QUEENSLAND COURTS

OFFICE OF THE STATE CORONER

FINDINGS OF INQUEST

CITATION:	**Inquest into the death of James Leon Short**
TITLE OF COURT:	Coroners Court
JURISDICTION:	Southport
FILE NO(s):	2010/2696
DELIVERED ON:	1 November 2012
DELIVERED AT:	Southport
HEARING DATE(s):	24 September 2012
FINDINGS OF:	James McDougall, Southeastern Coroner
CATCHWORDS:	Truck, dog trailer, pedestrian over-run, reversing alarms

REPRESENTATION:

Counsel Assisting:	Ms A Martens
Counsel for Workplace Health & Safety:	Mr M Carey
Counsel for Department of Transport & Main Roads:	Ms S Martin

CORONERS FINDINGS AND DECISION

These are my findings in relation to the death of James Leon Short who died at the Gold Coast Hospital on 6 August 2010. These findings seek to explain how the death occurred and consider whether any changes to policies or practices could reduce the likelihood of deaths occurring in similar circumstances in the future. Section 45 of the *Coroners Act 2003* (the Act) provides that when an inquest is held into a death, the coroner's written findings must be given to the family of the person who died and to each of the persons or organisations granted leave to appear at the inquest. These findings will be distributed in accordance with the requirements of the Act and also placed on the website of the Office of the State Coroner.

Introduction

At about 5.25pm on Friday 6 August 2010 an industrial traffic incident occurred at 1 Old Coach Road, Upper Coomera; premises owned by M.K.M Earthworks (MKM). MKM earthworks used the premises to service a fleet of trucks and trailers. At the property there was a mechanics workshop, refuelling station and a portable building used as a staff office. At the end of the work shift, trucks are reversed parallel-parked in close proximity to each other, around the perimeter fence. The ground surface of the facility was unsealed soil and clay crushed rock. There were no line markings or other identifying markers to define parking bays for the trucks.

At the time of the incident, Mr Short was an employee of MKM and in good health. Mr Short died as a consequence of injuries sustained as a result of being run over by a reversing truck (2007 T404 Kenworth, registration 26MKM) with an attached dog trailer (2007 Hamlex Dog Trailer, registration 531QOU) driven by Mr Brydone. A dog trailer is a trailer with two axle groups. The front axle is steered by connecting to the drawing vehicle. Dog trailers are self supporting and do not require landing gear to support them when decoupled from the towing vehicle.

The incident was primarily investigated by Senior Constable Kyle Hutchinson of the Southern Forensics Crash Unit. No prosecution was preferred by the Queensland Police Service. An investigation by Workplace Health and Safety (WH&S) into the incident preferred charges against MKM Earthworks relating to the failure to discharge a workplace health and safety obligation. Following the incident all witnesses cooperated with either the Queensland Police Service and/or WH&S and provided detailed statements or were interviewed.

The Inquest

As there was uncertainty concerning the circumstances leading up to Mr Short's death, and because it was in the public interest to draw attention to the circumstances of Mr Short's death in order to prevent deaths occurring in similar circumstances, in accordance with section 28 of the Act, I decided to hold an inquest into his death.

On 20 August 2012, a pre-inquest conference was held. Leave was granted to the legal representatives for the Department of Transport and Main Roads

and the Department of Justice and Attorney-General (Workplace Health and Safety).

The issues identified at the pre-inquest conference to be explored at the inquest were:

- The findings required by section 45(2) of the Coroners Act 2003, namely the identity of the deceased, when, where and how he died and what caused his death; and

- Whether the particular setup of the truck and dog trailer and whether the use of the squawker contributed to Mr Short's death.

The scope of the Coroner's inquiry and findings

There has been considerable litigation concerning the extent of a coroner's jurisdiction to inquire into the circumstances of a death. The authorities clearly establish that the scope of an inquest goes beyond merely establishing the medical cause of death.

An inquest is not a trial between opposing parties but an inquiry into the death. In a leading English case it was described in this way:- 'It is an inquisitorial process, a process of investigation quite unlike a criminal trial where the prosecutor accuses and the accused defends… The function of an inquest is to seek out and record as many of the facts concerning the death as the public interest requires.' [1]

The focus is on discovering what happened, not on ascribing guilt, attributing blame or apportioning liability. The purpose is to inform the family and the public of how the death occurred with a view to reducing the likelihood of similar deaths. As a result, the Act authorises a coroner to make preventive recommendations concerning public health or safety, the administration of justice or ways to prevent deaths from happening in similar circumstances in future.[2] However, a coroner must not include in the findings or any comments or recommendations, statements that a person is or maybe guilty of an offence or has some civil liability.[3]

The Admissibility of Evidence and the Standard of Proof

Proceedings in a coroner's court are not bound by the rules of evidence because the Act provides that the court *may inform itself in any way it considers appropriate.*[4] That does not mean that any and every piece of information however unreliable will be admitted into evidence and acted upon. However, it does give a coroner greater scope to receive information that may not be admissible in other proceedings and to have regard to its origin or source when determining what weight should be given to the information. This flexibility has been explained as a consequence of an inquest being a fact-finding exercise rather than a means of apportioning guilt. As already stated, it is an inquiry rather than a trial. If a witness refuses to give oral

[1] *R v South London Coroner; ex parte Thompson* (1982) 126 S.J. 625
[2] Section 46 of the Act
[3] Sections 45(5) and 46(3) of the Act
[4] Sections 37(1) of the Act

evidence at an inquest because the evidence would tend to incriminate the person, the coroner may require the witness to give evidence that would tend to incriminate the witness if satisfied it is in the public interest to do so. The evidence, when given, and any derivative evidence is not admissible against the witness in any other proceeding, other than a proceeding for perjury.[5]

A coroner should apply the civil standard of proof, namely the balance of probabilities but the approach referred to as the Briginshaw sliding scale is applicable.[6] This means the more significant the issue to be determined, the more serious an allegation or the more inherently unlikely an occurrence, the clearer and more persuasive the evidence needed for the trier of fact to be sufficiently satisfied that it has been proven to the civil standard.[7]

It is also clear that a coroner is obliged to comply with the rules of natural justice and to act judicially.[8] This means that no findings adverse to the interest of any party may be made without that party first being given a right to be heard in opposition to that finding. As Annetts v McCann[9] makes clear that includes being given an opportunity to make submissions against findings that might be damaging to the reputation of any individual or organisation.

If, from information obtained at an inquest or during the investigation, a coroner reasonably suspects a person has committed a criminal offence, the coroner must give the information to the Director of Public Prosecutions in the case of an indictable offence, and to the chief executive of the department which administers legislation creating an offence which is not indictable.[10]

The Evidence

Relevant legislation

The Vehicle Standard (Australian Design Rule 1/00 - Reversing Lamps and 13/100 – Installation of Lighting and Light Signalling Devices on other than L-Group vehicles) 2005 are the relevant vehicle standards in relation to reverse lamps and lighting.

According to Appendix A, UNECE R48/03, 6.4.1 it is mandatory for all vehicles and light to heavy trailers to have a reversing lamp. However section 8.9.1 of ADR 13/00, states that where it states mandatory read optional for trailer categories. Therefore, all trailer categories are exempt from having mandatory trailer reverse lights fitted.

The Vehicle Standard (Australian Design Rule 42/04 - General Safety Requirements) 2005 contains a section on audible warning devices. Section

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[5] Section 39 of the Act
[6] *Anderson v Blashki* [1993] 2 VR 89 at 96 per Gobbo J
[7] *Briginshaw v Briginshaw* (1938) 60 CLR 336 at 361 per Sir Owen Dixon J
[8] *Harmsworth v State Coroner* [1989] VR 989 at 994 and see a useful discussion of the issue in Freckelton I., "Inquest Law" in *The inquest handbook*, Selby H., Federation Press, 1998 at 13
[9] (1990) 65 ALJR 167 at 168
[10] Section 48(2) of the Act

20.1.1 states that no siren, repeater horn, bell, exhaust whistle or compression whistle or other device capable of producing a sound resembling that produced by any such siren, repeater horn, bell or whistle must be attached to a motor vehicle other than an emergency community service vehicle. Section 20.1.2 states that for the purpose of this clause, a repeater horn is any device which generates an audible sound (to be emitted) alternating between different tones or frequencies on a regular time cycle. Section 20.2 states that every motor vehicle must be fitted with at least one warning device capable of giving sufficient audible warning of the presence of the vehicle. It must give an audible signal having constant amplitude and frequency characteristics. It may be powered by any energy source including compressed air. Section 20.3 states that notwithstanding clauses 20.1 and 20.2 a further device may be fitted which when and only when reverse gear is selected emits an intermittent audible signal on a regular time cycle. It must not emit a signal louder than is necessary to warn persons of the proximity of the reversing vehicle.

MKM policies and procedures

Both Mr Brydone and Mr Short signed paperwork for an induction checklist. The induction checklist confirmed that a tour of the facility had taken place and safety requirements had been communicated. Mr Brydone told WH&S investigators that he was required to sign the paperwork however no induction was actually conducted by MKM.

MKM's policy dated 2009 stated that drivers are to communicate with the office before parking the trucks in the yard, parked trucks are not to block any other truck and one metre is to be left between each truck when parked. A copy of this policy had been signed by Mr Short. It is unclear whether Mr Brydone had been provided, viewed or signed this policy.

On 13 May 2010, Mr Renner, the civil manager, completed a risk assessment of a hazard for movement of vehicles in the yard. He ranked the risk of vehicle movement in the yard as one however this was revised to two. Mr Renner identified as a substitute that all drivers are to park the trucks at the fuel bay for detailers to fuel and park.

According to Mr Renner, following this, there was a toolbox meeting at the facility. At this meeting, the drivers were told of the rule that everyone was to park at the fuel bay and hop out. Drivers were to go into the workshop, complete paperwork and hand in the keys. The two detailers would be responsible for parking the trucks; one being the spotter. If there were too many trucks, then they parked at the other yard and the detailers would bring them across one by one. Mr Renner was unable to say whether Mr Brydone or Mr Short were present at this meeting. Mr Clements, the workplace supervisor, also confirmed this understanding of the work procedure. Mr Renner stated that 90% of drivers followed this rule. When drivers did not follow this rule, Mr Renner or Mr Kljaic, the Chief Executive Officer, would tell the drivers to follow the policy. In a statement provided to WH&S, Mr Brydone stated there were no specific rules about vehicle movements in the yard

however there was a rule not to drive to the mechanical workshop or drivers' room. There were no safe zones or Pedestrian Only zones.

The incident

Just prior to the incident, Mr Brydone had driven back into MKM and was having his vehicle refuelled and completing paperwork as was normal procedure at the end of the work day.

At about the same time, Mr Short had asked Mr Darmody for some repair work to be done on his vehicle and also assisted Mr Darmody in unhooking a trailer from Mr Darmody's vehicle (vehicle 14). Mr Darmody believed that after this exchange Mr Short left and headed back to his own vehicle (vehicle 4).

At the time of the incident Mr Darmody was sitting in vehicle 14, having moved the vehicle a couple of meters to clear the trailer. Mr Darmody observed Mr Brydone reversing vehicle 26 from the fuel bowsers into the truck parking, aiming for a spot to the right of where Mr Darmody's vehicle was idling.

Mr Brydone told WH&S investigators that he was reversing into the spot alongside other parked trucks and followed the previous pattern of parking trucks close together. Mr Brydone briefly saw Mr Short and Mr Darmody in the vehicle's side mirrors. Mr Brydone saw Mr Darmody get into his vehicle and assumed Mr Short had moved out of the way, as he was no longer in the mirror view.

Mr Darmody watched Mr Brydone reverse at slow pace and followed the progress of the on coming trailer for about 15 meters. Mr Darmody noticed Mr Short was still in the area approximately three or four meters from the right side of vehicle 14. Mr Short had his back towards Mr Brydone's reversing vehicle 26. Mr Darmody did not hear the sound of a squawker in his cabin. A squawker is a sound device fitted to vehicles/machinery to alert persons of a reversing vehicle; the sound resembles a duck call sounding on and off at regular intervals.

Mr Brydone was unable to recall whether the squawker was sounding when he reversed his vehicle and trailer. A squawker was fixed to the truck but not the dog trailer. A reversing light was also on the truck, but not the dog trailer.

Mr Darmody tried to gain the attention of Mr Short and alert him of the reversing vehicle however both Mr Short and Mr Brydone failed to register or heed Mr Darmody's warning calls. Mr Darmody sounded the air-horn on his truck and flashed his lights to try and get their attention. Mr Short was hit by the reversing vehicle 26 just as Mr Short turned around in response to the air-horn.

Mr Brydone was not aware of anything being wrong until he saw the flashing lights and heard the air horn of Mr Darmody's parked vehicle in his left mirror, at which point he braked. Mr Brydone then noticed in his right hand mirror Mr

Short lying on the ground and in a panicked state moved forward and over Mr Short's legs (again). Mr Darmody alighted from his vehicle and went to assist Mr Short. Mr Short was lying on the ground with significant injuries to his lower body and legs. Mr Darmody asked how he was and phoned 000.

Mr Brydone put the hand brake on, exited out of his vehicle and went to assist Mr Short. According to Mr Brydone, the vehicle he was driving had no defects or issues with the mirrors.

Mr Clements heard a horn in the yard. It sounded to him like a long distressed sound. He was then advised that Mr Short had been hit or run over by a truck.

Mr Brydone went back to the vehicle cab to retrieve a towel to support Mr Shorts head. Mr Brydone apologised to Mr Short. When other employees with first aid training arrived, Mr Brydone stood back to let them assist Mr Short. Mr Brydone was sad and shocked at what had happened.

Mr Brydone told Mr Darmody he had seen Mr Short and Mr Darmody talking beside vehicle 14 and then he observed Mr Darmody get into vehicle 14. Mr Brydone stated he was reversing using vehicle 14 as a guide in his left mirror and watching his right mirror and everything looked fine. Mr Brydone did not see Mr Short behind the trailer.

Mr Clements made his way to the site of the incident, where he observed Mr Short. Mr Clements supported Mr Short's left leg because it was badly torn from the ankle to the knee and in the groin area. Mr Clements carried on a conversation asking a number of questions to keep Mr Short conscious until paramedics arrived.

Comments by witnesses regarding the 'squawker' device

Mr Clements and Mr Renner told police that when MKM won a contract to service part of the Airport link tunnel project, the company was required to fit the fleet vehicles with a quieter 'squawker' for night time work and subsequently vehicles had their noisier day time 'beepers' [a sound device fitted to vehicles/machinery to alert persons of a reversing position, the sound is a high pitched beep sounding on and off at regular intervals] removed.

Mr Clements identified deficiencies with the adoption of the reverse 'squawker' alarm on the vehicles as they were not loud enough at industrial worksites during the day and many people did not associate this sound with a work hazard noise. Mr Renner also agreed the squawker sound was not a sound he immediately associated with a vehicle reversing. Both Mr Darmody and Mr Renner believed the squawkers were not as loud as the beeper.

QAS treatment, hospitalisation and cause of death

The QAS received a 000 call at 1719. A unit was assigned to attend at the scene at 1722. Advanced care paramedics arrived on the scene at 1735. An intensive care paramedic (a more senior and experienced paramedic) arrived at 1742.

Mr Short was supine and conscious on arrival of paramedics however he had obvious limb and life threatening injuries with a wound that extended across the top of the anterior pelvis down into the groin.

There was delay on the scene as the paramedics had difficulty managing Mr Short's pain in order to be able to move him to the ambulance for transportation to the hospital. There was consultation with the Gold Coast Hospital regarding a Medevac however it was not dispatched due to the short distance to the scene and as Mr Short was not trapped.

Mr Short was transported to hospital via code one leaving the scene at 1819 and arrived at hospital at 1834.

Dr Rashford, the Medical Director of the Queensland Ambulance Service, considered the acceptable scene time in management of such a patient would normally be 25 to 30 minutes. The paramedics in this instance faced significant difficulty in moving Mr Short as he was in severe pain every time any movement was attempted. This resulted in the scene time extending by up to 15 minutes above the expected standard as the paramedics attempted to control Mr Short's pain to facilitate the extrication. Generally such critically injured patients are unconscious which allows more rapid extrication.

Dr Rashford was of the opinion the decision not to call the Medevac was the correct one. It would have taken 10 to 15 minutes to organise and would have saved little time in accessing more advanced care.

Initial x-rays taken at hospital showed bilateral acetabular fractures, left subcapital neck of femur fracture with possible splitting of the head of the femur, fractures of the right superior and inferior pubic rami and possible right sacroiliac joint diastasis.

Mr Short was noted to have an internal degloving injury from the left groin down to the left ankle. The groin wound communicated with the abdominal cavity over the pelvic brim. He was taken to the operating theatre at approximately 2000 where an external fixateur was placed and laparotomy was performed. The exploratory laparotomy showed normal liver, spleen, mesenteric vessels and bowel with contusion of the bladder and 'minimal pelvic hematoma'. The left groin laceration was explored and the saphenous vein was ligated. The femoral artery was noted to be intact. Haemostasis was unable to be obtained and the wounds were packed and Mr Short was sent to the intensive care unit were he died less than an hour later.

During his admission in hospital, Mr Short was given 32 units of blood, 20 units of cryoprecipitate, 12 units of fresh frozen plasma, 2 units of pooled platelets, 20 X 1000mL bags of sodium chloride and other fluids.

The pathologist who conducted the autopsy, Dr Little, noted the presence of severe injuries to the pelvis and left leg with multiple pelvic fractures and a degloving injury to the left leg. In addition, there were rib fractures on both

sides of the chest with haemorrhage into the chest cavities. Dr Little concluded these combined injuries directly caused Mr Short's death.

Investigations

Department of Transport and Main Roads

Mr Hall, a Senior Transport Inspector with the Department of Transport and Main Roads (the Department) attended the incident scene and inspected the truck and dog trailer. Both were found to be compliant with respect to the Vehicle Standards and applicable Australian Design Rules.

QPS

The investigating officer concluded that the configuration of the vehicle (with the trailer attached) was such that there was a significant sight obstruction to the driver when reversing. As such, Mr Brydone had to rely on his door mirrors to assist. Due to the angle of the trailer in relation to the truck cabin the left side mirror was obscured by the trailer wall whilst the right side mirror had limitation caused by truck side walls. Measurements taken at the scene identified that Mr Short was obscured by approximately 900mm from the view of the driver. Mr Short would have been standing in a position where he was completely obscured from the mirror view of the driver.

Mr Brydone had seen both Mr Darmody and Mr Short in conversation at the rear of his vehicle before reversing. He stated he saw Mr Darmody in the cabin of his truck but did not see Mr Short. He did not make any further checks to identify where Mr Short had moved to. The investigating officer concluded the situation may have been avoided had there been a designated spotter for Mr Brydone whilst reversing. It was apparent from the investigation that there was no direct communication between the three men involved to eliminate risks associated with the reversing procedure.

As Mr Brydone had been involved in a serious traffic incident the police attended his residence. Mr Brydone was required to provide a specimen of his breath for a random breath test. Mr Brydone advised police he had consumed two stubbies of James Boag (at 1845 and 1900). Mr Brydone had a specimen of his breath analysed with an approved Breathing Analysing Instrument at the Coomera Police Station at 2012. A certificate was issued indicating a concentration of 0.032 grams of alcohol in 210 litres of breath.

A Forensic Medical Officer provided a statement indicating the consumption of 2 X 375mL of James Boag beer after the traffic incident and before the police attendance could explain Mr Brydone's blood alcohol concentration which was 0.032% at 2015. The investigating officer concluded there was no evidence to conflict with Mr Brydone's version that he had consumed alcohol at home after the incident.

During the initial inspection by investigating officers, concerns were raised regarding the operation of the squawker warning device. The investigating officer upon hearing the device initially thought it to be faulty but was advised by senior MKM employees that this was the sound of the device. The

squawker of the truck was tested and found to be in working order. It became evident the device fitted to the truck could not be heard whilst standing behind the dog trailer.

The investigating officer conducted testing to determine the effectiveness of audible warning devices. He attempted to replicate the environment on the afternoon of 6 August 2010 such as having another vehicle idling (as was Mr Darmody's vehicle on the afternoon of the incident). He gave evidence that on the afternoon of the incident there was a quarry in operation towards the rear which could not be replicated on the testing day. He also noted that on the testing day the weather was different, being windier, which may have affected the testing.

The investigating officer concluded that the audible tone of the squawker was suppressed by the configuration of the trailer. Testing revealed the squawker device provided virtually no warning to a person standing at the rear of the reversing vehicle in similar conditions experienced on the day of the incident. The video footage taken of the testing clearly demonstrates that a person facing away from the reversing truck and dog trailer would be unable to hear the vehicle approaching due to the other noise present at the site.

The investigating officer concluded that the most effective audible warning was when a traditional beeper was fitted to both the truck and trailer, followed by a squawker fitted to both the truck and trailer followed by a beeper to the truck only, followed by a squawker fitted to the truck only (which was how the vehicle was configured).

It was the investigating officer's opinion that in open space daylight environments, the traditional beeper provided better warning and some directional indication toward hazard through the pitch of the sound emitted from the device. Whilst the squawker could be heard reasonably well, the tone is not one that is usually recognised as a reversing vehicle and it does not offer the same level of directional awareness as the traditional beeper.

It was the investigating officer's opinion that the configuration of the squawker fitted to the vehicle at the time of the incident substantially contributed to the cause of the collision between the trailer and Mr Short.

The investigating officer recommended that best practice would be to fit both devices to all trucks and trailers with a switchover mechanism to allow either device to be activated in the appropriate operational environment. He agreed that the use of a beeper in the environment of a tunnel would create an echo effect; the direction would be lost and, if used at night time, would be quite loud. He noted that amendments to the Vehicle Standards may impose substantial impact on all trailers, including private trailers.

The investigating officer found no evidence that Mr Brydone was driving in a dangerous manner. He also found no evidence there had been a breach of the relevant Vehicle Standards by the truck and dog trailer driven by Mr Brydone.

WH&S investigation

The WH&S investigation determined that prior to the incident, drivers would occasionally reverse-park their own trucks without the use of a spotter.

Mr Brydone told WH&S investigators there were no specific rules about vehicle movements in the yard. There were no line markings or other identifying markers to define parking bays or walkways at the premises.

The WH&S investigation concluded that there was no documentary evidence of a work procedure or tool box talk having been conducted, requiring trucks to be parked near the fuel bowsers and parked by detailers.

WH&S concluded that the cause of the incident could be attributed to MKM's failure to (a) adequately implement the system of work ostensibly in place at the workplace, to separate pedestrians from reversing trucks (b) adequately induct all workers with respect to the system ostensibly in place at the workplace (c) provide adequate supervision to ensure workers' adherence to the system ostensibly in place at the workplace and (d) adequately monitor and review the system ostensibly in place at the workplace, in particular its effectiveness and compliance by workers.

WH&S commenced a prosecution on the basis that MKM exposed Mr Short to risks to his workplace health and safety arising out of the conduct of its business or undertaking.

No plea was entered by MKM and in their absence MKM was convicted and fined $125,000.00.

Action taken by MKM following the incident

WH&S noted that following the incident, MKM implemented the following changes:

- Installed reverse lights and reverse (squawker) alarms on all trailers
- Reinforced that no trucks are to be reversed in the yard without spotters
- Reinforced that all trucks are to be parked at the fuel bay and the drivers are to leave them for the two detailers to park
- Reinforced daily checking of the driver's hours to manage fatigue issues.

Mr Brydone, Mr Clements, Mr Darmody and Mr Renner confirmed the changes that had been implemented at MKM.

Comments from various organisations and departments regarding possible recommendations

Mr Peter Twining, a Senior Advisor (Vehicle Standards and Regulation) for the Department provided a statement and gave evidence. Mr John Samson, the Technical and Regulatory Manager of Commercial Vehicle Industry Association of Queensland (CVIAQ), provided a report and gave evidence.

Mr Simon Humphries, the Chief Technical Officer, of the Truck Industry Council (TIC), provided a report and gave evidence.

CVIAQ is a not for profit industry association group representing manufacturers of trucks, trailers and other associated equipment involved in the production, sale and repair of commercial and heavy vehicles.

TIC is a peak industry body representing manufacturers and distributors of heavy vehicle commercial vehicles in Australia.

There are three peak national bodies which have representation from various state/territory jurisdiction and set ADR development priorities (the Strategic Vehicle and Safety and Environment Group or SVSEG), develop/adopt relevant standards (Technical Liaison Group or TLG) and oversee the implementation of those standards (Australian Motor Vehicle Certification Board or AMVCB) respectively. The Department are involved with all three groups. CVIAQ and TIC are represented on both the SVSEG and TLG.

There is also the National Transport Commission's Australian Vehicle Standards Rules (AVSR) Maintenance Group. This group is responsible for development and maintenance of national model regulations that set standards for in-service vehicles.

The Transport and Storage Industry Sector Standing Committee have published Guidelines (for Workplace Health & Safety Queensland) for working around trucks. It contains practical and straight-forward information on how risks associated with reversing trucks or plant can be managed. The controls detailed within these guidelines include but are not limited to: removing or reducing the need to reverse; providing clearly marked reversing areas; excluding non-essential personnel from parking areas; using reverse alarms and reversing flashing lights if the workplace noise is too loud; ensuring drivers have another person to direct them while reversing and this person wears highly visible clothing. There would appear to be similar guidelines in other Australian jurisdictions.

Mr Samson indicated in evidence that the nature of the work completed by dog trailers (i.e., transporting loads of material) is that they are reversed in so the load in the dog trailer can be emptied and then the truck and dog trailer are manoeuvred into an almost jack-knife position so that the load in the truck can be emptied. Mr Samson commented that dog trailers are a difficult vehicle to drive and they are reversing all the time in order to complete the work they are designed for.

Workplace Health & Safety have developed a Plant Code of Practice, (the Code) dated 2005 and it was preserved as a code of practice under section 284 of the *Work Health and Safety Act 2011*. A plant includes any machinery, equipment, appliance, container, implement and tool; any component of any of those things; and anything fitted or connected to any of those things.

The Code defines a powered mobile plant as a plant that is provided with some form of self propulsion which is under the control or an operator. Examples include tractors, forklifts, tip trucks, rollers, graders, cherry pickers and concrete delivery vehicles.

The Code notes that reversing powered mobile plant is a dangerous activity as there is a high risk people behind or beside the vehicle may be hit or run over. The Code notes that all powered mobile plant should (this is not mandatory) be fitted with a warning device such as a reversing alarm and/or flashing amber light that can effectively warn people who may be at risk of injury from movement of the vehicle. Mobile plant should not be reversed if it is practicable to drive the vehicle forward.

The Code also notes a risk assessment may indicate that the person in control of the business may control the risk of such an injury by appointing a 'spotter'. The spotter is responsible for directing and observing both vehicles and personnel movement within the working zone. Where there are multiple items of mobile plant using reversing sirens and lights simultaneously, additional controls should be developed and implemented. These could include a spotter for each reversing vehicle, isolation of vehicles from workers or other persons, streaming the vehicles so they move in one direction only or scheduling certain vehicles to work at certain times.

Other states would appear to have similar codes or guidelines. Most appear to require an effective warning device to be incorporated but not that it needs to be an audible alarm.

The Department does not prohibit any voluntary codes of practice by an industry sector to improve workplace health and safety, provided the requirements do not contradict statutory requirements.

Mr Twining was of the opinion that consistency with the national standards for new and in-service vehicles is important to ensure their effectiveness, as inter-jurisdictional borders are now open and vehicles move across state borders when fulfilling their freight tasks. In addition, consistency with the international standards, particularly UN ECE Regulations is important, as the majority of Australian new vehicles are designed for other major global markets and are imported into Australia.

Mr Samson noted that many of the members of CVIAQ already fit reversing alarms to production of trucks and trailers as standard equipment. These alarms are generally of the standard beeper alarm or squawker alarm found on machinery and vehicles. Mr Samson gave evidence that all truck manufactures provide an alarm as an option for trucks.

Mr Humphries reported that whilst reversing alarms are not mandatory, all Australian truck suppliers provide reversing alarms integrated with the reversing lamp circuit of the vehicle due to Occupational Health and Safety requirements. Some trucks have the reversing beeper hardwired into the reverse gear circuit which also activates the white reversing lamp, while

others have an ‘off’ switch which can be selected in circumstances where the sound of the beeper may cause public annoyance or nuisance.

Mr Humphries noted that most heavy trailers in service do not have a reversing beeper fitted.

Mr Samson commented that existing audible warning devices are reliable and economical if fitted at manufacture and have proven effective over many years of use. Mr Samson gave evidence that the cost of a reversing alarm fitted at manufacture would cost under $100 (compared to the cost of a dog trailer of over $70,000.00). He indicated the cost of fitting the device not at the time of manufacture could cost approximately $300.

Mr Humphries noted that all heavy vehicles that tow trailers have a reversing lamp circuit, the reversing signal can easily be sent to the trailer(s) via the standard wiring harness. A reversing beeper (and white lamp) could be incorporated into the same trailer rear lamp cluster for very little additional cost per trailer (TIC estimates less than $300 per trailer). The estimate of costs was where wiring had already been incorporated. Some trailers may not have the same number of wires so a retrofit may be more expensive.

Mr Twining commented that whether or not a reversing alarm can be heard by a person in the vicinity of a reversing vehicle depends on several factors including the distance of the person from the vehicle, attentiveness of the person to the surrounding sounds and the loudness or volume of the reversing alarm. Mr Samson agreed that there was no perfect solution however his preference was for the beeper to be used. His view was that the beeper was a better means of gaining attention. Mr Humphries noted that the reversing beeper/backup alarm sound is recognised internationally.

Mr Twining noted that the Department had received complaints from residents living close to road works and construction sites about disturbance caused by the sound of the reversing alarms from trucks operating at such sites, particularly at night.

Mr Twining commented that there has been discussion about the best location to fit reversing alarms (i.e., just on the prime mover or on each and every trailer) and the audibility of the reversing alarm if there is only one fixed to the prime mover or the first group of trailers. The outcome of these discussions was that one solution does not fit all.

A review into the alternatives to ‘beeper alarms’ and the effectiveness of non-tonal audible movement warning alarms for construction sites was carried out by Ms Burgess and Mr McCarty in 2009 (the study). The study noted that to be an effective warning, a movement alarm needs to provide the what, where and when of the hazard.

The study noted that the use of the beeper on vehicles and mobile plant is widespread across Australia and the world as a means of providing warnings of moving plant on work sites. The study also noted that whilst the sound may

have a purpose for those on the site, regulators often receive complaints from the community about noise from the beeper alarms.

The study indicated there are a range of alternatives to the standard pulsed tonal reversing alarm that may reduce the environmental noise impact. These include the use of spotters; proximity sensors and/or reversing cameras to alert the driver; smart alarms that adjust the level depending on the background sound level; alarms that focus the sound in the area of risk; and alarms with a broadband sound.

A broadband alarm was defined in the study as a pulsed signal that has a range of frequencies and is sometimes referred to as a ‘quacker’ or ‘woosher’.

A proximity sensor alarm is similar to sonar in that a beamed signal is transmitted when the vehicle is reversing. Any object in the range of the beam will reflect the signal and this reflected signal is detected and some form of warning signal activated. However there is a greater risk with some types of construction equipment that the sensors and/or alignment of the sensors will be damaged during the course of site work.

Mr Samson also noted that there are many safety devices available to prevent reversing accidents. These range from passive alarms through to an active obstacle detection unit that is integral with the brake system and has the capability of stopping the vehicle before it can collide with an object behind it. Much of the higher end equipment is part of a multi function safety system that may include other safety areas of the vehicle’s operation such as electronic stability control or emergency brake assist and although equipment is available it is not in use by any manufacturer that CVIAQ is aware of.

Mr Humphries commented about the potential benefit of fitting reverse cameras with in-cabin screens in heavy vehicles. However, while this is becoming quite a common technology employed on rigid trucks, it is more difficult to achieve on vehicles towing heavy trailers. Accordingly, this potential enhancement is not yet practical for prime movers and rigid trucks which regularly tow (and swap) heavy trailers.

Most smart alarms use the well accepted pulsed tonal signal, and so long as they do adjust properly to be above the surrounding noise, there should be little concern about them being a suitable warning for those at risk. Whilst Mr Samson and Mr Humphries were familiar with the concept of smart alarms, both indicated they were not commonplace in the industry and neither was aware of the cost of the smart alarms. Mr Humphries thought they might be significantly more expensive than normal reversing alarms however the benefit would be that they would address nuisance concerns. Mr Twining’s understanding of the smart alarm was that they operate at a sound level five decibels above the ambient sound.

Information from the investigating officer suggests the smart alarm could be purchased from between $48 and $100 US dollars. The investigating officer estimated the device could be fitted for less than $250.

The study reported that many mining and construction sites have adopted the use of a pulsed broadband alarm. The use of this alarm has led to a reduction of complaints from the surrounding community, especially for the sites that need to operate during the night.

The study reported that key features for effective implementation of alternative alarms on a construction site include: use of the same type of alarm sound for all vehicles on site, selection of appropriate sound level, correction location of the alarm on the item of plant and appropriate training for all site personnel and signage.

The study concluded that industry experience to date has shown that with the appropriate selection of the loudness of the alarm and with suitable training/induction on the nature of the alarm, the broadband alarm can be used safely on construction sites.

According to Mr Twining, there are no proposals currently before SVSEG for changes or further improvements to warning and safety procedures for reversing trucks and trailers.

Mr Twining was of the opinion that the existing requirements with respect to reversing audible alarms are adequate and do not require amendment. He believed a range of non-regulatory initiatives are possible and appropriate to address specific situations and could include development and adoption of industry specific voluntary codes of practice.

Mr Twining commented that any recommendations made by the coroner be provided to the Department to be put forward at a national level given the national scheme, to the SVSEG for discussion and adoption.

Mr Samson commented that the way forward is for regulatory authorities to engage in the following process:

- Conduct a cost benefit analysis to examine mandatory fitment of alarms to new vehicles;
- Carry out a study to identify the appropriate type of warning device for various situations having regard to the varying audible output of the units available;
- Examine current entry requirements to various work sites which require reverse alarms as a condition of entry and identify conflicting requirements that could result from the mandating of alarm use.

Mr Samson suggested that given issues regarding reversing were most likely to occur at construction sites or at workplaces (as opposed to on the road generally), that WH&S would be the best placed organisation to examine this issue and make recommendations about the appropriate type of device. Mr Twining agreed that as WH&S control every worksite, they might be the most appropriate body to make a determination about whether reversing alarms are required and if so, what type.

Mr Samson reported that feedback from CVIAQ members indicated that members had made the following suggestions:

- Alarms to be fitted to new vehicles at the time of manufacture;
- The fitting of alarms not to be retrospective on in service vehicles. Many trailers are not fitted with reversing lamps as they are optional in the lighting requirements and have no facility to connect a reversing warning device. Many trucks do not have the reversing light circuit connected through the trailer electrical plug;
- Problems can occur when alarms are relocated post manufacture as a part of the fit out process;
- Alarms to be fitted to new general access trailers (vehicles with an as of right to operate on roads without being subject to a permit) and all dog trailers, at the time of manufacture.

TIC does not support the introduction of a reversing beeper on trucks which have a different sound quality, sound pressure level or pulse frequency compared with those already on the market. He commented that the reversing beeper was a particular sound recognised around the world. If the sound quality is different, people may not be aware of the sound and what it means and it may cause confusion.

Mr Humphries stated that TIC supports the fitment of reversing beepers to heavy vehicles however the ability to switch off the sound is important in some environments to prevent public annoyance, especially during normal sleeping hours. Making reverse beepers mandatory would be superfluous as state OH&S regulations already require them hence they are a standard, market-driven feature.

Mr Humphries noted that TIC supports sound workplace policies that eliminate or reduce reversing in busy construction zones and workplaces to an absolute minimum. Prevention is better than potentially expensive technical solutions which may not be fully effective. In situations where reversing is unavoidable, it is good practice for the driver to have flashing hazard lamps on, in addition to reversing beepers and white reversing lamps.

Findings required by section 45

In accordance with section 45 of the Act, a coroner who is investigating a suspected death must, if possible, make certain findings.

On the basis of the evidence presented at the inquest, I make the following findings:

a. the identity of the deceased person is James Leon Short;

b. Mr Short died as a result of being run over by a dog trailer being driven by Mr Brydone in circumstances in which Mr Short was obscured from the view of Mr Brydone where there were not sufficient safety measures to warn Mr Short of the approaching truck and dog trailer.

c. the date of Mr Short's death was 6 August 2010;

d. the place of death was the Gold Coast Hospital, Southport;

e. the cause of death was pelvic, leg and chest injuries

Recommendations in accordance with section 46

Section 46 of the Act provides that a coroner may comment on anything connected with a death that relates to:

a. public health and safety,

b. the administration of justice, or

c. ways to prevent deaths from happening in similar circumstances in the future.

The nature of Mr Short's death highlights the very real dangers that face those working in the trucking industry. I will be forwarding a copy of my findings to the relevant industry organisations and unions so that these organisations can provide the details of this incident to its members as a timely reminder of the inherent dangers in reversing large vehicles and trailers where appropriate precautions are not undertaken.

There are no current legislative requirements for trucks and/or trailers to have some form of audible reverse warning alarm. There is no current legislative requirement for trailers to have reverse lights. The Code notes that all powered mobile plant should be fitted with a warning device such as a reversing alarm and/or flashing amber light that can effectively warn people who may be at risk of injury from movement of the vehicle. This is not mandatory. In light of the current regime, I will be forwarding a copy of my findings to the relevant body, namely SVSEG, for the body to consider amending the Australian Design Rules to include a requirement that all trailers have reversing lights and whether all vehicles (including trailers) over a particular size or used in a particular industry have some form of audible reverse warning alarm appropriate for the environment that the vehicle (and/or trailer) operates in. It would appear that most vehicles already have reversing lamps and the addition of audible reversing alarms would be a very small additional cost.

It would appear that the use of smart alarms, using the universal beeping noise associated with a reversing vehicle, would solve many of the difficulties identified in this matter as it would be able to provide the universal beeping noise and adopt the most appropriate volume depending on the work environment. If the information from the investigating officer is correct, the cost of these devices is not expensive. I recommend that WH&S in consultation with the Department consult with the relevant industry manufacturers/representatives (and/or national bodies) to conduct an analysis

on whether the use of the smart alarm is a cost effective solution that would be effective on work sites.

In the meantime, I will be forwarding a copy of my findings to CVIAQ and TIC suggesting that enquiries be undertaken with their members about implementation of the smart alarm.

There are adequate helpful sources of information regarding safe work practices and preventing potential injuries and damage that have been published by WH&S. A quick perusal of the Queensland Trucking Association's website shows that industry relevant information is provided to members, however neither the Transport and Storage Industry Sector Standing Committee Guidelines nor the Code are available. I recommend that WH&S liaise with relevant industry organisations, associations and unions to encourage them to publish these documents so that members are able to readily access them.

James McDougall
Southeastern Coroner
Southport
1 November 2012