



**Australian Government**

**Australian Transport Safety Bureau**

# Level crossing collision between freight train 5KQ7 and a road coach

Norlane, Victoria, on 2 April 2020



**ATSB Transport Safety Report**

Rail Occurrence Investigation (Defined)

RO-2020-004

Final – 28 January 2021

**Cover photo:** Coach: Sandringham Charter Coaches - Train: Chief Investigator Transport Safety

This investigation is being conducted under the Transport Safety Investigation Act 2003 by the Chief Investigator, Transport Safety (Victoria) in collaboration with the Australian Transport Safety Bureau and the Office of Transport Safety Investigations (NSW).

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#### Addendum

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# Safety summary

## What happened

On the morning of 2 April 2020, a road coach operated by Sandringham Charter Coaches was providing a V/Line train replacement service between Melbourne and Waurin Ponds in Geelong. At about 1049, the coach departed North Shore station in Norlane (Geelong) bound for North Geelong Railway Station. There was one passenger aboard the bus.

The coach travelled along Station Street and was veering left to cross the Station Street level crossing when the crossing warning system activated in response to an approaching freight train. The driver of the coach immediately applied the brakes, and the coach was stopped, but within the crossing.

A short time later as the train approached the crossing, the train crew observed the coach. The locomotive driver made an emergency brake application and the co-driver began to sound the horn. The coach driver heard the train horn and attempted, unsuccessfully, to reverse the coach.

The train was unable to stop and impacted the front-left corner of the coach at about 1050. The coach driver and the sole passenger were injured in the collision and were taken to hospital. The coach driver was released from hospital the same day, and the passenger the next day.

## What the ATSB found

The ATSB found that the coach had stopped past the boom barrier with the front-left corner of the coach foul of the western standard-gauge track. The coach driver reported that they had stopped in response to the crossing warning signals and was reluctant to proceed across the crossing because of fear of a complaint. The acute road-to-rail track angle may have influenced the driver's perception of the crossing and the position of the left-front corner of the bus relative to the track. The driver also reported not expecting a train because they were operating a train-replacement service.

Had the driver not stopped the coach, there was adequate time to complete the crossing prior to the arrival of the freight train.

## What has been done as a result

Westernport Road Lines issued a safety alert to their drivers, reminding drivers that level crossings must be regarded as live, even if they are providing rail replacement services.

## Safety message

Motorists need to be aware that in situations where passenger train services are not operating, freight trains may be operating, and normal safety precautions should be observed.

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# The occurrence

## Prior to the collision

On 2 April 2020, a Sandringham Charter Coaches (SCC) road coach was to operate train replacement services for V/Line<sup>1</sup> passengers travelling between Southern Cross Station and Waurn Ponds Station (Figure 1). The coach driver arrived at the company depot in Moorabbin, in south east Melbourne, at about 0400<sup>2</sup> that morning and prepared the coach.

The coach departed the Moorabbin depot at 0440 and travelled 'out of service' to Waurn Ponds. At 0638, the coach commenced its first scheduled passenger service, departing Waurn Ponds for Southern Cross.

**Figure 1: Train replacement coach route between Southern Cross and Waurn Ponds**



Source: Google maps data © 2020 with annotations by Chief Investigator Transport Safety

The coach arrived at Southern Cross at 0841 and at 0930 commenced a service back to Waurn Ponds. There were no passengers on board at departure. The coach ran via Little River to Lara Station, where one passenger boarded. From there the coach proceeded to Corio and North Shore stations, with no passengers boarding or alighting.

That same morning, a Pacific National (PN) freight train No. 5KQ7 was travelling from Murtoa (in Victoria) to Werris Creek (in New South Wales), via North Geelong and Melbourne. After passing North Geelong, the train stopped at Anakie Loop<sup>3</sup> (about 3 km from the Station Street level crossing in Norlane) for a crew change (locomotive driver and co-driver). At about 1045,<sup>4</sup> it resumed travelling towards Melbourne.

<sup>1</sup> V/Line is a government-owned corporation that operates regional passenger train and coach services in Victoria.

<sup>2</sup> All times are in Australian Eastern Daylight Time (UTC+11).

<sup>3</sup> The 'Anakie crossing loop' is located near Thompson Road, North Geelong. It is not associated with the town of the same name.

<sup>4</sup> Train logger times have been adjusted to align with GPS time.

## The collision

At about 1049, the road coach was stopped at North Shore Railway Station bus stop on Station Street. The level crossing was 70 m ahead and was visible from the bus stop. The flashing lights installation<sup>5</sup> in the centre of the road was also visible (Figure 2).<sup>6</sup>

**Figure 2: View of the level crossing from the North Shore Station bus stop**



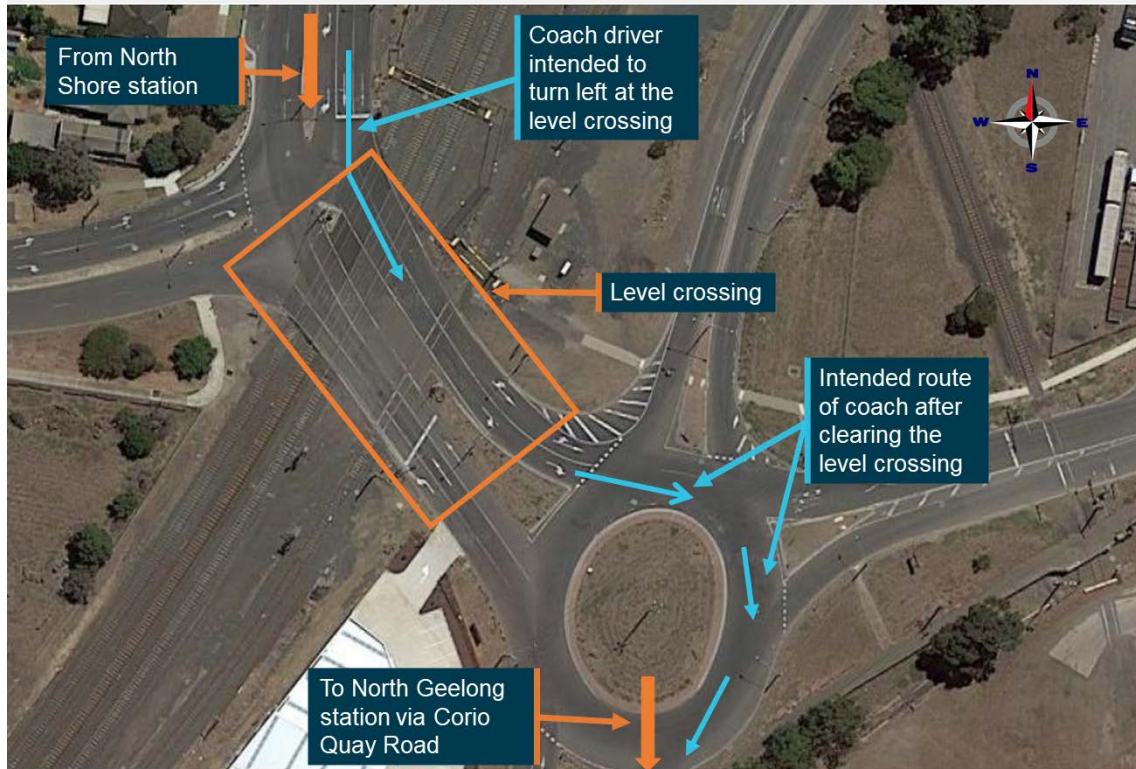
Source: Chief Investigator Transport Safety

No passengers boarded or alighted, and the coach departed the North Shore Station bus stop with the one passenger, bound for North Geelong Station. It was running to schedule. The coach was driven south in the bus lane, before moving across into the centre traffic lane of Station Street as it approached the level crossing at the junction with North Shore Road. The driver intended to travel in the right-hand lane across the level crossing and enter the roundabout on the right lane for an exit onto Corio Quay Road (Figure 3).

<sup>5</sup> The installation was a pedestal onto which warning signage, flashing lights, bells and boom barrier were mounted.

<sup>6</sup> From the coach stop, the left-hand (or 'near') side signal assembly was partly obscured by vegetation and roadside infrastructure.

**Figure 3: Intended route of coach from Station Street towards North Geelong station**



Source: Google maps data © 2020 with annotations by Chief Investigator Transport Safety

On approaching the crossing, the driver slowed the coach in preparation to cross. The driver reported that the coach had just crossed the level crossing stop line road marking when they heard the level crossing warning bells and stopped the coach. In the stopped position, the coach was foul of the first track (Figure 4).

The driver also indicated that, at the time, he was under the impression that trains were not operating that day.

The freight train was about 580 m (and 39 s) from the crossing when the active protection at the crossing was activated. Due to the curvature in the track and trackside obstructions, the train was not yet visible from the crossing, and the crossing was not yet visible to the train crew. The train crew stated that they sounded the horn when the train passed the whistle board, about 400 m prior to the crossing.<sup>7</sup>

After stopping, the coach driver placed the bus transmission in neutral, engaged the park brake, removed their seatbelt and stood up. The driver recalled there were no vehicles ahead or behind the coach. The right-hand level crossing boom barrier then descended onto the roof of the coach. The driver was aware of the boom but did not attempt to reverse the coach concerned at possible damage.

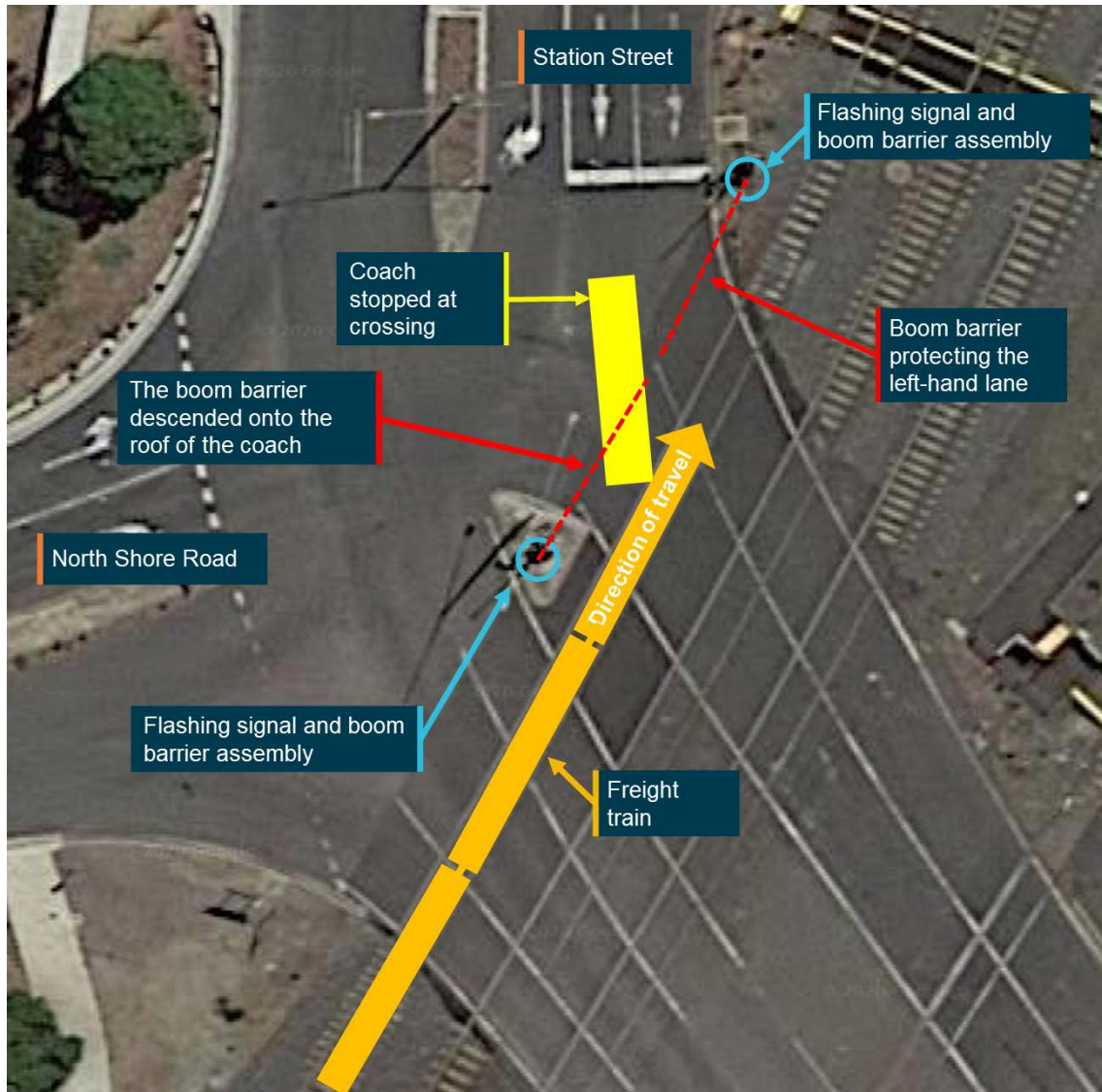
As the train came around the curve and when the train was about 100 m from the level crossing, the coach's position on the crossing came into view. The train was travelling at about 53 km/h. The train crew identified that the coach was foul of the crossing and made an emergency brake application and commenced continuous sounding of the train horn.

<sup>7</sup> The train recorder fitted to this locomotive was not fitted to record the activation of the train horn.

The coach driver was alerted to the train’s presence by the train horn. The driver recalled attempting to reverse the coach, but the coach did not move. The driver reported that they had forgotten to release the park brake.

About 39 seconds after the crossing warning had activated, the leading locomotive entered the crossing travelling at a speed of about 50 km/h. The train then collided with the front left-hand quarter of the coach.

**Figure 4: The estimated position of the coach on the crossing and the approaching train**



Source: Google maps data © 2020 with annotations by Chief Investigator Transport Safety

### Consequence of the collision

The coach driver and passenger suffered injuries requiring treatment at a local hospital. The driver was discharged the same day and the passenger was discharged the next day. The locomotive crew were not injured.

The front section of the coach was substantially damaged and the locomotive sustained minor front-end damage and a shattered windscreen (front cover).

The impact pushed the coach into the near side flashing light assembly and boom barrier causing substantial damage to infrastructure (Figure 5).



**Figure 5: Damaged flashing signal and boom barrier assembly**



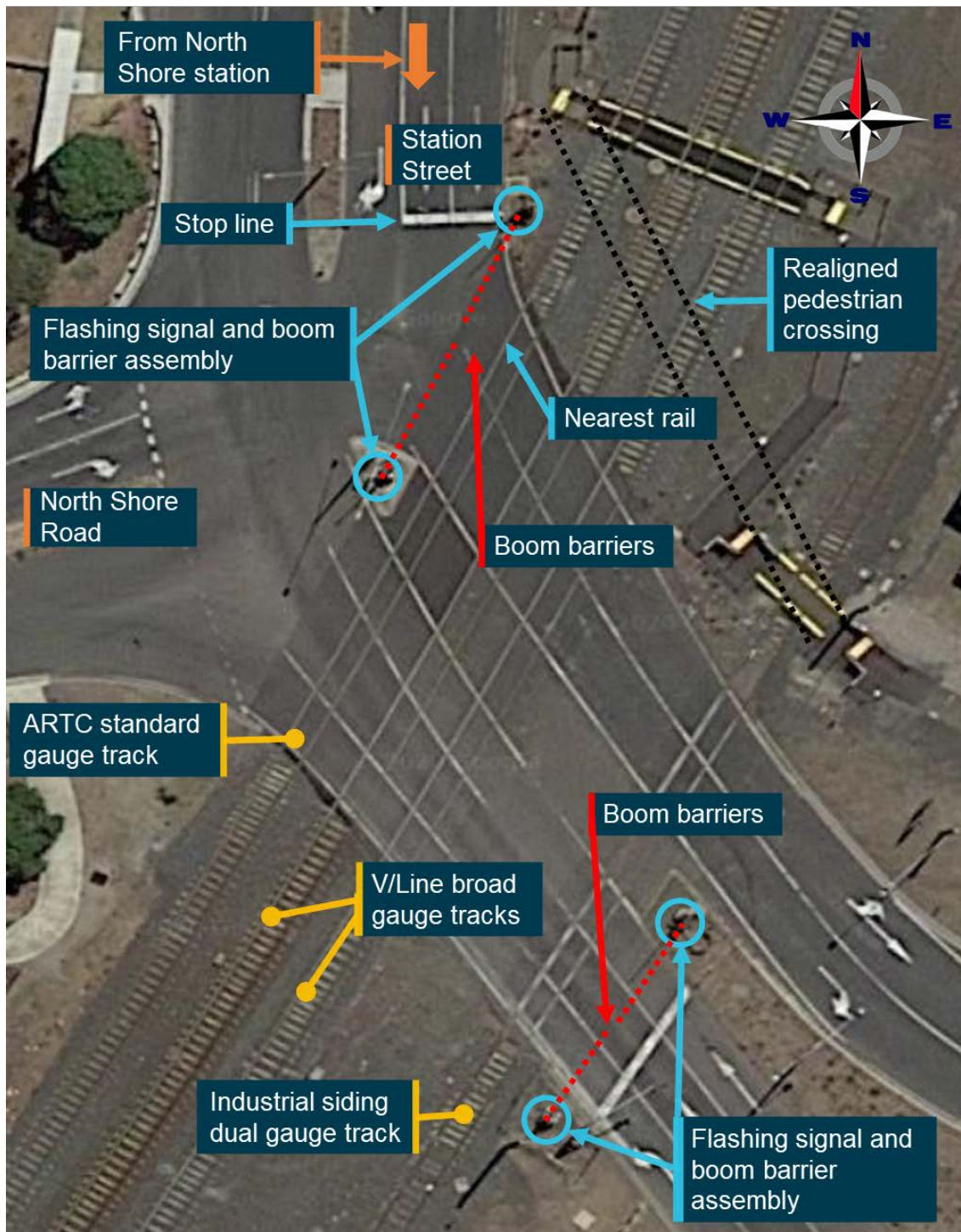
Source: Chief Investigator Transport Safety

# Context

## Station Street level crossing

The Station Street level crossing is about 67 km from Melbourne on the Werribee – Geelong section of the rail corridor (Figure 6).

Figure 6: Aerial view of the Station Street level crossing and its key features



The aerial photograph shows the layout of four rail tracks crossing five lanes of road traffic. The photograph was taken prior to the pedestrian crossing being re-aligned (its alignment at the time of the incident is shown as dotted lines).  
 Source: Google maps data © 2020 with annotations by Chief Investigator Transport Safety.

At this crossing, four bi-directional rail tracks crossed five lanes of road traffic. The western-most track on which the coach impinged was a standard-gauge track managed by the Australian Rail Track Corporation (ARTC). The middle two tracks were main line broad-gauge tracks managed by V/Line and the track furthest from the coach was a dual-gauge track leading to an industrial siding.

The road comprised two lanes for traffic travelling south-east and three lanes travelling north-west. The distance through the crossing, between opposing boom-barriers, was about 40 m.

A CCTV camera provided partial surveillance of the crossing. However, in this instance, the point at which the coach stopped was outside the camera's field-of-view.

### ***Level crossing protection***

The level crossing was fitted with active protection that included flashing lights, bells and boom barriers protecting the inbound-side of each carriageway. Operation of the equipment was triggered by a level crossing predictor system.<sup>8</sup> The system was configured to activate the initial crossing warnings of flashing lights and bells about 35 seconds prior to the arrival of a train. The boom barriers would commence lowering about 7 seconds after the initial warning.

### ***Level crossing event logger***

The level crossing was fitted with an event logger. The logger was designed to record the time when the crossing activated and the time when a train entered the crossing but was not equipped to record the time when the boom barriers commenced descending and when they were at the horizontal.

### ***Environmental conditions at location***

At the time of the occurrence, the sky was overcast, and the road was wet from previous rainfall. There was no evidence to suggest that the environmental conditions at the incident location contributed to the occurrence.

## **Road and rail approaches to the level crossing**

### ***Approaching by road along Station Street***

The train replacement bus stop for the North Shore Railway Station was located on Station Street, about 70 m from the level crossing. Along this stretch of road, the sign-posted maximum speed was 60 km/h and it is probable the coach was travelling significantly below this.

Approaching the crossing, the road and crossing configuration meant that traffic was required to pass the road intersection with North Shore Road and then veer to the left to enter the crossing. Drivers of road vehicles would have a view of the stop line road marking, crossing signage and both the left-hand<sup>9</sup> and the central<sup>10</sup> flashing light assemblies (Figure 7).

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<sup>8</sup> A level crossing predictor system measures the train's approach speed in order to predict the arrival time of the train at the crossing. This information is then used to adjust the commencement of the level crossing warning so as to achieve a consistent and efficient warning time for road traffic.

<sup>9</sup> Visible when about 55 m from the crossing

<sup>10</sup> Visible from the North Shore Railway Station bus stop on Station Street.

**Figure 7: Road approach to level crossing including signage and protection equipment flashing light and boom barrier assembly**



Source: Chief Investigator Transport Safety

### ***Rail traffic approach***

The rail approach to the level crossing (travelling towards Melbourne) was on a left-hand curve with a radius of about 550 m. The curve commenced about 200 m prior to the crossing and was preceded by a curve board indicating a permitted speed of 80 km/h. The train was travelling at 53 km/h prior to the emergency brake application and was therefore significantly below this speed.

Due to the track curvature and the visual obstructions along the left-hand side of the rail corridor, the train crew could not observe the crossing until clear of the obstructions (Figure 8). It is estimated that the coach was not in the view of the locomotive drivers until the train was within about 100 m of the crossing.

Figure 8: The rail approach to the Station Street level crossing



The “direction of travel” arrow is placed over the track on which the train was travelling.  
 Source: Google maps data © 2020 with annotations by Chief Investigator Transport Safety

## Management and maintenance of the level crossing

### **Safety Interface Agreement**

The level crossing involved the interface of infrastructure owned and maintained by several organisations. A Safety Interface Agreement<sup>11</sup> (SIA) established the shared understanding of safety responsibilities of each party for the crossing and its components. The parties to the SIA were the Australian Rail Track Corporation (ARTC),<sup>12</sup> V/Line, VicRoads,<sup>13</sup> and the Greater Geelong City Council.

ARTC and V/Line were the rail infrastructure managers for their track passing through the crossing. ARTC was identified as being the initial point of contact and responsible for maintenance of the level crossing infrastructure and equipment.

VicRoads was the primary road manager, responsible for road signage and markings and Greater Geelong Council was the footpath manager.

<sup>11</sup> A requirement of the Rail Safety National Law Application Act 2013 (Vic)

<sup>12</sup> ARTC is Government of Australia owned and manages the Australian defined inter-state rail network (DIRN).

<sup>13</sup> The primary road manager under the SIA was VicRoads. VicRoads became a part of the Department of Transport (DoT), on 1 July 2019.

## **Infrastructure inspection and maintenance**

Infrastructure service maintenance was carried out by ARTC as per the following schedule:

- HXP3 crossing predictor maintenance service scheduled every 180 days with 27 days planning latitude, completed on 27 February 2020.
- Level 1: check and inspection of the crossing active warnings to be carried out every 90 days with 18 days latitude, completed on 27 February 2020
- Level 2: a more in-depth examination of the crossing active warnings every 360 days with 54 days latitude, completed on 7 January 2020

Post-occurrence inspection of the level crossing found that the stop line marking was approximately 1.8 metres from the boom barrier<sup>14</sup> when measured along the inner edge (or near side) of the street; AS1742.7 requires a minimum of 3 m.

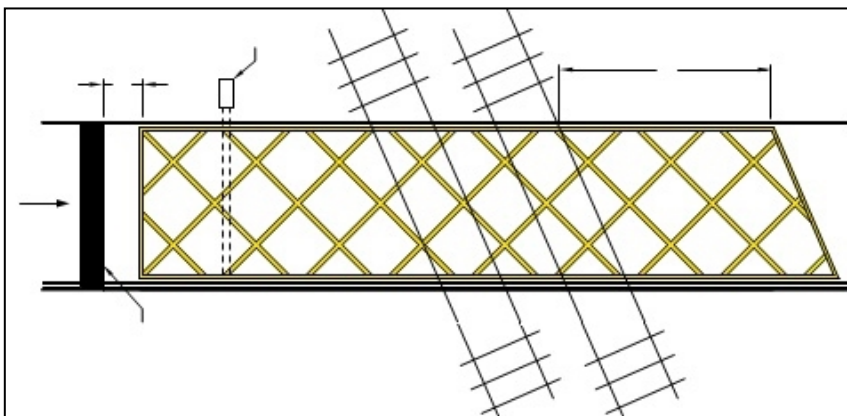
## **ALCAM Survey**

The level crossing had previously been assessed using the risk-based Australian Level Crossing Assessment Model (ALCAM).<sup>15</sup> The most recent ALCAM survey of the Station Street level crossing was in September 2009 at which time the survey found that traffic controls at the crossing were observable from a safe stopping distance and that there was no vehicle queueing issues at the crossing.

## **Yellow box marking**

Yellow box road markings are used to highlight the hazard zone of level crossings for road users. AS1742.7 specifies that they are only used to discourage traffic queuing on a crossing where the other treatments such as grade separation cannot be used.

**Figure 9: Yellow box marking**



Source: Australian Standards AS 1742.7:2016

Additionally, the VicRoads Supplement to AS 1742.7:2016 – Edition 1 states:

It is important to limit the use of yellow box markings in order to maintain the effectiveness in attracting drivers' attention and improve the level of compliance with road rule 123(e). As such, yellow box marking shall not be used generally to denote the limits of railway level crossings, as the overuse of such markings may leave the impression that it is permissible to remain stationary within a level crossing where there is no yellow box marking.

<sup>14</sup> 1.80 m when measured along the inside radius of the road. When measured along the centre of the lane, the distance was about 5.5 m.

<sup>15</sup> Australian Level Crossing Assessment Model (ALCAM) is an assessment tool used to identify risks at level crossings and to assist in the prioritisation of crossings for upgrades.

## The train replacement service

### **Contractual arrangements**

V/Line contracted the management of train replacement coach services to Wangaratta Coaches that in turn sub-contracted a number of routes to Dineen Group. Sandringham Charter Coaches was part of this group and had been allocated the Southern Cross to Waurin Ponds route for a block of work that included the day of the occurrence.

### **Sandringham Charter Coaches**

Sandringham Charter Coaches, incorporating Brighton Coaches, was an accredited Melbourne-based private charter bus company servicing the bayside, eastern and south-eastern suburbs of Melbourne. The company had been operating since 1925 and was part of the Dineen Group that operated charter coach and bus services in New South Wales and Victoria.

### **Coach information**

The road coach was built in 2011 with a Scania K320 chassis and a Higer A30 body. It was about 12-metre-long and could seat 54 passengers (Figure 10). The coach was acquired by Sandringham Charter Coaches in April 2019 and was used predominantly for charter services. At the time of the occurrence, the coach was registered in Victoria. Its service regime was up-to-date and there were no known safety defects. The coach was fitted with seat belts.

**Figure 10: Photograph of a similar coach**



Source: Sandringham Charter Coaches

### **The coach driver**

The coach driver had about 36 years' experience driving similar coaches, mainly within the greater Melbourne region and had joined Sandringham Charter Coaches as a charter coach driver in

December 2018. At the time of the occurrence, his licence was current. The driver wore spectacles when driving and reported that he was wearing them at the time of the incident.

In August 2019, the driver was suspended from driving duties for about two weeks due to passenger complaints of careless driving and an incident involving collision with a low-hanging tree branch.

In the days prior to the incident, the driver attended route-familiarisation training for the route between Melbourne and Waurn Ponds on 30 March and completed a four-hour shift within the Melbourne region on 31 March. The driver's first shift on the new route was on 1 April, commencing at 0430 and finishing at about 1530 (two round trips). On each trip, the incident level crossing was traversed without it operating. That evening the driver went to bed at about 1930. There were no indicators to suggest fatigue may have contributed to the occurrence.

On the morning of 2 April, the driver woke at about 0330 and after having breakfast arrived at the depot at about 0400. On the first round-trip that morning (coach depot to Waurn Ponds to Southern Cross), the driver travelled across Station Street level crossing each way, without encountering a train.

### ***Safety management of drivers***

With regard to safety management, the company monitored the currency of driver licenses and driver accreditation certificates issued in accordance with State and National regulations for coach drivers. In addition, drivers were required to complete a 'fitness to drive' declaration on their daily pre-start check.

The company had also introduced a clearance for work document, which was used if a driver had an extended period of absence for medical issues or if they became aware that the driver may be suffering from a medical condition that may affect their ability to drive.

As required by their safety management system, the company conducted route familiarisation training and/or provided route maps to assist the drivers whenever a new route was allocated.

### ***Driver route-familiarisation training***

This was the first time Sandringham Charter Coaches had been allocated a charter outside the Melbourne area. As a result, the company arranged route-familiarisation training for their drivers.

Driver route-familiarisation training was facilitated by the Dineen Group (the parent company) and delivered by Panorama Coaches,<sup>16</sup> using the V/Line Driver Training Manual prepared by Roscar.<sup>17</sup> The manual provided information on the location of rail replacement coach stops, preferred routes between stations/coach stops and parking/layover bays for coaches; and reporting requirements for drivers. The training manual did not address normal road rules, which licensed drivers were expected to know.

Panorama Coaches advised that the routes described in the manual were not mandatory. Drivers could use their discretion when selecting a particular route between stops. With reference to this occurrence, the training manual suggested that the coach take a right turn at the Station Street level crossing and travel along North Shore Road to North Geelong Station (Figure 11), whereas the trainer recommended turning left and crossing the tracks to follow Corio Quay Road (Figure 3) as it was shorter.

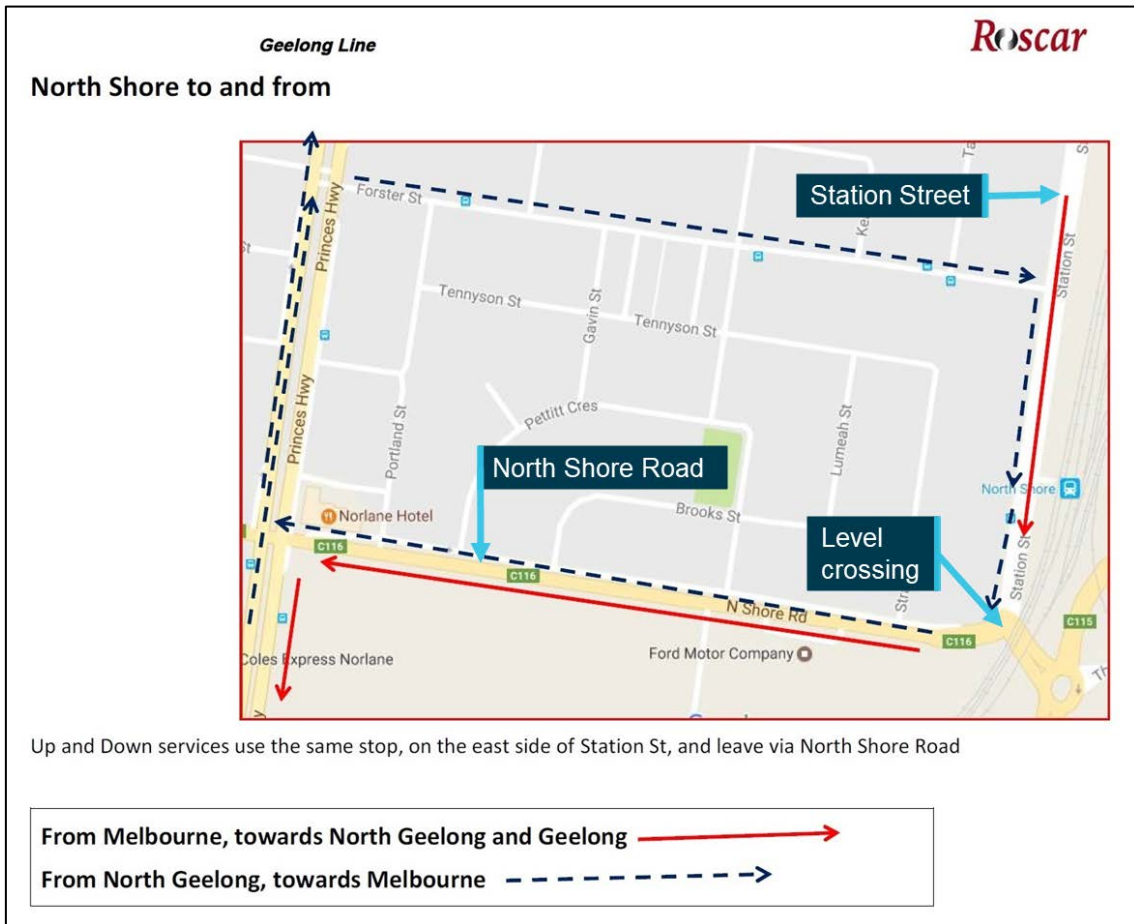
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<sup>16</sup> Also a part of the Dineen Group.

<sup>17</sup> Roscar Australia Group Pty Ltd is a Melbourne based major event transport and logistics specialist, handling events requiring specialised transport arrangements.



Figure 11: Training manual recommended route



Source: Sandringham Charter Coaches with annotations by Chief Investigator Transport Safety

As part of the training, the drivers were provided with a route map and taken on a route-familiarisation observer trip from Southern Cross to Waurn Ponds and back. On each leg they drove across Station Street level crossing, unimpeded. Whether trains would be operating at this time was not discussed in the training.

**Road rules, entering and leaving a level crossing**

Section 123 ‘Entering a level crossing when a train or tram is approaching etc.’ of the *Road Safety Road Rules 2017 (Vic)* states:

- A driver must not enter a level crossing if—
  - (a) warning lights (for example, twin red lights or rotating red lights) are operating or warning bells are ringing; or
  - (b) a gate, boom or barrier at the crossing is closed or is opening or closing; or
  - (e) the crossing or the road beyond the crossing is blocked.

and Section 124 of the Rules ‘Leaving a level crossing’ states:

A driver who enters a level crossing must leave the level crossing as soon as the driver can do so safely.

## Freight train operation

### ***Train information***

Train 5KQ7 was a Pacific National freight service from Murtoa, Victoria to Werris Creek (in the Hunter Valley NSW), travelling via North Geelong and Melbourne. It consisted of Locomotives 8161 (cover photo) and BL31 with a trailing load of 40 grain-laden wagons. The total length of the consist was about 639 m. The locomotives were equipped with Hasler recorders.<sup>18</sup>

### ***Locomotive crew information***

Both locomotive crew were based in Geelong.

The driver running the train at the time of the collision joined Pacific National in November 2013 and qualified as a locomotive driver in February 2020. At the time of the occurrence, their certification and medicals were current. On 1 April, he completed his shift at 1600 and joined train 5KQ7 on 2 April at 0945.

The co-driver joined Pacific National in October 2015 and qualified as a locomotive driver in October 2018. At the time of the occurrence, his certification and medicals were current. He had a rostered day off on 1 April and also joined train 5KQ7 on 2 April at 0945.

## Previous incidents

Data received from the Office of the National Rail Safety Regulator (ONRSR) indicates that since May 2014 and prior to this occurrence, there had been 20 instances of damage to the boom spanning the left lane at Station Street level crossing. In five instances, a road vehicle was seen to collide with the barrier. The other 15 instances were not witnessed, but it is presumed that a road vehicle caused the damage. None of those instances resulted in a 'near-miss' incident with a train being reported.

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<sup>18</sup> Developed by Hasler Rail, Switzerland, the Hasler electro-mechanical speedometer incorporates a waxed chart-strip on which several basic operational parameters were recorded.

# Safety analysis

## The Incident

The driver recalled having just crossed the stop line when the level crossing warnings commenced. He immediately stopped the coach but was within the crossing zone.<sup>19</sup> At this point, the train was probably still about 35 seconds away from the crossing. To clear the crossing width of 40 m<sup>20</sup> at a nominal speed<sup>21</sup> of 15 km/h would have taken the coach about 12.5 seconds. Had the coach not stopped but continued through the crossing it would have cleared the crossing safely.

When the boom lowered on the coach a short time later, the driver took no action. The driver advised that he was concerned that moving the coach with the boom resting on its roof may cause damage.

The train crew approaching the level crossing around a curve had limited vision of the Station Street side of the crossing. On observing the coach foul of the track, the locomotive driver made an Emergency brake application and the co-driver began to sound the train horn continuously. It was estimated from the Hasler recording that this brake application was initiated about 80m from the crossing.

Alerted to the presence of the train about 5 seconds before collision, the coach driver recalled attempting to reverse the coach, but the coach would not move. It is probable that the driver forgot to release the park brake before attempting to reverse.

The locomotive subsequently collided with the left-front corner of the coach. The train was travelling at a speed of about 50 km/h and stopped about 200 m from the point of the application of the emergency brake. This was consistent with the expected braking performance for this train.

## Factors influencing coach driver actions

The driver's response to the activation of the warning lights and bell was to immediately apply the brakes bringing the coach to a stop as he thought was required. Possible factors that influenced the driver's initial action in stopping the coach and subsequent actions are:

### ***Concern of reprimand***

In August the previous year, the driver had been suspended following passenger complaints. At interview, the driver indicated that he did not continue over the crossing as he did not want to be reported for crossing with the bells ringing.

### ***Expectancy***

The driver indicated at interview that he was surprised when the crossing was activated. He knew that V/Line trains were not running because he was driving the train replacement service. Also, during familiarisation training and his previous service trips, he had not encountered a train at the crossing. The coach driver also reported that when the level crossing warnings activated, he had thought that the activation may have been due to maintenance work.

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<sup>19</sup> Section 124 of the *Road Safety Road Rules* require a driver who enters a level crossing to leave the level crossing as soon as the driver can do so safely.

<sup>20</sup> Clearing the crossing would require travel of about 52 m, comprising the 40 width of the crossing and the 12 m length of the bus.

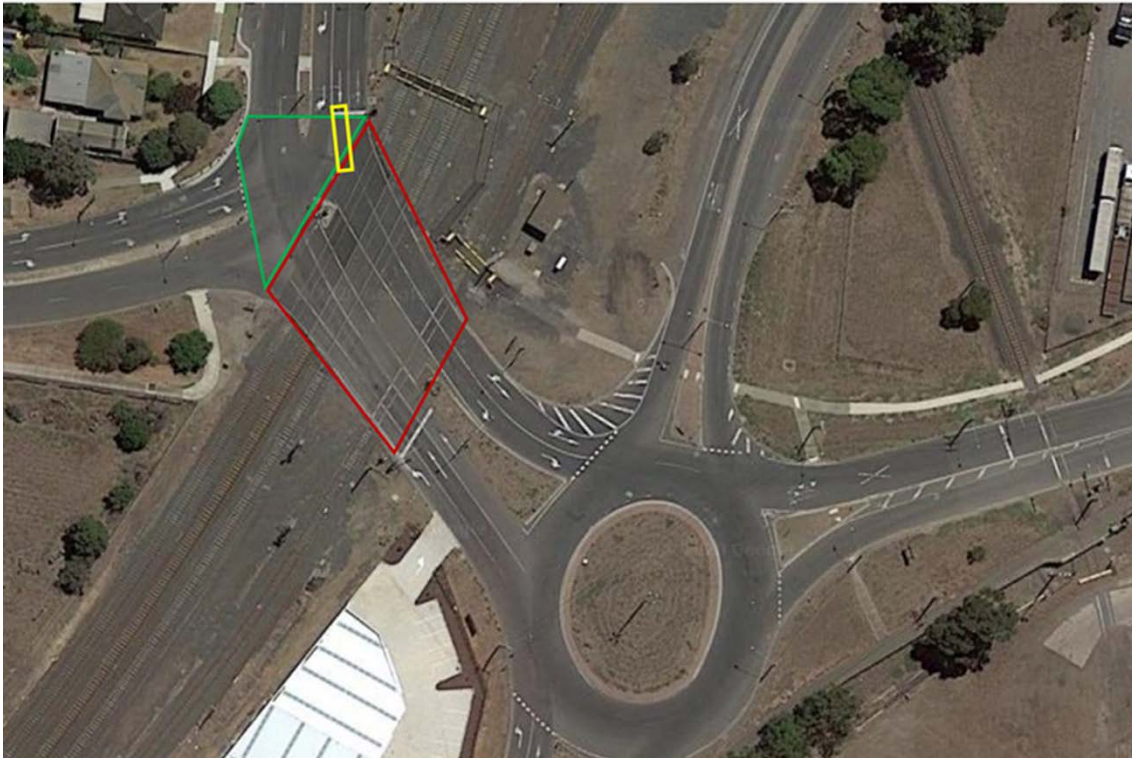
<sup>21</sup> Estimated speed for negotiating the turn.

### ***Crossing complexity***

The stop line in Station Street marked the beginning of the level crossing zone, and the intersection with North Shore Road (green triangle in Figure 12). Both the road intersection and level crossing overlap with no clear delineation between the two. The lack of clear delineation between the road intersection and the level crossing may have influenced the driver's perception of the crossing (shown in red in Figure 12).

The crossing itself was four tracks wide (40 m). This is greater than most crossings and may have influenced the decision of the driver not to proceed. The geometry of the crossing also meant it may not have been immediately apparent to the driver that the left-front corner of the coach had fouled the track.

**Figure 12: Road intersection and level crossing layout**



Source: Google maps data © 2020 with annotations by the Australian Transport Safety Bureau.

While there were no identified queueing issues that may have triggered applying yellow box markings,<sup>22</sup> such markings at this complex crossing may have assisted with identification by the driver of the crossing limits and the hazardous zone.

### ***Road rules for level crossings***

Once the crossing was activated, the driver was probably focussed on the requirement to stop prior to the crossing (Rule 123) and may not have appreciated that having already entered the crossing, or unaware that he would not be able to stop prior to the crossing, that the requirement then was to leave the crossing as soon as could be done safely (Rule 124). Improved delineation of the boundary of the level crossing itself may have assisted with this.

<sup>22</sup> AS1742.7 specifies that yellow box markings be used to discourage traffic queueing on a crossing.

## Previous incidents

Although probably not directly related to this incident, in the previous six years, there had been 20 occurrences of the boom barrier strikes by road vehicles on the inside lane of the Station Street approach. This suggests that the crossing configuration is probably conducive to driver error on that approach, and that additional risk controls may be warranted.

A report completed by the Australian Rail Research Board (ARRB) for VicRoads found that compliance by motorists was better at railway crossings provided with traffic lights in addition to flashing lights and boom barriers, compared to sites with flashing lights and boom barriers only.<sup>23</sup>

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<sup>23</sup> Carney P, Bennett P, and Green D, *Compliance with traffic signals at railway level crossings*, ARRB Research Report No VC7 3922-1 August 2009

# Findings

ATSB investigation report findings focus on safety factors (that is, events and conditions that increase risk). Safety factors include ‘contributing factors’ and ‘other factors that increased risk’ (that is, factors that did not meet the definition of a contributing factor for this occurrence but were still considered important to include in the report for the purpose of increasing awareness and enhancing safety). In addition ‘other findings’ may be included to provide important information about topics other than safety factors.

**Safety issues are highlighted in bold to emphasise their importance.** A safety issue is a safety factor that (a) can reasonably be regarded as having the potential to adversely affect the safety of future operations, and (b) is a characteristic of an organisation or a system, rather than a characteristic of a specific individual, or characteristic of an operating environment at a specific point in time.

These findings should not be read as apportioning blame or liability to any particular organisation or individual.

From the evidence available, the following findings are made with respect to the level crossing collision between freight train 5KQ7 and Sandringham Charter Coaches coach at the Station Street level crossing in Norlane, Victoria on 2 April 2020.

## Contributing factors

- The driver stopped the coach past the boom barrier and with the front left corner foul of the standard gauge track.
- On hearing the horn of the approaching train, the driver was unsuccessful in reversing the road coach clear of the track, probably as a result of not releasing the vehicle’s park brake.

## Other findings

- The boom barrier protecting the inner lane of Station Street has been damaged by vehicles 20 times in the previous six years.

## Safety actions

All of the directly involved parties are invited to provide submissions to this draft report. As part of that process, each organisation is asked to communicate safety actions they have carried out or are planning to carry out.

### ***Proactive safety action taken by Dineen Group***

Dineen Group through its subsidiary Westernport Road Lines issued a safety alert to their drivers in regards to level crossing safety, reminding drivers that level crossings must be regarded as live, even if they are providing a rail replacement service. Additionally, all drivers providing rail replacement for Geelong were contacted individually by the site manager and informed of the accident.

# General details

## Occurrence details

Date and time:	2 April 2020 – 1050 AEDT	
Occurrence category:	Serious incident	
Primary occurrence type:	Collision	
Location:	Station Street level crossing, Norlane, Victoria	
	Latitude: 38° 05.983' S	Longitude: 144° 21.884' E

## Train details

Track operator:	Australian Rail Track Corporation	
Train operator:	Pacific National	
Train number:	5KQ7	
Type of operation:	Freight	
Consist:	Two locomotives hauling 40 freight wagons	
Departure:	Murtoa, Victoria	
Destination:	Werris Creek, New South Wales	
Persons on board:	Crew – 2	Passengers – None
Injuries:	Crew – None	Passengers – N/A
Damage:	Minor damage to lead locomotive	

## Coach details

Coach operator:	Sandringham Charter Coaches	
Registration:	7192AO	
Type of operation:	Train replacement passenger service	
Departure:	Southern Cross Station, Victoria	
Destination:	Waurm Ponds Station, Victoria	
Persons on board:	Crew – 1	Passengers - 1
Injuries:	Crew – 1	Passengers - 1
Damage:	Substantial	



# Sources and submissions

## Sources of information

The sources of information during the investigation included:

- Dineen Group, for Sandringham Charter Coaches
- Coach driver
- Australian Rail Track Corporation
- Pacific National
- Train drivers
- Office of the National Rail Safety Regulator
- Flight Medical Systems

## References

Carney P, Bennett P, and Green D, *Compliance with traffic signals at railway level crossings*, ARRB Research Report No VC7 3922-1 August 2009

Chief Parliamentary Council of Victoria 2020, *Road Safety Road Rules Act 2017*, Authorised Version No.008 incorporating amendments as at 1 January 2020.

Roscar Australia Group Pty Ltd 2017, *Driver Training Manual*, v3.1, April 2017.

SAI Global 2016, *Manual of uniform traffic control devices Part 7: Railway crossings*, AS 1742.7:2016 incorporating Amendment No.1, 21 March 2016.

## Submissions

Under section 26 of the *Transport Safety Investigation Act 2003*, the ATSB may provide a draft report, on a confidential basis, to any person whom the ATSB considers appropriate. That section allows a person receiving a draft report to make submissions to the ATSB about the draft report.

A draft of this report was provided to the following directly involved parties:

- Dineen Group
- Pacific National
- The Australian Rail Track Corporation
- V/Line Pty Ltd
- Office of the National Rail Safety Regulator
- Transport Safety Victoria
- Department of Transport (Victoria)
- The coach driver and passenger
- The locomotive crew

The submissions were reviewed and, where considered appropriate, the text of the report was amended accordingly.

# Australian Transport Safety Bureau

## About the ATSB

The ATSB is an independent Commonwealth Government statutory agency. It is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers.

The ATSB's purpose is to improve the safety of, and public confidence in, aviation, rail and marine transport through:

- independent investigation of transport accidents and other safety occurrences
- safety data recording, analysis and research
- fostering safety awareness, knowledge and action.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia, as well as participating in overseas investigations involving Australian-registered aircraft and ships. It prioritises investigations that have the potential to deliver the greatest public benefit through improvements to transport safety.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, international agreements.

## Purpose of safety investigations

The objective of a safety investigation is to enhance transport safety. This is done through:

- identifying safety issues and facilitating safety action to address those issues
- providing information about occurrences and their associated safety factors to facilitate learning within the transport industry.

It is not a function of the ATSB to apportion blame or provide a means for determining liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner. The ATSB does not investigate for the purpose of taking administrative, regulatory or criminal action.

## Terminology

An explanation of terminology used in ATSB investigation reports is available on the ATSB website. This includes terms such as occurrence, contributing factor, other factor that increased risk, and safety issue.