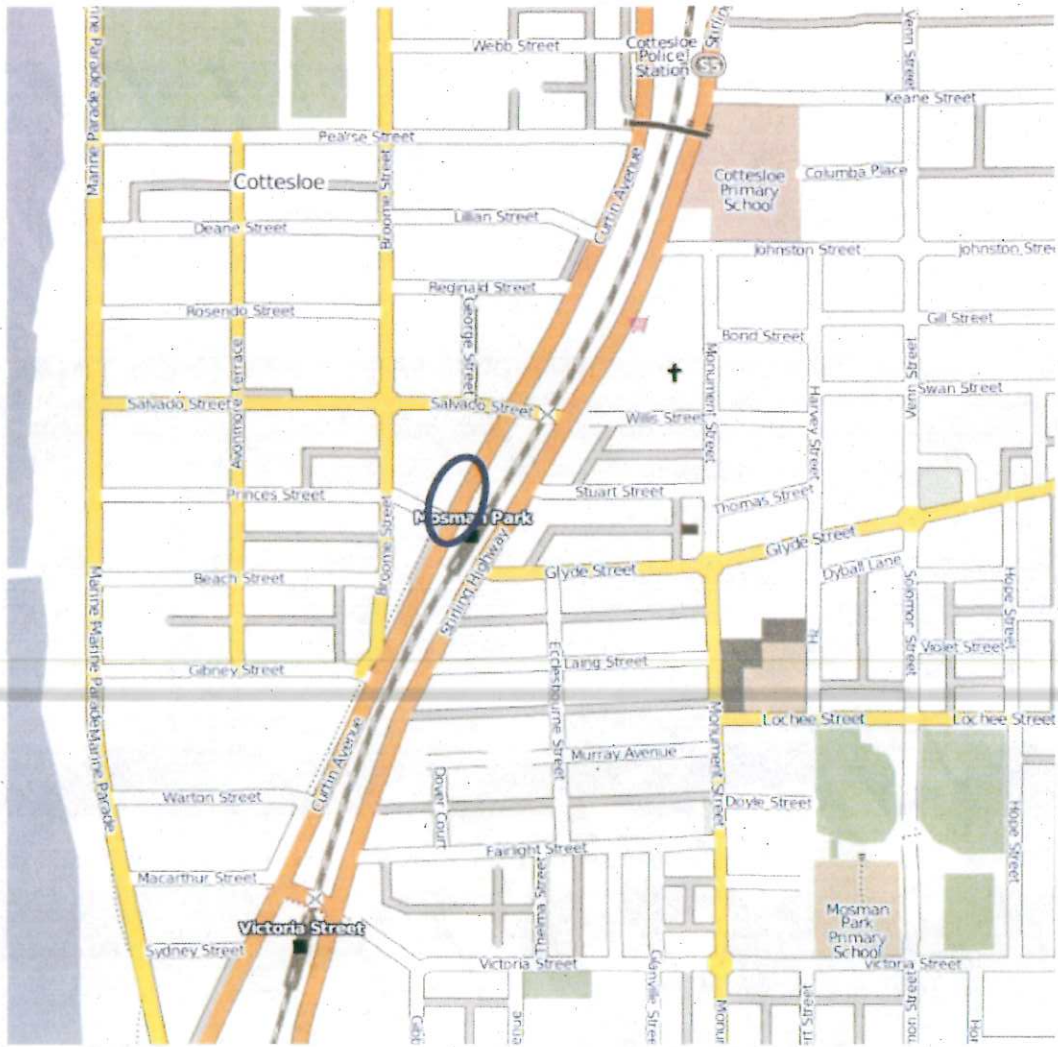
Item	Estimate (\$)	Estimate (\$)	Estimate (\$)
	Non Staged Project	Staged Project Stage One	Staged Project Stage Two
<u>Pre-Construction Works</u>			
Project Management			
Design (includes survey, traffic analyses)	\$10,000		
Environmental, Heritage and Aboriginal Clearances/Requirements			
<u>Construction Works</u>			
Contract Management			
Traffic Control (Roadwork traffic management, etc)	\$15,000		
Clearing	\$2,000		
Service Relocations (e.g.: Telstra, Water Corporation requirements)	\$5,000		
Drainage Installation	\$5,000		
Earthworks	\$5,000		
Pavements	\$58,000		
Concrete Works (e.g.: kerbing, islands, paths)	\$20,000		
Signs	\$1,000		
Pavement Markings	\$4,000		
Lighting	\$10,000		
Traffic Signals			
Landscaping			
<u>Road Safety Audit Cost</u>			
Initial Road Safety Audit*			
Anticipated cost of Design Audit			
<u>Other</u>			
<b>Total</b>			
<b>Staged Project: Total Cost</b>			
<b>TOTAL</b>	<b>\$135,000</b>		



- ① 2 ped refuges
- ② provide additional light
- ③ upgrade path



Intersection Curtin Avenue/Princes Street, Cottesloe



Locality Plan