U-turn detour route for 12.5m Medium Rigid Vehicle (MRV): Victory Parade, and Illoura Street - Northern Interchange, Newcastle Inner City Bypass, in Newcastle, NSW

Traffic and Pedestrian Impact Study

November 2024

Fulton Hogan

Project: RP2J – Newcastle Inner City Bypass

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Revision	Details	Date	Amended by
A		27/11/2024	ZB
B		30/11/2024	ZB

Contents

Appendices

1. Summary

Audited project:	**U-turn detour route for 12.5m Medium Rigid Vehicle (MRV): Victory Parade, and Illoura Street - Northern Interchange, Newcastle Inner City Bypass, in Newcastle, NSW**
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Team members:	Zoran Bakovic (Lead Level 3 Road Safety Auditor - ID:471) Shane Geurts (Level 2 Road Safety Auditor - ID: 1536) Snezana Bakovic (Level 3 Road Safety Auditor – ID:471)
Study type:	Traffic and Pedestrian Impact Study
Commencement meeting:	31 October 2024
Site visit:	31 October 2024
Completion meeting:	To be advised by Fulton Hogan

This Traffic and Pedestrian Impact Study reviewed the proposed U-turn detour route for a 1.25m Medium Rigid Vehicle (MRV): Victory Parade and Illoura Street - Northern Interchange, Newcastle Inner City Bypass, in Newcastle, NSW.

The audit checked that the temporary traffic management's safety features were suitable for their intended purpose and conducive to a safer road environment for all road users, emphasising the potential impact of the 12.5m long Medium Rigid Vehicle (MRV).

This study was based on the identified findings dated 31 October 2024.

2. Introduction

This report presents the findings of the Traffic and Pedestrian Impact Study, which reviewed the proposed U-turn detour route for a 12.5m long Medium Rigid Vehicle (MRV) (refer to Figure 2.2) on Victory Parade and Illoura Street as part of the Newcastle Inner City Bypass project in Newcastle, NSW (refer to Figure 2.1).

Figure 2.1: Proposed U-turn detour
(Source: Fulton Hogan)

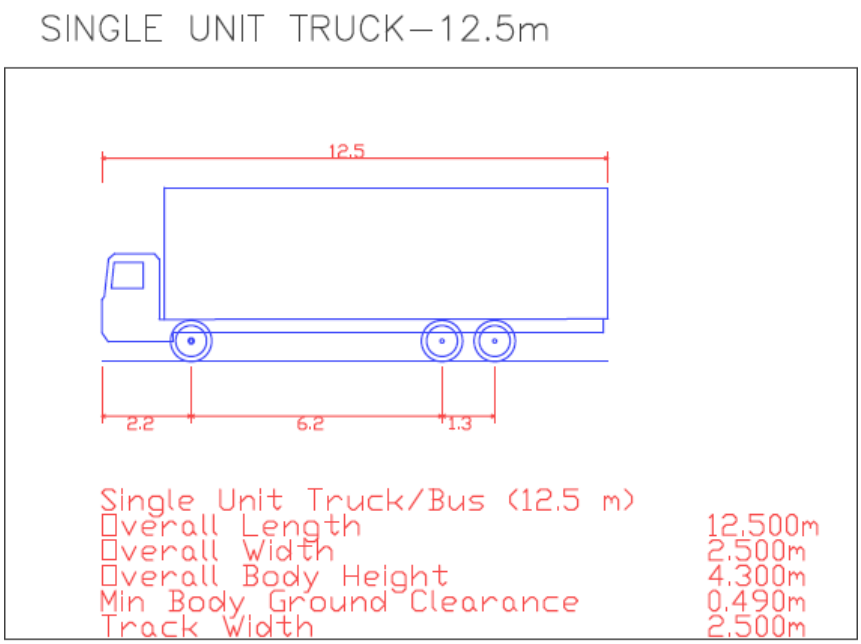


Figure 2.2

2.1 The study objectives

The main objective of this Traffic and Pedestrian Impact Study was to identify relevant road safety deficiencies, which, if addressed, would improve safety for all categories of road users and pedestrians along the proposed U-turn detour for 12.5m long Medium Rigid Vehicle (MRV) (refer to Figures 2.1 & 2.2).

The other objectives of this study were to:

- check the compatibility between the safety features and the functional classification of the roads
- identify any feature that can, either now or with time, create a safety problem
- determine the extent of deficiencies, considering all road user groups

2.2 Supporting information

Traffic Engineering Centre was provided with a proposed U-tun detour map (refer to Figure 2.1).

2.3 Study team

This study was carried out by the following team:

- **Zoran Bakovic**, Level 3 Road Safety Auditor – Team leader (report) (Auditor ID: 471)
- **Shane Geurts,** Level 2 Road Safety Auditor - Team member (TCP plan) (Auditor ID: 1536)
- **Snezana Bakovic,** Level 3 Road Safety Auditor – Team member (Swept path analysis) (Auditor ID: 471)

2.4 Responding to the study

The responsibility for the temporary traffic management rests with the client's project management team, not the Traffic Engineering Centre. The project manager is under no obligation to accept the study findings. Also, it is not the role of the Traffic Engineering Centre to agree to or approve the project manager's responses to the study. Rather, the study provides the opportunity to highlight potential road safety problems and have them formally considered by the project manager or design manager in conjunction with all other project considerations.

3. Study program

Zoran Bakovic (Traffic Engineering Centre) and Kelly Weeden (Fulton Hogan) held a commencement meeting on 31 October 2024, during which the study methodology was explained.

3.1 Site inspection

The site inspection was undertaken in daylight on 31 October 2024, in fine and dry weather and road conditions.

Photos and video footage of the audited site were taken (refer to Photos 3.1 & 3.2).

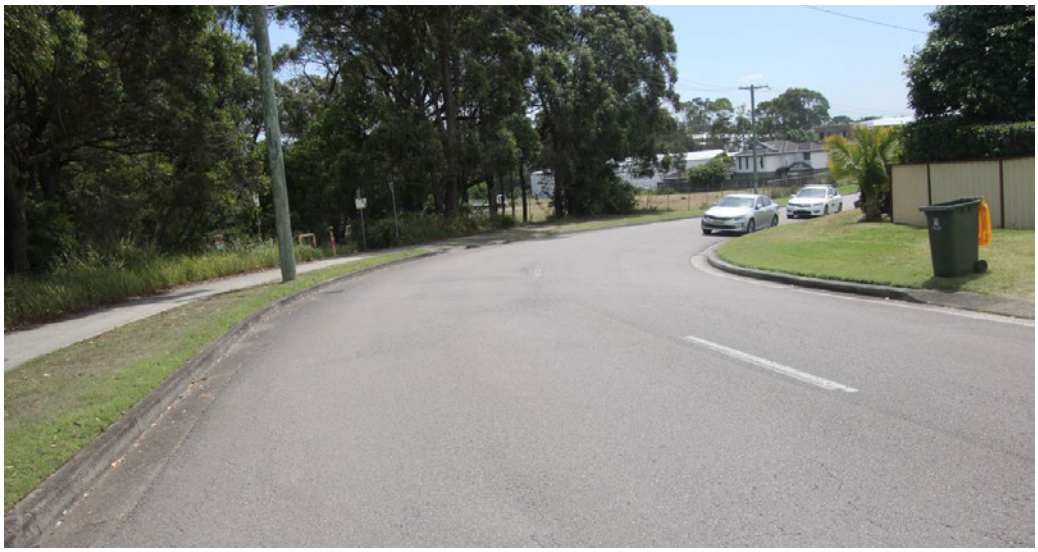


Photo 3.1: Victory Parade
(Photo: Traffic Engineering Centre Pty Ltd)

Photo 3.2: Victory Parade
(Photo: Traffic Engineering Centre Pty Ltd)

Photo 3.3: Victory Parade
(Photo: Traffic Engineering Centre Pty Ltd)

Photo 3.4: Illoura Street
(Photo: Traffic Engineering Centre Pty Ltd)

3.2 Disclaimer

The findings and opinions in the report are based on examining the current situation with consideration given to the necessary temporary traffic management and may not address all concerns existing at the time of the audit. The study team has endeavoured to identify features of the temporary traffic management that could be modified or removed to improve safety, although it must be recognised that safety cannot be guaranteed since no road can be regarded as absolutely safe. The problems identified have been noted in this report and should be considered for improving road safety. Readers are urged to seek specific advice on particular matters and not to rely solely on this report. While every effort has been made to ensure the accuracy of this report, it is made available strictly on the basis that everyone relying on it does so at their own risk without any liability to the study team.

4. Study findings

The study findings have been documented in the deficiency log, which provides specific details of each safety deficiency identified and mitigation measures (Table 4.1):

It should be noted that the positive attributes of the site have not been discussed.

Table 4.1: Road safety audit findings

No.	Approximate location	Description of findings
1	Newcastle Road, Illoura Street, and Victory Parade	'DETOUR' (T5-1) sign and 'DETOUR AHEAD' (T1-1) signs are missing on Newcastle Road, Illoura Street, and Victory Parade. In addition, nothing is in place to warn drivers of a detour or to identify the directions and locations for their trucks to leave Newcastle Road. The 'DETOUR' (T5-1) sign should be used along the route to reassure and guide the construction HVs on the detour route. **Recommended mitigation measures:** ▪ Install 'DETOUR AHEAD' (T1-1) and 'DETOUR' (T5-1) signs and repeat the 'DETOUR' (T5-1) signs to reassure and guide the 12.5m long Medium Rigid Vehicle (MRV) along the route of the detour (refer to Figure 4.1).  **Figure 4.1**

No.	Approximate location	Description of findings
2	Newcastle Road, Illoura Street, and Victory Parade / Swept path analysis	Swept path analysis leads to the conclusion that the proposed U-turn detour route is wide enough to accommodate swept paths of 12.5m long Medium Rigid Vehicle (MRV) (refer to Figure 4.2).  **Figure 4.2**

No.	Approximate location	Description of findings
3	Newcastle Road, Illoura Street, and Victory Parade / General	An increase in traffic of a maximum of 1 to 2 of the 12.5m long Medium Rigid Vehicle (MRV) per peak hour would have no more than minimal impact on the local residents' amenity along the proposed detour route. This is due to: ▪ insignificant increase in heavy vehicles ▪ ample road capacity and intersection capacity available ▪ not creating additional parking demand on any of the local streets ▪ no impact on the vehicular access to the residential properties ▪ no impact on the pedestrian access to any of the residential properties ▪ unlikely to adversely impact a reasonably safe road environment in all foreseen circumstances

No.	Approximate location	Description of findings
4	Victory Parade / Zebra crossing	The sight distance to the existing Zebra crossing on Victory Parage exceeds 120m (refer to Photo 4.1).  **Photo 4.1: Victory parade, at ≈ 120m before the Zebra crossing** (Photo: Traffic Engineering Centre Pty Ltd) According to Austroads' Guide to Road Design Part 3: Geometric Design, Clause 5.3.2, the Truck Stopping Sight Distance for an operational speed of 50km/h [observed likely to be the case in this 50km/h speed limit zone] is no more than 69m (refer to Table 4.1).

No.	Approximate location	Description of findings
4 Cont'd		

Operating speed (km/h)	Single unit trucks, Semi-trailers and B-doubles Based on d = 0.29 (1)		
	R_T = 1.5 s (2)	R_T = 2.0 s	R_T = 2.5 s
40	38	44	49
50	55	62	69
60	74	82	91
70	96	105	115
80	120	131	142
90	147	160	172
100	–	191	205
110	–	225	241

Table 4.1: Truck stopping sight distance
(Source: Austroads' Guide to Road Design Part 3: Geometric Design, Table 5.5)

In addition, at 90m before the Zebra crossing, there is an advance warning sign alerting approaching drivers about the crossing (refer to Photo 4.2), while the crossing itself is also properly signed, with even an addition in the form of 'Give Way' sign (refer to Photo 4.3).

The only identified deficiency was the faded 'Zig-zag' line on the approach to the Zebra crossing (refer to Photos 4.2 & 4.4).

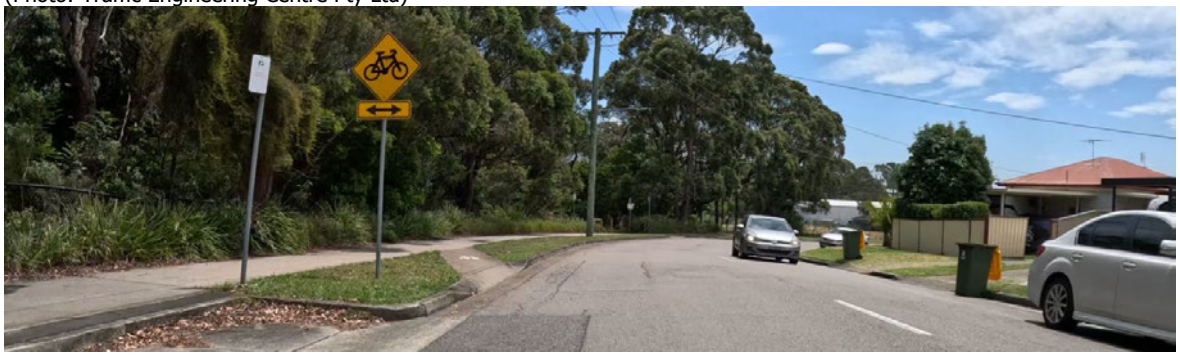
No.	Approximate location	Description of findings
4 Cont'd		 **Photo 4.2: Victory parade, at ≈ 100m before the Zebra crossing** (Photo: Traffic Engineering Centre Pty Ltd)  **Photo 4.3: Victory parade, at the immediate approach to the Zebra crossing** (Photo: Traffic Engineering Centre Pty Ltd)

No.	Approximate location	Description of findings
4 Cont'd		 **Photo 4.4: Victory parade, faded 'Zig-zag' line on approach to the Zebra crossing** (Photo: Traffic Engineering Centre Pty Ltd)

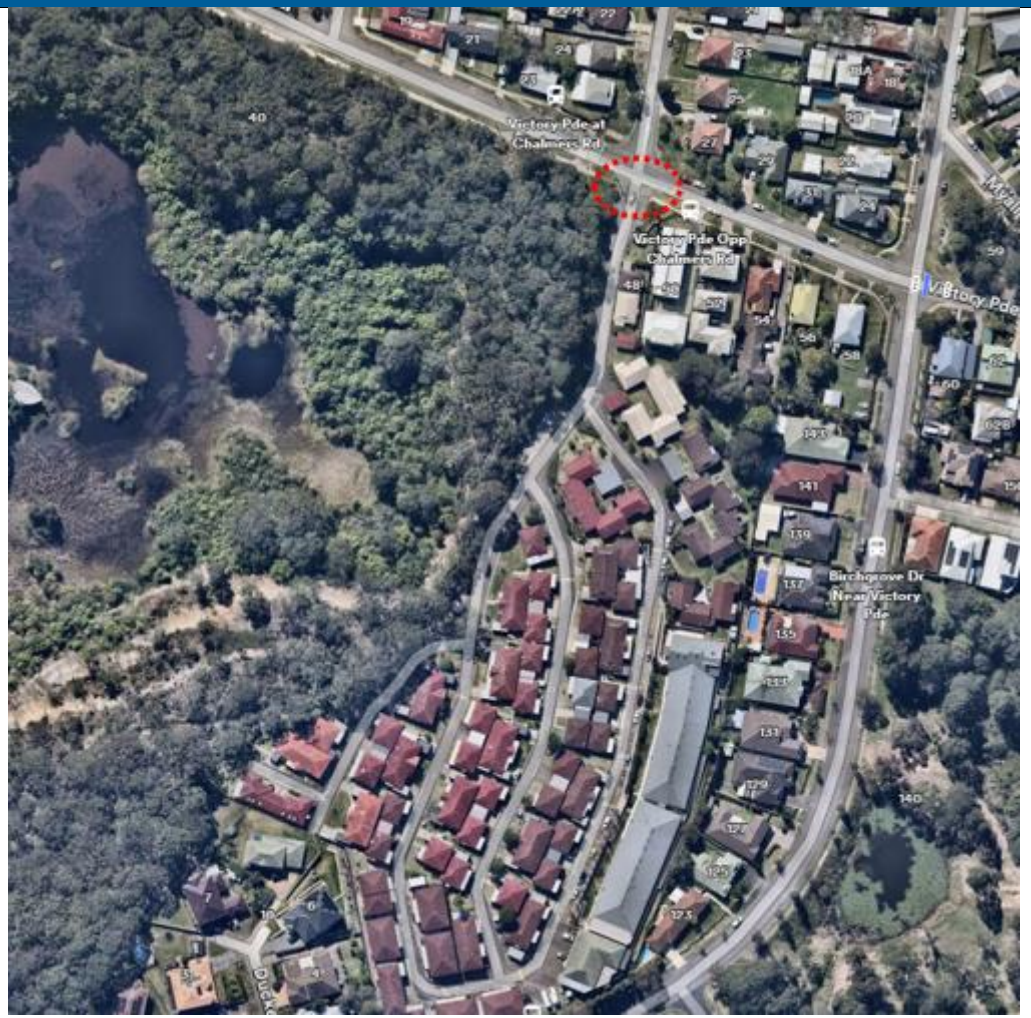
Under the condition that the 'Zig-Zag' line is repainted, an increase in traffic of a maximum of 1 to 2 of the 12.5m long Medium Rigid Vehicle (MRV) per peak hour would have no more than minimal impact on the pedestrian amenities and safety along the proposed detour route.

Recommended mitigation measures:

- Repaint the faded 'Zig-Zag' line.

No.	Approximate location	Description of findings
5	Victory Parade / General (Cyclists amenity and safety)	The proposed detour route is well signposted to warn drivers about the cyclists' presence and two locations where the cyclists are likely to cross the roadway (refer to Photos 4.5 & 4.6).  **Photo 4.5: Victory parade, cycling warning sign** (Photo: Traffic Engineering Centre Pty Ltd)  **Photo 4.6: Victory parade, cycling warning sign** (Photo: Traffic Engineering Centre Pty Ltd) Consequently, an increase in traffic of a maximum of 1 to 2 sweepers per peak hour would have no more than minimal impact on the cyclist's amenity and safety along the proposed detour route.

No.	Approximate location	Description of findings
6	Victory Parade, at the intersection with Chalmers Road and the access driveway to the retirement village	The access driveway to a retirement village is located at the intersection with Chalmers Road (refer to Photo 4.7 and Figure 4.3).  **Photo 4.7: Access driveway to the retirement village, off Victory Parade** (Photo: Streetview)

No.	Approximate location	Description of findings
6 Cont'd		 **Figure 4.3** (Sorce: nearmap)

No.	Approximate location	Description of findings
6 Cont'd		As observed at the site, in all likelihood and foreseen circumstances, the access driveway and a vehicle on it are visible to a driver on Victory Parade at least 70m before the intersection (refer to Photo 4.8 and Figure 4.4).  **Photo 4.8: Victory parade, at ≈ 70m before the intersection with the access driveway to the retirement village** (Photo: Traffic Engineering Centre Pty Ltd)  **Figure 4.4** (Source: nearmap)

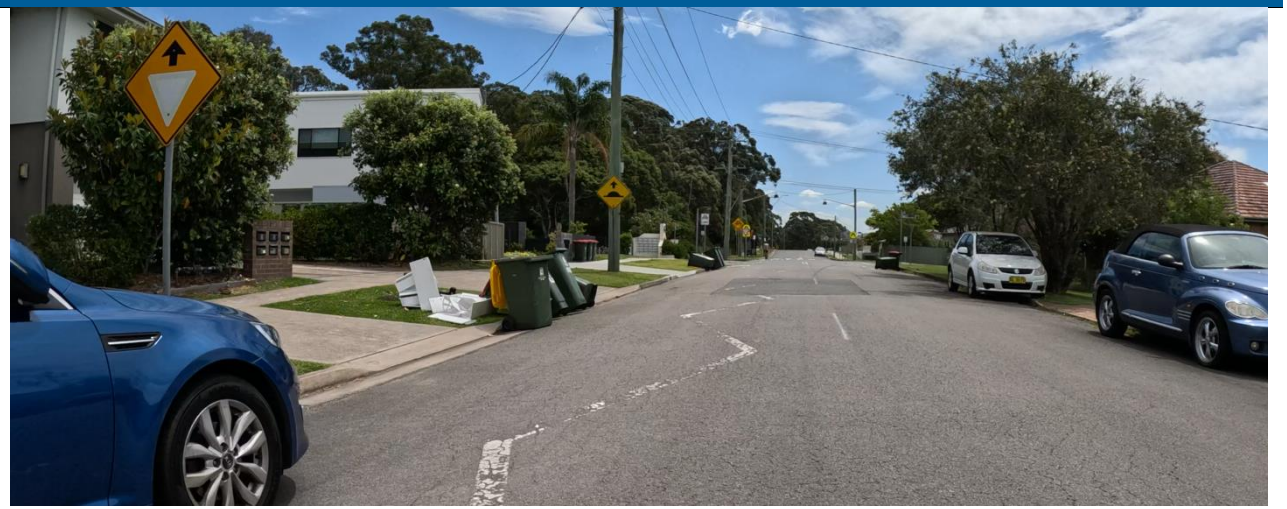
No.	Approximate location	Description of findings
6 Cont'd		Considering the general minimum reaction time (Rt) of only 2.0 seconds, the available minimum Stopping Sight Distance of 70m complies with the minimum standard requirements (refer to Table 4.2).

Operating speed (km/h)	Single unit trucks, Semi-trailers and B-doubles Based on d = 0.29 (1)		
	R_T = 1.5 s (2)	R_T = 2.0 s	R_T = 2.5 s
40	38	44	49
50	55	62	69
60	74	82	91
70	96	105	115

Table 4.2: Truck stopping sight distance
(Source: Austroads' Guide to Road Design Part 3: Geometric Design, Table 5.5)

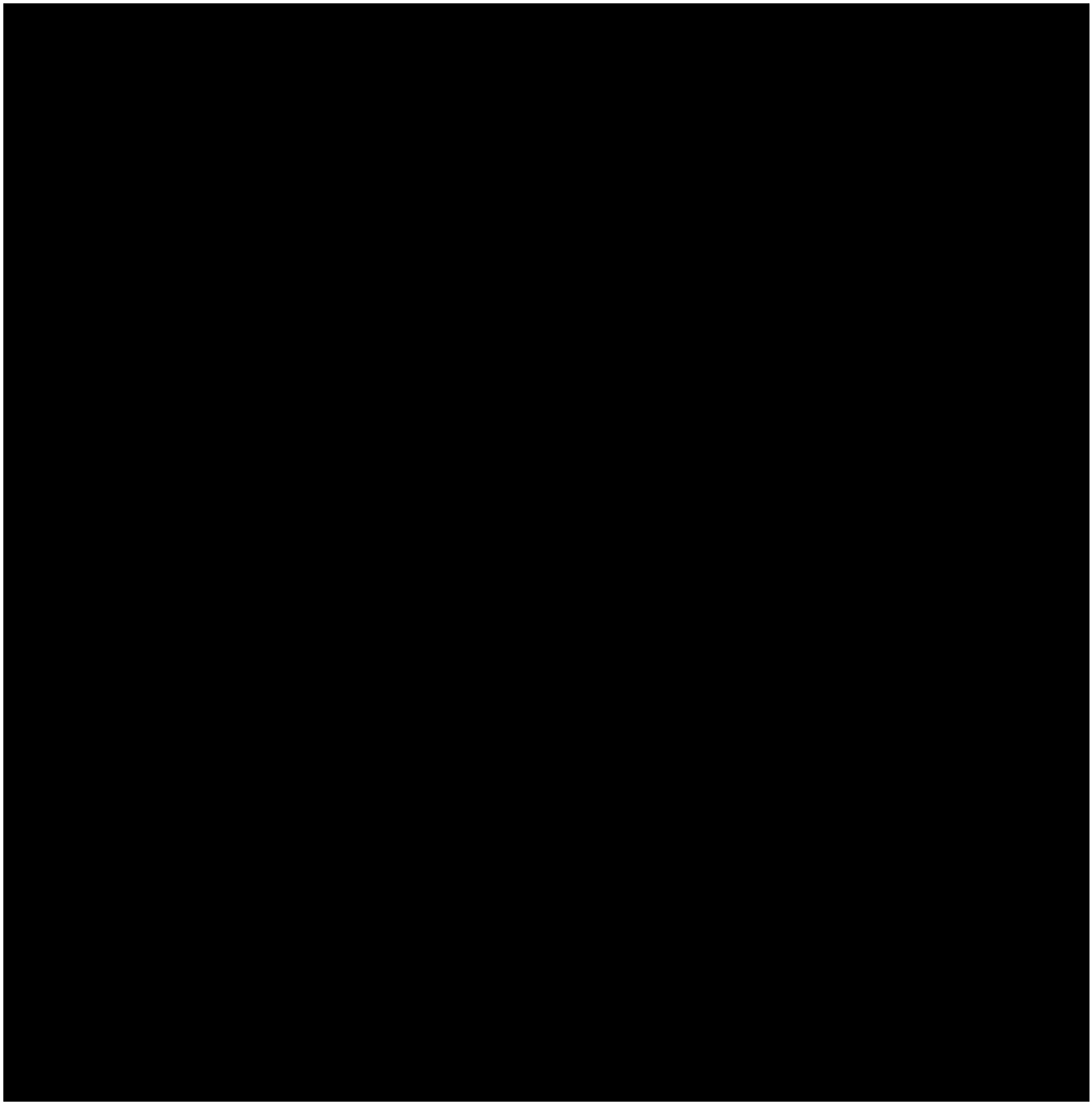
Furthermore, the closer to the access driveway, the more obvious and visible the access driver is to approaching motorists on the Victory Parade (refer to Photos 4.7 & 4.8).

Photo 4.9: Victory parade, on the final approach to the access driveway to the retirement village
(Photo: Traffic Engineering Centre Pty Ltd)

No.	Approximate location	Description of findings
6 Cont'd		 **Photo 4.10: Victory parade, on the final approach to the access driveway to the retirement village** (Photo: Traffic Engineering Centre Pty Ltd) In addition to the above, and considering Vicory Parade is a bus route, the introduction of only one or two sweepers per peak hour would not, in all likelihood and foreseen circumstances, impact the retirement village residents' safety or amenity.

5. Formal statement

The findings and opinions in the report are based on the examination of the temporary traffic management and might not address all concerns existing at the time of the audit. The team members have endeavoured to identify features of the temporary traffic management that could be modified or removed to improve safety, although it must be recognised that safety cannot be guaranteed since no road can be regarded as absolutely safe. While every effort has been made to ensure the accuracy of this report, it is made available strictly on the basis that anyone relying on it does so at their own risk without any liability to the Auditors.



Appendix A

Swept path analysis

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Traffic Control Plan (TCP)

NEWCASTLE INNER BYPASS

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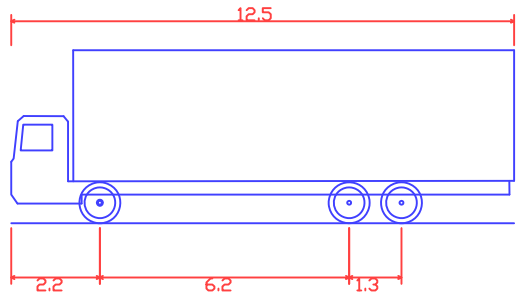
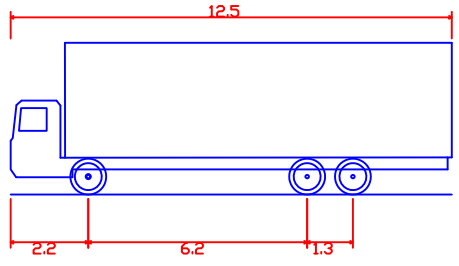
SINGLE UNIT TRUCK–12.5m



Single Unit Truck/Bus (12.5 m)	
Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.490m
Track Width	2.500m

NEWCASTLE INNER BYPASS

SINGLE UNIT TRUCK–12.5m



Single Unit Truck/Bus (12.5 m)	
Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.490m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb-to-Curb Turning Radius	12.500m

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Legend
LV PATHWAY
SWEEPER/LV PATHWAY
VMS Board
END DETOUR
DETOUR
DETOUR AHEAD
REPORT TRAFFIC INCIDENT
CONSTRUCTION VEHICLE DETOUR (Sweeper and LV Only)
USE
DETOUR
OR
Newcastle Rd
Victoria Parade
Crest Rd
Chalmers Rd
Illoura St
Drury St
The Crescent
Blue Gum Rd
Mordue Parade
Myall St
60m
Google