Office of Transport
Safety Investigations

Short investigation

Bus Safety Investigation Report

Collision between buses m/o9982 and m/o1531 Campsie

20 March 2024

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Campsie

20 March 2024

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Collision between buses m/o9982 and m/o1531, Campsie 20 March 2024

Short investigations are undertaken in circumstances where the incident is likely to contain valuable safety lessons, but the lessons are unlikely to extend to the identification of systemic safety issues.

The aim of these investigations is to facilitate rapid dissemination of valuable information to benefit involved parties and industry stakeholders in improving safety.

Incident overview

On the afternoon of Wednesday 20 March 2024, bus m/o1531, operated by Transit Systems West, was conducting a scheduled passenger service on Route 410, from Hurstville to Macquarie Park, in Greater Sydney, NSW. The driver was experienced in regularly operating that service and familiar with both the route and vehicle configuration.

Initial operation of the involved service

During initial operation of the service, the onboard Closed-Circuit Television (CCTV) system recorded the driver of m/o1531 safely operating in heavy traffic, on narrow streets with parked cars, and close to other traffic, including buses. The driver complied correctly with traffic signals and stopped at the route's designated bus stops, where passengers boarded and disembarked without incident. The bus's telematics system recorded the driver's footbrake and handbrake applications, which were in accordance with the operating environment at that time.

At 1615:19,[1] the driver pulled up at the designated bus stop at Campsie Station, Stand B, on Beamish St, Campsie. Several passengers boarded while others disembarked.

At 1616:19, the recorded speed of the bus, approaching a roundabout, was 18 km/hr, based on Global Positioning System (GPS) data. This was within the expected operating speed range for this approach. There were 25 passengers onboard at this time, with the next designated bus stop on this route located on Seventh Avenue.

Last recorded brake applications

At 1616:35, as m/o1531 travelled north on Beamish Street, approaching the intersection with Seventh Avenue, the driver made the last recorded foot brake application. The driver released the foot brake eight seconds later. No subsequent brake applications, either foot or parking, were recorded from this point.

Turn into Seventh Avenue, Campsie

The bus approached the intersection of Beamish Street and Seventh Avenue, where the driver was required to make a left turn into Seventh Avenue. This intersection was marked with a solid white line and STOP sign (Figure 1).

[1] Times in this report are in 24-hour clock form in Australian Daylight-Saving Time

Figure 1: Recorded position of bus m/o1531 at 1616:40 from the forward-facing CCTV camera[2]

Source: Transit Systems West

At 1616:42, the driver of bus m/o1531 continued through the STOP sign and solid line marking at the intersection of Beamish Street and Seventh Avenue, without stopping or slowing the vehicle. There was no directly conflicting traffic.

The driver conducted a left turn into Seventh Avenue, to travel in a westerly direction, which was in accordance with Route 410. The bus's indicator was activated, then deactivated. The forward-facing CCTV camera recorded the bus's line of travel into Seventh Avenue as directly approaching two traffic islands in the centre of the road, which were positioned about 22 m in from the intersection. At that time (1616:49), the recorded speed of the bus, based on GPS data, was 12 km/hr (Figure 2).

Figure 2: Recorded position of bus m/o1531 at 1616:49 from the forward-facing CCTV camera

Source: Transit Systems West

[2] The forward-facing CCTV camera on the bus was positioned in the centre above the windscreen

Mirror impact with tree and missed stop

The driver was observed on the bus's internal CCTV recording system to then steer the bus to the left, away from the traffic islands, towards the kerb.

Just before the bus stop located at Seventh Ave after Beamish Street, the front near side[3] external mirror of the bus hit a tree, which was planted on the nature strip (Figure 3). The part of the tree impacted was not directly overhanging the road but offset from the kerb. The impact removed the bus's mirror and housing, which then travelled down the exterior near side of the bus before landing on the ground.

Figure 3: Recorded position of bus m/o1531 at 1616:54 from the forward-facing CCTV camera, immediately before mirror impact with the tree

Source: Transit Systems West. Image annotated by OTSI

At the bus stop, which was a designated stop on Route 410 (Figure 3), two people were waiting to board the bus. They were recorded on the bus's forward-facing camera as quickly moving back from the kerb, after the bus's mirror collided with the tree.

Onboard CCTV recorded the driver then making a correction in steering to position the bus back in the left lane, away from the kerb. The driver continued in a westerly direction on Seventh Avenue without stopping or slowing the bus.

[3] The left side when looking forward from the driver's seat in the bus is the near side. The right side is the offside.

Continued operation down Seventh Avenue

At 1617:02, as the bus travelled over a speed hump on Seventh Avenue, the GPS based recorded speed was 25 km/hr. Over the next three seconds, the bus's recorded speed increased to 33 km/hr. While the bus's speed increased, m/o1531 was travelling below the speed limit of 50 km/hr for the area.

The driver of m/o1531 continued straight ahead on Seventh Avenue, through a low-profile roundabout which intersected with Sixth Avenue.

After the roundabout, at 1617:11, the onboard CCTV system recorded the bus travelling over the centreline on Seventh Avenue, into the oncoming lane. There was oncoming traffic travelling in an easterly direction down Seventh Avenue. Bus m/o9982 was entering the intersection ahead (Figure 4).

Figure 4: Recorded position of bus m/o1531 at 1617:11 from the forward-facing CCTV camera

Source: Transit Systems West. Image annotated by OTSI

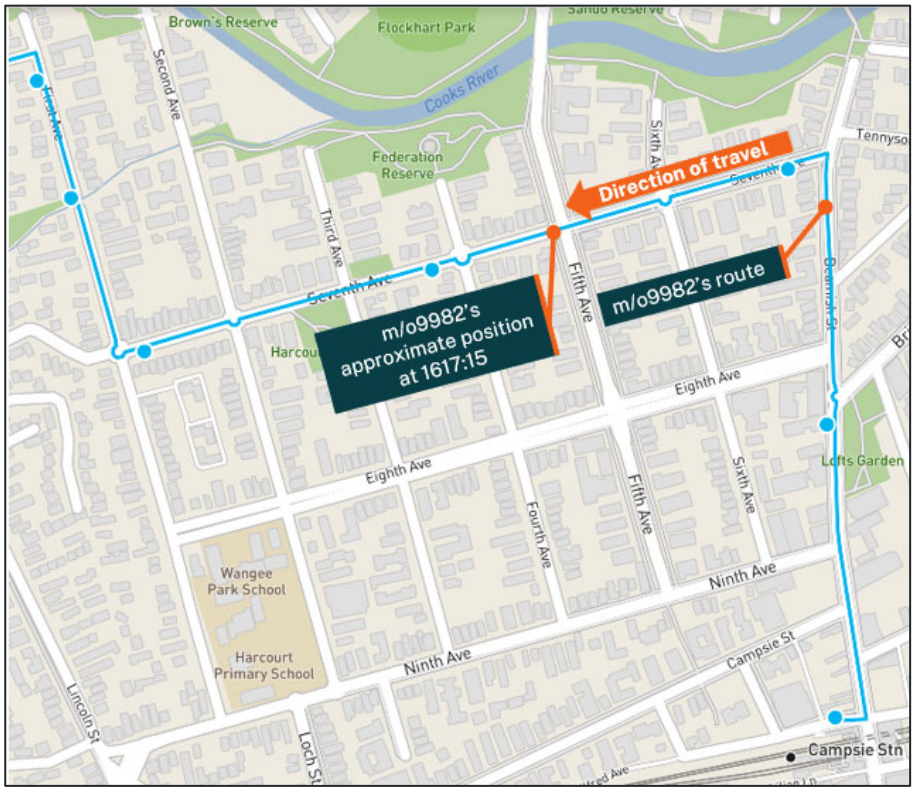
Approach to intersection

The driver of m/o1531 positioned the bus from over the centreline, back into the left lanes.

At 1617:15, bus m/o1531 approached the traffic light-controlled intersection of Seventh Avenue and Fifth Avenue, Campsie. The traffic lights were green. Bus m/o1531's route required a right turn from Seventh Avenue, into Fifth Avenue. Although experienced and familiar with Route 410, the driver did not make the right turn and continued travelling on Seventh Avenue in a westerly direction, across the traffic light-controlled intersection with Fifth Avenue.

At that time, bus m/o9982 was travelling ahead at low speed on Seventh Avenue, on Route 942 (Campsie to Lugarno), crossing through the intersection with Fifth Avenue, on a green traffic signal (Figure 5).

Figure 5: Map showing route and approximate position of bus m/o9982 at 1617:15



Source: Transport for NSW. Image annotated by OTSI

The rear of m/o9982 was within the marked pedestrian crossing and not obstructed from view to traffic behind (Figure 6). There was no oncoming traffic recorded in the two lanes to the right of m/o9982.

Figure 6: Recorded position of bus m/o9982 at 1617:15 from the forward-facing CCTV camera onboard bus m/o1531

Source: Transit Systems West

Collision event

Initial impact

The driver of m/o1531 continued driving straight ahead, towards the rear of bus m/o9982.

At 1617:17, bus m/o1531 was recorded via GPS based data as travelling at a speed of 62 km/hr. Two seconds later, at 1617:19, the recorded speed of m/o1531 was 68 km/hr. These speeds exceeded the 50 km/hr limit for that area.

The driver of m/o1531 was recorded on the vehicle's onboard CCTV as appearing to look straight ahead at commencement of impact with the rear of bus m/o9982. There were no observable driver avoidance actions, such as swerving, or discernible bracing, recognition of the situation or awareness of the collision.

Post impact

Bus m/o1531 did not separate from the rear of m/o9982 after the collision and continued moving in a westerly direction on Seventh Avenue, pushing m/o9982 ahead, under power.

Bus m/o1531 impacted several vehicles parked on the left side of the street before coming to a standstill approximately 12 seconds after the collision, as the bus impacted the side of the last parked vehicle in the sequence.

Bus m/o9982 then travelled further down Seventh Avenue, separating from the front of m/o1531 and stopping before the roundabout intersecting Seventh and Fourth Avenues, which was approximately 95 m from the point of collision (Figure 7). The doors of this bus were not damaged in the incident and were used for passenger evacuation.

Figure 7: Final position of bus m/o9982 after the collision

Source: U-Go Mobility

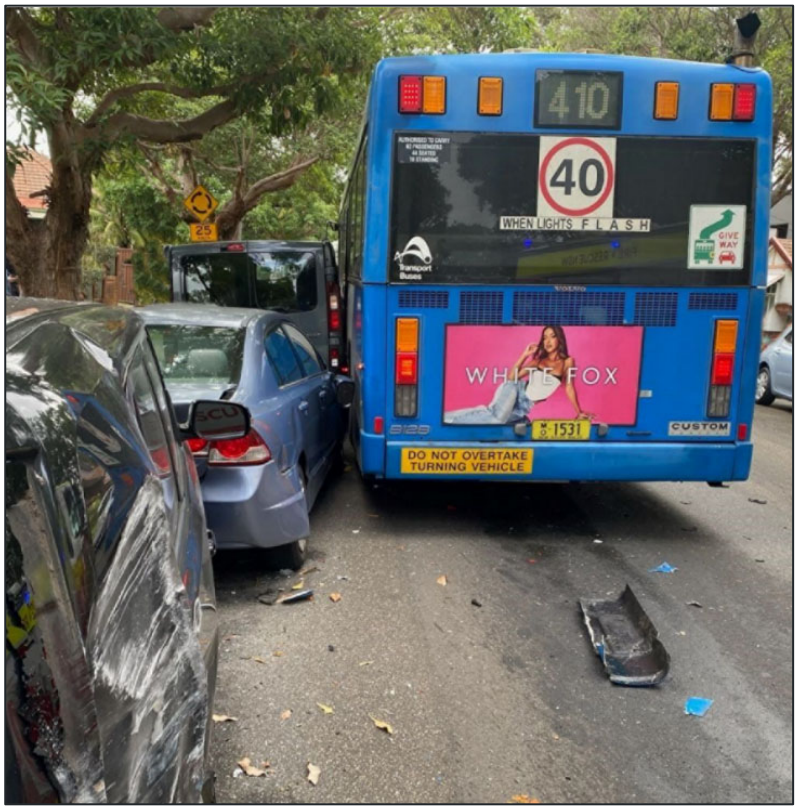
The driver of m/o9982 and several passengers sustained injuries requiring medical treatment.

Bus m/o1531 came to a stop with the rear doors directly against the offside of the parked vehicle, blocking passengers from being able to exit via the rear. One panel of the front door self-opened due to damage from the collision (Figure 8, Figure 9).

Figure 8: Front view of final position of bus m/o1531 on Seventh Avenue

Source: U-Go Mobility. Image modified by OTSI

Figure 9: Rear view of final position of bus m/o1531 on Seventh Avenue



Source: U-Go Mobility. Image modified by OTSI

The driver of m/o1531 sustained serious injuries in the collision and was trapped in their seat, due to deformation of the front of the bus from the impact, before being extracted by emergency services and transferred to hospital. Multiple passengers also sustained serious injuries requiring medical treatment.

Bus information

Bus m/o9982

Bus m/o9982, operated by U-Go Mobility, was a 2009 Scania K230UB chassis fitted with a Custom Coaches CB60 Evo II body. The vehicle was a low-floor, air-conditioned two axle city bus, which was 11.8 m long. The driver's position was fitted with a seatbelt, which was worn by the driver at the time of collision. As this was a two-door city bus, there were no passenger seatbelts fitted.

Bus m/o1531

Bus m/o1531, operated by Transit Systems West, was a 2004 Volvo B12BLE chassis fitted with a Custom Coaches CB60 body. It was a low-floor, air-conditioned two axle city bus with two sets of doors on the near side. The vehicle was 12.5 m long with a total passenger capacity of 62, including a seating capacity of 44. At the time of collision, all 25 passengers onboard m/o1531 were seated. The driver's position was fitted with a seatbelt, which was worn by the driver at the time of collision. As this was a two-door city bus, there were no passenger seatbelts fitted.

The bus's last scheduled service was conducted on 6 March 2024. A brake warning light indication activation on m/o1531 was reported by a driver on 17 March 2024. A new anti-lock braking system (ABS)[4] sensor and backing plate on the offside rear of the vehicle was fitted by the operator on 18 March 2024 and the bus returned to service. There were no reported technical issues with the bus following this return to service.

OTSI observations

OTSI's evidence collection and analysis considered several lines of enquiry in identifying likely contributing factors to the incident. The investigation determined that environmental conditions were not a contributing factor.

Bus serviceability

There was no available evidence to support that a technical failure involving bus m/o1531 contributed to the collision. NSW Police conducted a technical inspection of bus m/o1531 following the incident. It was reported that no technical defects were identified.

The operator of bus m/o1531 also conducted a post incident technical inspection, after release of the vehicle by NSW Police. No technical defects were identified by the operator in their inspection.

An ABS sensor was replaced on m/o1531 three days before the incident, with the bus subsequently operating without reported braking issues. If the ABS sensor had failed prior to the collision, the bus's braking system would have remained functional on Seventh Avenue. If the driver had suddenly applied the bus's brakes, with a failed ABS sensor, the wheels may have locked up, but the braking system would still have functioned.

[4] The primary function of ABS is to modulate brake pressure during emergency braking

Prior to the driver's turn onto Seventh Avenue, normal and expected brake applications, of both foot and park brakes, were recorded as being made by the driver of m/o1531, until the last recorded application of foot brake at 1616:35 and release at 1616:43.

Bus m/o1531 travelled approximately 330 m along Seventh Avenue before colliding with the rear of bus m/o9982. There were no recorded brake applications after the turn onto Seventh Avenue or while the bus travelled down Seventh Avenue, including in the period immediately prior to impact with the rear of the other bus.

There were no recorded brake applications, or witness marks of a brake application on the road, to indicate braking by m/o1531's driver to avoid a collision with the rear of the other bus. The driver of m/o1531 did not steer around or away from the rear of m/o9982 to avoid the imminent collision, when the two lanes to the right were clear of traffic.

It is unlikely that there was a steering issue with bus m/o1531 in the period directly leading up to the collision. A review of the onboard CCTV system recordings indicated that the vehicle was responding to driver initiated steering inputs on Seventh Avenue, before the collision. These observable inputs included:

- steering corrections following the mirror impact
- repositioning of the bus from the oncoming lane back to the left lanes, in the approach to the intersection with Sixth Avenue.

The GPS-based speed data recorded for the bus indicated that the vehicle's speed was increasing along Seventh Avenue, up to 62-68 km/hr at the time of impact with m/o9982. There was no significant gradient or incline on Seventh Avenue to contribute to, or influence, an increase in speed of the bus. There was an absence of recorded brake applications, expected in the event of the significant speed increase in that operating environment. However, there was a recorded increase in the bus's speed, which was likely due to the driver applying a level of pressure on the accelerator.

If the bus's throttle was stuck open in the lead up to the collision, there were no observable actions by the driver, recorded on the onboard CCTV system, to indicate collision avoidance actions or other actions expected in the event of bus brake system failure. From the available evidence, it is unlikely that the bus's throttle/ accelerator was immovable at the time of the collision.

While not contributory to the collision, OTSI's investigation noted that the modesty panel[5] behind the rear door vestibule, on the near side of bus m/o1531, was dislodged from its saloon floor fixture in the collision. When impacted by the two passengers seated immediately behind, the bottom of the modesty panel fractured from its mounts. This resulted in the two passengers falling under the panel, into the rear door vestibule, with one passenger sustaining serious injuries.

[5] A modesty panel refers to a protective barrier or partition that separates different areas within the bus. These panels serve various purposes, such as enhancing passenger safety, providing privacy, and preventing unwanted interactions. They can be found near entrances, between seats, or around driver compartments.

Driver incapacitation considerations

OTSI defined a bus driver incapacitation incident as:

> 'Where the driver has lost effective control over the vehicle through either a loss of consciousness or loss of gross or fine motor skills. This applies to drivers who are driving or at the wheel of the bus. If the driver realises they are ill or tired, pulls to the side of the road, and reports it, then this is not to be classified as such'.

The following potential forms of driver incapacitation were considered as part of OTSI's investigation (in addition to the potential influence of a medical event, such as a stroke, or illness):

- a 'blackout';
- startle reflex response; and
- panic attack.

A 'blackout'

Under the AFTD standards, the term 'blackout' means a transient impairment or loss of consciousness. A 'blackout' may occur due to a range of mechanisms. There was no declaration by the driver of m/o1531, in completing their last Bus Driver Authority Medical, that they had experienced a 'blackout' as part of their medical history.

Startle reflex response

The startle reflex response is an involuntary neurological and physiological response to a sudden-onset unexpected event. Normal conscious decision making is bypassed, invariably resulting in action recognisable as 'irrational' in relation to the circumstances.

The startle reflex response usually follows an entirely unexpected 'sudden change' event at a time of low workload. Research into startle reflex has identified that this response is rare and usually has a duration of a few seconds.

In this incident, the available evidence supports that the driver of m/o1531 experienced a duration of incapacitation of around 30 seconds. As such, it is unlikely that a startle reflex was contributory.

Panic attack

A panic attack is the human body's response to a perception of threat, such as a road accident near miss. As documented by the Australian Psychological Society, a panic attack is a sudden surge of intense fear or discomfort which reaches a peak within several minutes and is accompanied by at least four of the following:

- heart palpitations, or racing/pounding heart
- shaking or trembling
- shortness of breath or a feeling of choking
- chest pain or discomfort
- nausea or abdominal upset
- chills or heat sensations/sweats
- dizziness, light-headedness, or feeling faint or unsteady
- numbness or tingling sensations
- derealisation (the feeling that what is happening around the person is not real)

- depersonalisation (the feeling of being outside one's body looking in)
- fear of losing control or of 'going crazy'
- fear of dying.

Two types of panic attack have been identified: expected and unexpected. Expected panic attacks occur following a particular cue or trigger, for example, for some people being in an enclosed space might frequently trigger a panic attack. Unexpected panic attacks do not have an identifiable cue or trigger and can occur at any time, even if the person is in a calm state or asleep. The operator had no documented medical history for the driver experiencing panic attacks, or knowledge of any declaration by the driver of m/o1531, in completing their Bus Driver Authority Medical in 2023, that they had experienced a panic attack.

Conclusion

Available evidence supports that the driver of m/o1531 likely experienced a level of incapacitation that adversely impacted their safe operation of the bus. The direct causal factor/s, resulting in the likely driver incapacitation or the specific form of incapacitation, could not be determined from the evidence available at the time of this report.

Medical standards for bus and coach driver licensing

The publication '*Assessing fitness to drive for commercial and private vehicle drivers*'[6] (AFTD) documented the medical standards for licensing and clinical management. This was a joint publication of Austroads and the National Transport Commission, and detailed medical standards for driver licensing purposes for use by health professionals and driver licensing authorities.

Transport for NSW Fitness to Drive requirements for bus drivers

To be a bus driver in NSW, a Bus Driver Authority (BDA), issued by Transport for NSW (TfNSW), was required. When applying for a BDA, a driver was required to pass a commercial medical assessment, in accordance with the AFTD medical standards. Completion of the TfNSW '*NSW Fitness to Drive Medical Assessment Commercial Standards Form*' required the driver to declare any medical conditions.

All bus drivers under the age of 60, with no medical conditions, needed to complete a medical assessment every three years. For drivers with an existing medical condition, or aged over 60, a medical assessment was required to be completed annually.

The AFTD stated that:

> 'An understanding of the driving task, both generally and for the specific driver, underpins the assessment of fitness to drive and guides the determination of risk associated with impairment due to ill health'
>
> and
>
> 'Assessing health professionals should document the individual's driving requirements and driving history as part of the assessment process'.

However, there was no documented requirement for the registered medical practitioner or specialist conducting the commercial medical assessment to be familiar with the individual or experienced in conducting these assessments.

[6] https://austroads.com.au/__data/assets/pdf_file/0037/498691/AP-G56-22_Assessing_Fitness_Drive.pdf

In October 2023, TfNSW published a Fact Sheet titled '*NSW Fitness to Drive medical assessments for bus drivers*'.[7] This Fact Sheet outlined that when applying for a BDA, drivers needed to pass a commercial medical assessment before submitting their application. If a driver had an existing medical condition, they may be required to provide further medical report/s from specialist doctors. The Fact Sheet also provided information about ongoing medical assessment, notification of newly diagnosed medical conditions and advising TfNSW immediately if the driver's doctor advises that they are medically unfit to hold a BDA.

In April 2024, TfNSW documented in the *DRIVE Lite - Bus Operator Accreditation Scheme (BOAS)* newsletter, under the heading '*BDA statistics*' that:

> 'Failure to meet commercial medical standards continues to be the primary reason that bus drivers may have their licence suspended, with 125 persons subject to a suspension since January 2024'.

TfNSW further reported to OTSI that 149 BDAs were suspended from 1 January 2024 to 30 April 2024.

Operator of bus m/o1531

In late 2023, the operator of bus m/o1531 implemented a BDA medical assessment and driver pre-employment medical policy and procedure, which required drivers to attend designated medical centres. Medical practitioners in these centres were provided with additional driver role and operating criteria, for application in assessing drivers for the operator, supplementary to the required AFTD commercial driver standards.

This safety action by the operator was implemented, as an enhancement to TfNSW requirements, after the involved driver of m/o1531 had commenced employment and completed their last BDA medical assessment. The operator reported that since implementation, their enhanced driver medical assessment process had assisted with proactively identifying driver health conditions which may adversely impact safe operation of a bus.

Driver of bus m/o1531

The driver of m/o1531 last completed a commercial driver's medical assessment on 24 March 2023 and was issued an 'unconditional' licence. Due to their age, the driver was required to complete annual medical assessments. There was no record that the driver had yet completed their next commercial driver's medical assessment which was due by 24 March 2024.

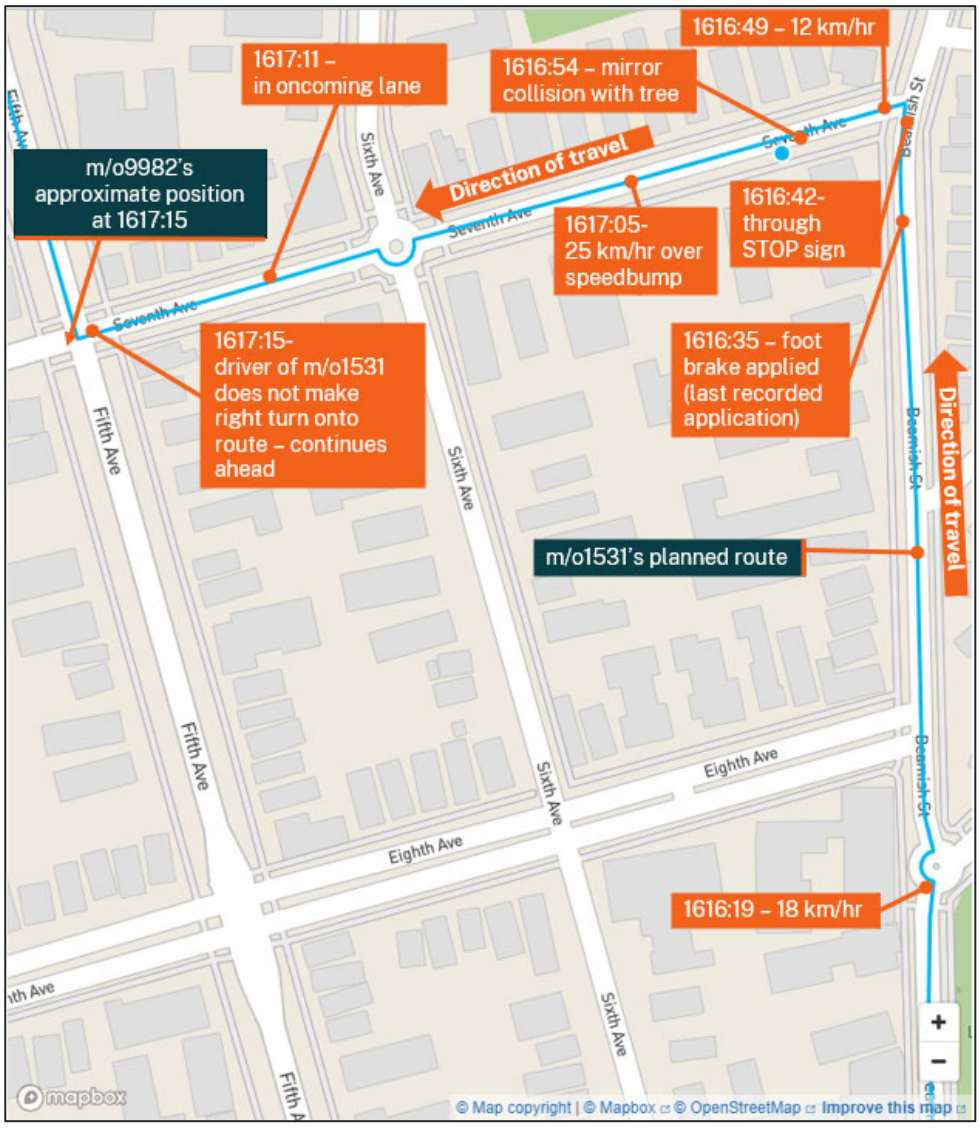
The driver had no declared or diagnosed illnesses or medical conditions at the time of the collision. With the collision occurring four days before their next medical assessment was due, it could not be determined if that assessment process would have proactively identified any conditions which may have resulted in an incapacitation while driving.

[7] https://www.transport.nsw.gov.au/system/files/media/documents/2023/Fact-Sheet_NSW-Fitness-to-Drive-medical-assessment-for-bus-drivers.pdf

Observable driver behaviours

OTSI's investigation included a review of key events in the lead up to the collision and supporting evidence (Figure 10). There was no evidence to support that driver rostering or fatigue contributed to the incident.

Figure 10: Overview of key events involving bus m/o1531 in the lead up to the collision



Source: Transport for NSW (map). Image modified by OTSI
Note: positions on map are approximate and for reference only

Proceeding through a STOP sign without stopping

From the period immediately before the left turn from Beamish Street into Seventh Avenue, observable driver behaviours, recorded on the bus's onboard CCTV system, were inconsistent with expected driver behaviours in operating the vehicle in the involved road environment.

The driver went through the STOP sign on Beamish Avenue, without stopping. In NSW, when approaching a 'STOP' sign and 'STOP' line (single unbroken line), drivers must come to a complete stop. Drivers must stop before the line, and as close as possible to the line.

The STOP sign and solid line marking were evident and in good condition, and the driver was familiar and experienced with the route and configuration of the bus. In addition to stopping at that location being a requirement, the driver's behaviour was not in accordance with their normal driving behaviours, including at that location, with no evidence that the driver had proceeded through that STOP sign previously, without stopping.

Operation of the bus in the turn into Seventh Avenue

The driver of m/o1531 turned the bus into Seventh Avenue at a speed and angle which positioned the vehicle for a potential front impact with the two centre traffic islands.

The driver over-corrected their steering of the bus, avoiding the centre traffic islands but positioning the near side of the bus close enough to the kerb to impact a tree with the front mirror, with adequate force to remove the mirror and associated housing. The driver did not stop. Onboard CCTV recordings captured that the passengers were aware of the impact of the mirror with the tree. There was no recorded observable behaviour from the driver to indicate an awareness of the impact or loss of the mirror. Normal driver behaviour would have been to stop the bus safely after impacting a tree and removing a front mirror.

Following the impact of the mirror on the tree, the driver of m/o1531 had the bus on a trajectory to potentially impact pedestrians waiting at the designated bus stop, before steering away from the kerb. The driver did not stop at the designated bus stop on Seventh Avenue.

The driver would have been aware that a designated bus stop on that route was located shortly after the left turn into Seventh Avenue and operated the bus accordingly. However, on 20 March 2024, during the period directly leading up to the collision, the driver did not operate the bus in a manner which indicated familiarity with the vehicle or that part of the route.

Proceeding down Seventh Avenue with increased speed

As stated previously, there were no recorded brake applications after the turn onto Seventh Avenue or while the bus travelled down Seventh Avenue, including in the period immediately prior to impact with the rear of the other bus.

The bus travelled over a speed hump at a recorded speed of 25 km/hr, which resulted in some passengers holding onto seats and handrails for stability while seated.

The bus's recorded speed on Seventh Avenue increased by 37 km/hr in a period of 12 seconds, from 25 km/hr at 1617:05 to 62 km/hr at 1617:17.

Missed route turn and collision with m/o9982

The driver of m/o1531 did not slow for or make the right-hand turn from Seventh Avenue into Fifth Avenue, as required for Route 410. The driver continued straight ahead on Seventh Avenue, across the intersection, colliding with the rear of m/o9982.

The view of the rear of m/o9982 was unobstructed from the position of the driver of m/o1531 and there was no sun glare at that time of day.

The driver's reactions and responses immediately before the collision were inconsistent with the behaviours of passengers in the driver's proximity. The driver did not brace for impact or display signs of situational awareness.

Passengers onboard m/o1531, with visibility through the front windscreen, braced for impact. Other passengers were holding onto handrails for stability at the time, in response to the speed and movement of the bus. These expected passenger behaviours, in response to an imminent collision, did not align with the driver's observable behaviours.

Post incident safety action by operator of m/o1531

Following the collision, the operator of m/o1531, Transit Systems West, proactively commenced immediate testing of braking systems on buses of the configuration as the involved bus.

While there was no indication that there was a brake failure, in the interval between the incident and NSW Police Force's mechanical examination of the involved bus, the operator identified this safety action to assure that the braking systems of similarly configured buses were serviceable. No safety critical brake system faults were identified.

The operator also conducted a post incident technical inspection of the bus, after release of the vehicle by NSW Police. No technical faults or system failures were identified by the operator in this inspection.

OTSI data review

A review of OTSI data for notifiable occurrences, for 2005-19 March 2024, provided the following figures for bus and coach driver incapacitation events (Table 1).

Table 1: Notified occurrences of bus and coach driver incapacitation events per year

Year	Number of notifiable incidents involving driver incapacitations
2024 (to 19/03/24)	3
2023	13
2022	17
2021	50
2020	30
2019	10
2018	2
2017	6
2016	8
2015	17
2014	22
2005-2013	71
TOTAL	249

OTSI has published a Safety Advisory – SA02/24 '*Fitness to drive: Bus and coach drivers*',[8] which reminds drivers of the 'I'm Safe' approach and notes a driver incapacitation in June 2023, and a driver incapacitation in 2019 in which a pedestrian waiting at a crossing was struck and fatally injured.[9]

A bus driver incapacitation event at Cordeaux Heights in 2021 resulted in the commencement of the OTSI bus and coach rollaways systemic investigation, which is ongoing at the time of publication of this investigation report.

[8] See www.otsi.nsw.gov.au
[9] OTSI investigation - Bus Safety Investigation - Bus and Pedestrian fatal accident - Brunker Road Adamstown - 05 November 2019 – see www.otsi.nsw.gov.au for the report

Investigation outcomes

OTSI has identified that the driver of bus m/o1531 likely experienced a sudden incapacitation event, which resulted in the driver losing effective control over the vehicle through a loss of gross and fine motor skills. This possible incapacitation resulted in reduced physical and cognitive ability to operate the bus safely. The mechanisms behind the likely driver incapacitation event could not be determined.

Key considerations

OTSI's investigation did not identify that either the operator, or driver, of bus m/o1531 were aware of an existing driver condition which may have adversely affected the safe operation of the bus. However, there is an opportunity for a timely reminder, to bus and coach drivers, and operators in NSW, that TfNSW must be notified within 48 hours of an operator and/or driver becoming aware of 'any apparent change in the physical or mental condition of a driver of a public passenger vehicle operated by the operator that may detrimentally affect the driver's ability to drive public passenger vehicles safely'.[10]

While the reasons for the driver of m/o1531's likely incapacitation event could not be determined, some driver incapacitation events result from undiagnosed and/or underlying medical conditions, of which the driver is unaware.

A more robust system of medical assessment for bus and coach drivers may provide opportunities for early detection of health issues which could result in a later incapacitation while driving, particularly in consideration that bus and coach drivers are operating public passenger transport vehicles in environments which can be challenging and present risks to both the driver and their passengers, other road users, and pedestrians. This includes both metropolitan and regional and rural operations, which have different and unique driving and risk environments.

A review of the regulatory oversight, and application, of Bus Driver Authority medicals, declared medical conditions, and decisions about fitness to drive (including guidelines/requirements for operators), may provide safety improvement opportunities.

[10] Passenger Transport (General) Regulation 2017 [NSW], Part 2, Division 4, Section 24 'Operators to notify detrimental change in driver's medical condition' and Part 4, Section 47 'Medical condition of drivers'

Appendices

Appendix 1: Sources, submissions and acknowledgements

Sources of information

- Australian Psychological Society
- Austroads, '*Assessing fitness to drive for commercial and private vehicle drivers*', 2022
- NSW Police Force
- Transport for NSW, *NSW Fitness to Drive medical assessments for bus drivers Fact Sheet*, October 2023
- Transit Systems West
- U-Go Mobility

Submissions

The Chief Investigator forwarded a copy of the Draft Report to the Directly Involved Parties (DIPs) to provide them with the opportunity to contribute to the compilation of the Final Report by verifying the factual information, scrutinising the analysis, findings and recommendations, and to submit recommendations for amendments to the Draft Report that they believed would enhance the accuracy, logic, integrity and resilience of the Investigation Report. The following DIPs were invited to make submissions on the Draft Report:

- Transit Systems West
- Transport for NSW
- U-Go Mobility

Submissions were received from the following DIPs:

- Transport for NSW

The Chief Investigator considered all representations made by DIPs and responded to the author of the submission, advising which of their recommended amendments would be incorporated in the final report, and those that would not. Where any recommended amendment was excluded, the reasons for doing so were explained.

About the Office of Transport Safety Investigations

The Office of Transport Safety Investigations (OTSI) is the independent transport safety investigator for NSW.

The role of OTSI is to improve safety and enhance public confidence in the safety of the NSW transport network through:

- independent investigation of transport incidents and accidents
- identifying system-wide safety issues and their contributing factors
- sharing safety lessons and making recommendations or highlighting actions that transport operators, regulators and other stakeholders can take to improve the safety of bus, ferry and rail passenger and rail freight services.

OTSI is empowered under the *Transport Administration Act 1988* to investigate rail, bus, and ferry accidents and incidents in accordance with the provisions of the *Passenger Transport Act 1990* and *Marine Safety Act 1998*. It also conducts rail investigations under the provisions of the *Transport Safety Investigation Act 2003* (Cth) and a Collaboration Agreement with the Australian Transport Safety Bureau (ATSB).

The aim of an OTSI investigation is to enhance transport safety by sharing safety lessons and insights with those organisations that can implement actions to improve safety. OTSI uses a 'no-blame' approach to identify and understand contributing safety factors and underlying issues. It does not assign fault or determine liability in relation to the matters it investigates.

An OTSI investigation is independent of any investigation or inquiry that a regulator, NSW Police or the Coroner may undertake. While information gathered by OTSI in the conduct of its work is protected, the Chief Investigator, under the *Transport Administration Act 1988*, may disclose information if they think it is necessary for the safe operation of a transport service.

OTSI is not able to investigate all transport safety incidents and accidents or matters that are reported. The Chief Investigator focuses the agency's resources on those investigations considered most likely to enhance bus, ferry or rail safety by providing new safety lessons and insights that may be shared.

Many accidents result from individual human or technical errors which do not involve safety systems so investigating these in detail may not be justified. In such cases, OTSI will not generally attend the scene, conduct an in-depth investigation, or produce an extensive report.

OTSI may request additional information from operators or review their investigation reports which may lead to several activities, such as the release of a Safety Advisory or Alert to raise industry awareness of safety issues for action.

OTSI investigators normally seek to obtain information cooperatively when conducting an investigation. However, where it is necessary to do so, OTSI investigators may exercise statutory powers to conduct interviews, enter premises and examine and retain physical and documentary evidence.

Publication of the investigation report

OTSI produces a written report on every investigation for the Minister for Transport, as required under section 46BBA of the *Passenger Transport Act 1990*.

Investigation reports strive to reflect OTSI's balanced approach to the investigation, explaining what happened and why in a fair and unbiased manner. All Directly Involved Parties in the investigation are given the opportunity to comment on the draft investigation report.

The final investigation report will be provided to the Minister for tabling in both Houses of the NSW Parliament in accordance with section 46D of the *Passenger Transport Act 1990*. The Minister is required to table the report within seven days of receiving it.

Following tabling, the report is published on the OTSI website — www.otsi.nsw.gov.au — and information on the safety lessons promoted to relevant stakeholders.