



Office of the Chief Investigator  
Transport and Marine Safety Investigations

## Rail Safety Investigation

No 2008 / 05

# Brief Report

Tram to Tram Collision

Nicholson Street and Victoria Parade

Melbourne

12 May 2008



## Scope and Reporting

### The Chief Investigator

The Chief Investigator, Transport and Marine Safety Investigations is a statutory position established on 1 August 2006 under Part V of the *Transport Act 1983*.

The objective of the position is to improve public transport and marine safety by independently investigating public transport and marine safety matters.

The primary focus of an investigation is to determine what factors caused the incident, rather than apportion blame for the incident, and to identify issues that may require review, monitoring or further consideration. In conducting investigations, the Chief Investigator will apply the principles of 'just culture' and use a methodology based on systemic investigation models.

The Chief Investigator is required to report the results of investigations to the Minister for Public Transport and / or the Minister for Roads and Ports. However, before submitting the results of an investigation to the Minister, the Chief Investigator must consult in accordance with section 85A of the *Transport Act 1983*.

The Chief Investigator is not subject to the direction or control of the Minister(s) in performing or exercising his or her functions or powers, but the Minister may direct the Chief Investigator to investigate a public transport safety matter or a marine safety matter.

## Issuing of a Brief Report

In those cases where an investigation is curtailed or a full investigation report is not considered warranted, the Chief Investigator may issue a Brief Report.

A Brief Report will typically include the particulars of the event, a description of the incident, a summary of pertinent investigation information and key findings and, as applicable, a description of identified safety issues and recommended safety actions.

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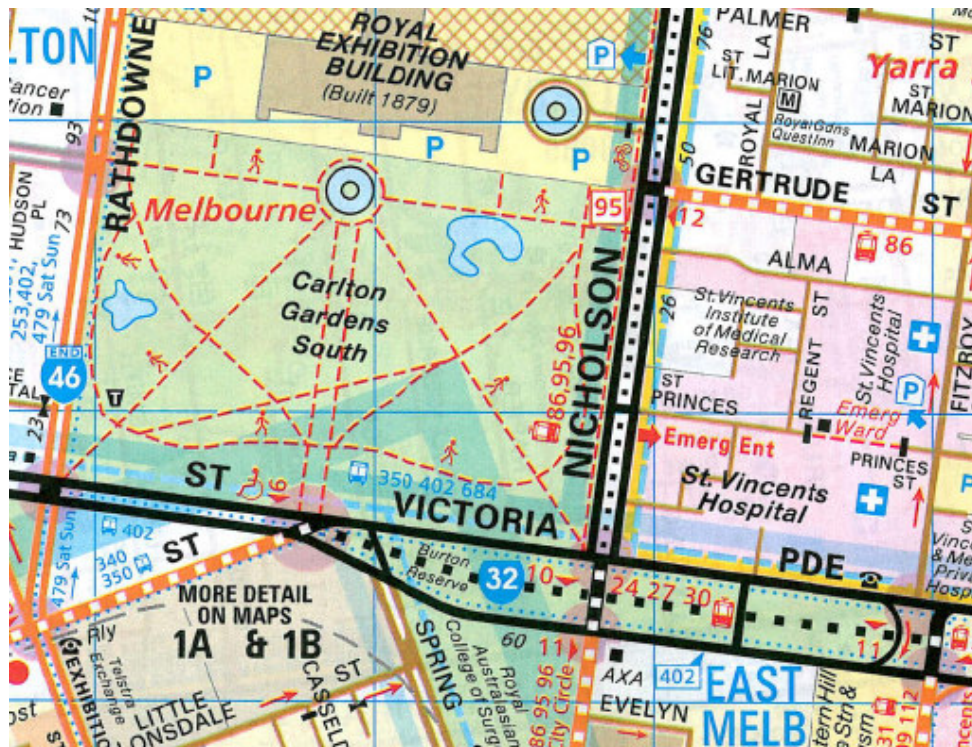
## Occurrence Details

**Date:** 12 May 2008

**Time:** 1051

### Location:

At the intersection of Nicholson Street and Victoria Parade, East Melbourne.



### Trip / route details

The trams involved were travelling on the inbound and outbound tracks of Route 96 - East Brunswick to St Kilda Beach.

### Incident outcomes

The incident resulted in a low speed side collision and derailment of Tram 3032. There were no injuries to passengers or tram crews. Both trams sustained minor panel damage.

### Vehicle details

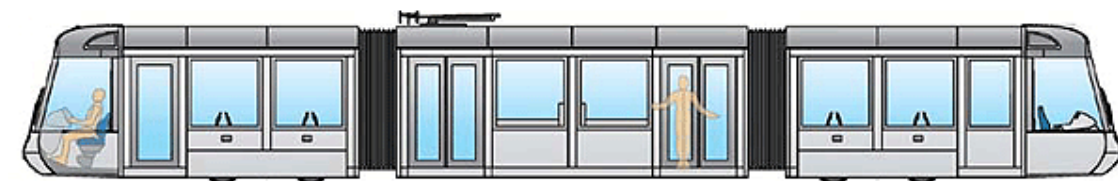
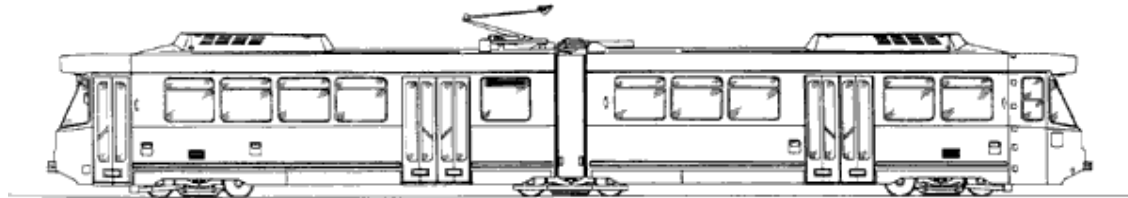


Figure 1. C Class tram.

Tram 3032 - was an Alstom built three-section low floor C class tram seating 40 with a tare weight of 28.6 tonnes, a width of 2.65 metres and a length of 22.98 metres.

At the time of the incident the passenger load on this vehicle was about 30.



**Figure 2. B2 Class tram.**

Tram 2103 - was a Commonwealth Engineering Pty Ltd built three-door B2 class articulated light rail vehicle seating 76 with a tare weight of 34.0 tonnes, a width of 2.77 metres and a length of 23.63 metres.

At the time of the incident the passenger load on this vehicle was about 16.

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### **Vehicle operator**

Yarra Trams Pty Ltd.

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### **Infrastructure manager**

Yarra Trams Pty Ltd.

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### **Environmental details**

The meteorological conditions at the time of the incident were fine, with a northwest wind of one knot gusting to three knots. The temperature was 14.5 degrees and cloud cover four to five eighths at 4000 ft. The sun was at azimuth 23 degrees 42' true and altitude 30 degree 32' at 1051 local time. There were no weather induced impediments affecting the driver's visibility.

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## Circumstances

### Background / context

The Nicholson Street and Victoria Parade intersection is a 90 degree intersection which consists of two multi-laned roads. Victoria Parade incorporates a separated tram reserve. Nicholson Street has a centre of road tram right of way. The tram system infrastructure consists of a 90 degree tram square with turnouts on three of the four quadrants together with a mixture of automatic and hand operated points to facilitate routing of tram traffic. The tram route connections are depicted in figure 3. There are designated centre right turning provisions for motor vehicle traffic adjacent to each tram route. Road and tram traffic is managed by multiple traffic lights which provide either conjoint or independent visual control cues for road and tram vehicle movement.

### Sequence of events / Circumstances

At about 1042 southbound Tram 866 arrived at Stop 11 at the intersection of Nicholson Street and Victoria Parade. Tram 866 had a defect which required it to proceed to the Southbank depot via Latrobe Street. This situation required the driver to manually set the points for the diverge route from Nicholson Street into Victoria Parade.

At about 1048 southbound Tram 3032 arrived at the intersection of Nicholson Street and Victoria Parade - Stop 11. While at this stop the driver reported that he observed the points and believed them to be set for the straight to continue along Nicholson Street across the Victoria Parade intersection.

As tram 3032 entered the intersection the driver observed an opposing northbound movement (tram 2103) about three quarters of the way into the intersection. When both trams were passing, tram 3032 diverged to the right and collided with the side of tram 2103. The point of contact was about eight metres from the rear of Tram 2103 and resulted in superficial damage to the side panels. As a consequence of the impact tram 3032 was derailed and also sustained superficial panel damage.

Tram 3032 was brought to a stand with the leading bogie on the route leading towards Victoria Parade 8.7 metres from the toe of the facing points in Nicholson Street. Tram 2103 continued across the intersection coming to a stand opposite stop 11. The speed of tram 3032 at impact was about 10 km/h

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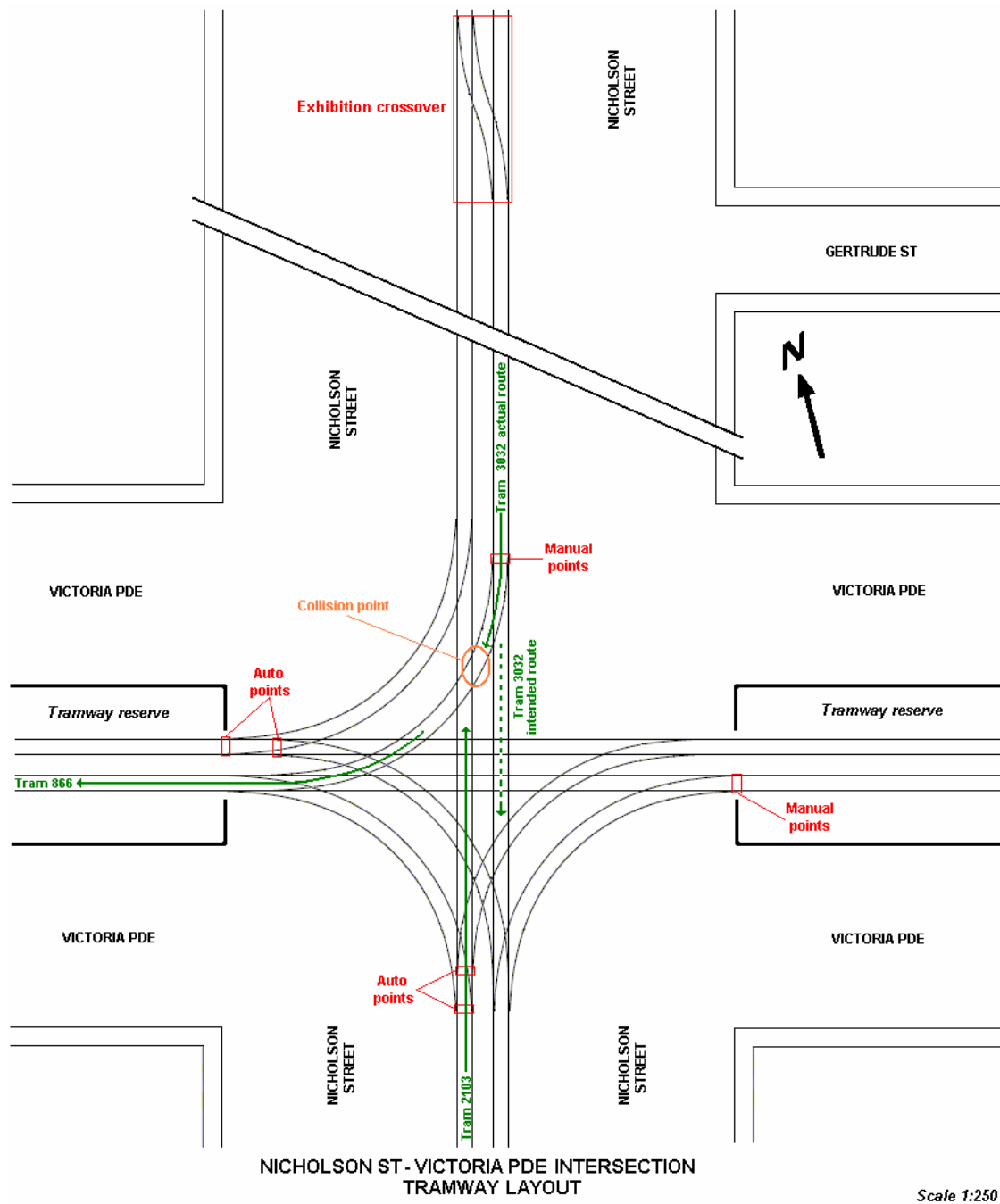


Figure 3. Schematic of intersection.



Figure 4. View of facing points from driving position of tram 3032.



Figure 5. View of side panel damage to Tram 2103.



Figure 6. View looking north showing final position of tram 3032.

## Summary Investigation Information and Findings

### Personnel

The driver of tram 3032 had been employed with Yarra Trams for six months and was assigned to the Southbank Depot where he had undergone practical driver training for B class trams. His conversion training for C class trams was conducted at the Kew Depot and he was qualified in this traction in February 2008. A review of the driver's employment history found no record of any other safety occurrences. A review of the driver's medical records identified that he was fit for duty and that all relevant medical requirements had been met. He reported that he was not suffering from any recurrent illness or ailment nor was he taking any medications. Post incident impairment and breathalyser tests were conducted with negative results.

The driver was regularly rostered on Route 96 and was conversant with both the route and the intersection.

At interview he reported that on the day of the incident (Monday) he was well rested and awoke about 0530 for his 0712 tour of duty. The previous shifts worked were 1700 - 0200 on Monday, Tuesday, Wednesday, Friday and Saturday of the previous week. He did not work on Thursday or Sunday.

The driver also reported that the shift on 12 May 2008 was normal for that time of day with the usual heavy road traffic and passenger loadings encountered on the inbound run of Route 96.

The driver of Tram 2103 was not interviewed.

### Vehicle(s)

Post incident inspections found no condition with either vehicle that would have contributed to the incident.

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### Infrastructure

Post incident inspection of the track infrastructure found no condition that would have contributed to the incident and the points operated as designed.

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### Operations

Yarra Trams reported that the hand points for the diverge route from Nicholson Street into Victoria Parade - Stop 11 - are provided primarily to cater for planned service diversions and that it is not a common requirement for drivers to operate these points without a field operations officer being on site. However, unplanned operational issues do, from time to time, dictate the requirement for drivers to operate these points without the presence of a field operations officer.

In addition to physically operating the points for diverging movements, tram drivers are required to place a "turning" call on the traffic control lights by activating a push button mounted at about eye level on the traffic light post. In such cases drivers are required to seek permission from the Fleet Operations Centre before proceeding over the points for the diverge route into Victoria Parade.

On this particular day the driver of Tram 866 before taking the turn sought and was given permission from Fleet Operations Centre to operate the points on Nicholson Street and to proceed west along Victoria Parade.



Information provided to the investigation indicated that there is no formal or documented requirement for Fleet Operations Centre to notify the immediate following tram of this situation, however there exists an informal work practice by which such notification is often provided. The driver of tram 3032 was not provided with any notification of the diverge movement of tram 866 or that the points at the intersection would require resetting.

Section 83 of Yarra Trams General and Operational Rules and Procedures in part states:

*Before going through facing points, drivers must stop at the compulsory stop mark and make sure the points are set for the track the tram is to take. Drivers must stop their tram at a position that enables them to see that the points are set for the track the Tram is to take. If the Tram goes on the wrong track at points, it must be stopped immediately in a safe position and Fleet Operations Centre must be notified for further instructions.*

The driver of Tram 3032, although stopping tram 3032 in accordance with section 83 at Stop 11, failed to recognise, for whatever reason, that the facing points were set for the diverge route before proceeding.

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### **Identified Safety Issues and Recommended Safety Actions (RSA)**

The investigation has identified that the prevention of side or head-on tram collisions at facing points is reliant on a single level procedural defence, the observance by the driver of the position of the facing points.

#### **RSA 20080035**

That Yarra Trams review their Safety Management System with respect to the adequacy of risk mitigations provided to prevent side or head-on tram collisions at locations where facing points lead to a diverging movement which conflicts with opposing tram traffic.

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### **Safety Actions Taken Since the Event**

Yarra Trams have issued a safety notice and conducted safety briefings to raise driver awareness of the requirements when stopped at facing points.

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### **Decision to Curtail Investigation**

Further investigation into this incident by the Office of the Chief Investigator is not considered warranted. The key safety issue and associated recommendation is identified within this report.

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