Office of the Chief Investigator
Transport and Marine Safety Investigations

Rail Safety Investigation
No 2008 / 03

Brief Report

Pedestrian Fatality
V/Line Train 8136
Ardeer
6 March 2008

Figure 1. Pedestrian crossing viewed from direction of pedestrian approach

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.

Occurrence Details

Date: 6 March 2008

Time: 1405

Location

The incident took place between Ardeer and Sunshine Railway Stations opposite Tower Street.

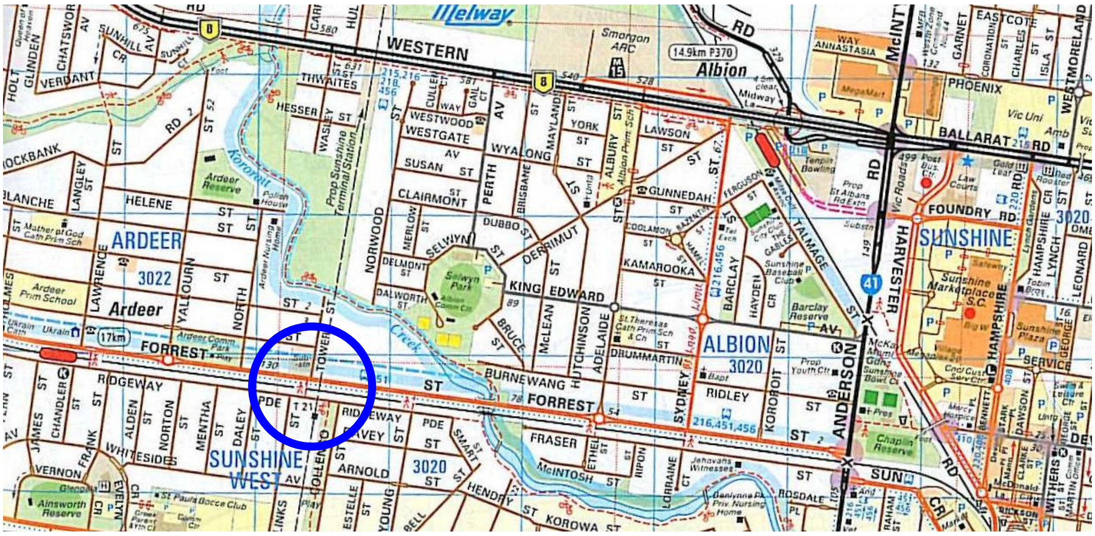

Figure 2. Location of pedestrian crossing

Trip / route details

The train was the scheduled 1212 service from Ararat to Southern Cross Railway Station.

Incident outcomes

A pedestrian was struck and fatally injured.

Vehicle details

The train comprised a two unit VLocity designated VL27.

Vehicle operator

V/Line Passenger Pty Ltd

Infrastructure managers

Rail corridor: V/Line Passenger Pty Ltd

Pedestrian crossing: VicTrack

Environmental details

The ambient temperature at the time of the incident was 21 degrees Celsius.

Conditions were dry with scattered (three to four eighths) cloud and good visibility. Winds were reported as SSE at 10-15 knots.

Circumstances

Background / context

V/Line provides regular passenger rail services between Ararat and Southern Cross stations utilising the corridor upgraded as part of the Regional Fast Rail (RFR) project.

The Melbourne bound VLocity service was travelling on the south track which in the area of the incident has a maximum line speed of 130 km/h.

Sequence of events

The train last stopped at Melton Railway Station and was running express to Sunshine for its scheduled stop at 1409. In the cab were the designated driver and two other V/Line employees (drivers) on route to commence their shift.

The train passed through Ardeer Station travelling at about 121 km/h. The occupants of the train cab subsequently sighted a pedestrian on the north track. The pedestrian was observed to be crossing from north to south.

With the train about 95 metres from the crossing and travelling at 119 km/h, the driver gave a short blast on the train horn and immediately applied the emergency brake, followed rapidly by another short blast. The pedestrian was seen to look towards the oncoming train apparently alerted by the horn and then speed up her movement to cross in a southerly direction.

A further and continuous application of the horn commenced about 27 metres before the crossing and was maintained until after the train had passed the crossing.

The pedestrian failed to clear the south track by about a metre and was struck by the right hand side of the front of the train at or about the southern most rail of the south track. The pedestrian sustained fatal injuries.

The train was travelling at 112 km/h at impact and subsequently came to a stop 524 metres past the crossing. With the leading car stopped on the Kororoit Creek Bridge, passengers were required to alight from the rear car access doors.

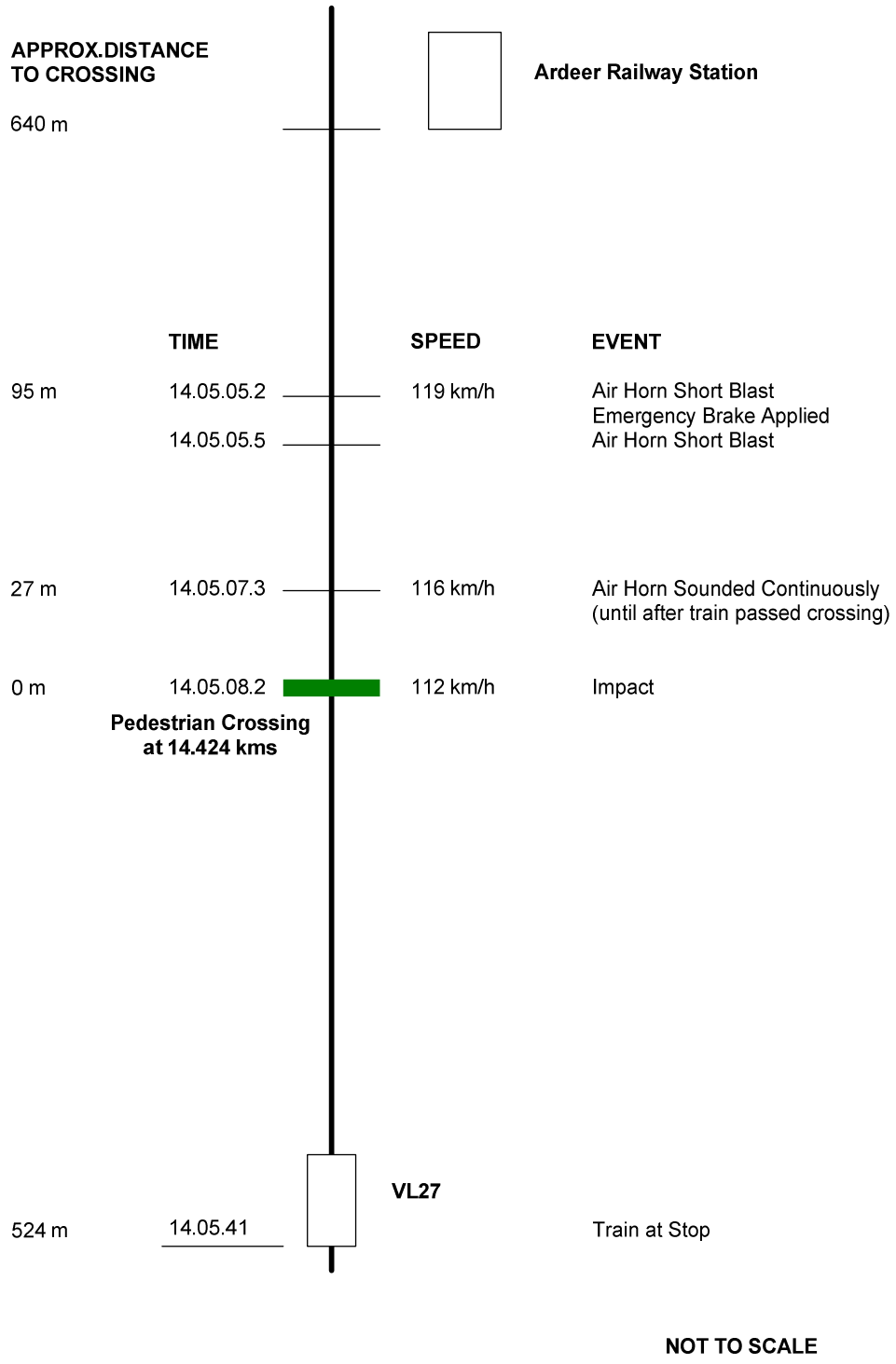

Figure 3. Times and locations of key events

Summary Investigation Information and Findings

Personnel

Pedestrian

The pedestrian was female, aged 50, lived locally and was familiar with the crossing. The pedestrian was not substantially sight, hearing or mobility impaired.

In this instance, the pedestrian's decision making and assessment of risks as she approached and traversed the crossing could not be ascertained by the investigation. Eye-witness information suggests that the pedestrian was looking towards the east and away from the train until alerted by the train horn. After being alerted, the pedestrian was observed to quicken her movement and continue crossing in the same direction.

Train driver

The driver of the train was qualified and current for the train being operated.

The train was operating below the permitted track speed and the actions of the driver are considered consistent with current operating procedure.

Vehicle(s) and equipment

The condition of the train is not considered contributory to the incident. There were no indications of any fault with the rail vehicle or its equipment.

Infrastructure

Overview

The Tower Street pedestrian crossing is located 14.424 rail kilometres from Southern Cross Station about 640 metres on the Melbourne side of Ardeer Railway Station.

For a pedestrian approaching from the north, there is a long bounded pathway leading to a maze (crib) and warning signage. The signage was in part defaced by graffiti but was legible.

Figure 4. Pedestrian approach to maze and signage on northern side of crossing

The crossing itself is perpendicular to the rail tracks and is 8.6 metres wide from wait line to wait line. The view of the track is open and clear in both directions.

The crossing traverses two tracks both of which can be used by trains travelling in either direction (bi-directional). In this instance, the train was using the south track which has a maximum line speed of 130 km/h. The adjacent, north track has a maximum line speed of 115 km/h.

For a Melbourne bound train, as in this case, the approach to the crossing is straight and open with a slight down hill grade increasing after the crossing. There is no mandated requirement to fit whistle boards on the approach to a stand alone passive pedestrian crossing and no such boards were fitted in this instance.

Increase in line speed

The permitted line speed for the south track was increased from 115 km/h to 130 km/h as part of the RFR project.

In the absence of Victorian standards prescribing the required level of protection at pedestrian crossings, the RFR Project developed Guideline No. 502: Pedestrian Crossings Protection which outlined the project policy position on the levels of crossing protection to be provided. This guideline, which was specifically to be applied to the RFR project, required active protection for all crossings of two or more tracks with moderate or above pedestrian usage or where line speeds exceeded 130 km/h irrespective of usage. The project guideline permitted passive protection at pedestrian crossings with two or more tracks in those instances where pedestrian usage was low (less than 15 pedestrians per hour, average peak) and the line speed was 130 km/h or lower.

Observations by the investigation at the Tower Street crossing suggest that the project criteria for permitting passive protection would have been satisfied.

Current pedestrian crossing standards, guidelines and procedures

Overview

In Victoria, standards and guidelines for pedestrian crossings are developed through industry collaboration across public and private sectors and draw on available practice including Australian Standards. A product of this process is the Victorian Rail Industry Operations Group Standards (VRIOGS) 003.2-2006, Criteria for Infrastructure at Railway Level Crossings – Pedestrian Crossings.

VRIOGS 003.2-2006 addresses crossing design and configuration within its scope. The standard does not provide guidance on the level of protection (type of control) that should be provided except stating that remedial action, such as providing active protection, will be required at those crossings which do not have the required sighting distance. Much of the standard is generally consistent with the current applicable Australian Standard, AS1742-2007, except for some minor variations, notably with regard to signage. The Public Transport Division (PTD) of the Department of Transport has advised that it has recently completed a gap analysis of the two standards and is updating VRIOGS 003.2 to fully comply with the signage requirements of the Australian Standard. The intention is for the revised VRIOGS to be submitted to the Victorian Rail Industry Operations Group (VRIOG) for consultation and approval.

Similar to the VRIOGS, AS1742-2007 does not provide guidance on the type of control to be used at pedestrian crossings. The standard states that such guidance can be found in risk assessment models such as ALCAM.

Rail operator procedures

Relevant V/Line documentation includes Procedure NIPR:2687. Under the heading "road and footpath approach gradients", the procedure specifies VRIOGS 003.2-2006 for designing new or executing substantial alterations to pedestrian crossings. The V/Line procedure also references AS1742.7 for signage which, as noted earlier, is at variance with the VRIOGS.

Compliance with guidelines and standards

Sighting distance

VRIOGS 003.2-2006 and AS1742.7 both require a sighting distance at the Tower Street pedestrian crossing of about 400 metres or 480 metres if it were assumed that there was likely to be significant use of the crossing by people with ambulant disabilities. This gives an 11 second crossing time or 13 seconds for those with ambulant disability. The standards do not differentiate between bi-directional and uni-directional tracks.

The available sighting distance in the direction of interest is greater than 600 metres and therefore exceeds these requirements by a significant margin.

Signage

The crossing has been established for some time. Signage at the crossing is consistent with the standards of a previous track authority, Public Transport Corporation (PTC); specifically the engineering services division standard crib crossing arrangement drawing F616, revision dated 10/10/98.

Signage at the crossing is at variance with more recent standards including the VRIOG standard and the current Australian standard which both vary from the earlier PTC standards.

Physical configuration

The physical configuration of the crossing is similar to the PTC standard arrangement drawing with minor variations in maze dimensions and pavement stencil colouring. These areas of variation are not considered consequential to the outcome of the incident.

The configuration has dimensional differences to the VRIOG standard and the current Australian Standard, again not considered consequential to the outcome of the incident.

Operations

The Operating Rules and Procedures 1994 which govern rail network operations are silent with respect to pedestrian crossings. As the Tower Street crossing was not provided with a whistle board in either direction there was no requirement for drivers to sound a warning horn on the approach to this crossing.

There were no unusual operational aspects identified by the investigation excepting the carriage of two additional persons in the driver's cab.

Legislation and regulatory systems

Legislative obligations

The rail safety regulator, Public Transport Safety Victoria (PTSV), has oversight of the accredited rail operator (ARO). PTSV has expressed the view that, consistent with the Rail Safety Act 2006 responsibility for the management of operational risks in the rail corridor associated with this section of track rests with the ARO, currently V/Line.

The Tower Street pedestrian crossing is outside the primary track infrastructure lease agreement and is retained by VicTrack. Accordingly, in the case of this crossing, some level of responsibility may also rest with VicTrack.

The investigation has not identified coordination plans addressing this interface of responsibilities between V/Line and VicTrack.

Approval of the increase in line speed

At the time of the increase in line speed of the south track from 115 km/h to 130 km/h, the track manager was Pacific National.

In accordance with the requirements of that time, Pacific National submitted a material change application dated April 2005 for regulatory approval. The application identified the increase in line speed and the level of protection to be provided at the Tower Street crossing and was subsequently approved by the regulator.

Identified Safety Issues and Recommended Safety Actions (RSA)

Interface Coordination Plan

In this instance, responsibility for the pedestrian crossing resides with VicTrack while V/Line as the accredited rail operator has responsibilities for the safety of operations within the rail corridor. The investigation has not identified the mechanism by which this interface of responsibilities is managed.

RSA 2008028

That V/Line clearly articulates within its interface coordination plan its strategies for managing risks at those crossings for which VicTrack has responsibility as the infrastructure manager.

Scope of pedestrian crossing standards

The Victorian industry standard (VRIOGS) and the previous and current Australian Standards do not specify requirements for the minimum levels of protection to be provided at stand alone pedestrian crossings. In Victoria, decisions on the level of crossing protection (type of control) are currently informed by risk profiling utilising the Australian Level Crossing Assessment Model (ALCAM).

At the time of the RFR project, the lack of available standards specifying explicit requirements for the levels of protection was addressed through the project's development of guidelines. The project guidelines applied to all pedestrian crossings covered by the RFR project including the Tower Street crossing and were satisfied at that crossing.

While recognising the role of risk based methods such as ALCAM to assist in the risk assessment process, the absence of guidelines on minimum treatments has the potential to lead to inconsistent levels of protection. Accordingly, there may be a case to expand the scope of current Victorian industry standards and specifically to introduce appropriate guidelines for the minimum levels of treatment to be provided at pedestrian crossings.

RSA 2008029

That the Victorian Railway Industry Operators Group (VRIOG) considers the development of guidelines addressing the minimum levels of protection (types of control) to be provided at pedestrian crossings.

Signage

The signage at the Tower Street pedestrian crossing was established under previous standards and does not comply with either the VRIOGS or the latest Australian Standard. This in itself is not considered unusual as it is common for there to be a lag between the introduction of new standards and signage upgrades.

While the non-compliance with current signage standards is therefore not considered directly contributory to this incident, the track manager's policy on signage including the standards applied and progressive upgrade is not clearly articulated within its procedural documentation.

RSA 2008030

That V/Line reviews and clearly articulates its policy on pedestrian crossing signage standards and the progressive upgrade of signage to the latest applicable standards.

Operating procedures and whistle boards at passive pedestrian crossings

Network operating rules and procedures do not require whistle board installation for passive pedestrian crossings. There are similarly no operating rules specific to pedestrian crossings.

RSA 2008031

That V/Line reviews its safety management systems with regard the use of horns on the approach to stand alone passive pedestrian crossings.

RSA 2008032

That the Victorian Rail Network Consultation Committee (VRNCC) reviews the operating rules with regard the use of horns on the approach to stand alone passive pedestrian crossings.

Decision to Curtail Investigation

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