File number:
2020/2713
Deceased name:
Carolyn Anne Lister

Form 20A
Version 3

Coroners Act 2003 (sections 45, 51 and 97(2))
Coroner's findings and notice of completion of coronial investigation

I have investigated the death of:

Name:
Carolyn Anne Lister

Address:
12 Frances Avenue KALINGA QLD 4030 AUSTRALIA

Date of birth: 06/11/1969 Age: 50

Gender: ☐ Male ☒ Female

I find that:

This is how the person died (provide narrative of circumstances of death):

Introduction

I have investigated the death of Carolyn Lister. She was born at Ferntree Gully, Victoria on 6 November 1969. At the time of her death she worked as a registered nurse at the Royal Brisbane & Womens Hospital (RWBH) at Bowen Hills, Brisbane, Queensland. She and her husband, John Lister, were avid bicyclists. Carolyn usually rode her bicycle to work and usually parked at the Cycle Centre at RWBH. The entrance to the bicycle park is reached on the RBWH side of Bowen Bridge Road.

On 30 June 2020, Carolyn died instantly as the result of a crash between her bicycle and a large tip truck, near the intersection of O'Connell Terrace and Bowen Bridge Road, opposite the RWBH at Herston, Brisbane in Queensland.

This death was reported to the coroner because it was an unnatural and violent death and therefore a reportable death pursuant to sections 8 and 11 Coroners Act 2003. The role of the coroner is to investigate reportable deaths to establish the cause of death and how the person died. The purpose of a coronial investigation is to establish the facts, not to cast blame or determine criminal or civil liability.

The traffic crash

On 30 June 2020, Carolyn had bicycled from her home at Frances Avenue in Kalinga to the RWBH for an 8:00am shift start. Just after 7:30am she was approaching the intersection of O'Connell Terrace and Bowen Bridge Road, opposite the RWBH.

Traffic on O'Connell Terrace was stopped at a red light while Carolyn approached that intersection. She rode her bicycle down the righthand side of the street, intending to go straight ahead into the RWBH site. She stopped at the front and to the right of a large dual carriage (truck and trailer) tip truck. The tip truck was stopped three cars back from the stop light.

Carolyn appears to have tried to indicate to the tip truck driver by her extended arm movements that she intended to cross in front of the tip truck, which was turning right. When the lights turned green at 7:35am, the three cars at the front of the queue turned right into Bowen Bridge Road, and Carolyn began to ride across the path of the tip truck.

The tip truck driver did not see Carolyn. He drove, proceeding to turn right. Carolyn and her bicycle were hit and run over by the front and back wheels of the tip truck. Pedestrians alerted the truck driver and he stopped immediately, mid-way through the intersection. Carolyn was left lying in between the back of the tip truck and the front of the trailer. She suffered severe injuries and died instantly, at

the scene of the crash.

Autopsy

Dr Rohan Samarasinghe conducted an autopsy consisting of an external and partial internal examination of the body, as well as a full-body CT scan, histology and toxicology testing. Dr Samarasinghe reported:

> The injuries were consistent with the deceased having been a cyclist who had fallen on to the ground and was run over by a vehicle. The severity of the injuries was such that death would be instantaneous.
>
> Drugs and alcohol were not detected on toxicology analysis.
>
> There was evidence of single coronary artery vessel disease with up to about 60 – 70% atherosclerotic stenosis. However, there was no autopsy evidence of acute coronary event such as thrombosis or dissection of a coronary artery.

Dr Samarasinghe concluded that the cause of death was:
- 1(a) Multiple injuries, due to or as a consequence of;
- 1(b) Road traffic accident (cyclist)

Queensland Police Service Investigation

The Queensland Police Service (the police) attended the scene of the crash and the police Forensic Crash Unit made a thorough investigation of the crash, including taking statements of a number of people involved at the scene of the crash. I find from that report:

Strava App Information

Carolyn used an app called 'Strava' on her phone to record her rides. She didn't use any other electronic device or watch when she was riding to and from work. The Strava app relies on GPS readings and shows the approximate street route taken by a rider. Strava records show that Carolyn's usual route as she approached the RWBH Cycle Centre took her south along the Enoggera Creek bikeway until the bikeway met Campbell Street, Bowen Hills. Carolyn would turn right onto Campbell St towards Bowen Bridge Rd, cross Bowen Bridge Rd at the traffic lights, and then turn left and ride south along the footpath until she reached the entrance to the Cycle Centre just before the O'Connell Terrace intersection.

Usual route(O'Connell Tce is just off the bottom of the map)[1]

However, from Tuesday 23 June 2020, construction work was being done on the footpath outside the RWBH and the Cycle Centre to remove combustible cladding from the building's façade. The footpath north of the Cycle Centre was partly or fully blocked after that date. The Cycle Centre was still accessible from the footpath to the south of the entrance. The Strava App shows: Tuesday 23 June, Carolyn did not cross Bowen Bridge Rd at the Campbell Street intersection. Instead, she turned left from Campbell St and travelled

[1] *Forensic Crash Unit Report, page 20*

south down Bowen Bridge Road to the intersection of O'Connell Terrace, and there she crossed Bowen Bridge Road at the lights, and then rode north back to the entrance of the Cycle Centre.

Wednesday 24 June Carolyn was able to take her usual route and crossed Bowen Bridge Road at the Campbell Street intersection. Thursday and Friday 25 and 26 June, she crossed at the O'Connell Street intersection as she had on the previous Tuesday. Monday 29 June, she again crossed Bowen Bridge Road at the O'Connell Terrace intersection. Tuesday 30 June 2020, Carolyn's route to the hospital that morning was not found within the Strava App.

Near Map image of the intersection. The red arrow indicates the dedicated left turn lane, the yellow arrow the right turn/straight ahead lane and the blue arrow the right turn lane. The hospital carpark can be seen at the top right of the photographs. The road on the left of the photograph indicated by the green arrow is the busway flyover[2].

CCTV Footage

CCTV from the car park on the right-hand side of O'Connell Terrace shows that at approximately 7.30am Carolyn approached Bowen Bridge Road from O'Connell Terrace instead of from Campbell Street. She was riding in the right-hand lane of the road towards the intersection. At 7:34am there was a red traffic light at the intersection and the tip truck was stopped in the left hand right turning lane, two cars back from the traffic lights. The driver of the tip truck, had put its right-hand indicator on to indicate he was going to turn right into Bowen Bridge Road.

The CCTV shows Carolyn riding along the right-hand side of the truck and stops at the front of the tip truck's cab. Carolyn then appears to make movements with her right arm, pointing straight ahead and then pointing towards the left. Because of the distance from which the footage is taken, it is difficult to be certain, but she seems to be trying to indicate to the tip truck driver that she wants to ride across in front of him in order to go straight across the intersection.

The tip truck driver

Alan John Smith was the tip truck driver and was interviewed at the scene of the crash by the police. On 18 July 2020 Alan Smith was further interviewed by the police. In summary Alan Smith stated, as follows:
He is the owner of the tip truck (including the dog trailer). The day before the crash he had loaded his tip truck with sand to take to the Boral Company's Bowen Bridge Concrete Plant (the Plant). The Plant is located on Bowen Bridge Road at the intersection with Horace Street.

On 30 June, he arrived at the Plant at 6.15am for a 6.30am 'tip off'. He waited for about an hour before being able to unload. During this wait time he received a phone call from a friend Eric Keating. He did not take the call because he was on-site, and he needed to

[2] *Forensic Crash Unit Report, page 20*

get out of the truck to clean up. Also, he explained it is general practice not to answer personal calls while on-site due to too much other communication happening at the time (listening to the two-way radio and to others on-site).

After finishing at the Plant Alan Smith had to drive north on Bowen Bridge Road to Narangba quarry to get his next load. To leave the Plant to drive north vehicles turn left onto Bowen Bridge Road then left into Campbell Street, and usual practice is to turn right onto Wren Street, right onto O'Connell Terrace and right onto Bowen Bridge Road. On this day he was advised by the Boral Company not to turn right onto Wren Street but to continue on Campbell Street until the intersection with O'Connell Terrace and then turn right. For twelve years Alan Smith had been turning right onto Wren Street – he did not know why the change of route. But this was his first time at the Plant for about three to four months, so he did not know how long the change had been in place.

He exited the Plant and returned the call to Eric Keating. He explained the way his phone works – when he has missed a call the name of the caller and a green redial button appear on his phone. He then pushes the redial button to return that call. His phone is connected via Bluetooth to his radio to talk 'hands free'. He pressed the redial button to make the phone call. He turned left onto Campbell Street and right into O'Connell Terrace.

On entering O'Connell Terrace, he saw the traffic lights ahead were green but knew they would be red by the time he drove to the intersection. He pulled up at the traffic lights behind other vehicles – he does not know how many, maybe three or four. He was in the left hand of the two right turn lanes. He always chooses this lane to allow for a wider turn with his vehicle. At that point he was still talking to Eric Keating about what he was doing that day. He was sitting at the traffic lights for somewhere between 30 seconds and one minute. He was looking to his left at a group of pedestrians, maybe six or seven, at the traffic island waiting for the green walk signal to go to the hospital. He recalled seeing people walking on the footpath on his left. He knows it is a busy intersection and although he was looking towards his left and also talking to Eric Keating, he was still scanning around him watching the traffic lights.

Alan Smith knew there was a line of vehicles in the right-hand lane beside him and a car stopped directly to his right so he did not look in that direction. He noticed the vehicles travelling inbound on Bowen Bridge Road were slowing so he was getting ready to take off by selecting the correct gear. He did not see Carolyn.

The traffic lights changed to green and he started to take off. He felt a slight bump, not a big bump. He thought there might have been a rock on the road that he ran over and he looked at his right hand mirror to see if a rock shot out from the truck. The truck continued to move freely after this so he continued to accelerate. Then he felt a very big bump and then another big bump – he knew something was very wrong and that he needed to stop. He looked to his right and he saw two ladies on the footpath calling 'Stop stop'.

After stopping he looked in his right-hand mirror and caught a glimpse of something poking out of his mud flap on the driver's side. He got out of the truck. He saw the stress on people's faces and thought it was something bad. He raced to the area between the truck and the trailer – where he had seen something around the mud flap. He saw a person at the back of the truck and realised what had happened. He was in shock.

He saw people coming to assist the person and he assumed they were doctors. There was a lady on the footpath screaming and he went across to that lady and asked her where did the cyclist come from? At no time after entering O'Connell Terrace did he see a cyclist or even a motorcyclist around him.

He explained that when stopping behind a vehicle in traffic he likes to be able to see the bumper or tyres of that vehicle. From this measurement he assumes he was about three to four metres behind the vehicle in front of him at the traffic lights.

The police also obtained background information: Alan Smith is a mechanic by trade. He bought his first truck in 1984 and had been driving trucks since that time. Alan Smith has been contracted to the Boral Company since 2007. The Boral Company has an electronic tracking system set up within the tip truck. This system monitors the tip truck's movements, break and rest periods each day. A driver must log on with a PIN into the system prior to starting the tip truck or notification is sent to Boral. There was no paperwork / work related log books to look at or distract him while he was sitting at the traffic lights as everything from Boral is done electronically.

Alan Smith stated down the sides of the tip truck the visibility is pretty good. Straight ahead and over the bonnet he knows there are metres in front of the truck that cannot be seen. The tip truck does not have any forward facing / dash cam.

Alan Smith explained that the previous day he was home by about 2.30pm after work. He was in bed by about 8.30pm to 8.45pm. The morning of the crash he woke up about 4.45am and left home at about 5.15am. He does not suffer from any illness, does not take any medication and does not need glasses to drive. Having been on O'Connell Terrace many times he is aware there is a cycle path in the area and he has seen cyclists both on the road and on the footpath at various times.

Witnesses at the crash site

Kyle McCallion, who was in a car in the line of traffic behind the truck, stated to the police that he saw Carolyn ride past in the middle of the right-hand lane. After she passed him, he let another car pass on his right-hand side and then he merged into the right-hand lane. He saw Carolyn ahead of him riding down the middle of the two right hand lanes between the stopped traffic. She came to a stop on

the right-hand side of the truck. Kyle McCallion did not see how Carolyn was hit by the tip truck, but he saw her go under the truck and go under the two sets of wheels on the passenger side of the truck.

Stephen Johnson, a Patient Support Officer who works at the RBWH stated to the police that he was standing on the hospital side of Bowen Bridge Road, about 20 metres away from the intersection with O'Connell Terrace (towards the north). Prior to the incident he was drinking a coffee and eating a sandwich and was just generally watching the traffic but not paying particular attention to what was going on. He saw the front of the tip truck clip the back of Carolyn's bicycle. He saw the passenger side wheels of the truck travel up and over an object, then the two rear sets of wheels of the truck also rise and fall. He saw the truck jump/hop when coming to a stop indicating to him that the driver applied the brakes.

Dr Daniel Bodnar, works in the Emergency Department at the RWBH. He was walking out of the carpark towards the hospital and saw Carolyn and the tip truck. He could see that Carolyn was in front of the truck, but she took off slowly and he "*knew that something was going to happen"*. He dropped his bag and ran towards the tip truck yelling for it to stop, but the tip truck bumped into Carolyn's bicycle and drove over the top of Carolyn.

Dr Bodnar was the first person to get to Carolyn, who was lying between the tip truck and the trailer once the truck had stopped. Dr Bodnar could see that Carolyn was severely injured. She had no pulse and was not breathing. Dr Bodnar pronounced Carolyn deceased and organised a sheet to cover her body. He stayed with Carolyn until police arrived.

Background Information – John Lister

The police also obtained a detailed statement from John Lister. I find from John Lister's statement that at the time of her death Carolyn had been married to John Lister for 23 years. John and Carolyn were a fit and active couple, who enjoyed hiking and bicycling. Both were experienced bicyclers having ridden extensively in Australia and overseas. Both Carolyn and John have cycled to work for about 20 years. Depending on the weather, Carolyn would sometimes drive their car or take a bus. From May 2009, when their car was damaged in the floods, the couple have not owned a car, and both have used their bicycles to work and around the city.

Carolyn was in the Army Reserves, and regularly rode to Enoggera every Tuesday night for Reserve training/meetings. She was also involved in recreational cycling with the Hamilton Wheelers and the Ascot Catering Club and had regular weekly rides with these groups. These rides had been reduced due to COVID, but Carolyn still tried to ride as much as possible.

John Lister provided detailed information in respect of Carolyn's riding habits:

> *If Carolyn was riding with a group, she would ride on the road and her philosophy was 'taking a lane' meaning she would ride in the centre of the lane to make herself visible. If she was riding alone, as a solo rider, Carolyn would ride on the bike paths as much as possible. When riding to the hospital she would stick to bike paths as much as she could, but if she had to get onto the road, then she would place herself in the middle of the lane. It would be unusual for Carolyn to ride on the footpath.*
>
> *This would be the case except along Campbell Street between the North Brisbane Bikeway and Bowen Bridge Road then up the western footpath on Bowen Bridge Road to the cycle centre. Construction work in front of the RWBH in the days and weeks preceeding the 30th June 2020 resulted in the footpath being completely closed to all users at the time resulting in Carolyn seeking alternative routes to the Cycle Centre.*
>
> *Carolyn would not 'lane split'. If there were a couple of lanes of traffic travelling in the same direction and the traffic was stopped, and there was the opportunity to ride between the vehicles to get to the front of the line, Carolyn would not ride between the vehicles and she would sit at the back of the traffic.*
> …
> *…Even when we would ride together I would make my way to the front of the line but Carolyn would sit behind the line of vehicles.*
>
> *I would not say Carolyn was completely comfortable riding within traffic, she would put up with the surrounding traffic. But if a bike path was available she would use that for a more relaxed and enjoyable ride.*

On Tuesday 30 June, Carolyn rode to work on her new Marin Presidio 4 bicycle which she had bought from the US. After the bicycle arrived, John had taken it to Tom Wallace Cycles at Lutwyche for a full safety check and picked it up around Tuesday 23 June. On the weekend of 27 and 28 June, Carolyn transferred all her equipment from her old bike to the Marin Presidio, and John ensured that everything was working properly.

John Lister noticed that Carolyn left their home at 7:17am to ride to the hospital. John says that she was happy and relaxed and had eaten breakfast and read the paper before she left.

Examination of the tip truck

Examination of the tip truck shows that it was in good working condition with no mechanical defects. Alan Smith held the appropriate

driving licence, was an experienced truck driver, and was not affected by alcohol or any other substance and was complying with the road rules and paying attention to his surroundings.

The Boral Company for whom Alan Smith was working, provided their employment and personnel records for him. These records showed that there was no fatigue issue arising from his recent shifts, he was travelling on a route approved by the Boral Company, and Alan Smith had been appropriately trained.

There were no external conditions which were found to have contributed to the accident. The weather conditions were fine and clear, the intersection was in good condition and the traffic lights were working, and there were no defects on the road surface which contributed.

Forensic examination of the tip truck showed that the front right bumper of the truck hit the back the mudguard of Carolyn's bicycle, and that she and the bicycle went under the front right of the tip truck and both right hand wheels. This was found consistent with the eyewitness statements. The truck came to a stop partway into the intersection, having travelled only 11.5metres past the line marking the front of the intersection[3].

Forensic Crash Unit calculations

The police mapped the visibility from the driver's seat of the tip truck and found there are significant blind spots in trucks of this design. The driver is unable to see ground level for 12 metres in front of the tip truck. This means that objects in this area may or may not be seen, depending on the height of the object. The police calculated that Carolyn's head height would have been between 170cm and 180cm above the ground, depending on whether she had her feet on the ground or was standing on the pedals. The police mapped the blind spots around the cab of the tip truck with reference to these heights. The result indicates that for an object at 1.7 metres in height it needs to be at least 2.8 metres in front of the tip truck before it can be seen. For an object of 1.8 metres in height it needs to be at least 2 metres in front of the truck before it can be seen.

Current information re blind spot technology

Police Sgt Brennan made enquiries with Boral and the Department of Transport and Main Roads (TMR) regarding the use of blind spot technology in heavy vehicles. Alan Smith had worked as a truck driver under contract to the Boral Company since 2007. His tip truck was not equipped with any mirror or other device/technology to improve forward visibility.

Wade Clark, Boral Operations Manager Logistics Qld stated to the police that, in response to Carolyn's death, Boral is:

> *Working at a National level within Boral, developing a National standard to cover the company's entire fleet with the installation of a bonnet mirror. The standard will ensure that all of Boral's owned vehicles and the dedicated contracted vehicles that work for Boral everyday are fitted with a convex mirror mounted to the passenger side of a 'bonnet' truck. These mirrors are not required on 'cab-over' trucks. These mirrors have been mandated on new Boral vehicles since 2013. They are now looking at installing these on the older fleet. The mirror on the bonnet would become a minimum standard on vehicles. If a contractor wished to exceed this standard by installing a camera instead of a mirror, then that will also be suitable. The retrofit of such a mirror is about $200 per truck to fit.*

Police Sgt Brennan also made enquires in respect of whether sensors or cameras may be suitable alternatives to forward blind spot mirrors. Forward sensors would make a noise/alarm if an object was close to the front of the vehicle, and cameras connect to a screen in the cabin to give the driver visibility of the blind spot. Mr Clark advised that he had contacted Mack Trucks and Volvo Trucks (truck builders) to enquire about installing sensors on Boral's fleet, and stated to the police that:

> *…both companies confirmed there is nothing in the current design space for trucks to be fitted with forward-facing proximity sensors similar as fitted on new cars. Consequently, it is believed that unless the Australian Design Rules requirements are changed by law then it is unlikely that the truck design will change at any time allowing for the installation of such sensors. There is no knowledge if such sensors could be retrofitted[4].*

I find that a quick internet search shows that such technology is available for all types of vehicles, is designed to be installed easily without the need for specialist installation and could cost as little as a few hundred dollars. This is not mentioned in the Forensic Crash Unit Report.

Police Sgt Brennan made enquiries with the Department of Main Roads and Transport (TMR) regarding heavy vehicle blind spots and what consideration TMR had given to this issue. In response, Nigel Ellis, Executive Director, Land Transport Safety and Accreditation branch, provided the following information:

> *Following the Coroner's findings from December 2015 involving the tragic death of Rebekka Meyer, TMR sought support from the*

[3] *Forensic Crash Unit Report, pages 3, 23, 29-34*

[4] *Forensic Crash Unit Report, page 38*

Commonwealth for the incorporation of blind spot technology in all new heavy vehicles in Australia through the National Strategic Vehicle Safety and Environment Group (SVSEG). The SVSEG is an inter-jurisdictional group which includes peak heavy vehicle industry representatives and deals with vehicles standards, safety policy and amendments to Australian Design Rules (ADRs) for new motor vehicles in Australia. ADRs are the national standards for safety, anti-theft and environmental performance of road vehicles when first supplied to the Australian market.

Discussions at SVSEG at the time did not result in the early adoption of blind spot technology for new heavy vehicles in Australia. SVSEG deliberations centred around the practical difficulties with mandating such equipment given existing vehicle width restrictions in Australia, concerns about the effectiveness of emerging blind spot technology until it was further developed, and that Europe was still in the process of developing mandatory requirements for blind spot technology. Given Australia's small size on the world market and as a result its limited capacity to influence international manufacturers which supply the majority of vehicles purchased in Australia, successive Australian Governments have adopted the practice of harmonising ADRs with international (namely the United Nations Economic Commission for Europe) vehicle standards (currently at 90-95%) where appropriate.

While the Commonwealth is responsible for vehicle standards with respect to new or imported light and heavy vehicles, the vast majority of States and Territories (including Queensland) are only responsible for vehicle standards for in-service or the existing light vehicle fleet. Responsibility for the regulation of in-service or existing heavy vehicles (including heavy vehicle standards and modifications) in most jurisdictions in Australia now rests with the National Heavy Vehicle Regulator (NHVR). Nevertheless, there are challenges in mandating requirements for blind spot technology in the existing heavy vehicle fleet. Those challenges include costs of retrofitting such technology, practical difficulties with retrofitting blind spot technology in some heavy vehicles (due to vehicle width requirements, for example), and the high frequency of heavy vehicles crossing state boundaries where different rules may apply.

Given the difficulties with implementing mandatory requirements for the existing vehicle fleet, in 2017 TMR established a working group to consider local initiatives to holistically deal with the safety of vulnerable road users when interacting with heavy vehicles. Outcomes of the working group activity included the:

- *promotion of safety messaging and signage in relation to sharing the road with heavy vehicles;*
- *ongoing partnering / engagement with the heavy vehicle industry to promote the adoption of safer practices (in areas such as vehicle design & equipment, driver awareness and training; and safe heavy vehicle routes selection);*
- *promotion of contractual requirements in inner city construction contracts (including*
- *promoting the increased use of heavy vehicle safety technologies, the training of driver around bike riders and other vulnerable road users, and improved signage on heavy vehicles).*

As a result of the activities of the working group, the Cross River Rail Delivery Authority recently requested commercial entities tendering for work with the authority, to show how they will ensure heavy vehicles are fitted with equipment that minimises risks to vulnerable road users. Further, entities were also requested to demonstrate how they will undertake training and continuous professional development for drivers covering the safety of vulnerable road users and on-road hazard awareness.

TMR also continues to educate road users on the importance of sharing the road and seek opportunities to address the safety issues surrounding heavy vehicles without blind spot technologies. This includes continual communications through TMR's StreetSmarts campaign including safety around heavy vehicles, vulnerable road user campaigns in the Brisbane and Fortitude Valley CBD districts and TMR's social media safety messages.

More recently, in July 2020 the Honourable Mark Bailey, Minister for Transport for Transport and Main Roads wrote to the Honourable Michael McCormack MP, Deputy Prime Minister and Minister for Infrastructure, Transport and Regional Development, to add the agenda item of 'Heavy Vehicles and Vulnerable Road Users' onto the agenda for discussion with other state transport ministers at a future meeting of the Transport Infrastructure Council (the next meeting is planned for November 2020). The Minister acknowledged that mandating sensors on trucks so they can detect if a bike rider or pedestrian is in their blind spot is a good one. But importantly, for it to be effective, it needs to be applied urgently nationally for all new and imported vehicles in Australia.

It is also noteworthy that the NHVR recently funded the establishment phase of a project by the Australian Road Research Board (ARRB) to consider how best to implement a nationally consistent program similar to the Construction Logistics and Community Safety program in the United Kingdom, which is designed to improve safety outcomes for vulnerable road users through construction contracts. Funding is currently being sought by ARRB to progress this project further. The NHVR additionally provided funding to support the Brisbane City Council to complete Stage 1 of its Safe Travel Together – Heavy Vehicle and Bicycle User Awareness Campaign. The campaign is designed to help bike riders and heavy vehicle drivers to share the road safely.

In mid-2020 the NHVR further released its Vehicle Safety and Environmental Uptake Plan, which outlines a program of work to be undertaken, designed to accelerate the introduction of new safety and environmental technologies into the Australian heavy vehicle market. The plan contains five work packages that aim to encourage operators to incorporate newer, more technologically advanced

and safer vehicles into their fleets[5].

Forensic Crash Unit Report Conclusions

Police Sergeant Patricia Brennan provided a detailed report. Importantly, there was nothing blocking Campbell Street, so it is not known why Carolyn changed her usual route which was to approach the RBWH site using Campbell Street. The Forensic Crash Unit Report makes the following conclusions:

> *The incident has occurred when a truck and dog trailer were waiting at the traffic lights on O'Connell Terrace to turn right onto Bowen Bridge Road. The vehicle was stopped behind two vehicles for approximately 1.25 minutes prior to the lights changing to green. While stopped at the lights, a cyclist has ridden along the driver's side of the truck and stopped in front of the truck, close to directly in front of the driver. The truck driver was unaware of the presence of the cyclist. When the lights have turned green the truck started to accelerate, striking the cyclist resulting in the cyclist being run over by the truck and sustaining fatal injuries. The truck driver has stated that while waiting at the lights he was on his phone, handsfree via Bluetooth – this, he is legally able to do. The driver also stated he was looking towards his left side at pedestrians while waiting at the lights, which will account for why he did not see the cyclist riding along the right side of his vehicle.*
> *…*
> *There are no charges under consideration for this matter.*
> *…*
> *The two main issues arising from this incident are:*
> *• Lack of visibility / blind spots around the front of the truck.*
> *• Lack of awareness on the part of the cyclist regarding truck blind spots.*
>
> *Given these issues Boral and Bicycle Queensland have been very proactive and have been working together in trying to find ways to avoid such an incident occurring again. Boral is invested in looking at what is available and what can be done from a technology or instrument standpoint, but both organisations believe that education is very important*[6].

I adopt the Forensic Crash Unit report.

Office of Industrial Relations Investigation

As the tip truck driver was working at the time the crash occurred, the Office of Industrial Relations (OIR) conducted an investigation into the accident. In a report dated 30 June 2020, Senior Workplace Health and Safety Qld (WHSQ) Investigator Graham Bell identified the Boral Company as a duty holder, and made the following conclusions:

> *From numerous witness accounts it appears that prior to the incident Ms Lister has simply ridden her bicycle into a location in front of Mr Smith's truck where she could not be seen from the truck's cabin. When the lights changed to green both the Truck and Ms Lister commenced moving however Ms Lister has failed to move forward with sufficient speed to outpace the moving Truck resulting in the collision*[7].

And further, that:

> *As the investigation found no evidence to indicate that any act or omission on behalf of Boral Resources caused or contributed to the incident it is recommended that no further action be taken in relation to them at this time.*

And further, that:

> *The investigation found no evidence to indicate that Mr Smith saw Ms Lister prior to the incident and that he had done everything reasonably practical to ensure that he was fit to drive; and the truck he was driving was mechanically sound. The investigation failed to establish that any entity had breached their duty of care to Ms Lister.*

Previous deaths involving cyclists and heavy vehicles.

I have considered previous deaths involving cyclists and heavy vehicles that have been the subject of findings by Queensland Coroners, as follows:

Richard POLLETT 2011/3345

Richard Pollett died on 27 September 2011 from multiple injuries caused by collision between a cement truck and the bicycle he was

[5] *Forensic Crash Unit Report, pages 34-35*
[6] *Forensic Crash Unit Report, page 36*
[7] *OIR Investigation Report, page 4*

riding. Both Richard Pollett and truck were heading inbound on Moggill Road in the outside lane. The truck rounded a bend and attempted to overtake Richard while travelling in the same lane. Richard was caught up in the wheels of the truck. The truck driver was charged with dangerous operation of a motor vehicle causing death. He was found not guilty.

The Deputy State Coroner Lock delivered chambers findings on 26 August 2014, noting that, since the accident, changes to the road rules now require vehicles to maintain a minimum passing distance of 1m in a 60km/hr or under zone and 1.5m in an over 60km/hr or over zone.

Rebekka MEYER 2014/3357

Rebekka Meyer died on 11 September 2014 from multiple injuries caused by collision between a truck and the bicycle she was riding. The truck, which was towing a dog trailer, hit her from behind as she was executing a right-hand turn from Stanley Street into Annerley Road in South Brisbane. Rebekka and the truck were turning in the same direction, but the driver was not aware that she was in front of him.

Coroner Clements delivered her findings of inquest and eight recommendations on 9 December 2015. The Government response to the recommendations has been as follows:

Recommendation 1:
Electronic recording of the process whereby witness statements are made [by the police], should be routinely undertaken and saved. Privileges as attached to the substantive conversation should also attach to the recording. This recommendation was not implemented as “technically unfeasible” and “potentially oppressive”.

Recommendation 2:
Further improvement could be considered by:
• Making the pedestrian crossing across Stanley Street as wide as possible; and
• Marking a bicycle path on the right-hand side of the pedestrian crossing from the northern to the southern side of Stanley Street. This would lead directly into the bicycle dedicated lane on the eastern side of Annerley Road. This recommendation was implemented.

Recommendation 3:
Consideration could be given to positioning CCTV camera coverage focusing on the intersection from the corner. This could provide Council with information about compliance with the no parking change and whether enforcement action is necessary. This recommendation was implemented.

Recommendation 4:
Clearway cycling lanes on Annerley Road, which are currently being trialled by Council, should be extended so that the peak hour cycling lanes operate both during morning and evening peak times on both inbound and outbound bicycle lanes along Annerley Road. This recommendation was implemented.

Recommendation 5:
Balancing the huge potential for harm to any other small vehicle, including motorcycles and cyclists, against the inconvenience to a truck driver required to maintain visual observation of all traffic ahead of the truck driver, focuses attention on physical safety versus optimal traffic flow. Physical safety must prevail. It was recommended:

i. The Queensland Government should amend the Transport Operations (Road User Management - Road Rules) Regulation 2009, to require motor vehicles (including heavy vehicles) who stop as the first vehicle behind a bike box, to stop in a position which enables the driver to see the entire bike box.
This recommendation was not implemented because it would require modification of intersections which use road embedded traffic sensors; adjustment of signal timings to allow trucks to clear the intersection from further back, and enforcement would be difficult.

ii. Coupled with the above recommendation, release a targeted and frequent education program aimed to alert motorists, and other road users of the risk of placing themselves immediately in front of a heavy vehicle with impeded forward vision. This recommendation was implemented.

iii. Consideration be given to making requirement to stop per i. above, by a driver/rider, an offence. This recommendation was not implemented. It was not supported by Department of Transport and Main Roads.
Recommendation 6: Noting in their final submission that Council acknowledged the force of the submission for a technologically triggered bike box and head start light, it was recommended that this be seriously examined and considered, balancing safety of cyclists and not solely traffic flow conditions. This recommendation was implemented.

Recommendation 7:
i. Conventional shaped heavy vehicles should be prohibited unless they are fitted with appropriate technologies to warn the driver

of any obstacles or other road users within the forward blind spot of the truck. This recommendation was not implemented due to the cost of retrofitting, lack of similar interstate legislation and high frequency of heavy vehicles crossing state boundaries. Rather, blind spot issues would be continually under consideration by a working group.

ii. Publicly disseminated information for car drivers, motorcyclists and cyclists should aim to educate them about the extent of the blind spot in front of conventional shaped heavy vehicles. Eye level signage at the back of vehicles (similar to Keep Clear of Turning Vehicle) could assist in alerting other road users to the danger of positioning themselves directly in front of conventional shaped heavy vehicles. This recommendation was implemented.

Recommendation 8:
Brisbane City Council to engage with bicycle representative groups to investigate, plan and develop more dedicated exclusive bikeways in Brisbane. Resources and planning should be prioritised to extend Council's excellent existing dedicated bicycle only bikeways that provide physically exclusive bicycle paths. This recommendation was implemented.

Responses to the death
I consider information received from entities concerned about safety of bicycle riders who are riding in close proximity to heavy vehicular traffic, as follows:

Response by the Boral Company

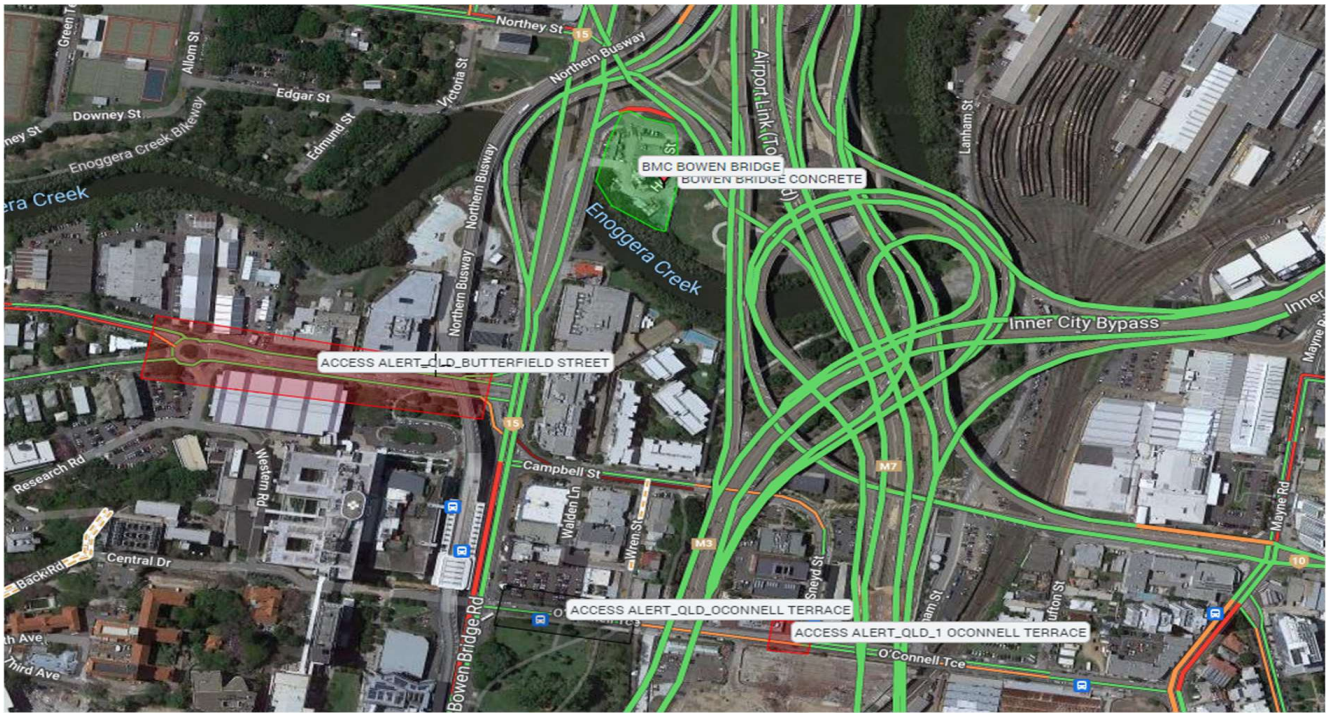
Wade Clark, Boral Operations Manager Logistics Qld states:

….[We] have retrofitted blind spot mirrors to all our company bonnet fleet across QLD. Our cab over company trucks - Volvo do not require bonnet mirrors to be fitted as they do not have bonnet's obstructing the drivers view. By design they have great visibility for the driver.

We have now restructured our Logistics business which we are now a national business not limited to state based silos. As a result of this we are working through finalising our National fleet standards which at the moment has these blind spot mirrors fitted or cameras fitted to all Boral company heavy vehicles covering Tippers, Tankers and Agitators.

Boral is still working through if we mandate these mirrors for our contractor fleets.

We also have applied geofence alerts on the 3 roads below that all our company and dedicated contractor fleets (fitted with Boral GPS tracking) triggers and alerts us by email if the fleet uses any of these 3 roads.



Response by National Heavy Vehicle Regulator (NHVR)

The NHVR is Australia's in-service regulator for all vehicles over 4.5 tonnes gross vehicle mass (heavy vehicles) in most Australian states and territories. Information was sought from the NHVR in respect of their position on blind spot technology generally, and whether

they had considered any specific responses to this matter. The questions put and their responses are as follows:

Does NHVR have any position in respect of heavy vehicle blind spot technology?

The NHVR broadly supports improving the safety of the heavy vehicle industry, both for members of the heavy vehicle industry such as drivers, and other road users who interact with heavy vehicles.

In relation to improving driver visibility, potential improvements need to be considered across the full technology spectrum, from rudimentary manual devices such as mirrors and door windows, through to more advanced technological solutions like camera and sensor-based systems.

The NHVR also acknowledges the regulatory limitations when considering the introduction of mandatory requirements. To address this, it is important to consider all options that may be available to achieve the desired safety outcome. These may include a combination of mandating for new vehicles and offering of incentives (i.e. a productivity improvement), to either remove barriers or encourage operators to retrofit older vehicles. This is considered further in Question 4.

Are any current regulations relating to its use by companies and/or heavy vehicle private owners?

Indirect vision is regulated by the [Australian Design Rules (ADRs)], which currently only mandate traditional rear vision mirrors being fitted. Recent amendments to the ADRs now allow the use of camera-monitor systems in place of mirrors, but the required field of view remains the same. The alternate UN ECE R46 standard for indirect vision requires additional mirrors to be fitted. However, in most cases these can only be fitted to cab-over vehicles.

Consideration is being given to the adoption of UN ECE R46 as mandatory in Australia as part of a broad range of reforms termed 'Safer Heavy Freight Vehicles'. Under these proposed reforms, vehicles that comply with international width limits will be required to comply with the more stringent UN ECE requirements. To ensure the safety benefits are also realised on bonneted trucks, a local variation to allow these vehicles to meet Class VI field of view (Class VI field of view covers the area directly in front of a heavy vehicle and is defined technically in UN ECE R46) requirements is also being considered. Progression of these reforms is currently on hold due to Commonwealth caretaker protocols during the current federal election period.

Following a previous Coroner's recommendation (Inquest into the death of Rebekka Tine Lousdal Meyer; Queensland Coroners Court File 2014/3357), the NHVR progressed amendments that excluded 'front blind spot mirrors' fitted to vehicles from being included in prescriptive vehicle length limits (Heavy Vehicle National Legislation Amendment Regulation 2020, Queensland. https://www.legislation.qld.gov.au/view/html/asmade/sl-2020-0019. These amendments commenced on 28 February 2020 and were intended to remove any regulatory barrier that may have prevented operators from fitting these devices.

Have you conducted any reviews or considered any changes to any regulations/policies following the death of Ms Lister?

No specific reviews or policy consideration has been undertaken following this incident. However, broader relevant action has been underway for some time.

Would you support a recommendation that all 'bonnet' style vehicles operating in QLD must have some kind of blind spot mitigation – e.g. forward mirrors, sensors and/or cameras?

While the NHVR recognises that the jurisdiction of the Queensland Coroners Court is limited to Queensland, any future policy action by the NHVR in this space would be done in a national context

.

As previously stated, the NHVR supports any measure that improves heavy vehicle operator safety; however, the broader regulatory and industry context must be considered. Changes to regulation that have the effect of rendering a previously certified vehicle defective offend against fundamental legislative principles and are unpopular with industry. They are likely ineffective in any case, as noted above, due to the effect of section 78 of the Road Vehicle Standards Act 2018.

The NHVR believes there are other policy tools available, which are directly within the control of all levels of government, that could deliver safety improvements while facing fewer barriers. This could include mandatory inclusion of blind-spot safety equipment as a contract condition for any vehicle to be used on a local or state government-funded project or other activity.

The NHVR's Heavy Vehicle Safety and Environmental Technologies Action Plan identifies a suite of reform packages that support the adoption of improved safety technologies.

Any approach to improve heavy vehicle visibility should be performance-based, i.e. defining the fields of vision the driver is required to have, and then allowing the industry to provide that vision using the best solution for the industry sector or vehicle type.

The NHVR's Heavy Vehicle Safety and Environmental Technologies Action Plan is summarised as follows:

I. Advocate for the increased:
a. Harmonisation of Australian vehicle standards to allow for the latest designs from origin markets; and
b. fitment of safety and environmental technology from those major market designs.
II. Relax access and use limits for vehicles fitted with the latest environmental and vehicle safety technology.
III. Ensure in-service requirements maximise the benefits of mandated technology.
IV. Empower industry to make informed purchasing decisions.
V. Educate industry about vehicle safety and environmental technology.

Response by Brisbane City Council

Information was sought from the Brisbane City Council (BCC). The questions put are as follows:

Due to the vicinity of the Campbell Street bicycle track and the popularity of the RBWH Cycle Centre, has the Council Considered the construction of a safer path of travel, or any changes for the safety of cyclists between the two locations; and

If no changes have been considered at this time, would the upgrade to the surrounding footpaths to make the short commute more bicycle friendly or the creation of distinct bike paths between the bicycle track and the Cycle Centre be an option to be considered by Council.?

The BCC response includes, as follows:

During 2021-22, Council undertook a transport planning study on O'Connell Tce including its intersection with Bowen Bridge Road.
…
The objectives of the proposed study included identifying future transport infrastructure requirements to improve active transport safety and accessibility at the Bowen Bridge Road and O'Connell Tce intersection. This study was undertaken by Council in conjunction with Jacobs Traffic Engineering in collaboration with the following entities:
• Dept of Transport and Main Roads (TMR) which operates the public transport system including the northern busway and passenger rail system. TMR is planning an east-west bus-based public transport connection between RWBH, Exhibition Rail Station, Bowen Hills Rail Station and Hamilton North Shore. TMR is keen for the bus service to use O'Connell Tce in both directions.

• Qld Health, represented by the Metro North Hospital Health Service, which operates the Herston Health Precinct. Qld Health is very keen to improve active transport safety and accessibility at this intersection.

• Economic Development Queensland (EDQ) which manages the Bowen Hills Priority Development Area (PDA), the western boundary of which is the centre of Bowen Bridge Road. EDQ is upgrading O'Connell Tce and assessing development applications for land along this road.

The study is ongoing in the sense that full documentation of its outcomes is still occurring. However, the study has generated the Interim Concept Plan which depicts the solution derived in collaboration with the above entities for the western end of O'Connell Tce.
….
In terms of cyclist safety, the concept is all about separating cyclists from general traffic and includes the following features:

• East of Wren Street, a separated, two-way cycle path is to be provided along the southern side of O'Connell Tce. This will fully separate cyclists from general traffic.
• West of Wren Street, cyclists will be directed to the northern and southern verges. This will fully separate cyclists from general traffic.
• Cyclists will be able to cross Bowen Bridge Road on the northern side of the intersection via a signalised crossing.
• Cyclists will be able to cross O'Connell Tce via signalised crossings at the Bowen Bridge Road intersection and at the signalised intersection immediately east of Wren Street.

This study now provides Council with a concept and cost estimate for upgrading the Bowen Bridge Road / O'Connell Tce intersection to a configuration which has improved safety for cyclists. This information will used to nominate this project for potential inclusion in future annual formulations of Council's capital works program.

The North Brisbane Bikeway (NBB) between Campbell Street and O'Connell Terrace was closed for several years, primarily due to building construction occurring on adjacent land. This situation forced NBB cyclists to travel along other routes such as Wren Street or Sneyd Street further to the east. This closed section of the NBB was recently reopened. This has since enabled NBB cyclists to use the NBB corridor, which has improved cyclist safety.

Cyclists can currently travel between the NBB and the RBWH via either footpath on O'Connell Tce. Cyclists can then cross Bowen Bridge Road via the existing signalised pedestrian crossings.

Response by Interested Bicycle Riders Groups

Interested Bicycle Riders Groups have made submissions. Each group has identified safety issues for bicycle riders and request examination at an inquest, as follows:

Brisbane Central Business District Bicycle User Group (CBD BUG):

i. BCC's continued approach when designing intersections and roads – focusing solely on motor vehicle traffic flow considerations ahead of cyclist safety;

ii. Failure to implement Coroner's previous recommendation – "Conventional shaped heavy vehicles should be prohibited unless they are fitted with appropriate technologies to warn the driver of any obstacles or other road users within the forward blind spot of the truck";

iii. Lack of consideration of 'vulnerable road user' safety in truck haulage route planning for major developments;

iv. Absence of monitoring/enforcement of truck driver utilisation of these routes;

v. Recent footpath/bikeway closures in the vicinity of the accident – due to development work; and

vi. Poorly designed intersection at corner O'Connell and Bowen Bridge Road.

Space4Cycling:

i. Given construction happening in area combined with closure of various paths and bikeways, and type of truck involved known to have large blind spots, who approved truck route, which was busy with pedestrians and cyclists?

ii. What consideration was given to how cyclists might access the cycle centre safely with all this happening, and how was this communicated?

iii. Given large volume of pedestrians and cyclists accessing RBWH and cycle centre, is the road design of the intersection suitable and safe for the number of people who use it?

iv. Trucks continued to travel through the intersection immediately following the accident and in the days following. Why wasn't the spoil haulage operation at the worksite where the trucks originated and similar worksites shut down pending and assessment of the vehicles and the route?

v. What co-ordination was in place between the various work sites in the area to ensure safe movement?

Bicycle Qld:

i. Heavy vehicles vs vulnerable road users continues to be a problem – this is third death in Brisbane in similar circs in 10 years (POLLETT 2011 and MEYER 2014).

Cycling Qld

i. How "conventional –cab" truck-trailer combinations with large blind spots and no additional cyclist or pedestrian sensors continue to operate routinely on Brisbane roads?;

ii. How spoil-haulage routes for major constructions sites are identified and approved?;

iii. What consideration is given to the safety of people cycling on these roads?

iv. What warning is provided to the public when dangerous vehicles are operating on routes like O'Connell Tce? Especially when alternative paths and footpaths are closed, as was the case nearby at the time of Carolyn's death.

Response by John Lister

John Lister has not directly raised any concerns either in respect of Carolyn's death or with the Forensic Crash Unit investigation.

Coroners Conclusion and Comment

From the evidence available I find the contributing factors to the crash included –

- Caroline did not have a bicycle route to her workplace to keep her entirely separate from motor vehicle traffic because of works being conducted in the area near her workplace. This was temporary;

- Caroline did not ride the (albeit) longer but safer bicycle route available to her that day of crossing Bowen Bridge Road at the pedestrian crossing on the left-hand side of the intersection. It was not chosen by her for an unknown reason when previously she had ridden the longer route and she apparently had a habit of avoiding road traffic;

- Caroline's decision to remain on the road and effectively "lane split" which brought her beside and immediately in front of the tip truck;

- The tip truck design which meant the tip truck driver could not see Caroline or her indication towards him that she was in front of his tip truck;

- The lack of any item/s, like blind spot mirrors fitted or cameras fitted to the tip truck, to enable better vision for the driver.

I notice that these contributory aspects have been the subject of consideration and action on the part of entities closely involved with ensuring more safety in circumstances where motor vehicles, and especially large vehicles like the tip truck, and bicycles share road space.

Pursuant to section 28(1) *Coroners Act 2003*:

> An inquest may be held into a reportable death if the Coroner investigating the death is satisfied it is in the public interest to hold the inquest.

Whether it is in the public interest to hold an inquest, I consider the extent to which drawing attention to the circumstances of the death may prevent deaths in similar circumstances happening in the future.

The responses to Carolyn's death by entities involved has, in my view, been appropriate and thorough, and towards safety for the future. In particular, the Boral Company has acted to ensure that their fleet has appropriate blind-spot mirrors or cameras installed, and to restrict the route that their fleet and contractors travel through in Bowen Hills so as to avoid the intersection in question. The BCC has conducted a review of the intersection and surrounding streets and proposed a plan with improved safety for cyclists in and around the area of the Cycling Centre at RWBH. The NHVR has confirmed that it is working towards mandating better blind spot technology nationwide, despite the difficulties in implementing consistent standards across different state jurisdictions. In my view, the awareness that the Boral Company and the BCC now have expressed, and the changes proposed to the area are sufficient to prevent similar deaths occurring in the future. I am also bolstered by the NHVR expressing it is pushing for a future in which cab-over vehicles, with inherently better driver visibility, are the norm in Australia, as they are now in Europe.

For these reasons, I find that the evidence and information gathered in my investigation is sufficient for me to make the findings required by section 45 Coroners Act without the need for an inquest.

I do not reasonably consider that any further coronial investigations and or conducting an inquest will provide any more clarity or understanding of the tragic circumstances of Caroline's death or prevent deaths in similar circumstances happening in the future.

I express my sincere condolences to John Lister, Carolyn's family and friends.

This is when the person died:

30/06/2020

This is where the person died (where possible this must include whether the person died in Queensland):

O'Connell Terrace BOWEN HILLS QLD 4006 AUSTRALIA

This is what caused the person to die (this will usually be the medical cause of death):

1(a) Multiple injuries
1(b) Road traffic accident (cyclist)

An inquest was not held in relation to this death.

☒ I authorise the investigating officer to dispose of any property obtained in connection with this investigation according to law.

OR

☐ I make the following directions in relation to the disposal of property obtained in connection with this investigation:

Name:

Anne Thacker, Brisbane Coroner

Signature:

Date: 4 October 2023

Place:

BRISBANE