QUEENSLAND COURTS

# OFFICE OF THE STATE CORONER

# FINDINGS OF INQUEST

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| CITATION: | **Inquest into the death of Zoe Louise McInnes** |
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| JURISDICTION: | Brisbane |
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| FINDINGS OF: | John Lock, Deputy State Coroner |
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REPRESENTATION:

Counsel Assisting: Mr P. De Waard, Office of the State Coroner

Federal Chamber of Automotive Industries (FCAI):
Mr Dollar of Counsel I/B Norton Rose Fulbright

Workplace Health & Safety Queensland:
Mr K Parrott of Counsel I/B Crown Law

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## Introduction

Approximately 170 deaths over the past decade have occurred in Australia and New Zealand where Quad Bikes were involved. Most of these have occurred in a rural setting and the leading cause of death on farms in Queensland has some involvement with a quad bike.[1]

It is uncontroversial to say that a number of the statistical sources confirm that the majority of deaths occurred in the age group of 10 – 19 and a second highest age group for those over the age of 50.

Quad Bikes are essentially four wheeled motorbikes. They are motorised vehicles designed to travel on four low-pressure tires, having a seat designed to be straddled by the operator, and handlebars for steering control. They are used for both recreational purposes, either privately or in tourism, or for agricultural purposes. In Australia and New Zealand they are typically used in rural settings. They are utilised by search and rescue teams. In the United States of America they are also used in rural settings but the majority are used in a recreational setting.

Whatever may be said about their utility, they have become essential equipment on many farms. That being said, the evidence gathered during this multiple inquest raise many issues including the importance of active riding, good maintenance, use of correct tyre pressure, use of helmets, not allowing children to ride adult sized quad bikes, understanding the limitations of the vehicle and that tragic incidents can occur in quite benign conditions. The cases also emphasise the importance of riders making appropriate decisions.

Most standard quad bikes have no roll over protection system (ROPS). In broad terms, a ROPS is a cabin or roll bar structure on top of the quad bike, which incorporates a seatbelt to restrict movement outside the protective zone in the event of a roll over. Other possible protection mechanisms include Crush Protection Devices (CPD), which is a two bar or circular structure attached to the rear of the vehicle, which aims to provide a protective space in the event of a roll over, but without a seat belt. The utility of either device has been the subject of considerable debate.

Quad Bikes are referred to by the manufacturers and marketed to the public as 'All Terrain Vehicles' (ATVs). There has been some criticism of the use of that term.[2] In this inquest it is intended to adopt the term Quad Bike, but I do so conscious of both arguments and simply use the term in this phase of the inquest because it is one known better to the general public in Australia.

There has been considerable research, studies, reports and investigations carried out by varying persons and organisations considering how to reduce the number of quad bike related accidents. Although there is considerable agreement in relation to a number of issues, there has been robust debate between the main protagonists and considerable difficulty in reaching a consensus as to how to move forward on some of the more contentious issues.

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[1] Lisa Crockett, *National Coronial Information System Database Search.* The report was dated up to 1 January 2013 and noted there is a possibility of underreporting due to filing errors and currently open investigations. The deaths involved in this inquest would not be included. By the time of the inquest the figures estimated were closer to 195.

[2] Coroner John Olle, *Record of Investigation into Death of Thomas John Hutchings* (2009) State Coroner Victoria, case number 3067/02, p 4. Coroner HB Shortland, *An inquiry into the death of Carlos Mendoza,* Coroners Court New Zealand, CSU- 2010-WHG- 000185 at p 25

This inquest will examine the circumstances of the deaths of nine individuals. Findings in relation to each of those cases will be made in the first phase of this inquest. In the second phase I will hear evidence concerning what recommendations should be made to help prevent deaths occurring in similar circumstances in future.

## The evidence

1. Ms Zoe McInnes died in hospital on 19 June 2013, four days after falling off a work issued quad bike that she was using for private purposes at her private property at Durong, in Queensland. Ms McInnes was 28 years of age.

2. The incident occurred on 16 June 2013 at about 2:30am, when Ms McInnes was returning home on her quad bike from her youngest brother's engagement party. The party had been held at her mother's house, which was about 200m across the lane way from her house.

3. Ms McInnes had been consuming alcohol since at least 3:00pm on the afternoon prior to the party, whilst preparing food for the party with friends. According to her older brother, she had a 'fair bit' of heavy beer.

4. The party officially started at 6:00pm but some guests had arrived earlier. Ms McInnes had been riding the quad bike all night backwards and forwards between her residence and her mother's residence to deliver food for the party. Mr Dion Branson provided oral evidence at the inquest that he had seen Ms McInnes riding the quad bike between the residences at an approximate speed of 40km/h.

5. Police were unable to identify any witnesses who saw Ms McInnes leave the party for the last time. She had travelled around 50m along her mother's dirt driveway when she appears to have fallen off the right hand side of her quad bike and struck her head. She was not wearing a helmet.

6. Ms McInnes was found about 10 - 20 minutes after she had departed the party by Mr Dion and Mrs Emily Branson. They provided oral evidence at the inquest. They were staying at Ms McInnes' residence that night and were driving back to her house for bed.

7. The quad bike was noted to have been in a small ditch about 2m to the left of the road, facing towards the bordering wire fence. The quad bike was still upright and running, with the lights on. Zoe was lying perpendicular across the dirt road on her back. Her head appears to have been pointing towards the back of the quad bike. She had blood coming out of her right ear and blood on her scalp. Her left leg was observed to have been bent up and her right leg was straight. It appeared to Mr and Mrs Branson that Ms McInnes may have hit her head. It also appeared to them that she had vomited before they got there, as they could see vomit on the road near her and in some in her hair. Ms McInnes was breathing relatively normally and was moaning, although very groggy. She moved her arm out towards Mrs Branson when she attended to her. Ms McInnes vomited twice more in the presence of Mrs Branson.

8. Mrs Branson observed a beer bottle in the driveway, about 3m from where Ms McInnes was lying. The beer bottle had been observed by Ms McInnes' older brother as half full, with a trail of alcohol from where Ms McInnes was lying to the position of the beer bottle. Ms McInnes' mother advised that her daughter was left handed and always held her beer in her left hand. This would suggest that Ms

McInnes had been carrying her beer in her left hand whilst steering and operating the throttle on the quad bike in her right hand at the time of the incident.

9. Emergency services were called by Ms McInnes' younger brother at 2:58am. The Queensland Ambulance Service has advised the Coroner that an ambulance was dispatched from Jandowae (98km away) at 3:02am and arrived at the incident location at 4:15am. However, it also appears that another ambulance attended the scene from Kingaroy. Following assessment and treatment by an ambulance paramedic, they transported Ms McInnes to the Kingaroy Airport and arrived at 6:05am. She was then airlifted to the Princess Alexandra Hospital in Brisbane.

10. It would appear that Ms McInnes fell off her quad bike due to losing control of her quad bike, most likely as a result of attempting to hold a beer bottle in one hand, whilst steering with the other hand. Her foot may have also slipped off the foot rest, and she struck her head on the dirt road.

11. Ms McInnes had sustained a severe brain injury and underwent an emergency Craniotomy and Evacuation (of extra dural haematoma) before being admitted to intensive care. Unfortunately, Ms McInnes' condition did not improve over the following days. After consultation with her mother, withdrawal procedures were introduced at approximately 10:11am on 19 June 2013. Ms McInnes was pronounced deceased at 10:55am.

## Autopsy results

12. An external autopsy was performed by a forensic pathologist, Dr Rebecca Williams, on 20 June 2013. The autopsy report was concluded on 3 September 2013.

13. Dr Williams noted multiple abrasions and bruises to the surface of the body, such as the trunk, and upper and lower limbs. A post mortem CT scan demonstrated recent head injury as well as bilateral pneumothoraces.

14. Toxicology tests were performed on ante-mortem blood samples collected at 8:30am on 16 June 2013 (approximately 5.5 hours after the quad bike accident). No non-therapeutic drugs or alcohol were detected in Ms McInnes' system.

15. Dr Williams concluded that Ms McInnes' medical cause of death was:

    *1(a). Multiple injuries*
    *due to, or as a consequence of*

    *2(a). Quad bike accident (driver).*

## The investigation

16. Police officers from the Murgon Criminal Investigation Branch and Kingaroy Scenes of Crime attended Ms McInnes' property later on the morning of the incident but at that stage they were not treating this as a fatal incident as Ms McInnes had not yet passed away.

17. At about 9:00am on 16 June 2013, a Senior Constable John Gordon from the Proston Police Station arrived at the property and spoke with family and friends before departing and contacting Detective Sergeant Peter Lunney from the Murgon Criminal Investigation Unit.

18. Detective Lunney then arrived at the property and spoke with Ms McInnes' older brother. He inspected the incident location and the quad bike, which by that time had been moved into a shed. There were no tyre marks or signs of blood.

19. Senior Constable Brendan Young from Kingaroy Scenes of Crime attended later that afternoon and took photographs of the scene and quad bike. He did not provide a statement and did not provide a log or description of the photos. He took photos of areas he thought may have been relevant based on what Ms McInnes' older brother told him about the incident. He provided oral evidence at the inquest.

20. A police reporting officer, Constable Allan Brewster, from the Princess Alexandra Hospital Police Beat, submitted an undated Form 1 to the Coroner, from the events log on the occurrence dated 19 June 2013. Constable Brewster incorrectly referred to the incident as a quad bike 'roll over'.

21. The investigating officer allocated to this matter was Sergeant Gary Brown from the Wondai Police Station. Sergeant Brown never attended the scene. He submitted a police report to the Coroner dated 10 June 2014. The report made a number of assumptions that were not supported by the evidence gathered. He provided a Supplementary Form 1 dated 1 July 2014, addressing questions asked of him by our office.

22. The police investigation in this matter was disjointed and no officer appears to have taken carriage of the overall investigation. Although this would not have initially been treated as a fatal incident due to Ms McInnes' death four days later, the quality of the police reporting in this matter was unhelpful. This led to additional witnesses having to be called and further questions being asked during the inquest to fill in the gaps.

23. Although Senior Constable Young was not the investigating officer in this case, he agreed in oral evidence at the inquest that quad bike specific investigation training and a standardized template for quad bike investigations would be useful.

## Quad bike details

24. The quad bike was a 1990 model Honda TRX 300 quad bike.

25. There were no accessories or modifications to the quad bike. There was no CPD or ROPS installed on the quad bike.

## Mechanical inspection

26. Sergeant Bradley Dieckmann from the QPS Vehicle Inspection Unit at Alderley, Brisbane, conducted a mechanical examination of the quad bike on 27 June 2013 at the Murgon Police Holding Yard. There appears to have been some confusion caused by the incident originally being incorrectly reported by the police to Sergeant Dieckmann as a roll over. He completed his report on 21 January 2014. Sergeant Dieckmann provided oral evidence at the inquest.

27. Sergeant Dieckmann noted that the front brake was operated by a right hand, hand lever to a single circuit brake master cylinder operating the front drum brakes. The front brakes had a ½ hard hand lever indicating that the front drum brakes required adjustment. He found that the front brakes were very poor in efficiency, which is a potentially dangerous condition due to the poor operation of the front brakes.

28. The rear brake was operated by dual controls (left hand, hand lever and a right foot brake pedal to cables operating the rear drum brake). The rear drum brake adjustment was found to be satisfactory.

29. The right rear wheel bearing was excessively loose, which was unsatisfactory, however not yet serious enough to effect the safe operation of the vehicle.

30. Sergeant Dieckmann did not originally record his measurements of the inflation of the tyres in his report. In oral evidence at the inquest, he advised the Coroner that the tyre pressures were as follows:

    a. Right front tyre – 7psi;
    b. Rear front tyre – 12.5psi;
    c. Left front tyre – did not register; and
    d. Left rear tyre – 13psi.

31. The recommended tyre pressure in the quad bike owner's manual was 4.4psi +/- 0.6psi. This means that two tyres were over double the recommended maximum tyre pressure. The left front tyre was deflated. All four tyres were in good tread condition.

32. Sergeant Dieckmann was of the opinion that if the quad bike was ridden with a partially deflated or flat left front tyre, the handling characteristics of the quad bike would cause heavy steering. He also noted that uneven tyre pressures would have affected the handling characteristics of the quad bike. The faster the speed, the greater the effect. The owner's manual also identified that uneven tyre pressure was a hazard and could cause a loss of control.

## Terrain and Conditions

33. Police observed that the dirt road on which the incident occurred was flat. It did not appear that the quad bike had collided with anything, resulting in the crash.

34. The weather conditions on the night of the incident were fine. There was no natural lighting on the road. However, it is noted that Ms McInnes had turned the quad bike lights on.

## Speed

35. As no one witnessed Ms McInnes depart the party on her quad bike and police were unable to do a proper analysis of the incident location, the speed at which Ms McInnes was travelling prior to the incident is unknown.

## Personal Protection Equipment and Safety Issues

36. Ms McInnes' brother has advised police that she never had a helmet to use when riding the quad bike and she never wore one.

37. Ms McInnes was wearing boots at the time of the incident. It is unknown what clothing she was wearing.

38. Ms McInnes was riding her quad bike alone at night, although family and friends knew where she was heading.

39. It does not appear that Ms McInnes had ever received any formal or informal training from her employer, or otherwise.

40. It is unlikely that Ms McInnes was ever given access to the Owner's Manual for the quad bike by her employer.

41. Ms McInnes appears to have been a relatively experienced quad bike rider.

42. Her older brother advised police that she had picked the quad bike up from the Pittsworth branch of her employer, Landmark, about six months prior to the incident. She had previously used the same quad bike when working at the Pittsworth branch for the five years prior.

43. Ms McInnes' older brother stated that she usually rode the quad bike about twice a week when she used to place it on the back of her utility to go and check crops for work purposes.

44. Ms McInnes had been living at the property for a number of years, so she would have been familiar with the road in question.

45. Ms McInnes did not have any relevant health issues that could have contributed to this incident.

## Possible intoxication

46. It is evident that Ms McInnes had been consuming a fair amount of alcohol for at least 12 hours prior to the incident. Police did not obtain sufficient evidence to obtain a better understanding of the volume of alcohol she may have consumed.

47. Blood was collected from Ms McInnes at 8:30am on 16 June 2013 (approximately 5.5 hours after the incident). The toxicology results indicated that she had a zero blood alcohol content level at the time of testing.

48. A report was obtained from the Director of the Clinical Forensic Medicine Unit, Dr Adam Griffin, regarding her blood alcohol concentration at the time of the incident.

49. Dr Griffin advised that given the absence of a known volume of alcohol, it remains possible that Ms McInnes had a zero, or near zero blood alcohol content at the time of the incident.

50. Dr Griffin also explained that Ms McInnes may have had a maximum blood alcohol concentration of between 0.055% BAC to 0.185% BAC and still have had a 0 result 5.5 hours later.

51. He explained that Ms McInnes' consumption of alcohol could have impaired her judgement, reduced her alertness; slowed her thought processes, reaction times and reflexes, and reduced her muscle co-ordination.

52. A person with a BAC above 0.08% will have their ability to control a motor vehicle impaired.

53. It is not possible to know with any level of certainty what Ms McInnes' actual BAC was on the basis of the information obtained.

## Work health and safety issues

54. WHSQ were not notified of this incident by police but have indicated that although this incident involved a work issued vehicle, they do not consider this to have been a workplace incident due to the private use at the time of the accident.

55. Ms McInnes was employed as an Agronomist by Landmark and operated from the Chinchilla branch. She was issued with the quad bike by the Pittsworth branch. It does not appear that she was issued with a helmet, although helmets were compulsory. It does not appear that any formal arrangements were put in place in relation to the ongoing maintenance of the quad bike when it was in Ms McInnes' possession.

56. Ms McInnes' older brother advised police that when she picked up the quad bike from the Pittsworth branch, the quad bike had not been used for about a year and needed a new battery. Most of the tyres were flat so Ms McInnes' brother pumped the tyres up and topped the oil up. After that, Ms McInnes mostly looked after the maintenance of the quad bike, although every now and then he would check the tyres and put air in them if needed. He would put around six psi of air in each tyre. He could not recall there ever being a problem with the front left tyre. He used to ride the quad bike around the property once a week. He never noticed any problems with the brakes.

## Adequacy of emergency response services

57. Ms McInnes was fortunate to have received attention from a number of friends and family who were trained in first aid. A family friend who was a doctor and another who was a nurse, had attended the party earlier in the night, attended to Ms McInnes soon after the incident.

58. Mr Branson and Ms McInnes' mother perceived that it took a long time for the ambulance to arrive and when they arrived, they did not appear to be in a hurry. The also expressed concerns about the failure to dispatch a helicopter for an aeromedical evacuation. For this reason, the Coroner made further enquiries with QAS. The medical director of QAS, Mr Bowles, responded to the Coroner's questions in a letter dated 14 July 2014.

59. The response time of the ambulance by road appears to have been satisfactory given that it only took four minutes to dispatch an ambulance at 3:02am from the receipt of the emergency call and then 1 hour and 15 minutes to travel 98km.

60. At 3:17am, the QAS operations centre requested a potential helicopter response from the Queensland Emergency Medical System Coordination Centre. There were three potential options. The Brisbane based helicopter was unavailable due to a lack of available aircrew duty hours. The helicopter from Maroochydore was unavailable because it was completing another task. The Toowoomba based helicopter was only staffed with an intensive care paramedic but no physician. The duty Medical Co-ordinator from QCC felt that a doctor was required for this aeromedical transfer and therefore recommended an alternative approach. A fixed wing Royal Flying Doctor Service aircraft, staffed by a doctor and flight nurse, was dispatched to the Kingaroy Airport to rendezvous with the road ambulance.

61. Whilst it is unfortunate that a suitable helicopter was not available at the time of Ms McInnes' incident, it is recognised that such assets are of a finite resource and their unavailability in the circumstances was not unreasonable.

## Conclusions

62. Although this case was initially reported as a roll over, I am satisfied the incident occurred when Ms McInnes fell from her quad bike. She suffered a number of injuries as a result. If she had been wearing a helmet it is possible her head injuries would have been survivable. She was regarded as an experienced rider, although she had no formal training.

63. It is uncertain how she came off the quad bike. There were some issues with the braking system, due to maintenance issues and it is likely there was unevenness in tyre pressures, which may have affected the handling characteristics of the quad bike. Combined with some degree of alcohol as well as the fact she had reduced control over the bike, given she had a beer bottle in her hand, all these factors resulted in her falling in what seemed relatively benign terrain and conditions.

## Findings required by s. 45

***Identity of the deceased –*** Zoe Louise McInnes

***How she died*** – Ms McInnes died when she fell from her quad bike. She was not wearing a helmet and suffered a head injury. It is likely she fell as a result of a combination of factors including mechanical and maintenance issues potentially affecting the handling characteristics in even benign conditions and compounded by a degree of alcohol intoxication and the fact she was carrying something in one of her hands.

***Place of death –*** Princess Alexandra Hospital 199 Ipswich Road, Woolloongabba QLD 4102

***Date of death–*** 19 June 2013

***Cause of death*** – 1(a) Multiple injuries
1(b) Quad bike accident- driver

## Comments and recommendations

I close the inquest in respect to my findings as required by s. 45. I will be considering any comments and recommendations in the second phase of this multiple inquest.

John Lock
Deputy State Coroner
Brisbane
26 September 2014