QUEENSLAND COURTS

OFFICE OF THE STATE CORONER

FINDINGS OF INQUEST

CITATION:	**Inquest into the death of P, a child**
TITLE OF COURT:	Coroners Court
JURISDICTION:	Brisbane
FILE NO(s):	2013/4461
DELIVERED ON:	26 September 2014
DELIVERED AT:	Brisbane
HEARING DATE(s):	20 May 2014, 6-8 & 11-12 August 2014
FINDINGS OF:	John Lock, Deputy State Coroner
CATCHWORDS:	Coroners: inquest, quad bike accident, roll over, helmets, children, supervision

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. The tragic circumstances of this fatality involve a child and a related family member. For the purpose of protecting the family from as much further distress as was possible in the circumstances, on 20 May 2014 I made a non-publication order prohibiting the publication of the name of the deceased person, and/or information that identifies or is likely to identify them.

2. P died on 12 December 2013 due to head injuries after rolling an adult sized quad bike on a station in rural Queensland. P was 11 years of age.

3. P's father, Mr W, was working as a fencing contractor at the property (which was a 45,000 acre sheep and cattle grazing property located approximately 65km from Hughenden). He was constructing a stock proof fence close to the house on the property. P and her father had been staying in the worker's quarters on the property since 10 December 2013. P's father advised police that he took P out to the property with him to spend time with her.

4. On 12 December 2013, Mr W drove his Hilux utility to work on the fence. P went with her father, riding his adult sized quad bike. At about midday, P's father told her to return to the quarters as he felt it was too hot for her to be outside. He requested her to get some lunch ready and he would meet her back at the quarters. The quarters were about 1km north from where they were working. P left, riding the quad bike.

5. At about 1:00pm, P's father was returning to the worker's quarters in his vehicle. After travelling about 400m, he found P underneath the quad bike in a gully. The quad bike had rolled onto its left side. He could not remember how P's body was positioned. She was unresponsive.

6. The evidence located at the scene suggests that P was travelling back from the quarters through the gully in a southerly direction, towards the location of where her father was working. It is unknown why she was travelling in the opposite direction to where she was supposed to be. Either she had decided to go for a ride, or she was returning from the quarters to see her father (possibly to tell him lunch was ready).

7. P's father lifted the quad bike off and carried her into his vehicle and returned to the quarters to raise the alarm. The other workers called triple zero and commenced CPR at about 1:40pm (including the station manager's 13 year old nephew as he had completed a First Aid course). P did not have a pulse.

8. Queensland Ambulance officers arrived at about 2:30pm. They were unable to revive P and pronounced her deceased at 2.45pm on 12 December 2013.

Autopsy results

9. An external autopsy was conducted on 17 December 2013 by a forensic pathologist, Professor David Williams. The autopsy report was completed on 31 December 2013.

10. P weighed 47kg. The body demonstrated a number of recent injuries; the most severe of these was on the face, which demonstrated asymmetry and pronounced redness to the right side, with parchment like abrasions of the right forehead and right cheek. Blood was seen within the nose and mouth.

11. There were a number of abrasions scattered around the umbilicus, with a concentrated area of abrasion measuring 13 x 9cm at the left ileac fossa.

12. The right lower limb had extensive superficial burns to the skin of the lateral quadriceps and also the right leg. Discrete areas of injury were also seen around the right knee and mid length of the left leg. A burn was noted on the index finger of the left hand and a similar red colour was seen to the thumb on the same hand. The neck was abnormally mobile.

13. Professor Williams concluded that P had sustained a fatal head injury in a quad bike accident. She had been trapped under the quad bike and had sustained burns to the lower limbs.

14. Professor Williams determined that the medical cause of death was:

    1(a). Head injury
    due to, or as a consequence of

    1(b). Quad bike accident (driver).

The investigation

15. Senior Constable Leanne Rissman was the first police officer at the scene at about 3:00pm. At about 4:00pm on 12 December 2013, FCU Investigator, Sergeant Robert Nalder was advised of the incident and provided immediate advice to the investigating officer, Detective Sergeant Flanders, from the Charters Towers CIB.

16. Detective Sergeant Flanders and Plain Clothes Senior Constable David Atwell from the Charters Towers police station attended the property at about 7:30pm and commenced an investigation. They took a number of photographs of the body. They also conducted an inspection of the quad bike and the incident location. They unsuccessfully attempted to take photographs of the scene that evening. They took notebook statements from some witnesses that night and the following day.

17. Sergeant Nalder from the Townsville District FCU, attended the scene the following day in company with Detective Senior Constable Atwell and commenced a detailed forensic examination of the scene and quad bike.

18. On 23 December 2013, Sergeant Nalder submitted an FCU Police Report. On 31 January 2014, a further report was submitted by Detective Sergeant Anthony Flanders from the Charters Towers Criminal Investigation Branch.

Quad bike details

19. The quad bike was a single seat 2006 model Yamaha Kodiak 400cc. P weighed 47kg and the 'dry weight' of the quad bike without fuel was 283kg.

20. There were no accessories or modifications to the quad bike. No CPD or ROPS was installed.

Mechanical inspection

21. On 14 January 2014, Sergeant Bradley Dieckmann from the QPS Vehicle Inspection Unit at Alderley, Brisbane, conducted a mechanical inspection of the quad bike.

22. Sergeant Dieckmann determined that:

    a. The left hand rear brake lever was broken; and
    b. The right foot brake pedal provided only limited braking due to excessive wearing of the pivot bush, which limited the operation of the rear disc and was in an unsatisfactory condition.

23. Sergeant Nalder was of the opinion that it is unlikely that the unsatisfactory rear brake contributed to the incident given the slow speed at which P was travelling.

24. The recommended tyre pressure listed on a plaque on the quad bike and within the owner's manual for the front and rear tyres was a minimum of 3.10psi and a maximum of 3.63psi.

25. Sergeant Dieckmann determined that:

    a. all four tyres were below 1psi; and
    b. after inflating all tyres to 6 psi and waiting 2.5 hours, the front right tyre was again very low in pressure as he was unable to gain a pressure reading. He was unable to locate the source of the leak in the tubeless tyre. All other tyres remained inflated at 6 psi.

26. Sergeant Dieckmann highlighted in his mechanical inspection report that correct tyre pressures on quad bikes are critical as low tyre pressure may contribute to vehicle roll over, especially when changing direction at speed.

Terrain and conditions

27. The incident took place off a well used dirt track, which travelled down a slight grade and into a gully. Whilst the track was constructed on dirt, it was packed hard with a thin layer of crust. The alignment of the track was relatively flat.

28. A mound of dirt with a tuft of grass was found slightly to the right of the left hand wheel track of the quad bike. In front of this, a small opening in the ground was also located.

29. The tyre marks from the quad bike veered off to the right. At this area, it appears that the track had suffered more use than others, being eroded away, causing a cutaway type situation. The angle of the grade of the lip was measured to be approximately 29 degrees. The angle of the grade for the left wheel track was 12.7 degrees. The angle for the grade for the right wheel track was 22.1 degrees.

30. The left hand wheel mark appeared to travel over the left edge of the opening in the ground and then continue up the lip. The right hand wheel tracked to the top of the lip and then stopped. The left hand wheel tracked up and over the top of the lip, where there was a single scallop mark located in the direction to the left. Evidence was located on the left front rim to suggest that the left front wheel had caused the scallop mark. A significant difference in length of the left and right tyre marks was located at this point.

31. The weather on the day was fine and sunny. The Manager of the station reported to police that there was a relatively strong southerly wind blowing at the time. There is no indication that there was poor visibility at the time of the incident.

Speed

32. Sergeant Nalder followed the route P was believed to have taken. He did not locate any evidence of heavy acceleration or vehicle slide to indicate a certain course of riding. It was therefore his opinion that P had been driving in a conservative and sensible manner.

33. Sergeant Nalder's inspection of the quad bike revealed that it was in high range and 2WD was selected. However, as the quad bike was an automatic, high range did not indicate the gears or at what speed the quad bike was travelling.

Personal Protection Equipment

34. There was a clear warning sign on the quad bike and in the owner's manual stating a rider should not to operate the quad bike unless wearing a helmet.

35. P's father advised police that P often wore a helmet when riding her quad bike for mustering purposes. However, he did not take helmets to Marionvale Station as he did not think of it. At the time of the incident, P was not wearing a helmet.

36. P was wearing a long sleeve button up shirt, denim shorts, an Akubra hat, sunglasses, and sand shoes with ankle socks.

Age and supervision

37. There was a clearly visible warning notice near the rider's left knee of the quad bike and notices within the owner's manual stating that the quad bike was not to be ridden by persons under 16 years of age.

38. P's father did not always supervise her on the property whilst she was riding the quad bike. He was not supervising her at the time of the incident. P was permitted by her parents to ride quad bikes alone.

Training and experience

39. There is no indication that P or her parents had received any formal or informal rider training.

40. There is no indication that P's father read the owner's manual when he purchased the quad bike.

41. P's father taught her how to ride quad bikes from when she was a baby. She started to ride quad bikes by herself about three years prior to the incident.

42. P initially started out on a 250cc quad bike but she had been riding the 400cc

quad bike on her own since it was purchased two years prior to the incident. She had ridden the quad bike involved in the incident daily, if not every second day.

43. P would ride quad bikes for recreation, to get the mail (7km return from her residence), to run the horses, and when mustering with her father. She had never had any accidents on a quad bike before.

Riding habits

44. The Manager and part owner of the station, Mr Thomas O'Brien, said he had seen P riding the quad bike on the property on numerous occasions in the two days leading up to the incident. He commented to police that she was a very cautious rider and would normally ride the quad bike at very slow speeds. He never saw anything that concerned him.

45. A station hand on the property, Mr Darrin Large, had also seen P riding the day prior and advised police that in his opinion she was very cautious and appeared to ride very steadily.

46. The Station Manager's nephew also commented to police that P never seemed to be going very fast and looked comfortable on the quad bike. The pace she would ride was about jogging pace.

47. Mr O'Brien advised police that he had witnessed P ride on the same road and in the same direction as the one she had her accident on.

Workplace health and safety issues

48. Mr O'Brien advised police that he would always provide safety briefings to new workers about the use of his quad bikes on the property. He would always advise workers to utilize one of the four or five motorbike helmets he had on the property.

49. Although he noticed that neither P nor her father was wearing a helmet, he felt that it was not his place to intervene. P's father accepted that P was his responsibility as she was not there to work; she was there to spend time with him.

50. WHSQ was notified of the incident by police on 12 December 2013 and conducted an investigation. WHSQ investigators attended the scene on 13 December 2013 and spoke with Mr O'Brien. They took photographs of the incident scene and quad bike. They obtained relevant documentary material from the police.

51. WHSQ completed their investigation on 23 February 2014. WHSQ identified a possible contravention with respect to non-adherence with the manufacturer's instructions for an under aged person operating an adult size quad bike and the non-wearing of an approved helmet (PPE). However, due to the presence of public interest considerations, and given the father and daughter relationship, no further action was taken.

Conclusions

52. It would appear that P was travelling down a dirt road into a gully when she made a sharp right turn off the road (at about 90 degrees) up a very slight incline. She is likely to have made the turn in order to head in the direction where her father was working.

53. As P was making the turn, she may have hit a small mound of grass and a hole in the ground. Although the quad bike would not normally have had any difficulty navigating such an obstacle, P's strength and weight would have made this more challenging for her.

54. As P travelled up the incline, it is likely that she manipulated the throttle to increase speed, but without effectively shifting her body weight to manage the slope. This resulted in the right hand wheels of the quad bike lifting off the ground.

55. P appears to have eventually reacted correctly to the right wheels coming off the ground by steering the quad bike towards the left. This is what caused the front left tyre to scallop on flat ground after the obstacle. However, by the time P steered to the left, it was too late and the quad bike must have passed its roll-over threshold.

56. The end result was that the quad bike rolled to the left by probably a half roll onto P, capturing her underneath.

57. This case highlighted a number of issues. It is evident that quad bikes should not be ridden by children under the age of 16 particularly when unsupervised. Even in relatively benign terrain and with a person who is stated to be experienced and competent, children simply do not have the strength and perception to make compensatory decisions or manoeuvres when things go wrong. It is difficult to say whether a helmet would have made a difference in this case, but without it there was little chance.

Findings required by s. 45

My formal s. 45 findings will be included in the findings forwarded to family.

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