STATE CORONER'S COURT
OF NEW SOUTH WALES

Inquest:	Inquest into the deaths of: **Donald Eveleigh** **Angela Stackman** **FW** **ML** **Anthony Waldron** **Colin Reid** **Bradley Jackson** **Robert Beamish** **LE**	 2009/467571 2011/387257 2012/137664 2012/216240 2013/119793 2013/293977 2014/193403 2014/236747 2015/18733
Also considered	During these inquests the following deaths were also considered: **Edward Parchimowicz** **Phillipa Macey** **JH** **Wesley Davis**	 2002/123008 2009/467510 2011/387602 2012/149701
Hearing dates:	16 – 20 February 2015, 20 – 24 July 2015 and 3 – 7 August 2015.	
Date of findings:	26 November 2015	
Place of findings:	State Coroner's Court, Glebe.	
Findings of:	Magistrate Sharon Freund, Deputy State Coroner	

Representation:	Mr I Bourke SC with Ms B Baker instructed by Mr S Milesi as Counsel Assisting the Coroner; Mr M Cahill instructed Ms Z Hannaford for Safework NSW formerly known as Workcover NSW; Mr D Jordan SC with Mr L Dollar instructed by Mr P Cash solicitor from Norton Rose Fulbright for the FCAI; Mr P Roney QC instructed by Ms P Murphy solicitor from Baker & McKenzie for Polaris; and Mr M Mulock solicitor for the family of FW;
Non-publication orders:	Orders made prohibiting the publication of any material that may identify (including name, address or location) any of the child deceased, FW, ML, LE or JH.

REASONS FOR DECISION

INTRODUCTION

1. This is an inquest into 9 deaths which occurred in NSW between 22 February 2009 and 8 August 2014.

2. The inquests were heard concurrently as each death involved a common feature, in that, each person died while riding or using a 4 wheel motorised vehicle known as a "Quad Bike" or a related 4 wheel vehicle known as a side-by-side ("**SSV**").

TERMINOLOGY

3. A Quad Bike is a four wheel, motorised vehicle, which rides on low-pressure tyres, with a seat that is straddled by the operator, and (usually) with handlebars for steering. Quad Bikes are also known as "Quads" and "All Terrain Vehicles" (or "**ATV**"s). Of the thirteen deaths considered during these inquests, eleven involved the use of a Quad Bike.

4. A Side-by-Side Vehicle ("**SSV**") is similar to a quad bike, but larger, with a longer wheelbase, a wider track width, a steering wheel, foot pedals and seats allowing more than one person to be seated "side-by-side" inside the vehicle. SSVs usually include seat belts and a "roll cage", each of which provide significantly more protection for the occupants in the event of a roll over or other accident. Two of the thirteen deaths being considered in these inquests involved an SSV vehicle.

5. In the United States, SSVs are commonly referred to as "Recreational Off Highway Vehicles" or "ROVs", while Quad Bikes are known as "All Terrain Vehicles" or "ATVs".

BACKGROUND

6. According to statistics published by the Australian Centre for Agricultural Health and Safety, there have been over 200 Quad Bike related deaths in Australia since 2001,[1]

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[1] ACAHS Submission by Dr T Lower, Annex 5, ACAHS Quads Data Base as at 27 February 2015, (Exhibit 7, Vol 1, Tab A) at p.123.

with approximately 64% of these deaths having occurred on farms.[2] This makes Quad Bikes the highest killer of workers on farms in Australia. Moreover, on average, 1,400 people are seriously injured in Quad Bike accidents in Australia each year.[3] Of concern is that the Data from the Australian Trauma Registry indicates that major trauma injuries from Quad Bikes, have been steadily increasing, from 26 in 2010 to 51 in 2012.[4]

7. The issue of Quad Bike safety is also a serious concern overseas. In 2012, a Discussion Paper issued by Safe Work Australia noted a comment by Commissioner Adler of the United States Consumer Product Safety Commission ("**CPSC**") - that *"ATVs are the most dangerous consumer item in the Consumer Product Safety Commission's jurisdiction, with more than 700 funerals expected in the coming year".*[5]

8. A number of inquests have been held in Australia and New Zealand which have considered what action can be taken to reduce this tragic death toll. In particular, lengthy inquests have recently been held into Quad Bike deaths in Victoria, in Queensland and in New Zealand.[6] Each of those inquests has resulted in a number of recommendations aimed at improving safety and reducing deaths and injuries.

9. The majority of quad bike accidents in Australia and New Zealand have involved incidents of "roll over", that is, where the rider of the Quad Bike or SSV is injured where the quad bike tips or "rolls" onto the rider. Indeed, approximately 71% of quad bike and SSV fatalities involve roll overs.[7]

10. The present inquests were convened with a view to determining what further work can be done to reduce Quad Bike deaths and injuries in this State. To this end, nine inquests concerning persons who have died using Quad Bikes and related SSVs have been convened and heard together. In addition to these nine deaths, the

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2 TARS Final Project Summary Report, (Exhibit 7, Vol 5, Report 4) at p.7; ACAHS submission by Dr T Lower, (Exhibit 1, Vol 9, Tab A) at p.9.

3 TARS Quad Bike Performance Project, Supplemental Report (Exhibit 7, Vol 5, Tab 5) at p.8

4 Submission of the Royal Australasian College of Surgeons, (Exhibit 1, Vol 10, Tab F) at p.1.

5 Exhibit 1, Vol 10, tab E1, p.13

6 Joint inquests in Victoria conducted by Coroner John Olle, findings delivered 17 April 2009 re death of Patricia Murray Simson Case No 3697/02 and others ("Victorian findings"); Joint inquests in New Zealand conducted by Coroner H B Shortland, findings delivered 23 October 2013 re death of Grant Charles Cornelius Case No CSU-2001-AUK-001161 and others ("New Zealand findings"); Joint inquests in Queensland into nine deaths caused by Quad Bike Accidents by Deputy State Coroner John Lock, findings delivered 3 August 2015 ("Queensland findings").

7 TARS Final Project Summary Report, (Exhibit 7, Vol 5, Report 4) at p.8.

circumstances of a further four deaths, connected to the use of Quad Bikes and related vehicles, have also been investigated. The need for an inquest in those matters had previously been dispensed with, but the facts and circumstances of those deaths are relevant to the nine inquests.

THE FUNCTION OF THE CORONER AND THE PURPOSE OF THIS INQUEST

11. The role of a Coroner as set out in s. 81 of the Coroners Act 2009 ("**The Act**") is to make findings as to:
    a) the identity of the deceased;
    b) the date and place of a person's death;
    c) the physical or medical cause of death; and
    d) the manner of death, in other words, the circumstances surrounding the death.

12. A Coroner, pursuant to s.82 of The Act, also has the power to make recommendations, concerning any public health or safety issues arising out of the death in question.

13. Accordingly, the primary purpose of these Inquests was to ascertain what might be done to make the use of Quad Bikes and related vehicles safer in order to prevent future fatalities and injuries from occurring. To that end, the inquest examined the following issues:

    a. Each of the deaths the subject of this inquest;
    b. How the design of Quad Bikes and related vehicles impacts on rider safety;
    c. How the behaviour of the rider impacts on the stability or otherwise of the vehicle; and
    d. How Quad Bikes and related vehicles are marketed to consumers.

USE OF THE TERM ALL TERRAIN VEHICLE OR ATV

14. In New Zealand, Coroner HB Shortland, made the following recommendation in 2013:

"*That a quad bike should not be referred to as (an) all-terrain vehicle (ATV). It is accepted the acronym ATV was associated with the marketing of quad bikes over many years and has been an accepted term within the quad bike/motorcycle industry. In my view it is misleading and to remove it from Government terminology in relation to quad bikes is appropriate. Quad bikes should be identified by their true definition and not a misleading definition like ATV*."[8]

15. In Victoria, Coroner John Olle, made the following comments in 2009:

"*Quad bikes must not be described or marketed as All Terrain Vehicles or ATVs. So described, a false impression is created, which warnings are unable to erase.*
A quad bike is not an all terrain vehicle.
To describe a quad bike as an All Terrain Vehicle is a serious overstatement of its capabilities."[9]

16. During these inquests, evidence was heard from industry representatives that shared a view that there was no indication of confusion about the capabilities of these machines arising from their name. This is inconsistent, in my view, with the circumstances of some of the deaths considered in these inquests and with evidence of other witnesses, which make it apparent that there is a misperception of the capabilities of Quad Bikes by users in Australia.[10] Victorian and New Zealand Coroners have previously found the term to be misleading and inappropriate, and, in my view, the evidence in this case could lead to the conclusion that, at least in some circumstances, Quad Bike capabilities are being overestimated, and the use of the term ATV does not assist to overcome that misperception.

17. In view of the risks involved in perpetuating the public perception that such vehicles are suitable on "all terrains" and in support of the current trend towards the common usage of the terms "quad bikes" and "SSVs" in Australia, in these findings, I will refer to the vehicles as Quad Bikes and side-by-side vehicles (or "SSVs").

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8 New Zealand findings at page 29.

9 Victorian findings at page 10.

10 In particular the deaths of Donald Eveleigh, Angela Stackman, Wesley Davis and Anthony Waldron and the evidence of Michael Cantwell 17 February 2015 and Detective Senior Constable Newman 18 February 2015.

PUBLIC HEALTH AND SAFETY

18. It has been estimated that in 2010 there were about 270,000 Quad Bikes and SSVs in use in Australia[11].

19. It is accepted and probably well known that Quad Bikes are popular and can be highly useful machines, especially on farms but they can also pose one of the greatest threats in that environment.

20. A large number of people of almost all ages die in Quad Bike accidents in Australia every year and many hundreds more are injured. According to statistics published by Safe Work Australia, there have been over 200 Quad Bike related deaths in Australia since the year 2000 including 15 in 2014 and, in the current year to date, there have been an additional 18 deaths[12].

21. The emotional and social costs of these deaths to family, friends and the community are enormous. It is imperative, in my view, that steps be taken to make these vehicles safer and that is the overriding purpose of this inquest.

FINDINGS AS TO THE PARTICULAR DEATHS WHICH ARE THE SUBJECT OF THIS INQUEST

DONALD EVELEIGH

22. Donald Eveleigh was 55 years old when he died on or about 22 February 2009, while riding his Yamaha 350 Quad Bike on the sloped wall of a dam on his farming property, which he owned with his brother, Bruce Eveleigh, approximately 25 kms west of Scone[13].

23. Mr Eveleigh was last *seen alive at around 9am on Sunday 22 February 2009, when he spoke to his nephew, Geoff Eveleigh at the property[14]. Mr Eveleigh told Geoff that

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11 TARS Final Project Summary Report, (Exhibit 7, Vol 5, Report 4) at p.17.

12 http://www.safeworkaustralia.gov.au/sites/swa/whs-information/agriculture/quad-watch/pages/quad-bike-fatalities#2015

13 Exhibit 1, Volume 1, Tab C6 at paragraph 7;

14 Exhibit 1, Volume 1, Tb C5 at paragraph 4;

he was heading up to Pikes Mountain to have a look around the dam[15]. At that time, Mr Eveleigh was towing his quad bike behind his ute[16]. He was reported to be in good spirits[17].

24. The following day, namely Monday 23 February 2009, Mr Eveleigh's family noticed that he was missing and began looking for him. He was eventually found deceased, face down in the dam on the property near Pikes Mountain. His quad bike was resting in the water nearby.

25. No-one witnessed the accident.

26. Police who attended the scene formed the view that Mr Eveleigh had attempted to ride his quad bike along the edge of the dam. The embankment of the dam was described as steep and comprised of a "lot of loose rock".

27. Detective Sergeant Simos observed scrape and gouge marks in the sandstone above the area where the deceased and the quad bike were lying.[18] These marks were consistent with the quad bike having lost traction, and rolled. Police concluded that the bike had travelled approximately 5.8 metres in the roll.[19] Mr Eveleigh was not wearing a helmet at the time of the accident.

28. Accordingly, the investigating officers formed the view that Mr Eveleigh had hit his head, possibly on the rocks during the roll, and that he had landed unconscious, face down in the water.[20]

29. It is of note that at the time of the accident, the quad bike was carrying herbicide in a spray tank which was attached to the rear of the quad bike. The capacity of the tank was 100L, and it was approximately half full.[21] A hose spray attachment was wound around the rear of the tank.

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15 Exhibit 1, Volume 1, Tab C6 - Statement of Geoff Roger Eveleigh at paragraph 8;

16 Ibid;

17 Ibid;

18 Statement of Detective Sergeant Elizabeth Simos, 29 December 2009 (Exhibit 1, Vol 1, Tab C5) at para 9.

19 Crime Scene Report (Exhibit 1, Vol 1, Tab C9).

20 Statement of Detective Sergeant Elizabeth Simos, 29 December 2009 (Exhibit 1, Vol 1, Tab C5) at para 10.

21 Statement of Detective Sergeant Elizabeth Simos, 29 December 2009 (Exhibit 1, Vol 1, Tab C5) at para 34.

Cause of death

30. The Post Mortem Report dated 5 May 2009, found the direct cause of death was "*Drowning following head injury*".[22] Toxicology analysis detected a small quantity (0.033 g/100ml) of alcohol in Mr Eveleigh's blood. However I note that decomposition changes to the body may have contributed to or caused this alcohol reading.[23] Accordingly I cannot be satisfied on the balance of probabilities that alcohol contributed to Mr Eveleigh's death.

Contributing factors

31. Helmet: Mr Eveleigh was not wearing a helmet. If he had been, it is likely that he would not have been rendered unconscious in the quad bike roll and therefore would not have drowned.

32. Load: At the time of the accident, Mr Eveleigh was carrying herbicide on the back of the quad bike. Detective Simos was of the opinion that the tank could have contributed to the susceptibility of the quad bike to rolling on the steep embankment.[24] Associate Professor Rechnitzer agreed with this opinion.[25] However, Associate Professor Rechnitzer was unable to say whether it was likely that the accident would not have occurred if the tank had not been fitted or if it had been fitted with with baffles to prevent the liquid sloshing freely in the tank.

33. Use of a quad bike: Associate Professor Rechnitzer expressed the view that the quad bike was not the most fit vehicle for the purpose for which it was being used by Mr Eveleigh. He said that, assuming that the task of driving along the dam was required, a higher stability vehicle like an SSV would be more fit for purpose, in the sense that the SSV would have been less likely to roll. More importantly, as Associate Professor Rechnitzer observed, provided that a seat belt and side protection were utilised, an

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22 Autopsy Report, Dr K Nadesan, 5 May 2009 (Exhibit 1, Vol 1, Tab C4) at p. 9.

23 Autopsy Report, Dr K Nadesan, 5 May 2009 (Exhibit 1, Vol 1, Tab C4) at p. 8.

24 Statement of Detective Sergeant Elizabeth Simos, 29 December 2009 (Exhibit 1, Vol 1, Tab C5) at para 34.

25 Evidence of Associate Associate Professor Rechnitzer 20 and 21 July 2015.

SSV would have provided Mr Eveleigh with significantly more protection in the event of a rollover.

34. Crush protection device: Because Mr Eveleigh suffered a head injury in the rollover, and because the cause of death was drowning, Associate Professor Rechnitzer concluded that the fitting of a crush protection device to the quad bike would not likely have prevented Mr Eveleigh's death.

35. Personal locator beacon: Given that the cause of death was drowning, and there were no persons nearby who could have come to Mr Eveleigh's aid, it is unlikely that a personal locator beacon could have prevented Mr Eveleigh's death.

ANGELA STACKMAN

30. Angela Stackman was 34 years old when she passed away on 20 November 2011.

31. At the time of the accident, Ms Stackman was using a Polaris Sportsman 500 Quad Bike, which she and her husband had purchased approximately 6 months prior to the accident, to spray weeds on their property at Niangala (south east of Tamworth).

32. Ms Stackman was an inexperienced Quad Bike rider. In addition, approximately 10 years before this accident, Ms Stackman had been seriously injured in a motor vehicle accident which left her unable to walk for about three months.[26] As a result, Ms Stackman had continuing restricted movement in her legs.[27] Ms Stackman's husband told the investigating police officer that because of her inexperience, they had agreed "*she was only going to ride on the flat of the paddocks and leave the lower ends of the paddocks once she had become more experienced in using the quad bike (sic)*."[28]

33. At the time of the accident, the quad bike had a 100 litre fitted tank on its rear.[29] The tank was three-quarters full when Ms Stackman first set out (Ms Stackman and her

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26 Statement of Colleen Stackman, dated 21 January 2012 (Exhibit 1, Vol 1, Tab E13) at para 14.

27 Statement of Neil Stackman, 21 January 2012 (Exhibit 1, Vol 1, Tab E14) at para 8.

28 Statement of Mark Partridge, 23 November 2011 (Exhibit 1, Vol 1, Tab E12) at para 6.

29 Statement of Mark Partridge, 23 November 2011 (Exhibit 1, Vol 1, Tab E12) at para 11.

husband did not completely fill the tank, as they were conscious that the additional load could be dangerous on the back of a bike).[30] Ms Stackman was not wearing a helmet.

34. There were no witnesses to the accident.

35. As Ms Stackman and her husband, Mr Partridge, were each working on separate parts of the property on the day of the accident. Mr Partridge became concerned for Ms Stackman's wellbeing when she did not return for lunch, despite having family waiting.[31] Mr Partridge commenced a search of the property and found Ms Stackman trapped under the quad bike at the bottom of an embankment.[32] Mr Partridge could see that Ms Stackman was trapped by the left side of her head at the rear near side wheel. She was facing back up the embankment.[33] Mr Partridge lifted the bike off Ms Stackman and pulled her out. He commenced CPR, stopping only to call for an ambulance. The ambulance officers pronounced Ms Stackman deceased at the scene.

36. Police also attended. Photographs were taken of the area in which the accident occurred. Those photographs depict an area of some steepness, with small trees, bushes and rocks. The Officer in Charge of the Investigation, Senior Constable Churchill, observed several black tyre marks on small to medium stones in the vicinity of the quad bike.[34] He was of the opinion that Ms Stackman had been trying to turn the quad bike around on an incline after the quad bike had become entangled in fallen branches.[35] He was of the view that as Ms Stackman attempted to turn the bike, she lost control and the quad bike rolled down the embankment, trapping Ms Stackman between the quad bike and the tree.

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30 Statement of Mark Partridge, 23 November 2011 (Exhibit 1, Vol 1, Tab E12) at para 12.

31 Statement of Mark Partridge, 23 November 2011 (Exhibit 1, Vol 1, Tab E12) at para 14.

32 Statement of Mark Partridge, 23 November 2011 (Exhibit 1, Vol 1, Tab E12) at para 16.

33 Statement of Mark Partridge, 23 November 2011 (Exhibit 1, Vol 1, Tab E12) at para 17.

34 Statement of Senior Constable Churchill, 20 January 2012 (Exhibit 1, Vol 1, Tab E9) para 76.

35 Statement of Senior Constable Churchill, 20 January 2012 (Exhibit 1, Vol 1, Tab E9) para 76.

Cause of death

37. The Post Mortem report dated 24 November 2011 concluded that Ms Stackman died as a result of "*positional asphyxia*" (suffocation due to being pinned under the quad bike).[36]

Contributing factors

38. Use of a quad bike: Associate Professor Rechnitzer stated in evidence that he considered that a Quad Bike was the wrong vehicle for the task of spraying in such a steep and uneven area, particularly given Ms Stackman's lack of experience. It might also be said that Ms Stackman's prior injuries (which left her with restricted movement in her legs) was another factor which rendered the vehicle unsuitable for her use in the terrain where she was found. Associate Professor Rechnitzer said that a high stability SSV would have been a better vehicle for the purpose. Associate Professor Rechnitzer did not consider the area to be too confined for a SSV (although he acknowledged that he had not physically inspected the area).

39. It may be noted that Mr Partridge stated that when he and Ms Stackman purchased the quad bike, they decided to "*get a bigger size as it would have been more stable*."[37] Mr Partridge's comment indicates that they were concerned about safety, and in particular, the stability of the quad bike at the time of their purchase. It is unclear whether Ms Stackman and her husband considered the purchase of a SSV, and whether they were aware of the greater stability of such vehicles at the time of their purchase.

40. Load: At the time of the accident, the 100 litre tank was less than ¾ full. This load would have contributed to the instability of the quad bike and its susceptibility to rollover. However it is not possible to say whether the accident would or would not have occurred if the tank had not been on the quad bike.

41. Failure to wear a helmet: Ms Stackman was not wearing a helmet. Associate Professor Rechnitzer expressed the view that a helmet may have been beneficial.[38]

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36 Autopsy Report, Dr A Beresford, 24 November 2011 (Exhibit 1, Vol 1, Tab E6).

37 Statement of Mark Partridge, 23 November 2011 (Exhibit 1, Vol 1, Tab E12) at para 7.

38 Evidence of Associate Professor Rechnitzer, 20 and 21 July 2015.

However, he also acknowledged that, as Ms Stackman died from asphyxia rather than head injuries, a helmet may not have saved her.

42. Awareness of dangers of quad bike: The quad bike was purchased second hand from a dealer. Mr Partridge informed Senior Constable Churchill that, at the time of sale, the sales person did not explain any safety features of the bike, or caution him as to any risks or dangers of the quad bike.[39]

43. Crush Protection Device: As Associate Professor Rechnitzer observed,[40] in view of the fact that Ms Stackman's head was trapped under the rear wheel of the quad bike, it is unlikely that a CPD would have reduced the probability of death in this accident.

FW (a child)[41]

44. FW died on 30 April 2012 when the Polaris Ranger SSV he was driving rolled over, trapping his legs. FW was only 9 years old at the time of his death.

45. No-one witnessed the accident.

46. FW's parents were working in the wool shed at their property at "Wandoo" in Westby, with an employee, Mr Smith.[42] Mr Smith said that as he was collecting a tractor to move the wool press, he saw FW in the workshop, and that it looked like he (FW) was getting ready to take the SSV for a ride.[43] About 15 minutes later, Mr Smith heard a motor running.[44] Mr Smith glanced up the hill and realised that the SSV was on its side with the motor still running.[45] Mr Smith ran up the hill and found FW trapped under the fuel tank by his legs.[46] Mr Smith was unable to lift the SSV off FW, so he immediately raced to get FW's father. Together, they were able to lift the SSV high

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39 Statement of Senior Constable Churchill, 20 January 2012 (Exhibit 1, Vol 1, Tab E9) para 74.

40 Evidence of Associate Professor Rechnitzer, 20 and 21 July 2015.

41 A pseudonym has been used in accordance with the non-publication order made on 16 February 2015.

42 Statement of Ivan Smith, 18 May 2012 (Exhibit 1, Vol 2, Tab H14) at para 3.

43 Statement of Ivan Smith, 18 May 2012 (Exhibit 1, Vol 2, Tab H14) at para 4.

44 Statement of Ivan Smith, 18 May 2012 (Exhibit 1, Vol 2, Tab H14) at para 4.

45 Statement of Ivan Smith, 18 May 2012 (Exhibit 1, Vol 2, Tab H14) at para 4.

46 Statement of Ivan Smith, 18 May 2012 (Exhibit 1, Vol 2, Tab H14) at para 5.

enough for FW to be pulled from under it.[47] CPR was commenced and an ambulance was called. Upon their arrival, FW was immediately taken to a local hospital, however, he went into cardiac arrest and was unable to be saved.

47. Police attended the scene. Police observed that the SSV was lying in its right hand side.[48] The vehicle was a left hand drive. The area was a grassed paddock with moderate to low slope. Police observed 27.1m of curved tyre tracks leading to the SSV.[49] Senior Constable Cooper observed that there were areas where the "*tyres had really dug in deep, gouged in, sort of, they sort of grabbed*."[50] In evidence, he clarified that the tracks were "*not a zigzagging but a sharp turn and they just dug in, dug into the ground*."[51]

48. Senior Constable Cooper formed the view that FW had not been wearing a seatbelt, and concluded that he would not have been ejected from the SSV had he been wearing a seatbelt.[52]

Cause of death

49. The direct cause of death at autopsy was found to be "*abdominal crush injuries*".[53]

Contributing factors

50. FW's age: At the time of the accident, FW had been driving the SSV with permission for at least a year.[54] In the TARS coronial report, it was observed that a 9 year old does not have the maturity and/or capability to drive an SSV safely.[55] There are clear warnings on SSVs against use by children under the age of 16 years.

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47 Statement of Ivan Smith, 18 May 2012 (Exhibit 1, Vol 2, Tab H14) at para 5; Statement of WW, 22 May 2012 (Exhibit 1, Vol 2, Tab H13) at para 5.

48 Evidence of Senior Constable Jamie Cooper, 18 February 2015, p.19.

49 Report of Crime Scene Examiner, M P Faust, (Exhibit 1, Vol 2, tab H7) at p.1.

50 Evidence of Senior Constable Jamie Cooper, 18 February 2015, p.30.

51 Evidence of Senior Constable Jamie Cooper, 18 February 2015, p.30.

52 Evidence of Senior Constable Jamie Cooper, 18 February 2015, p.26.

53 Autopsy, Dr Smart, 25 May 2012 (Exhibit 1, Vol 2, Tab H8).

54 Statement of Senior Constable Jamie Cooper, 11 June 2012 (Exhibit 1, Vol 2, Tab H10) at para 9; Statement of WW, 22 May 2012 (Exhibit 1, Vol 2, Tab H13) at para 7.

55 TARs coronial report, (Exhibit 1, Vol 12, Tab 19) at 2.4.8.

51. Child proof mechanisms: FW had been driving the SSV with his parents' permission for at least one year. Accordingly, it is unlikely that a child proof mechanism would have prevented FW's death.

52. Seatbelt and side mesh: At the time of the accident, FW was not wearing a seatbelt, and the SSV was not fitted with side mesh. The SSV used by FW did not have a seat belt interlock. However, the inquest was informed that the current model of the Polaris Ranger SSV does have a seatbelt interlock, which limits the speed of the SSV when the driver's seat belt is not fastened.[56] Whether such a seatbelt speed limiting device would have avoided this particular accident cannot be known, although logically it may have rendered the accident less likely.

53. Failure to wear a helmet: FW was not wearing a helmet, but given the nature of his injuries, it is unlikely that a helmet would have prevented his death.

ML (a child)[57]

54. ML died on 11 July 2012, when she lost control of the Yamaha Grizzly 550FI quad bike she was riding. At the time of her death, ML was aged 13 years.

55. At the time of the accident, ML was driving the quad bike on her parents' property. There were three passengers on the rear of the bike – all of them children. They were aged 10, 11 and 16 years.

56. There were no adult witnesses to the accident. However, a police interview was conducted with the 16 year old passenger, who provided information concerning the circumstances in which the accident occurred.[58]

57. In the interview, the 16 year old passenger explained that at the time of the accident four girls had been on the quad bike.[59] Initially, a 10 year old girl was riding (steering),

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56 Information provided by Mr Roney SC, Polaris counsel, 18 February 2015 (Transcript at 18/2/15 at 32).

57 A pseudonym has been used in accordance with the non-publication order made on 16 February 2015.

58 Transcript of record of interview, 27 July 2012, (Exhibit 1, Vol 2, Tab G18)

59 Transcript of record of interview, 27 July 2012, (Exhibit 1, Vol 2, Tab G18) at p. 2

with the other girls as passengers next to and behind her.[60] The 10 year old girl rode the quad bike over the raised drive way from east to west about three times.[61]

58. ML then switched positions with the 10 year old girl. ML rode the quad bike in a northerly direction near to the eastern boundary fence. She turned 90 degrees to the west and rode towards the raised driveway at the same speed at which the 10 year old had previously crossed the driveway. On approaching the driveway the 16 year old girl felt something was not right and jumped from the quad bike prior to it reaching the driveway.[62]

59. The 16 year old stated that she saw the quad bike become airborne after hitting the side of the driveway.[63] It seems that the quad bike travelled at a height of about one metre off the ground and landed on the other side of the driveway. After landing, the quad bike flipped end over end and landed back on its wheels. At some stage, the other girls fell from the bike. Tragically, ML, who was not wearing a helmet, suffered severe head injuries and died at the scene.

60. Investigating police were called and attended the scene of the accident. The Officer in Charge of the Investigation, Senior Constable Shaw, observed that the driveway at the scene was made from compacted gravel and was about four metres wide.[64] The paddock to the eastern side was about 40cm lower than the driveway and there was a steep rise on the edge of the driveway.[65] This eastern paddock was about 50 metres wide.[66] The grass in this paddock was long and had three sets of tracks through it that were consistent with being tracks from the quad bike.[67] Each set of tracks travelled in a northerly direction near the eastern boundary fence before making a 90 degree turn to head west towards the driveway.[68] The tracks could easily be seen all the way to the eastern edge of the driveway.

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60 Transcript of record of interview, 27 July 2012, (Exhibit 1, Vol 2, Tab G18) at p. 3.

61 Transcript of record of interview, 27 July 2012, (Exhibit 1, Vol 2, Tab G18) at p. 3.

62 Transcript of record of interview, 27 July 2012, (Exhibit 1, Vol 2, Tab G18) at p. 3.

63 Transcript of record of interview, 27 July 2012, (Exhibit 1, Vol 2, Tab G18) at p. 3.

64 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 18.

65 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 18.

66 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 18.

67 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 18.

68 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 18.

61. The sets of tracks were only metres away from each other.[69] A gumboot was located in the middle of the northern most track.[70] Looking east to west, the middle set of tracks appeared to line up with the position of the deceased and the quad bike on the western side of the driveway.[71] In the area where the middle set of tracks met the edge of the driveway, the embankment was far steeper than where the other two sets of tracks were. No tyre marks could be seen across the majority of the driveway.[72] However, about 50cm from the western edge of the driveway, the wheel tracks could again be seen. These were again in line with the final resting place of the quad bike.[73] The paddock on the western side gradually sloped down away from the driveway. The grass on the western side was short and the ground was very soft due to recent rain.[74]

62. The quad bike was about 10 metres to the left of ML's body. It was upright on its wheels and the seat had come off the quad bike.[75] A plastic spray tank was attached to the front of the quad bike. The bike was generally covered in dirt and mud.[76] The bike did not appear to be damaged. There was no grass on the handlebars or top portion of the bike, suggesting that the quad bike had not rolled along the ground.[77] There was a large smear of mud on the top corner of the spray tank. In view of the height of the smear, Senior Constable Shaw concluded that this portion of the quad bike had made contact with the ground at some point.[78]

63. A mechanical examination was conducted of the quad bike. This examination concluded that there were no mechanical defects or component failures that had contributed to the accident.

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69 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 19.

70 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 19.

71 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 19.

72 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 19.

73 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 19.

74 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 20.

75 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 20.

76 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 21.

77 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 21.

78 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 21.

Cause of death

64. The Post Mortem Report dated 6 August 2012 found the direct cause of ML's death was a "*fractured base of skull and jaw*".[79]

Contributing factors

65. ML's age: At the time of her death, ML was 13 years old. Senior Constable Shaw stated that he was aware that it is "*common practice*" for young persons to operate quad bikes and other farm equipment on rural properties.[80] However, he also observed that the manufacturer's warnings were clearly displayed on the bike and that, had these been followed, this accident would not have occurred.[81] Associate Professor Rechnitzer agreed with this evidence. [82]

66. Child proof mechanisms: Although ML's mother initially informed police that ML should not have been riding the quad bike, she later clarified that ML had ridden the bike with parental permission on a number of occasions in the past.[83] Accordingly, it is possible that a child proof mechanism may have been circumvented and may not have prevented ML's death.

67. Passengers: ML was carrying passengers on the quad bike. This was clearly contrary to the manufacturer's warnings – both on the quad bike and in the instruction manual. The carrying of passengers significantly affects the stability of a quad bike (as well as being obviously of significant danger to the passengers themselves). However, in his evidence before this inquest, Associate Professor Rechnitzer expressed the view that the accident probably still would have occurred, even if the passengers had not been on the quad bike.[84]

68. Helmet: ML was not wearing a helmet. However, Associate Professor Rechnitzer considered that, in view of the nature of ML's head injury, a helmet was unlikely to

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79 Autopsy report, Dr G A McBride, 6 August 2012 (Exhibit 1, Vol 2, Tab G5).

80 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 31.

81 Evidence of Senior Constable Shaw**,** 19 February 2015.

82 Evidence of Associate Associate Professor Rechnitzer, 20 and 21 July 2015.

83 Statement of Senior Constable Shaw, 13 September 2012, (Exhibit 1, Vol 2, Tab G7) at para 32.

84 Evidence of Associate Professor Rechnitzer 20 and 21 July 2015.

have prevented ML's death.[85] Associate Professor Rechnitzer described the injury as being similar to an injury that might be sustained by a diver diving into the ground. The injury resulted from force at the top of the skull pushing down on the base of the skull and vertebrae. His view was that it was unlikely that a helmet would protect the thin bone structure at the base of the skull from such injury.

ANTHONY WALDRON

71. Anthony Waldron was 68 years old when he died on 17 April 2013 after his Yamaha Big Bear 350 quad bike overturned at his cattle farm in Limpinwood, near Murwillumbah in northern NSW, trapping him underneath.

72. No-one witnessed the accident. At around 3:30pm on the day of the accident, Mr Waldron informed his wife that he was going to spray weeds along the fence line and creek area of his property.[86] He then collected his quad bike from the shed and set off to spray weeds using the poison that was in the 80L tank at the rear of the quad bike.[87]

73. At 6pm, Mr Waldron's wife became concerned when Mr Waldron had not returned home. [88] She called a friend, Stuart Raymond, who commenced a search for Mr Waldron.[89] At around 7:15pm, Mr Raymond found Mr Waldron trapped underneath his quad bike. He attempted to remove the quad bike from Mr Waldron, but was unable to do so because of the weight and position of the quad bike and the wet ground.[90] Mr Raymond then contacted police.

74. Investigating police attended shortly thereafter. Senior Constable McGinley observed that there was a slight decline towards where the quad bike and the deceased were located (when Senior Constable McGinley returned to the scene on a subsequent day, he measured the decline as being in the range of 15 degrees from left to right, and 25 degrees in a southerly direction). He also

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85 Evidence of Associate Professor Rechnitzer, 20 and 21 July 2015.

86 Statement of Senior Constable Jason McGinley, 29 May 2013, (Exhibit 1, Vol 2, Tab I6) at para 8..

87 Statement of Senior Constable Jason McGinley, 29 May 2013, (Exhibit 1, Vol 2, Tab I6) at para 8.

88 Statement of Senior Constable Jason McGinley, 29 May 2013, (Exhibit 1, Vol 2, Tab I6) at para 9.

89 Statement of Senior Constable Jason McGinley, 29 May 2013, (Exhibit 1, Vol 2, Tab I6) at para 10.

90 Statement of Senior Constable Jason McGinley, 29 May 2013, (Exhibit 1, Vol 2, Tab I6) at para 11.

observed that the area was covered in grass, which ranged from 5cm high to 180cm high and that there was a barbed wire fence directly behind the quad bike and deceased.[91] As Senior Constable McGinley approached the quad bike, he himself slipped down a drop of approximately 30cm, which was approximately one to one and a half meters away from where the quad bike had come to rest.[92]

75. Senior Constable McGinley observed that the quad bike had rolled onto its seat and handle bars, and he could see Mr Waldon's left leg protruding from under the quad bike. Senior Constable McGinley observed that Mr Waldon's right leg was caught under the rear seat/rear section of the quad bike and appeared to be pressed up against Mr Waldron's chest area.[93] The quad bike was lying against a metal star picket which was holding the barbed wire fence.[94] This metal star picket was downhill from where the quad bike and the deceased came to rest. On the day of the accident, it had rained heavily. The ground was soft and soaked underfoot.

76. Senior Constable McGinley was of the view that the quad bike rolled to the left due to a "*drop off*" of about 30cms that was concealed from view by long grass.[95] The quad bike came to rest upside down on top of Mr Waldron. In view of the weight of the quad bike, it was impossible for Mr Waldron to free himself after he became trapped.

Cause of death

77. The Post Mortem report dated 28 June 2013 concluded that Mr Waldren died as a direct result of "traumatic asphyxiation" (Mr Waldron being unable to breathe under the weight of the quad bike). I note, there was also a fracture in one of the bones of Mr Waldron's neck.[96] A low level of alcohol (0.006g/100ml) was detected however the level is very low and may possibly be due to decompositional changes. I do not find that alcohol played a contributing role in the accident.

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91 Statement of Senior Constable Jason McGinley, 29 May 2013, (Exhibit 1, Vol 2, Tab I6) at para 12.

92 Statement of Senior Constable Jason McGinley, 29 May 2013, (Exhibit 1, Vol 2, Tab I6) at para 13.

93 Statement of Senior Constable Jason McGinley, 29 May 2013, (Exhibit 1, Vol 2, Tab I6) at para 14.

94 Statement of Senior Constable Jason McGinley, 29 May 2013, (Exhibit 1, Vol 2, Tab I6) at para 14.

95 Statement of Senior Constable Jason McGinley, 29 May 2013, (Exhibit 1, Vol 2, Tab I6) at para 16.

96 Autopsy Report, Dr J Vuletic, 28 June 2013 (Exhibit 1, Vol 2, Tab I5).

Contributing factors

78. Use of a quad bike: As outlined above, Mr Waldron was spraying in an area of long grass. It appears that because of the long grass, he didn't notice the steep drop off. The TARS coronial report stated that:

> "*for the operating work environment (steep, sloping uneven terrain with very long grass, wet soft soil), and the spray tank function, the Quad bike was the wrong vehicle for the purpose. The Yamaha Quad bike loaded with the 80lt tank had low stability and no protection for the rider in a rollover*."[97]

79. Associate Associate Professor Rechnitzer opined that an SSV would probably not have rolled on this terrain, but he said that he could not be definitive in this opinion.[98] More fundamentally, however, as Associate Associate Professor Rechnitzer observed, provided that the seatbelt and side-mesh were fastened and Mr Waldron had been wearing a helmet, Mr Waldron's probability of death in the event of a rollover of this nature in an SSV would have been greatly reduced.

80. Load: At the time of the accident, the quad bike was loaded with an 80 litre tank. This load decreased the stability of the bike and increased the susceptibility of the quad bike to rollover. It is not possible to say whether the accident would have occurred if the tank had not been fitted.

81. Crush protection device: Associate Associate Professor Rechnitzer expressed the opinion that a CPD could have reduced the probability of Mr Waldron being killed in this accident. Specifically, Associate Professor Rechnitzer observed that a CPD may have provided Mr Waldron with "*crawl out space*" and that in this sense, the CPD may have reduced the risk of the quad bike landing on Mr Waldron and asphyxiating him.[99]

82. Helmet: Mr Waldron was not wearing a helmet, but in view of the nature of his injuries, it is unlikely that a helmet would have prevented Mr Waldron's death.

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97 TARS coronial report, (Exhibit 1, Vol 12, Tab 19) at 2.5.7.

98 Evidence of Associate Professor Rechnitzer, 20 and 21 July 2015.

99 Evidence of Associate Professor Rechnitzer, 20 and 21 July 2015.

83. Personal locator beacon: The use of an alert system would probably not have made a difference to Mr Waldron's prospects of survival, as there were no other persons in the immediate vicinity at the time of the rollover. Previous analysis of cases of asphyxiation by the authors of the TARS coronial report indicate that Mr Waldron would likely have survived for only a minute or two once the quad bike's weight came to rest upon him.[100]

COLIN REID

85. Colin Reid was 65 years old when he died on 26 September 2013 whilst using a Polaris 4 x 4 quad bike at his macadamia farm at "Hogarth Range" (West of Casino in northern NSW).

86. No-one witnessed the accident.

87. At the time of the accident, Mr Reid was riding his quad bike amongst the macadamia plantation. Mr Reid's de-facto wife was expecting him to return to the house about 3pm, as he normally did for afternoon tea.[101] At 3:15pm, Mr Reid's wife was no longer able to hear the quad bike operating, but did not think anything of this as it was common for the deceased to stop and start his quad bike when farming.[102] About 3.30pm, when the deceased had still not returned to the house, his wife went to look for him.[103]

88. As Mr Reid's wife walked down a steep hill from the house, she observed the deceased's hat on the ground.[104] As she got closer, she realised that the quad bike was on top of Mr Reid, and that he was blue in the face and lying face down under the quad bike.[105] She ran to her neighbour's house to obtain assistance. On arrival, Mr Michael Coleman (the neighbour) saw Mr Reid lying down. The weight of the

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100 TARs coronial report, (Exhibit 1, Vol 12, Tab 19) at 2.5.7

101 Statement of Senior Constable David Matheson, 9 November 2013, (Exhibit 1, Vol 2, Tab J10) at para 13.

102 Statement of Senior Constable David Matheson, 9 November 2013, (Exhibit 1, Vol 2, Tab J10) at para 13.

103 Statement of Senior Constable David Matheson, 9 November 2013, (Exhibit 1, Vol 2, Tab J10) at para 13..

104 Statement of Senior Constable David Matheson, 9 November 2013, (Exhibit 1, Vol 2, Tab J10) at para 14.

105 Statement of Senior Constable David Matheson, 9 November 2013, (Exhibit 1, Vol 2, Tab J10) at para 13.

quad bike was across the small of Mr Reid's back.[106] Mr Coleman pulled the quad bike off Mr Reid, and tied the bike to a tree.[107] An ambulance was called. Tragically, Mr Reid was unable to be resuscitated.

89. Investigating police attended and made observations of the scene. The Officer in Charge of the Investigation, Senior Constable David Matheson, concluded that Mr Reid had been using the quad bike to move irrigation pipes around the farm. To this end, a pipe had been tied to the rear of the quad.[108] He concluded that this pipe had become caught on a tree while Mr Reid was trying to drag it with the quad bike. Senior Constable Matheson further concluded that Mr Reid has, while doing this, driven up an embankment and attempted to accelerate the bike to free the caught hose, and that it was at this point that the quad bike overturned.[109]

Cause of death

90. The Post Mortem Report dated 5 November 2013 found that the direct cause of death was "*traumatic asphyxiation*". I note that a low level of alcohol (0.008g/100ml) was also detected post mortem. As indicated this amount could be as a result of decomposition and is not suggested as a factor contributing to the accident[110].

Contributing factors

91. Use of a quad bike: Associate Professor Rechnitzer observed that at the time of the accident, the quad bike was being used to move pipes. The land was sloping – although with a relatively gentle slope. Associate Professor Rechnitzer commented that the quad bike should not have been used as a tool for moving pipes. Associate Professor Rechnitzer expressed the opinion that an SSV would have been more appropriate for that kind of activity. In this respect, there was also evidence that Mr Reid had been riding the quad bike "side saddle" as this was more comfortable for him following a recent prostate operation.[111] Such use of the quad bike would have further destabilised the vehicle.

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106 Statement of Michael Coleman, 6 February 2015, (Exhibit 1, Vol 2, Tab J11) at para 7.

107 Statement of Michael Coleman, 6 February 2015, (Exhibit 1, Vol 2, Tab J11) at para 7.

108 Statement of Senior Constable David Matheson, 9 November 2013, (Exhibit 1, Vol 2, Tab J11) at para 14.

109 Statement of Senior Constable David Matheson, 9 November 2013, (Exhibit 1, Vol 2, Tab J11) at para 15.

110 Autopsy Report, Dr J Vuletic, 5 November 2013 (Exhibit 1, Vol 2, Tab J5)

111 Statement of Michael Coleman, 6 February 2015, (Exhibit 1, Vol 2, Tab J11) at para 12..

92. An SSV may not have rolled on this terrain. More fundamentally, however, provided that the seatbelt and side-mesh were fastened and Mr Reid was wearing a helmet, Mr Reid's probability of death in a rollover of this nature in an SSV would have been greatly reduced.

93. Crush protection devices: A CPD may have assisted in this case. It is unclear whether the quad bike came to rest upside down on Mr Reid, or on its side. If the quad bike had come to rest upside on Mr Reid, there is a prospect that the CPD may have provided Mr Reid with "crawl space", or that it may have caused the quad bike to roll off him. However, if the quad bike had trapped Mr Reid on its side, it is unlikely that a CPD would have been of assistance.

94. Personal locator beacon: The use of an alert system would probably not have made a difference to Mr Reid's prospects of survival, as there were no other persons in the immediate vicinity at the time of the rollover. Previous analysis of cases of asphyxiation by the authors of the TARS coronial report indicate that a person in Mr Reid's position would likely have survived for only a minute or two once the quad bike's weight came to rest upon him.[112]

95. Helmet: Mr Reid was not wearing a helmet. However, given the circumstances in which the accident occurred, a helmet would not have prevented Mr Reid's death.

BRADLEY JACKSON

96. Bradley Jackson was only 23 years old when he died on 28 June 2014. At the time he had been riding his Honda 350cc (Honda X) quad bike which had rolled onto him after it left a dirt road at Hadley Station, a rural "weekender" property owned by his father, about 41 km north-east of Crookwell (north of Goulburn).

97. No-one witnessed the accident.

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[112] TARS coronial report, Brief of Evidence, (Exhibit 1, Vol 12, Tab 19) at 2.5.7

98. The evening before the accident, Mr Jackson had arrived at the property with some friends. [113] They had two hunting dogs on the back of the truck.[114] When they arrived at the property, Mr Jackson let the two dogs off the truck to follow the truck to the homestead.[115] One of the dogs did not arrive at the house and could not be located.[116] Later that evening, Mr Jackson and his friends went to a local hotel for drinks.[117] When they returned (at approximately 11pm), Mr Jackson took out the quad bike to look for the dog.[118] He returned without locating the dog.[119] Mr Jackson and his friends cooked a meal and sat around having drinks until around 1-2am.[120]

99. At approximately 6am the following morning, Mr Jackson's friends awoke and found that Mr Jackson and his quad bike were missing.[121] Mr Jackson's friends set out to look for him. They travelled up an unsealed road to the north of the house, which led up and around a large hill.[122] As they negotiated a left turn in the road, they found Mr Jackson's quad bike approximately 5 metres down an embankment to the right of the road.[123] They ran down the embankment, and found Mr Jackson trapped under it. They lifted the quad bike off Mr Jackson and attempted to revive him.[124] Tragically, they were unable to do so.

100. Senior Constable Lorraine Dutton attended the scene and arrived at the property at around 10am. She made various observations. A number of photographs were also taken at the scene and formed part of the brief of evidence[125].

101. Senior Constable Dutton gave evidence as to her opinions about the accident.[126] She was of the view that speed did not contribute to the accident. In this respect, she

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113 Statement of Senior Constable Lorraine Dutton, 4 July 2014, (Exhibit 1, Vol 2, Tab K11) at para 12.

114 Statement of Senior Constable Lorraine Dutton, 4 July 2014, (Exhibit 1, Vol 2, Tab K11) at para 12.

115 Statement of Senior Constable Lorraine Dutton, 4 July 2014, (Exhibit 1, Vol 2, Tab K11) at para 12.

116 Statement of Senior Constable Lorraine Dutton, 4 July 2014, (Exhibit 1, Vol 2, Tab K11) at para 12.

117 Statement of Senior Constable Lorraine Dutton, 4 July 2014, (Exhibit 1, Vol 2, Tab K11) at para 13.

118 Statement of Senior Constable Lorraine Dutton, 4 July 2014, (Exhibit 1, Vol 2, Tab K11) at para 12.

119 Statement of Senior Constable Lorraine Dutton, 4 July 2014, (Exhibit 1, Vol 2, Tab K11) at para 12.

120 Statement of Senior Constable Lorraine Dutton, 4 July 2014, (Exhibit 1, Vol 2, Tab K11) at para 13.

121 Statement of Senior Constable Lorraine Dutton, 4 July 2014, (Exhibit 1, Vol 2, Tab K11) at para 14.

122 Statement of Senior Constable Lorraine Dutton, 4 July 2014, (Exhibit 1, Vol 2, Tab K11) at para 14.

123 Statement of Senior Constable Lorraine Dutton, 4 July 2014, (Exhibit 1, Vol 2, Tab K11) at para 14.

124 Statement of Senior Constable Lorraine Dutton, 4 July 2014, (Exhibit 1, Vol 2, Tab K11) at para 15.

125 Exhibit 1, Vol 4, Tab K.

pointed to the lack of any skid marks on the roads, to the relatively minor damage to the tree against which the quad bike came to rest, and to the fact that the quad bike had come to rest on a relatively steep area of the hill.[127] Senior Constable Dutton also observed that as the accident occurred between 2am and 6am, the accident would have occurred in darkness.[128]

Cause of death

102. The Post Mortem report dated 2 July 2014 recorded the direct cause of death of Mr Jackson as "*asphyxia*".[129] However, toxicology testing indicated that Mr Jackson had a high blood alcohol content (around 0.3g/100ml).

Contributing factors

103. Alcohol: Mr Jackson was heavily affected by alcohol. He had a high blood alcohol content at the time of the accident which would have significantly affected his capacity to handle the quad bike.

104. Lack of visibility: As the accident occurred at night, Mr Jackson's visibility of the corner would have been very poor.

105. Use of a quad bike: Associate Associate Professor Rechnitzer gave evidence that the quad bike may have been the wrong vehicle for the purpose. Mr Jackson was attempting to drive along a reasonably well formed road. Associate Associate Professor Rechnitzer accepted that the quad bike was not unfit for the purpose of driving along this road, provided that the quad bike stayed on the road. However, he said that once Mr Jackson travelled off the road, he was subjected to "*all of the vulnerabilities of the quad in that kind of terrain*".[130]

106. Associate Associate Professor Rechnitzer also gave evidence that a well designed SSV would have increased Mr Jackson's chances of survival in this rollover, provided that Mr Jackson had been wearing a seatbelt and helmet.

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126 Evidence of Senior Constable Dutton, 20 July 2015.

127 Evidence of Senior Constable Dutton, 20 July 2015.

128 Evidence of Senior Constable Dutton, 20 July 2015.

129 Autopsy Report, Dr J Docker, 2 July 2014 (Exhibit 1, Vol 2, Tab K5).

130 Evidence of Associate Professor Rechnitzer, 20 and 21 July 2015.

107. Crush protection device: Associate Associate Professor Rechnitzer observed that there was a rear mounted "cage" on Mr Jackson's quad bike. He said that this cage could have operated in a similar manner to a CPD (although its design would not have prevented the quad bike coming to rest upside down, as is a feature with some CPDs). Associate Associate Professor Rechnitzer observed that the front of the quad bike had come to rest on Mr Jackson. In these circumstances, he stated that it is not clear whether a CPD could have prevented Mr Jackson's death.

108. Helmet: Mr Jackson was not wearing a helmet. However, given the injuries sustained, it is unlikely that the wearing of a helmet would have prevented his death.

ROBERT BEAMISH

109. Robert Beamish was 49 years old when he died on 8 August 2014 while using a CanAm 650 quad bike on his property at Lynchs Creek near Kyogle (west of Murwillumbah in northern NSW).

110. There were no witnesses to the accident.

111. Constable Booker attended at the scene. Upon police arrival Mr Beamish was deceased and was still trapped under the upturned quad bike[131]. Constable Booker gave evidence that the area in which the accident occurred was a relatively flat, grassed area.[132] He arrived at the scene after 9pm. The area was lit by the lights of the police car and a neighbour's vehicle.[133] In addition, the officers had torches. The officers examined the site of the accident and were unable to find any evidence of skid or gouge marks.[134] Nor were the officers able to locate any evidence of obstacles such as rocks or depressions, which may have caused or contributed to the accident.[135]

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131 Statement of Constable Booker, (Exhibit 1, Vol 2, Tab L4).

132 Evidence of Constable Booker, 20 July 2015.

133 Evidence of Constable Booker, 20 July 2015.

134 Evidence of Constable Booker, 20 July 2015.

135 Evidence of Constable Booker, 20 July 2015.

112. Constable Booker opined that the cause of the accident may have been a high speed turn, causing the quad bike to flip.[136] Constable Booker acknowledged that he would expect there to be a gouge mark if this was the cause of the accident.[137] However, he said that as there had not been any recent rain, the ground may have been less susceptible to gouge marks in comparison to ground that had been softened by rain.[138] Associate Professor Rechnitzer was less convinced that Mr Beamish had been travelling at speed. His view was that if the rollover had occurred at a high speed there would most likely have been separation of the rider from the quad bike.[139]

113. Constable Booker performed an examination of the vehicle and did not find any mechanical defects.[140] He also examined the tyres by feeling them, and by looking at them when the quad bike was rolled back onto its wheels. He was unaware of the correct psi pressure for the inflation of quad bike tyres. (Indeed, he estimated that the correct psi would be in the realm of 20 psi).[141]

114. Ultimately, it is impossible to state what the cause of the quad bike rollover was in this case. Any conclusion as to the cause is likely to be speculative.

Cause of death

115. The direct cause of death at Autopsy was "*traumatic asphyxia*".[142] A moderate level of blood alcohol concentration (0.12 – 0.16g/100mls) was detected.

Contributing factors

116. Use of a quad bike: In view of the very limited information about the circumstances in which the rollover occurred, it is impossible to say whether an SSV would have rolled in the circumstances in which this quad bike accident occurred. However, had Mr Beamish been using an SSV, the probability of his death in a rollover of this nature

136 Evidence of Constable Booker, 20 July 2015.

137 Evidence of Constable Booker, 20 July 2015.

138 Evidence of Constable Booker, 20 July 2015.

139 Evidence of Associate Professor Rechnitzer, 20 July 2015.

140 Evidence of Constable Booker, 20 July 2015.

141 Evidence of Constable Booker, 20 July 2015.

142 Autopsy Report, (Exhibit 1, Vol 2, Tab L3).

would have been reduced, providing that the seatbelt and side-mesh had been fastened and provided Mr Beamish had been wearing a helmet.

117. Personal locator beacon: It is unlikely that a personal locator beacon would have made a difference to Mr Beamish's prospects of survival. Associate Professor Rechnitzer observed that their research had demonstrated that a person would survive for 5 to 10 minutes with a 50 kg weight on his or her chest.[143] As a quad bike weighs far in excess of 50 kg, unless there is a rescuer within minutes away, a personal locator beacon will not be of assistance. In these circumstances, it is unlikely that a personal locator beacon would have saved Mr Beamish.

118. Crush protection devices: It is possible that if a CPD had been installed, it may have increased Mr Beamish's prospects of survival. Associate Professor Rechnitzer observed that it appeared from the photographs that the vehicle rolled into a position where it was entirely upside down. Associate Associate Professor Rechnitzer observed that the design of CPDs is such as to encourage the CPD to rock to one side (or not land on its side at all).

LE (a child)[144]

119. LE was only 7 years old when he died on 18 January 2015, as a result of the adult sized CF Moto 500cc quad bike that he was riding overturning and trapping him underneath.

120. On the day of the accident, LE, together with his younger cousin were camping with LE's grandfather and great uncle who were droving sheep on a property near Walgett. The sheep needed to be moved through a gate into a new grazing area. LE offered to open the gate for his grandfather.[145] LE got onto his grandfather's quad bike, which LE had used a number of times in the past.[146] LE's younger cousin followed on a smaller (child-sized) quad bike.

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143 Evidence of Associate Associate Professor Rechnitzer, 20 and 21 July 2015.

144 A pseudonym has been used in accordance with the non-publication order made on 20 July 2015.

145 Statement of S/Constable Christopher Wallis, 22 January 2015, (Exhibit 1, Vol 2A, Tab M7) at para 7.

146 Statement of S/Constable Christopher Wallis, 22 January 2015, (Exhibit 1, Vol 2A, Tab M7) at para 7.

121. After a few minutes, LE's grandfather noticed that the sheep weren't moving through the gate.[147] He drove to the gate and saw the quad on its side, with LE trapped underneath.[148] LE's grandfather rolled the quad bike off LE.[149] LE was not breathing. LE's grandfather immediately drove LE to Walgett Hospital in his Landcruiser.[150] Tragically, LE was pronounced deceased at Walgett Hospital.

122. Investigating police attended the scene of the accident. Quad bike tracks were observed in the dirt in the area where the accident occurred. Those tracks indicated that LE had performed a very sharp "doughnut" turn immediately before the accident.[151] The investigating officers could not see any marks on the ground where the quad bike had rolled.[152] The investigating officers observed a concrete Tesltra pit lid in the area of the accident.[153] It is possible that the quad bike hit this lid (which may have been concealed by dust) and that this contributed to the accident.

Cause of death

123. No Post Mortem examination was carried out on LE however an external post mortem examination was conducted including a CT scan. The cause of death is thought to be traumatic asphyxia[154].

Contributing factors

124. LE's age: As outlined above, LE was only seven years of age. His weight (of only 27 kilograms) was not sufficient for him to be able to control an adult sized quad bike.

125. Child-proof mechanism: LE was using the quad bike with his grandfather's express permission. Accordingly, it is unlikely that a child proof mechanism would have prevented LE's death.

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147 Statement of S/Constable Christopher Wallis, 22 January 2015, (Exhibit 1, Vol 2A, Tab M7) at para 7.

148 Statement of grandfather of LE, dated 18 January 2015, (Exhibit 1, Vol 2A, Tab M12).

149 Statement of S/Constable Christopher Wallis, 22 January 2015, (Exhibit 1, Vol 2A, Tab M7) at para 7.

150 Statement of S/Constable Christopher Wallis, 22 January 2015, (Exhibit 1, Vol 2A, Tab M7) at para 7.

151 Statement of S/Constable Christopher Wallis, 22 January 2015, (Exhibit 1, Vol 2A, Tab M7) at para10.

152 Statement of S/Constable Christopher Wallis, 22 January 2015, (Exhibit 1, Vol 2A, Tab M7) at para10.

153 Statement of S/Constable Christopher Wallis, 22 January 2015, (Exhibit 1, Vol 2A, Tab M7) at para13.

154 External Examination Report for Coroner of Dr Leah Clifton dated 10 February 2015, (Exhibit 1, Vol 2A, Tab M6).

126. Crush protection device: In his evidence before this inquest, Associate Professor Rechnitzer expressed the opinion that a CPD may have been beneficial, but he was unable to provide a definite opinion in this respect. Associate Professor Rechnitzer acknowledged that where a Quad Bike traps the rider on its side (as appears to have occurred here) a CPD will typically be of no assistance in preventing injury or death.

127. Helmet: LE was not wearing a helmet. However, in view of the injuries that he sustained, it is unlikely that the wearing of a helmet could have prevented LE's death.

The circumstances of a selection of other deaths involving Quad Bikes and Related Vehicles that have occurred in NSW since 2002, which are not formally the subject of this inquest

128. In addition to the above nine deaths, I also heard evidence concerning four other deaths that occurred in NSW in the context of Quad Bike and SSV use within the relevant period. As inquests into the additional four deaths had been previously dispensed with, it is unnecessary for formal findings to be made in respect of these deaths. Nonetheless, it is convenient to briefly outline the circumstances in which these deaths occurred.

EDWARD PARCHIMOWICZ

129. Edward Parchimowicz was 43 years old when he died on 4 March 2002 whilst riding a 400cc Honda quad bike along a dirt track on the "Julievale" property at Brewarinna, New South Wales. [155]

130. At the time of his death, Mr Parchimowicz was riding at some speed along a dirt track. He was accompanied by three of his friends, who were also riding motorbikes and quad bikes. The area in which they were riding was flat and the dirt road was hard packed and very dusty.

131. Shortly before the accident in question, one of Mr Parchimowicz's friends had had an accident on his motorbike. The friend was travelling at an estimated 80km/hr when

[155] NSW Police, Report of Death to Coroner, (Exhibit 1, Vol 1, Tab A1).

this occurred.[156] Fortunately, the friend was not hurt, and the four friends set off again.

132. About five to 10 minutes after this accident, Mr Parchimowicz's friends came across him. Mr Parchimowicz had come off his quad bike. Mr Parchimowicz was unconscious near a small tree. His quad bike was positioned nearby. A large piece of wood was embedded in the rear tyre of the quad bike. Mr Parchimowicz was not breathing and did not have a pulse. Resuscitation attempts by his friends were unsuccessful.

133. Investigating police attended. The Officer in Charge of the investigation concluded that Mr Parchimowicz had somehow driven off the dirt track, and that he had ridden through a large bunch of tree branches, one of which has pierced the rear tyre causing Mr Parchimowicz to be thrown from the bike, colliding with the tree and killing him on impact.[157]

134. Post mortem toxicological examination revealed that Mr Parchimowicz had a low level of blood alcohol at 0.029g per 100 ml of blood.[158]

Cause of death

135. The Post Mortem report dated 8 March 2002 concluded that the cause of death was a "*massive brain haemorrhage and cervical spinal injury*."[159]

Contributing factors

136. Helmet: Mr Parchimowicz was not wearing a helmet at the time of his accident. The use of a helmet may have prevented his death.

137. Speed: It is unclear what caused Mr Parchimowicz's quad bike to leave the dirt track. However, in view of the fact that shortly before this accident, his friend had had a motorcycle accident at approximately 80km/hr, it is likely that speed played a role in this accident.

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156 Statement of David Johnson, 20 May 2002, (Exhibit 1, Vol 1, Tab A10) at para 16.

157 Statement of Senior Constable Geoff Moeller, 1 June 2002 (Exhibit 1, Vol 1, Tab A7) at para 7.

158 Exhibit 1, Vol 1, Tab A17

159 Autopsy Report, Dr A Firouz-Abadi, 8 March 2002 (Exhibit 1, Vol 1, Tab A3) at p.3.

PHILLIPA MACEY

138. Phillipa Macey was only 19 years old when she died on 8 December 2008 at Royal Prince Alfred Hospital, Camperdown as a result of injuries she sustained after the quad bike that she had been riding overturned.

139. The accident occurred on 5 December 2008 at Burratoo Station. At the time of the accident, Ms Macey was employed as a casual farm hand. She had completed an Agricultural Cadetship in 2007, which included training in the use and operation of Quad Bikes.

140. The accident occurred at around 5pm. At that time, Ms Macey was returning from drenching sheep on a Yamaha Grizzly quad bike from "Billy's Paddock" across "Sam's Orchard". Ms Macey was not wearing a helmet.

141. No-one witnessed the accident.

142. Ms Macey's partner, also a farmhand at the property, became concerned for her when she did not return after he had seen her riding in the distance.[160] She was eventually found lying unconscious on the ground, with her quad bike a few metres away. She was bleeding from the head. Her breathing was very laboured.[161] An ambulance was called, and Ms Macey was conveyed to hospital. Surgery was performed, but tragically, she was unable to be saved, succumbing to her injuries three days later.

143. Investigating police and WorkCover both attended the scene of the accident. Photographs taken of the accident site indicate a dry, featureless and cracked landscape, with little grass. There was a boundary fence in the area known as Sam's Orchard, to the south running in an east/west direction. A dirt track, which was commonly used to travel across Sam's Orchard to Billy's Paddock, traversed Sam's Orchard in an east/west alignment. This track consisted of wheel tracks compacted into the soil by the usage of vehicles over time. The track followed the fence line.

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160 Statement of Michael Cantwell, 21 December 2008 (Exhibit 1, Vol 3, Tab 10A).

161 Statement of Michael Cantwell, 21 December 2008 (Exhibit 1, Vol 3, Tab 10A).

144. A concrete irrigation pipe ran partially under the track in Sam's Orchard. An exposed section of the pipe protruded from the ground on the north side of that track. There were no markings or signs indicating the location of the pipe or indicating the area of the crossing of the pipe on the track. The normal route that would be travelled whilst traversing Sam's Orchard was along the track. This route did not require the driver to travel near to the irrigation pipe.

145. The location of the quad bike suggested that Ms Macey left the dirt track, and rode the quad bike onto the irrigation pipe, causing the quad bike to roll, at which time Ms Macey was thrown from the quad bike. It is unclear why Ms Macey left the normal route and travelled in the area of the irrigation pipe.

146. Ms Macey's employer was prosecuted under s 8(1) of the *Occupational Health and Safety Act 2000* for failing to ensure the health, safety and welfare at work of all its employees, including Ms Macey. The basis of that failure was said to be the failure to ensure the wearing of helmets by employees at all times when operating quad bikes. The employer pleaded guilty and was fined $80,000 and ordered to pay costs: *Inspector Williams v H P Woods (Holding) Pty Ltd* [2011] NSWIRComm 114.

Cause of death

147. As Ms Macey spent a few days in hospital prior to her death, there was no autopsy performed. However, it is apparent from her medical records that Ms Macey died as a result of head injuries sustained in the accident.

Contributing factors

148. Helmet: Ms Macey was not wearing a helmet at the time of the accident and as she suffered head injuries it follows that if she had been wearing a helmet, her death may have been prevented.

149. Use of a quad bike: An SSV would not have been as susceptible to rollover as the quad bike. In an SSV, Ms Macey would have been better protected in the event of rollover, provided she had been wearing a seatbelt and helmet. Of course, as observed above, if Ms Macey had been wearing a helmet, her death may have been prevented, even on a quad bike.

150. Crush protection device: In view of the circumstances in which the accident occurred, it is unlikely that a CPD would have prevented Ms Macey's death.

JH (a child)[162]

151. JH was only 11 years old when he died on 24 July 2011 after the Yamaha Rhino 600 SSV that he was driving tipped on its side at his home in Northern New South Wales.

152. No-one witnessed the accident.

153. JH's father was working in his shed on the property. When he hadn't heard JH for five or ten minutes, he looked down into the backyard.[163] He saw the SSV on its left hand side on a dirt track below the house.[164] He ran down to the SSV, and found JH in the vehicle with his left arm pinned underneath the rollover protection structure.[165] JH was unconscious and bleeding from the head.[166] He was not wearing a helmet and was not wearing a seatbelt. JH's father attempted to pull him out from underneath the SSV but was unable to do so because of the weight of the vehicle.[167] JH's father called out to his neighbours to assist. With assistance from neighbours, the SSV was removed from JH, and CPR was commenced.[168] Ambulance officers attended and JH was transported to hospital. Tragically, JH was unable to be saved.

154. Police attended the scene of the accident. The Officer in Charge of the Investigation, Senior Constable Chris Graham, concluded that JH had been playing with the SSV on a man-made dirt track below the house.[169] Senior Constable Graham observed that the dirt track ran north to south, was approximately 20 metres wide and about 70 metres in length.[170] At the southern end of the track closest to the house, was a 180

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162 A pseudonym has been used in accordance with non-publication order made on 16 February 2015.

163 Statement of BH, dated 11 October 2011 (Exhibit 1, Vol 1, Tab D7) at para 6.

164 Statement of BH, dated 11 October 2011 (Exhibit 1, Vol 1, Tab D7) at para 6.

165 Statement of BH, dated 11 October 2011 (Exhibit 1, Vol 1, Tab D7) at para 7.

166 Statement of BH, dated 11 October 2011 (Exhibit 1, Vol 1, Tab D7) at para 7.

167 Statement of BH, dated 11 October 2011 (Exhibit 1, Vol 1, Tab D7) at para 8.

168 Statement of BH, dated 11 October 2011 (Exhibit 1, Vol 1, Tab D7) at para 8.

169 Statement of Senior Constable Chris Graham, 3 October 2011 (Exhibit 1, Vol 1, Tab D5) at para 5.

170 Statement of Senior Constable Chris Graham, 3 October 2011 (Exhibit 1, Vol 1, Tab D5) at para 5.

degree hairpin turn with a steep dirt wall around the outside of the track on the western side.[171]

155. Senior Constable Graham concluded that the SSV had tipped onto its left (driver's) side when JH drove the vehicle along an incline at the commencement of the hairpin bend.[172] Because JH was not wearing a seatbelt, he was not contained within the SSV's rollover protection structure.

Cause of death

156. The Post Mortem dated 3 August 2011, had recorded the direct cause of JH's death as "*head injuries suffered in a quad motorbike accident*".[173]

Contributing factors

157. JH's age: The SSV was clearly marked with warnings that it was not to be used by persons under 16 years. However, JH had been using the SSV for approximately two years prior to the accident (that is, since he was 9 years old).[174] In particular, JH used the SSV to assist in work that needed to be performed around the farm, such as taking the rubbish to the bins at the front of the property, spraying weeds, carrying a mower and taking trees to the property burn pile.[175]

158. Failure to wear a seatbelt and helmet: JH's failure to wear a seatbelt and helmet contributed to his death. JH's father stated that if the SSV had been a "*standard quad bike*", he would have made JH wear a helmet, but because the SSV had a roll cage, he did not consider that a helmet was necessary.[176] He said that he did not "*see a risk in the* [SSV]."[177] If JH had been wearing a helmet and seatbelt, JH's death may have been prevented.

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171 Statement of Senior Constable Chris Graham, 3 October 2011 (Exhibit 1, Vol 1, Tab D5) at para 5.

172 Statement of Senior Constable Chris Graham, 3 October 2011 (Exhibit 1, Vol 1, Tab D5) at para 9.

173 Autopsy Report, Dr Brian Beer, 3 August 2011 (Exhibit 1, Vol 1, Tab D4) at p. 2.

174 Statement of BH, dated 11 October 2011 (Exhibit 1, Vol 1, Tab D7) at para 6.

175 Further Statement of BH, dated 15 May 2013 (Exhibit 1, Vol 1, Tab D7A) at para 8.

176 Further Statement of BH, dated 15 May 2013 (Exhibit 1, Vol 1, Tab D7A) at para 10.

177 Further Statement of BH, dated 15 May 2013 (Exhibit 1, Vol 1, Tab D7A) at para 10.

WESLEY DAVIS

159. Wesley Davis was 78 years old when he died on 9 May 2012 after his Honda "Big Red" 400cc quad bike rolled onto him at his property at 114 Tabberatong Road, Limekilns, NSW.

160. Mr Davis was a retired psychologist. His property, which he owned with his second wife, Susanne Davis, was used mainly for grazing.[178] Mr Davis used the quad bike to check the paddocks of the property. Mr Davis had been involved in some previous incidents on quad bikes, including an incident in which he had driven into a dam on the property.[179] He had also occasionally become stuck on rocks on the property, requiring the quad bike to be physically pushed off the rocks.[180]

161. Mr Davis suffered from a number of health conditions, including severe osteoarthritis and diastolic dysfunction of the heart. Mr Davis' arthritis affected his movement and his strength.[181] Mr Davis was prescribed several medications including Panadeine Forte, Neurontin, Pristiq, Crestor, Asprin and Inderal.[182]

162. At approximately 11:30am on 9 May 2012, Mr Davis left his house on his quad bike. He told his housekeeper that he intended to go to the "*wattle paddock*" to check on some young cows.[183]

163. At approximately 5pm, Mr Davis' wife returned to the property and found that Mr Davis was not at home. She went out on her own quad bike and searched several paddocks for Mr Davis, before returning to her home to change to the ute when it became dark.[184] At about 6:30pm, Mrs Davis noticed a red light in "Wattle Paddock".[185] She approached the light and found that it was the tail light of the bike.

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178 Statement of Constable Amanda Collins, 13 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 3.

179 Statement of Suzanne Davis, 21 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 5.

180 Statement of Constable Amanda Collins, 13 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 5.

181 Statement of Suzanne Davis, 21 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 4.

182 Statement of Suzanne Davis, 21 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 4.

183 Statement of Suzanne Davis, 21 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 7.

184 Statement of Suzanne Davis, 21 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 7.

185 Statement of Suzanne Davis, 21 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 7.

Mrs Davis then found Mr Davis trapped underneath the bike. She immediately called police.[186]

164. Investigating police attended the scene of the accident. They observed that Wattle Paddock was steep, and contained numerous rocks embedded in the hillside, some of which were raised more than 30cm from the ground.[187] The grass on the hill was approximately 15 – 20 cm high and taller in places, which made it difficult to see the rocks.[188]

165. The quad bike was located approximately 100 metres down the hillside.[189] The bike was upright and facing up the hill. Mr Davis was trapped underneath the quad bike. There were tracks behind the quad bike which continued down the hill.[190] A large stone was embedded into the hillside approximately one metre in front of the quad bike which had fresh markings on top of it.[191] A piece of wood was lying near the front left side tyre.[192]

166. The efforts of two police officers and two SES workers were required in order to tip the quad bike (which weighed over 200kg) onto its side, so as to remove it from Mr Davis.[193]

167. It appears that Mr Davis had attempted to ride up a steep hill. This hill was embedded with rocks. The investigating officers were of the view that when the quad bike became stuck on a rock, Mr Davis got off the bike and placed a piece of wood behind the front tyre.[194] He then went to the rear of the bike to push the bike off the

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186 Statement of Suzanne Davis, 21 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 8.

187 Statement of Constable Amanda Collins, 13 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 17.

188 Statement of Constable Amanda Collins, 13 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 17.

189 Statement of Constable Amanda Collins, 13 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 18.

190 Statement of Constable Amanda Collins, 13 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 19.

191 Statement of Constable Amanda Collins, 13 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 19, Statement of Detective Senior Constable Robert Newman, 31 August 2012 (Exhibit 1, Vol 1, Tab F8A), at para 12.

192 Statement of Detective Senior Constable Robert Newman, 31 August 2012 (Exhibit 1, Vol 1, Tab F8A), at para 12.

193 Statement of Detective Senior Constable Robert Newman, 31 August 2012 (Exhibit 1, Vol 1, Tab F8A), at para 19.

194 Statement of Constable Amanda Collins, 13 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 10 and 29; Statement of Detective Senior Constable Robert Newman, 31 August 2012 (Exhibit 1, Vol 1, Tab F8A), at para 26.

rock. The bike then dislodged from the rock and rolled backwards over the deceased, coming to rest on the deceased's chest and trapping him underneath.[195]

168. An examination was performed of the quad bike. No mechanical defects which could have contributed to the accident were found.[196]

Cause of death

169. A limited Post Mortem report concluded that the cause of Mr Davis' death was "*compression to the chest*."[197]

Contributing factors

170. Use of a quad bike: The terrain (being steep and rocky) was unsuitable for the quad bike. However, as the accident appears to have occurred when the quad bike rolled back as Mr Davis attempted to dislodge it from a rock, the fitness of the vehicle for the purpose it was being used by Mr Davis is not strictly raised by this accident.

171. Helmet: Mr Davis was not wearing a helmet at the time of the accident. However, given the circumstances in which the accident occurred, a helmet would not have prevented Mr Davis' death.

172. Crush protection device: In view of the circumstances in which the accident occurred, a crush protection device would not have prevented Mr Davis' death.

ISSUES IN COMMON IN DEATHS THE SUBJECT OF THIS INQUEST

173. Witnesses in these inquests have commented as to the "false sense of security" that Quad Bikes present.[198] Essentially because they have four large wheels, and are stable when stationary, the evidence indicates that it was common for people to

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195 Statement of Constable Amanda Collins, 13 July 2012 (Exhibit 1, Vol 1, Tab F3), at para 10 and 29; Statement of Detective Senior Constable Robert Newman, 31 August 2012 (Exhibit 1, Vol 1, Tab F8A), at para 26.

196 Vehicle examination certificate, D Bogaard, 17 July 2012 (Exhibit 1, Vol 1, Tab F9).

197 Autopsy report, Dr Cala, 14 August 2012 (Exhibit 1, Vol 1, Tab F2).

198 Eg. Michael Cantwell, 17 February 2015, at 77.34

perceive Quad Bikes to be safe and stable vehicles, requiring little or no experience to operate.

174. However, the evidence presented in these inquests suggests that Quad Bikes (in particular) are not stable vehicles, and are susceptible to rollover. Moreover, the evidence further suggests that SSVs are also vehicles which are prone to rollover (although to a much lesser extent than Quad Bikes), and in circumstances that may not be easily foreseen, even on flat ground.

175. The present inquests also tragically demonstrate the role played by rider or driver error in many Quad Bike and SSV accidents. In each of the deaths under consideration, the users failed to follow various manufacturer warnings, including many that were displayed on the Quad Bike (or SSV), and those that were specified in the user manual. All Quad Bikes and SSVs, when first sold, contain warning labels advising of warned against behaviours. Those labels were visible on a number of the vehicles involved in the deaths under consideration. The labels are usually on a plate riveted to the body of the vehicle in a prominent place. The failures to heed the warnings clearly played a causative or contributory role in many of the deaths. For example:

a) Helmets: All Quad Bikes and SSVs contain warning labels advising that the user should wear a helmet. However, in none of the accidents under consideration was the user wearing a helmet. The wearing of a helmet would not have made a difference in many of those deaths. However, in four of the deaths, I note that the evidence indicates that the rider may have survived if a helmet had been worn[199].

b) Use by children: All adult-sized Quad Bikes and SSVs contain explicit warnings against use by children under 16 years of age. However, in four of the deaths under consideration, the user was a child[200]. In each of these cases, the children had been given permission by their caregivers to use the Quad Bike or SSV at the time of the accident (and all had used the vehicles with the permission of their caregivers on many previous occasions prior to the accident that caused their death).

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199 Edward Parchimowicz, Donald Eveleigh, Phillipa Macey and JH

200 ML, JH, FW and LE

c) Seatbelts and side protection: All SSVs provide seat belts, and contain warnings of the importance of using them. Seat belts are also emphasised in the user manuals. However, in the two deaths involving an SSV[201], seat belts were not being used. (However I acknowledge that both of these deaths involved children, who should not have been using the SSV in any event).

d) Use at speed and under the influence of alcohol: Alcohol and/or speed played a role in one of the deaths under consideration namely, Bradley Jackson.

176. These inquests have heard that these types of "warned against" behaviours are not aberrations. The evidence suggests that it is common for children to be permitted to use Quad Bikes and SSVs on farms.[202] The evidence also suggests that, in the farming context at least, it is uncommon for users (children or adults) to wear helmets when using Quad Bikes and SSVs.

177. "User error" also plays a role in less obvious ways. For example, the user manuals of each of the quad bikes under consideration warn against using the quad bikes in terrain which is "*too steep*".[203] With the benefit of hindsight, it is apparent that in a number of the deaths being considered in these inquests, the users have ridden their quad bikes in areas which were "too steep" (for example, Angela Stackman, Wesley Davis and Donald Eveleigh). There is little information in the user manuals of the quad bikes and the SSVs about ascertaining how steep is "too steep". With the exception of the Polaris manuals, which specify a maximum incline of 25 degrees,[204] and a Honda Manual, which recommends that users "practice" climbing on evenly spaced surfaces of less than 20 degrees,[205] most of the user manuals leave to the rider the decision of whether an incline is "too steep" for the quad bike to safely traverse.

178. Similarly, a number of the persons who are the subject of this inquest used Quad Bikes in circumstances in which, particularly with the benefit of hindsight, the Quad

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201 JH and FW

202 Evidence of Michael Cantwell, 17 February 2015, at 55.20.

203 See for example, User Manual for the Yamaha Grizzly 350 at 2-2 (Exhibit 1, Vol 7, Tab B); User Manual for the Yamaha YFM350ERU 2 x 4 at 7-6 (Exhibit 1, Vol 7, Tab C); User Manual for the Yamaha Big Bear 350 at 7-47 (Exhibit 1, Vol 7, Tab I); Honda Fourtrax 400EX, at 63 (Exhibit 1, Vol 7, Tab K).

204 User Manual for Polaris Sportsman 500 (the quad bike being ridden by Angela Stackman) (Exhibit 1, Vol 7, Tab E); User Manual for Polaris Sportsman 300, at 49 (Exhibit 1, Vol 7, Tab J).

205 User Manual for Honda Big Red 300 (Exhibit1, Vol 7, Tab F).

Bikes should not have been used. For example, both Angela Stackman and Colin Reid had medical conditions which significantly reduced their ability to "actively ride" their quad bikes. The inability to engage in "active riding" may well have contributed to the lack of stability of the quad bikes in these accidents.

179. These less obvious instances of "user error" illustrate the sense of complacency which the riders may have had as to the stability of the quad bikes, and the lack of knowledge that the riders had as to the safe operation of these vehicles.

180. It is clear therefore, that "user error" – both patent, and less obvious - plays a significant role in Quad Bike and SSV accidents. However, in my view this does not excuse manufacturers, or the community generally, from the fundamental obligation to take measures to reduce the unacceptable level of deaths and injuries associated with these vehicles. As Dr Crozier aptly stated in his evidence before these inquests: "*The penalty for an error of judgment should not be death or serious injury*."[206] And, as Commissioner Adler of the CPSC put it – *"It is easier to re-design the product than to re-design the consumer".* [207]

181. It is a well accepted principle of Occupational Health and Safety regimes that a hierarchy of controls is to be applied to minimise the risk to persons operating machinery. That hierarchy emphasises a holistic approach involving administrative controls such as training and coercion of users to adopt the use of personal protective equipment, but at the top of the hierarchy, and considered to be more effective, are engineering controls which design out the hazard.[208] Representatives of the industry, who gave evidence before these inquests, Mr Toscano and Mr Vitrano[209], recognised the need for continued development of Quad Bikes and SSVs to make them safer, and expressed commitment to doing so. Against that background, it was somewhat disappointing that Mr Zellner, an expert relied upon heavily by the industry, expressed what could be described as a fatalistic view that these vehicles, in effect, had been made as safe as they could be without compromising their usefulness, and any further development would turn them into a different vehicle.[210]

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206 Evidence of Dr Crozier, 24 July 2015.

207 Evidence of P. Vitrano (Polaris), 3 August 2015.

208 TARS Final Project Summary Report, (Exhibit 7, Vol 5, Report 4) at p.7.

209 Evidence of Paul Vitrano, 3 August 2015 and Robert Toscano, 4 August 2015.

210 Evidence of Dr Graeme Fowler, 5 August 2015 and Mr John Zellner, 6 and 7 August 2015

182. It appears to be accepted by each of the parties to these inquests that "*there are way too many people getting hurt and killed by these vehicles*".[211] The question that arises is whether there are any ways to reduce the numbers of people, particularly farmers, being killed and injured by Quad Bikes and SSVs.

183. The first matter that needs to be considered is engineering solutions. (Indeed, Mr Zellner agreed with the proposition that "*engineering* [solutions] *should be agreed first*".[212]) To this end, it is necessary to consider whether an Australian Standard(s) should be made in respect of Quad Bikes and SSVs. It is also necessary to consider whether there are other engineering solutions, such as crush protection devices, which may be effective in preventing or reducing deaths or injuries from the use of Quad Bikes and SSVs.

184. However, it is clear that engineering solutions are not sufficient of themselves. Rather, a large part of the change must be a cultural change. In order for farmers to appreciate the need to wear helmets, to ensure that children do not use adult size Quad Bikes, to carefully assess whether the Quad Bike or SSV is able to proceed in the terrain in question, and to carefully consider whether the Quad Bike or SSV can safely carry a proposed load, it is essential that farmers become aware of the potential dangers of Quad Bikes and SSVs, including their instability and susceptibility to rollover.

185. Cultural change is unlikely to be achieved through a single coronial recommendation. Nor is the responsibility for cultural change in the hands only of government, or of industry, or of any other body in Australian society. The bringing about of cultural change can only be achieved through the concerted efforts of a range of government and non-government bodies, working together through a variety of methods. Advertising and law reform may be two means by which cultural change may be encouraged.

186. As information concerning the particular risks of Quad Bikes and SSVs may be efficiently transmitted via training, it is important to look at ways of increasing participation rates in training courses. Finally, in order to assist purchasers of Quad Bikes and SSVs in choosing the safest vehicle for their needs, it is appropriate to

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[211] Evidence of P Vitrano, 3 August 2015.

consider whether a safety rating system should be established for Quad Bikes and SSVs.

187. For these reasons, I considered recommendations in the following areas:

a) Safety Rating System;
b) Australian Standards;
c) Training/ licensing;
d) Helmets;
e) Crush protection devices;
f) Seatbelts;
g) Personal locator beacons;
h) Children;
i) Advertising/ education; and
j) Police investigations.

188. I received submissions in relation to each of these potential areas for recommendations.

189. Each of these potential areas for recommendations are considered below.

<u>Safety Rating System</u>: Whether consideration should be given to the introduction of a safety rating system (similar to the ANCAP - Australian New Car Assessment Program safety rating system for passenger and light commercial vehicles) in relation to Quad Bikes and related vehicles.

190. One of the major recommendations in the TARS report was that there be established a safety rating system, to provide guidance to consumers as to the relative safety of Quad Bikes and SSVs. The TARS report proposes that any such system be entitled "*Australian Terrain Vehicle Assessment Program*" ("**ATVAP**").

191. The evidence in these inquests has clearly established that there is little/limited information presently available to consumers as to the relative safety (in terms of rollover) between different Quad Bikes, and between Quad Bikes and SSVs. The purpose of such a safety rating system would therefore be to inform potential

purchasers about the relative safety (particularly as to rollover) of Quad Bikes and SSVs in a workplace situation. As the authors of the TARS report state:

> "*Such a program would inform consumers purchasing vehicles or accessories for use in the workplace. The Star Rating system is intended to provide 'a safety rating' in that Quad Bike and SSVs with higher star ratings will represent a lower risk of rollover and subsequent potential injury in the event of a rollover incident in the workplace environment, based on the best currently available information*."[213]

192. In this respect, the authors of the TARS report intend that the proposed star rating system would operate similarly to the ANCAP safety rating system for passenger and light commercial vehicles. As Nicholas Clarke (CEO of ANCAP) explained, the purpose of ANCAP is both to provide consumers with advice about the relative safety of cars, and to encourage car manufacturers to strive to create safer vehicles.[214] Indeed, in this latter respect, a star rating system has significant advantages over regulation, because a rating system may "*move quickly to pick up new technologies in its ratings and through its international sister organisations keep on top of technology in the pipeline*."[215]

193. Safework NSW, representatives of the farming community and the medical profession all support the establishment of a five star rating system[216]. Moreover the safety rating system is supported "in principle" by the FCAI[217]. However, the FCAI submit that ATVAP "requires substantial further development and consideration before implementation and release to the consumer"[218]. They state:

> "*a. ANCAP should develop any safety rating systems for ATV's and SSV's, with further work being required before any such safety rating systems could be properly or responsibly implemented and publicly launched;*
> *b. It is important that unintended potential adverse consequences be adequately considered so they can be avoided, and that, accordingly, any*

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213 TARs Quad Bike Report, at 2.1 (Exhibit 1, Vol 5)

214 Evidence of Nicholas Clarke (ANCAP), 22 July 2015.

215 Letter of Nicholas Clarke to the NSW Crown Solicitor, 22 June 2015 (Exhibit 1, Vol 10, Tab K).

216 Australian Centre for Agricultural Health & Safety (Exhibit 1, Vol 9, Tab A, p97); SafeWork Australia (Exh 1, Vol 10, Tab E, p8); Australasian College of Surgeons (Exh1, Vol 10, Tab F, p5); National Farmers' Federation (Exh 1, Vol 10, Tab N, p6); SafeWork NSW (Exh 1, Vol 12, Tab 21, p11)

217 Submissions of FCAI dated 15 October 2015 at paragraph 97;

218 Ibid at paragraph 98;

star rating systems should be based on a strong correlation between the performance indices tested, and demonstrated improved safety outcomes; and

c. ATV's and SSV's must be considered separately and not within the same class"[219]

194. The evidence in these inquests is that a safety rating system for Quad Bikes and related vehicles does not currently fall within the mandate of ANCAP, but that it is not beyond their reach. It is also clear from the evidence that the process of developing and establishing any safety rating system will take some years. To date, ANCAP has not been involved in the development of any star safety rating systems for Quad Bikes, SSVs or related vehicles.

195. The safety rating system advanced in the TARS report proposed that Quad Bikes and related vehicles be rated in relation to three elements namely:

a) static stability;
b) dynamic handling, and
c) crash worthiness.

196. It is clear from the evidence in these inquests that some of the aspects of the proposed TARS rating system remain highly contentious. However, in my view, that is not a basis for abandoning the establishment of such a system nor for delaying its implementation.

197. I accept the submission of Counsel Assisting that it is appropriate for SafeWork NSW, SafeWork Australia and Work Health and Safety Authorities in other States and Territories to continue to drive the creation of a five star safety rating system. Once such a system is established, there is reason to hope (based on the evidence of ANCAP CEO, Mr Nicholas Clarke) that ANCAP would be in a position to take over the administration of the safety rating system.

198. As to the FCAI's submission, that "ATVs and SSV's must be considered separately and not within the same class",[220] in any safety rating system, the question of whether

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219 Ibid at paragraph 99:

220 Ibid at paragraph 99(c);

the safety rating system should compare Quad Bikes and SSV's as part of, or within, a safety rating system is a question, in my view, that should be considered by those who establish, and then develop the system. Accordingly the recommendation I make pursuant to s.82 will not be prescriptive in this respect.

199. Accordingly I make the following recommendation in relation to the creation of a Safety Rating System:

a. That SafeWork NSW, in collaboration with Safe Work Australia, and Work Health and Safety Authorities in other States and Territories, develop, implement and support a safety rating system which provides independent information for the assistance of prospective purchasers of new quad bikes, side-by-side and related vehicles for the workplace environment.

b. That the Federal Chamber of Automotive Industries, and Polaris Industries, collaborate with Safework NSW, and other Work Health and Safety Authorities, to assist in the development and implementation of the safety rating system.

Australian Standard: Whether consideration should be given to the introduction of an Australian Standard/s for Quad Bikes and related vehicles.

200. Currently there is no Australian Standard/s for Quad Bikes or SSVs sold in Australia, however there are in existence, international voluntary design and manufacturing standards and in particular United States Standards.

201. The current US Standards are – for quad bikes (ATVs) – ANSI/SVIA 1 - 2010[221]; and for SSVs – ANSI/ROHVA 1 – 2011[222] and ANSI-OPEI B 71.9-2012.[223] At present, the vast majority of Quad Bikes and SSVs imported into Australian are produced by manufacturers based in the United States, and those vehicles are built to comply with the above Standards. Australian Standards which simply adopt the US Standards would not have any impact on the Quad Bikes and SSVs imported into Australia by those manufacturers.

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221 Exhibit 1, Vol 11,Tab 2.

222 Exhibit 1, Vol 11, Tab 3.

223 Exhibit 1, Vol 11, Tab 4.

202. I note that, Safework NSW does not support the formulation of an Australian Standard on the basis that the "financial costs and administrative difficulties associated with the development of separate Australian Standards are such that Safework NSW is of the view the apparent benefits which would flow from the development of Australian Standards will be outweighed by delay, cost and the fact that, in future, the Australian Standards, if based on the American Standards, would require review and updating each time the American Standards are amended. If the Australian Standards are "stand alone", there will be different and potentially greater administrative and financial costs involved in both the development of any such standards and, also, in relation to compliance"[224].

203. At present, there is no requirement that vehicles sold in Australia comply with the relevant American standards[225]. Accordingly, I accept that it is only in the case of Quad Bikes and SSVs imported from the United States that an assumption can confidently be made about compliance with US standards. It follows that Quad Bikes and SSVs imported from elsewhere need not comply with the US standards.

204. As to the financial and administrative costs of an Australian Standard, assuming the US standards are considered appropriate, there appears to be no reason why an Australian Standard could not simply adopt the US Standard as it exists from time to time.

205. The FCAI position in relation to the development of an Australian Standard is as follows:

a) Firstly, they submit that the Australian Standard be the same as the US Standard[226];

b) Secondly, they propose that SafeWork Australia and the FCAI jointly initiate the process of implementing Australian standards;

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[224] Submissions of Safework NSW dated 18 August 2015 at paragraph 113;

[225] the ANSI/SVIA 1-2010 and the ANSI/ROHVA 1-2011;

[226] Submissions of the FCAI dated 15 October 2015 at paragraph 123;

c) Thirdly, pending the implementation of any such Australian standards by Standards Australia, any Quad Bikes and SSVs imported into Australia should comply with the relevant US standards[227];

206. Counsel Assisting submitted in response that it is not appropriate for me to specifically recommend that the Australian Standard be the same as the US Standard. While they accept that there are good reasons why it may be appropriate for an Australian Standard to adopt the US Standard they submit that this detail is best left to be determined by the appropriate sub-committee of Standards Australia.

207. As to the second limb of the FCAI submission, Counsel Assisting submitted that it would be appropriate, in the first instance, for the quad bike manufacturers to make a joint approach to Standards Australia. If this is unable to occur, for example, if one or more of the manufacturers are unwilling to be involved, the approach may be made by the remaining manufacturers. Counsel Assisting submitted that SafeWork Australia would be envisaged to be an "*other stakeholder*" as referred to in their proposed recommendation. I accept that the preferable view is to not include Safe Work Australia as a specified party under the terms of any recommendation, but rather to expect that they would be a party consulted in the process of the development of any Australian Standard.

208. In relation the final limb of the FCAI submission, although I accept that it may well be preferable that Quad Bikes and SSVs imported into Australia comply with US standards, pending the implementation of Australian Standards, this proposed recommendation requires legislative action by the Commonwealth government, in circumstances where the Commonwealth government was not a party to these inquests, and has not been heard as to the appropriateness of such a recommendation. In addition, while anecdotal evidence emerged during the inquests which suggested that some vehicles being imported from Asia *may* not comply with US Standards, this evidence was inconclusive. In these circumstances I am not adopting the final limb of the FCAI submission

209. Accordingly I make the following recommendation in relation to the creation of an Australian Standard:

[227] Submissions of the FCAI dated 15 October 2015 at paragraph 123(b);

"That the Federal Chamber of Automotive Industries, Polaris Industries and Australian Quad Distributors Association take steps to develop Australian Standards *through Standards Australia, in consultation with other relevant stakeholders, relating to the design, manufacture, import and supply of Quad Bikes, side-by-side and related vehicles."*

<u>Training/Licensing</u>: Whether a system of mandatory training, licensing or certification should be introduced, and whether there are other methods by which training in the use of Quad Bikes and related vehicles can be mandated or encouraged.

210. It is apparent from the evidence in these inquests that there is a lack of knowledge about the serious risks of Quad Bikes and SSVs, and particularly the risk of rollover. For example:

a) The giving of permission to children to ride vehicles was suggestive of a lack of knowledge about the risks of Quad Bikes and SSVs;

b) The driving of Quad Bikes in steep and rocky terrain in many of the accidents indicated a lack of knowledge about the risk of rollover;

c) Dr Cass and Dr Crozier spoke of the "surprise" that many injured children spoke of when the quad bikes that they had been riding overturned;

d) JH's father stated that if the SSV had been a "standard Quad Bikes", he would have made JH wear a helmet, but because the SSV had a roll cage, he did not consider that a helmet was necessary.[228] He said that he did not "see a risk in the [SSV]";[229] and

e) There was a general lack of knowledge about the appropriate tyre pressure of Quad Bikes and SSVs.

211. Attendance at a comprehensive training course is likely to educate users of Quad Bikes and SSVs about the risks, and safe operation of these vehicles. For example,

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[228] Further Statement of BH, dated 15 May 2013 (Exhibit 1, Vol 1, Tab D7A) at para 10.

[229] Further Statement of BH, dated 15 May 2013 (Exhibit 1, Vol 1, Tab D7A) at para 10.

it would be hoped that if parents were better informed of the risk of rollover, and of the serious risks to children that parental permission would not be given to a child under 16 years to use such vehicles.

212. For this reason, training and licensing has been a focus of each of the previous inquests that have been heard in Australia and New Zealand.

213. Questions arise as to the most appropriate way of encouraging users of Quad Bikes to receive training. In the United States, training is offered free of charge to purchasers of new Quad Bikes. However, this inquest heard that even with the offer of free training, the uptake of training is less than 10%.[230]

214. The FCAI has urged that training and licensing should be mandated by legislation. In the workplace, it is already a legislative requirement[231], that employers ensure that any employee is properly trained. It is clear that this extends to the use of Quad Bikes and SSVs

215. However, as the evidence of Mr Williams of WorkCover pointed out, there are some areas of potential complications in dealing with farm premises. Mr Williams explained that in some cases, the mixed usage of premises (as both domestic and business premises) may render it difficult to determine the extent of the particular duty or liability. For example, a quad bike might be used for work, but might also be used at times as a recreational vehicle.

216. The question of whether it is appropriate to introduce a mandatory general law requiring all persons using Quad Bikes or SSVs to be trained and/or licensed involves some complexity. These issues include:

a) would any training / licensing requirement apply only to the purchaser/owner of the vehicle, or to any user?

b) How would any such law be enforced (given that usually the conduct will occur on private land)?

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230 Evidence of Paul Vitrano, 3 August 2015.

231 Under the *Work Health and Safety Act 2011* (NSW) ss. 19,20

c) Who would conduct training and licensing?

d) Who would administer any training and licensing system?

I accept that, on the evidence before me, it is not practicable to answer these broader questions of public policy and practical administration and this issue can be referred to the NSW Law Reform Commission for consideration.

217. Notwithstanding the obvious complexity of these questions, I am of the view that legislation, if enacted, is likely to prevent future deaths, and more generally would contribute to cultural change. I note that in this respect both Professor Danny Cass and Dr John Crozier of the Royal Australasian College of Surgeons both forcefully sought such legislative change. It is for this reason I have addressed the recommendation to the Attorney General.

218. Finally, I accept the submission of the FCAI that it would be appropriate for a recommendation be made that SafeWork NSW give consideration to offering rebates to employers in relation to the cost of training courses. I accept that this has merit and I propose to make a recommendation in that regard.

219. Accordingly I make the following recommendations in relation to a mandatory training, licensing or certification scheme:

a) That SafeWork NSW, Safe Work Australia, Federal Chamber of Automotive Industries, Polaris Industries, Australian Quad Distributors Association, and the National Farmers Federation, in consultation with other relevant stakeholders, work to develop an improved and standardised nationally accredited training package for the operation of Quad Bikes, side-by-side and related vehicles.

b) That SafeWork NSW, Safe Work Australia, Federal Chamber of Automotive Industries, Polaris Industries, Australian Quad Distributors Association, and the National Farmers Federation, in consultation with other relevant stakeholders, work collaboratively to improve the uptake of training in the operation of Quad Bikes, side-by-side and related vehicles.

c) That the Federal Chamber of Automotive Industries, Polaris Industries and Australian Quad Distributors Association work with their members to promote, at point of sale, the uptake of training in the operation of Quad Bikes, side-by-side and related vehicles.

d) That consideration be given, by the NSW Law Reform Commission and the NSW Attorney-General, to the introduction of legislation requiring mandatory training and/or licensing of all persons using Quad Bikes, side-by-side and related vehicles.

e) That SafeWork NSW give consideration to providing and promoting rebates to employers for the costs of providing training courses for employees concerning the safe use of Quad Bikes and SSVs.

Helmets: Whether the wearing of a suitable helmet should be compulsory. Whether a Star Rating System or Australian Standard should be introduced for helmets designed for use with quad bikes and related vehicles. Whether there are other ways of mandating or encouraging the use of helmets.

220. It is clear that greater helmet use would reduce deaths. Studies in the United States have shown that the risk of fatality in a Quad Bike accident can be reduced by as much as 42% through the use of helmets.[232] Of the 109 fatalities reviewed by the TARS researchers, helmets were worn in only 24 of the cases. Skull fracture was involved in 32.4% of the fatalities (11.3% in the farm work environment) and 44.4% involved traumatic brain injury (13.2% in the farm work environment)[233]. However, it is difficult to get farmers to wear helmets. In the Australian outback, they are perceived to be, (and can be in some circumstances) hot, uncomfortable and impractical for the purpose.[234]

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232 Evidence of Dr T Smith before Qld inquests, 26 November 2014 (transcript exhibited in these inquests) (Exhibit 1, Vol 9, Tab B12) at p.5-3.

233 TARS Quad Bike Performance Project, Supplemental Report, (Exhibit 7, Vol 5, Tab 5) p.1-38.

234 Evidence of Michael Cantwell, 17 February 2015, at 40.20; and Dr T Smith ibid at p.5-4

221. Mr Tony Williams of WorkCover commented that "*we are struggling to get farmers to put a helmet on their heads*."[235] For this reason, Mr Williams said that WorkCover is looking at a broader range of helmets, so as to encourage greater helmet use.

222. A number of witnesses suggested that some of the resistance by farmers to using helmets arises from the perception that the only suitable type of helmet is a motorcycle helmet compliant with AS 1698 (which, admittedly may well be hot and uncomfortable in a rural environment). In these inquests however, evidence has been given about a number of other types of helmet (in particular, those complying with New Zealand Standard NZS 8600:2002), which may provide a more comfortable and appropriate choice for farmers who use Quad Bikes and SSVs in hot conditions. There is currently no Australian Standard for Quad Bikes and SSV helmets. The promulgation of an Australian Standard would assist Australian farmers in selecting a suitable and safe helmet for quad bike and SSV use. During his evidence before the Queensland Coroner in late 2014, Dr Terry Smith said[236]:

> "*You could pursue introducing the ATV helmet standard from New Zealand. It is a - an excellent standard that could be incorporated into Australia quite easily. Australian standards and New Zealand standards have joint cooperative agreements….by creating a standard which is not design restrictive for ATV riders you're going to develop products that are going to be more appealing and we can get more helmets on people's heads, which is really what we are all trying to get to."*

223. I accept that the resistance is also cultural. Ways of overcoming such cultural resistance may include advertising and education. There clearly needs to be increased efforts to be made by industry, and by WorkCover, to promote helmet use.

224. Another method of overcoming cultural resistance is law reform, namely with a view to prohibiting the use of Quad Bikes and SSVs without wearing a helmet. In this respect, Mr Williams of WorkCover informed the inquests that clause 44 of the *Work Health and Safety Regulation* imposes a duty on a person (including a corporation) conducting a business or undertaking, to provide personal protective equipment to workers at the workplace (unless the equipment has already been provided by

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235 Evidence of Tony Williams, 4 August 2015.

236 Evidence of Dr T Smith before Qld inquests, 26 November 2014 (transcript exhibited in these inquests) (Exhibit 1, Vol 9, Tab B12) at p.5-8.

another person conducting a business or undertaking). This obligation extends to a duty to ensure that the worker is provided with information, training and instruction in the use of such equipment. These provisions, together with sections 19, 20 and 21 of the *Work Health and Safety Act 2011* (discussed in more detail below under "Children") impose a duty on a business/undertaking, not only to provide suitable head protection, but to ensure that it is worn[237].

225. Of course, the *Work, Health and Safety Act* only applies to Quad Bike and SSV use in workplaces. It has no application where the farmer is using the Quad Bike or SSV for recreational purposes separate to their farming activities. Extending the prohibition on using Quad Bikes and SSVs without a helmet to the use of Quad Bikes and SSVs "generally" (ie not just in the work environment) would have a further deterrent effect. Such a prohibition may also assist in public education as to the risks of using a Quad Bike or SSV without a helmet.

226. However, it must also be acknowledged that the criminalisation of Quad Bike and SSV use without a helmet on private land raises difficult public policy questions, particularly as to enforcement. In these circumstances, I accept the submission of Counsel Assisting that it would be appropriate to refer this issue to the NSW Law Reform Commission for further consideration. Furthermore, for the reasons I have outlined at [217], I also refer the matter to the NSW Attorney-General for consideration.

227. In the meantime, it is submitted that greater efforts should be taken to convey the message that criminal liability may apply to farmers (and others who conduct a business or undertaking) who fail to provide suitable head protection. The message should also be conveyed that criminal liability might also attach (for example) to the "family company" of the sole-practitioner farmer who himself/herself fails to use a suitable helmet in the workplace.

228. Accordingly, for the reasons set out in the preceding paragraphs I make the following recommendations in relation to the use of helmets:

    a) That the Federal Chamber of Automotive Industries, Polaris Industries and the

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237 Indeed, it was because of its failure to ensure helmet use by its employees that Phillipa Macey5)b F, p5)p5)b E); U5 p.123.nd fined: *Inspector Williams v H P Woods (Holding) Pty Ltd* [2011] NSWIRComm 114

Australian Quad Distributors Association in consultation with SafeWork Australia take steps to develop an Australian Standard through Standards Australia relating to the design and manufacture of helmets for use with Quad Bikes, side-by-side and related vehicles.

b) That until an Australian Standard for helmets is issued, SafeWork NSW consider adopting and promoting the use of helmets which comply with New Zealand Standard NZS 8600:2002.

c) That the Federal Chamber of Automotive Industries, Polaris Industries, and Australian Quad Distributors Association work to promote the importance of helmets, and the range of suitable helmets, at point of sale.

d) That SafeWork NSW conduct a campaign, aimed at farming and other workplaces, to promote awareness of the criminal liability which may attach to persons and corporations who fail in the course of a business or undertaking, to provide and enforce the use of helmets by persons using Quad Bikes and SSVs.

e) That consideration be given, by the NSW Law Reform Commission and the NSW Attorney-General, to the introduction of legislation requiring the use of a suitable helmet by all persons using Quad Bikes, side-by-side and related vehicles.

<u>Crush Protection Devices ("CPDs"):</u> Whether there is sufficient evidence to determine whether crush protection devices may be effective in preventing injury or death in Quad Bike accidents or whether CPDs may increase the probability of injury or death in such accidents. If there is insufficient evidence, whether further research should be conducted as to the effectiveness of CPDs.

229. It is clear that, in some circumstances, a CPD may be effective in preventing injury or death in a Quad Bike accident. In some of the deaths under consideration, for example, Anthony Waldron and Colin Reid, a CPD may well have saved a life.

230. However, it is also clear that, in some circumstances, a CPD may have the effect of increasing the risk of injury or death. In particular, the fitting of a CPD may adversely affect a rider's ability to "separate" from the vehicle in the event of rollover, and may reduce the ability of the quad bike to continue to roll "off" the rider in a rollover.[238]

231. Much research has been done, including computer modelling and simulated accidents involving dummies on the effects of fitting a CPD. The authors of the TARS report have concluded that:[239]

> *"In regard to injury prevention in rollovers for the workplace environment, two OPD's (Quadbar and Lifeguard) are likely to be beneficial in terms of severe injury and pinned prevention in some low speed rollovers typical of farm incidents. They do not reduce the incidence of rollover. In some specific cases injury risk could be increased although there is currently no real world recorded evidence of this."*

231. On the other hand, Mr Zellner asserts that there is no valid, scientific evidence establishing that fitting CPDs to Quad Bikes results in a net safety benefit.[240]

232. CPDs were the subject of lengthy evidence in the Victorian and Queensland inquests. Neither inquest was able to resolve the question of whether CPDs were more or less protective.

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238 Evidence of Mr Zellner, 6 and 7 August 2015.

239 TARS Final Project Summary Report, Conclusion 12 (Exhibit 7, Vol 5, Report 4) at p.11

240 Zellner JW, Kebschull SA and Van Auken RM, "Comments on UNSW TARS "Final Project Summary Report"", (Exhibit A, Vol 12, Tab 16) at p.63.

233. In the Queensland findings, Deputy State Coroner Lock stated:

> "*I have formed a view that the research from all sources has sufficient inherent difficulties and statistical inconsistencies for me to be (un)able to reach a conclusion about the efficacy of CPDs in particular*."[241]

234. Deputy State Coroner Lock continued:

> "[t]*hat does not mean the research from all sources to date is invalid or should be disregarded. To the contrary, what is needed is for the researchers to collaborate and examine the evidence in a scientific fashion, unhindered by entrenched positions that are so evident in the debate to date*."

His Honour then stated[242] :

> "*I am not convinced that CPDs as they currently exist on the market, or as a concept, should be thrown on the scrap heap as would be suggested by the FCAI. The testing does suggest there are a number of circumstances in which roll overs occur where a CPD, especially where low speed features (as occurs typically in a farming context), may save a person from death or from suffering a serious injury. In other circumstances, they may not, and they may even cause serious injuries or death. The sting is that the circumstances where benefit or detriment may or may not occur, cannot be stated at this time in sufficient clarity for me to make a finding.*"

235. In my view, what is lacking from the studies to date is any "real world" study of the incidence of injury and/or fatalities and/or prevented injuries/fatalities resulting from the use of CPDs. There is at present no evidence that any deaths have occurred as a result of the fitting of a CPD. However, in the absence of a study as to fatalities or injuries caused by CPDs, it is not possible to draw any absolute conclusions about the efficacy of CPDs.

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241 At paragraph 284-5;

242 At paragraph 285.

Efficacy of Operator Separation

236. One of the arguments of representatives of the industry against the fitting of CPDs is that they may interfere with the rider's ability to separate from the quad bike in the event of a rollover (typically where the quad does more than a half roll). Mr Zellner gave evidence to the effect that rider separation in a rollover was (whether active or passive) an effective safety strategy in a large percentage of cases.[243].

237. Associate Professor Rechnitzer was critical of this philosophy and expressed the view that rider separation was not a safety philosophy at all[244]. It is difficult to understand how the industry places so much emphasis on rider separation as a "safety strategy". Firstly, many accessories and loads, represented as being within the carrying capacity of Quad Bikes, create as much or perhaps a greater level of hindrance to "rider separation" than CPDs. Furthermore, in a number of the deaths under consideration, large spray tanks were fitted and, in marketing brochures and training videos evidenced in these inquests,[245] there are numerous depictions of Quad Bikes carrying hay bales, toolboxes and other equipment.

238. Another reason why rider separation is a questionable safety strategy was highlighted in the evidence of Mr Zellner.[246] Mr Zellner gave evidence of his view that making Quad Bikes wider would be likely to increase their weight (he referred to the prototype studied by TARS) and that increasing weight would make rider separation an ineffective safety strategy (because increased weight would be more likely to cause significant injury to the rider if the quad bike rolled onto them). Under cross examination from Mr Cahill for WorkCover, Mr Zellner stated that where a quad bike weighs 400 kg or more (including its load) separation is no longer an effective safety strategy. This concession about Quad Bikes weighing more than 400kg (including load) is, in my view, significant. In these inquests a number of user manuals and brochures have been exhibited[247] - in the specifications included in that material, the vast majority of Quad Bikes, when loaded within their recommended payload capacity, weigh in excess of 400 kg (not including the rider).

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243 Evidence of Mr Zellner, 7 August 2015.

244 Evidence of Associate Professor Rechnitzer, 20 July 2015.

245 Exhibits 27 and 21 and submission from QB Industries (Exhibit 1, Vol 10, Tab D)

246 Evidence of Mr Zellner, 7 August 2015.

247 Exhibit 8, Volumes 7 and 8 and exhibits 10 and 27.

239. SafeWork NSW submitted that, in view of the evidence given by Mr Zellner regarding the effects of a total load exceeding about 400kg, on the efficacy of operator separation from Quad Bikes, I should give consideration to a recommendation that the FCAI and Polaris conduct independent investigations into the effects of total load and the efficacy of operator separation as a crash safety system[248]. The submissions of the FCAI did not directly respond to this submission.

240. I accept that this may be an issue which the FCAI and Polaris should pursue further in their ongoing research into vehicle safety and development. However, this is not an issue which I will make a formal recommendation under s.82.

241. Given the possibility that CPDs could contribute to the prevention of loss of life and the prevention of serious injury, I accept the submission of Counsel Assisting that further research in this area is needed, particularly an assessment of the actual incidence of injuries and deaths caused or prevented by CPDs.

242. I further note the submission of Safework NSW that they agree that an independent scientific study of CPDs is necessary[249]. However, SafeWork NSW also submits that the primary responsibility of conducting such a study should fall to the manufacturers of those devices[250].

243. I acknowledge that SafeWork NSW and SafeWork Australia are bodies with limited resources and many demands on those resources. However, I accept the submission made by the FCAI,[251] that there are concerns about the ability of the manufacturers of CPDs to conduct an independent and scientifically rigorous study without the assistance of workplace authorities and independent experts.

244. In view of these concerns, I accept the submission that it would not be appropriate to limit this recommendation solely to the manufacturers of CPDs. However, as SafeWork NSW does not support the recommendation, I make the following recommendation in relation to CPDs:

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248 Submission of SafeWork NSW dated 18 August 2015 at paragraph at 133;

249 Submission of Safework NSW dated 18 August 2015 at paragraph 123;

250 Ibid at paragraph 124;

251 Submissions of the FCAI dated 15 October 2015 at paragraph 169;

"That SafeWork NSW, SafeWork Australia, and the manufacturers of the "Quadbar" and "Lifeguard" Crush Protection Devices, collaborate and attempt to reach agreement to conduct an independent survey study to assess the benefits, risks and general efficacy of Crush Protection Devices."

<u>Seat belts (for SSVs):</u> Whether the fitting and use of seatbelts should be mandatory in all SSVs. If so, what type of seatbelts should be required? Whether seatbelt alarms or disabling devices should be mandatory in all SSVs? Whether there are other ways of mandating or encouraging the use of seatbelts.

245. The roll-protection structure of an SSV is only beneficial in reducing or preventing death or injury if a seatbelt is worn by the occupant(s) of the vehicle. If a seatbelt is not worn, the occupant(s) of the SSV will not be contained within the vehicle in the event of a rollover. In such an event, the occupant will be at risk of crush or other injury both from the SSV and, indeed, from the rollover protection itself.

246. In both the ANSI/ROHVA-1-2014 and the ANSI/OPEI B71.9-2012 standards, there are detailed requirements for the fitment of seatbelts. However, given the importance of this issue, I am of the view that it would be appropriate to specifically recommend that any Australian Standard for SSVs include a requirement for the fitting of a suitable occupant retention system, including a requirement for the fitting of three point attachment seatbelts.

247. It is also essential, so far as is possible, to ensure that seatbelts are worn.

248. I have heard evidence during these inquests that one way in which the use of seatbelts can be encouraged is with a seatbelt interlock device[252]. Such devices are able to limit the speed of the vehicle when the seatbelt is not fastened. The ANSI-ROHVA 1 - 2014 standard provides that an SSV must be equipped with either an audible and visual reminder to fasten seat belts, or the SSV must incorporate technology that limits the maximum speed of the vehicle to 15 mph if the driver's seat belt is unbuckled. I accept the submission of Counsel Assisting, that any Australian standard for SSVs should include a requirement for a seatbelt interlocks which limits

[252] Eg, the evidence of Paul Vitrano, 3 August 2015.

the vehicle speed where the driver's seatbelt is not engaged. I note that SafeWork NSW opposes the development of an Australian Standard in this regard[253].

249. Finally, the issue of requiring the wearing of seatbelts in SSVs, as with the issues of helmets and mandatory training, also raises the potential of law reform, namely with a view to prohibiting the use of SSVs without a seatbelt. Again, in a workplace environment, an employer has a duty to ensure the health and safety of its employees – and this includes a requirement that the employer ensure that employees operate plant equipment safely (which, in the case of an SSV would necessitate the wearing of a seatbelt).

250. However, the extension of laws requiring SSV users to wear seat belts outside of a workplace environment may be a way of furthering cultural change. Again, as with the issues of helmet use and training, this issue raises important questions of public policy and difficulties of enforcement. This is another issue which I will refer to the NSW Law Reform Commission as well as the NSW Attorney-General.

251. Accordingly, for the above mentioned reasons, I make the following recommendations in relation to seatbelts:

a) That any Australian Standard for side-by-side or related (ride in) vehicles that is developed in accordance with recommendation 2 above, include a requirement for the fitting of a suitable occupant retention system and design measures aimed at encouraging seatbelt use.

b) That consideration be given, by the NSW Law Reform Commission and the NSW Attorney-General, to the introduction of legislation requiring the use of a seatbelt by all operators and passengers in side-by-side or related (ride in) vehicles.

Personal locator beacons

252. Personal locator beacons may be beneficial to those working with quad bikes and SSVs in isolated areas. In the event of a rollover, if the rider of the quad bike is trapped by the quad bike or SSV and injured, it will be often be impossible for the rider to free themselves without assistance. If a personal locator beacon is fitted to

253 Submissions of SafeWork NSW dated 18 August 2015 at paragraph 126;

the Quad Bike or SSV which activates automatically, upon a rollover, such a device may be beneficial in cases where the rider is unconscious, or otherwise unable to attract attention.

253. However, I acknowledge that such a requirement may be costly, and may not be justified for all Quad Bikes (many Quad Bikes will not be used by persons working in isolation). Moreover, I accept that of the cases examined in these inquests, the fitting of a personal locator beacon would probably not have prevented any of the deaths.

254. In these circumstances, I do not accept there is a sufficient basis to support a recommendation for the mandatory fitting of personal locator beacons to Quad Bikes and/ or SSVs.

Warning labels

263. There are already a number of warning labels on Quad Bikes and SSVs at present. These warning labels include:

a) Warnings against use by children aged 16 years and under;
b) Warnings against use without a helmet;
c) Warnings about overloading;
d) Warnings against use on paved surfaces; and
e) Warnings against carrying pillion passengers.

264. Those behaviours that have been particular issues in these inquests, namely those about use by children and not using helmets, are clearly warned against in labels on all Quad Bikes and SSVs. However, as seen in many of the deaths the subject of these inquests the warning labels were ignored.

265. In view of the extensive labelling already found on Quad Bikes and SSVs, and the apparently minimal deterrent effect that this labelling appears to have, I accept the submission of Counsel Assisting that there is not a sufficient basis to recommend that further warning labels be mandated.

Children: What measures should be taken to prevent or discourage children under the age of 16 years from using adult-sized quad bikes and related vehicles

266. Of the nine deaths that were the subject of formal inquest, three involved children[254]. Furthermore, one of the four additional deaths additionally considered also involved a child[255].

267. In all of these cases, the children were using the Quad Bike or SSV with the knowledge of a parent or caregiver. This evidence clearly demonstrates that children in rural areas are being given access to adult-sized vehicles, and that warning labels namely, that the vehicle should not be operated by anyone under 16 years, are not an effective measure against such mis-use.

268. Statistics were presented by Associate Professor Tony Lower of the Australian Centre for Agricultural Health and Safety, which indicate that in Australia, between 2001 and 2014, children under 16 years represented 18% of all closed quad bike fatalities.[256]

269. Evidence was also given by Professor Danny Cass and Dr John Crozier, on behalf of the Royal Australasian College of Surgeons, who expressed great concern for the number of deaths and injuries involving children using Quad Bikes. The College of Surgeons advocated strongly, both in their written submission[257], and in the oral testimony of Professor Cass and Dr Crozier, that all children under 16 years of age should be *prohibited* from riding adult-sized quads, and that consideration should be given to whether children under the age of 6 should be permitted to ride Quad Bikes at all.

270. The usage of Quad Bikes and SSVs in Australia seems largely to occur on private land, as were each of the 4 child deaths which were the focus of this inquest. The feasibility of enacting general laws to prohibit children from using adult-sized Quad Bikes and SSVs, wherever it occurs, is likely to raise a number of questions, not the least of which will be how such laws could be enforced, except in the event of a tragic death or a serious injury that requires hospitalisation.

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254 LE, who was 7 years old; FW, who was 9 years old; and ML, who was 13 years old;

255 JH, who was 11 years old;

256 Exhibit 1, Vol 9, Tab A, at p. 26.

257 Exh1, Vol 10, TabF

271. In the context of the workplace, including farms, the existing provisions of the *Work Health and Safety Act 2011* already create, at least in some circumstances, a prohibition on children being permitted to use Quad Bikes and SSVs. The relevant provisions of the *Work Health and Safety Act* were highlighted in the evidence given by Mr Williams of WorkCover. As Mr Williams noted:

a) s.19 imposes an obligation upon a person "conducting a business or undertaking" to - "ensure, so far as is reasonably practicable, that the health and safety of other persons is not put at risk from work carried out as part of the conduct of the business or undertaking";

b) s.20 imposes an obligation upon the "person with management or control of a workplace" to – "ensure, so far as is reasonably practicable, that the workplace…and anything arising from the workplace are without risks to the health and safety of any person" ; and

c) s.21 imposes an obligation upon the person "with management or control of …plant at a workplace" to – "ensure, so far as is reasonably practicable, that the …plant are without risks to the health and safety of any person".

272. As Mr Williams[258] agreed when he gave evidence, there is a good argument that these provisions may impose criminal liability upon a person, including a corporation, conducting a business or undertaking, such as farming, in circumstances where the person conducting the business, managing the workplace, or managing or controlling plant in the workplace, allows a child to use an adult-sized Quad Bike or SSV. The question of whether criminal liability will in fact arise will of course depend upon the individual facts of the case. However, the important point, and one that is probably not appreciated in the rural community, is that not only is it dangerous to allow children to use adult Quad Bikes and SSVs, but doing so may expose the farmer or other business operator to criminal sanctions, including convictions and very large fines[259].

273. Criminal liability in such cases does not of course require that there be a fatality, or even an injury to a child, although these are perhaps the usual ways in which cases come to light, but merely that the child be placed "at risk". Criminal liability may well

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258 Evidence of Tony Williams, 4 August 2015.

259 The maximum penalty for an individual who commits a "Category 1" (recklessness) offence where the individual is conducting a business or undertaking is a fine of $600,000 and/or 5 years imprisonment, and for a corporation is a fine of $3,000,000: see s. 31 of the *Work, Health and Safety Act*

also attach, depending on the circumstances, even where the Quad Bike or SSV is not being used by the child for a work-related purpose.

274. Counsel Assisting submitted that farmers and rural communities generally should be reminded/ advised/ educated that the farmer who allows a child, including their own child, to use an adult Quad Bike or SSV may be engaging in criminal conduct and that this might go some way towards effecting a much-needed change of "culture" in rural workplaces. Delivering the message that, by allowing a child to use the on-farm Quad Bike (or SSV), a farmer might also be exposing him/herself, or the family corporation, where it exists, to penalties of up to three million dollars, and possible imprisonment, might also help in achieving the necessary culture change.

275. I agree.

276. As was suggested to Mr Williams when he gave evidence, it would be appropriate for WorkCover NSW to give consideration to promoting greater awareness, especially in the rural environment, of the possibility of criminal conduct being committed where a child is permitted to use an adult-sized Quad Bike or SSV in the context of a business or undertaking, such as a farm, and of the maximum penalties that may be imposed.

277. The additional question, of whether general laws should be introduced, making it a criminal offence for a child to operate, ride, or be a passenger on or in an adult sized Quad Bike or SSV, raises broader issues of public policy, and enforceability. As previously indicated on other matters of potential legislative amendment this is a matter I will refer to the NSW Law Reform Commission and to the NSW Attorney-General for consideration.

278. Accordingly, for the reasons set out in the preceding paragraphs, I make the following recommendations in relation to children and their use of adult size Quad Bikes:

a) That SafeWork NSW and SafeWork Australia conduct a campaign, aimed at farming and other workplaces, to promote awareness of the possible criminal liability which may attach to persons and corporations who expose children to risk by allowing them to use adult-sized Quad Bikes and SSVs.

b) That consideration be given, by the NSW Law Reform Commission and the NSW Attorney-General, to the introduction of legislation prohibiting any child under 16 years from using an adult sized Quad Bike or SSV.

<u>Advertising/ education:</u> Whether there should be advertising or education concerning the use and safety of Quad Bikes and related vehicles, and if so, in what form.

279. I accept that there is a significant amount of advertising and education concerning the use and safety of Quad Bikes and SSVs. In particular, I have heard evidence that SafeWork NSW (formerly WorkCover) and the National Farmers Federation are extensively involved in the education of the rural community, including through information that is made available on websites, through advertising in rural newspapers, and through participation in agricultural field days.[260]

280. Given the need for extensive cultural change in many aspects of the use of Quad Bikes and SSVs by the farming community, it is essential that these educative efforts continue, and be reinforced. In particular, it is necessary for education to reinforce the dangers of Quad Bikes and SSVs, to emphasise the critical importance of wearing a helmet, of wearing a seatbelt (in an SSV), and of ensuring that children under the age of 16 years do not ride or drive adult-sized Quad Bikes or SSVs.

281. Accordingly, I accept the submission of Counsel Assisting that it would be appropriate to make a recommendation to SafeWork NSW, Safe Work Australia and to the National Farmers Federation that public media campaigns in respect of each of these areas be continued.

282. These inquests also heard evidence that the FCAI has a set aside a significant budget, in the vicinity of $300,000, for advertising/ education in the area of Quad Bike and SSV safety[261]. It is not considered necessary or appropriate to formally make a recommendation to the FCAI in respect of how this budget should be used. However, it is hoped that the education/ advertising will focus on the areas of need identified in these inquests, particularly concerning the use of Quad Bikes by children, the need to wear a helmet, and a seatbelt (in the case of an SSV) as well as the general risks of Quad Bikes and SSVs when used by persons who are not properly trained.

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260 Evidence of Tony Williams, 4 August 2015, Charles Armstrong, 22 July 2015 and Tony Lower, 23 July 2015.

261 Evidence of Robert Toscano, 4 August 2015.

283. Accordingly I make the following recommendations to SafeWork NSW with respect to a public media campaign to increase awareness in persons engaged in rural activities in NSW:

a) That SafeWork NSW conduct a public media campaign to increase awareness in persons engaged in rural activities in NSW, of the following matters:

(i) The risk of death or serious harm from being crushed or asphyxiated in rollovers and other accidents involving Quad Bikes, side-by-side and related vehicles;

(ii) The risk of death or serious harm from head injury where a helmet is not worn in accidents involving Quad Bikes, side-by-side and related vehicles;

(iii) The risk of death or serious harm where seat belts are not worn in accidents involving side-by-side and related vehicles;

(iv) The risk of death or serious harm to children who use adult-sized Quad Bikes, side-by-side and related vehicles;

(v) The risk of death or serious injury to those who operate Quad Bikes, side-by-side and related vehicles without proper training;

(vi) The risk of death or serious injury in carrying passengers on Quad Bikes and side-by-side that are not specifically designed to carry a passenger, or in carrying more passengers than the vehicle is designed to carry;

(vii) The risk of death or serious injury to those who operate Quad Bikes, side-by-side and related vehicles whilst under the influence of alcohol, or in a reckless or careless manner.

b) That Safe Work Australia and the National Farmers Federation consider conducting a public media campaign to increase awareness in persons engaged in rural activities in NSW in respect of the matters outlined above.

284. I note that SafeWork NSW did submit that these recommendations should also be directed to the NSW Farmers Federation[262]. I accept the merit of these submissions however, as the NSW Farmers Federation was not a party to the inquest, and have not been invited to respond to the proposed recommendations, it is not in my view appropriate to direct the recommendations to it as an entity. However I will direct that a copy of my findings be forwarded to them.

Police investigations: Whether there should be developed a "pro-forma" list of factual information to be gathered and issues to be addressed by police investigators attending/investigating deaths involving Quad Bikes and related vehicles.

285. It is clear that there was a great deal of variation in the quantity and quality of information that was collected in respect of the deaths that were the subject of the present inquests. In respect of some of the deaths, detailed information was recorded about matters such as the terrain in which the accident occurred, the load carried, the make and model of the Quad Bike or SSV, while with other deaths, much less detailed information was recorded.

286. However, improved reporting by police would be able to significantly assist in the collection of data which is necessary to improve Quad Bike and SSV safety. In particular, recording information as to, for example, slope, speed, loads, the presence or absence of a CPD would assist researchers such as TARS and the manufacturers, and may also assist in the validation of any safety rating system.

287. In the recent Queensland inquest, Deputy State Coroner Lock observed that "[b]*etter police investigation and reporting of quad bike and side by side accidents will assist in advancing industry and government safety initiatives in the future*"[263] and recommended that the Queensland Police Service introduce a standardised investigation template for all Quad Bike and SSV fatalities.[264]

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262 Submissions of SafeWork NSW dated ** at paragraph 130;

263 Queensland findings at para 352.

264 Queensland findings, recommendation 14.

288. In these inquests each of the Officers in Charge indicated in evidence they would be assisted by some form of checklist, or pro-forma document to assist them in their investigations. A number of them commented that such checklists already exist to assist with investigation of other specific types of deaths such as SIDS or child drownings.

289. By letter dated 3 August 2015, NSW Police advised that liaison had been undertaken between Field Support Command (within the Education and Training Command) and legal, engineering and research representatives of WorkCover.[265] The letter stated that a "checklist" of factors had been identified and that it was believed that, if the factors were recorded consistently, WorkCover and TARS would be able more effectively to identify trends in the nature and causes of deaths involving Quad Bikes and related vehicles.

290. The letter further advised that it is proposed to publish this checklist, with an accompanying article about the design and safety of quad bikes and related vehicles, and the difficulties experienced by TARS and WorkCover to date in the "Policing Issues and Practice Journal" and in a statewide message to all police personnel.

291. I commend NSW Police for the proactive approach that they have adopted in respect of their liaison with WorkCover in the formulation of the checklist and the intended plans for its publication. Accordingly, no recommendation is required in this regard.

Conclusion

292. This was a complex and lengthy inquest spanning a number of weeks, which focused on nine deaths that occurred between February 2009 and January 2015, I also considered four supplementary deaths. However, these deaths are just a fraction of the number of those killed or injured as a result of riding a Quad Bike or SSV every year in Australia. This year alone there have been an additional 18 deaths reported.

293. I hope the recommendations made pursuant to section 82 of the Act go part of the way to reducing the incidence of death and injury, which is, in my view, unacceptably high.

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265 Exhibit 19.

Findings

Accordingly, I now turn to the findings I am required to make pursuant to section 81 of the *Coroners Act 2009*.

I find that Donald Eveleigh died on or about 22 February 2009 at Pikes Mountain, Bunnan, in the State of New South Wales. His death was due to drowning in shallow water, in an accident where the quad bike he was riding rolled over, causing him to strike his head on the rock surface of a dam, rendering him unconscious.

I find that Angela Stackman died on 20 November 2011 at Bungara, Top Dale Road, Niangala in the State of New South Wales from positional asphyxia, when the Polaris Sportsman 500 quad bike that she was riding overturned, pinning her between the vehicle and a tree.

I find that FW died on 30 April 2012 at Wagga Wagga Hospital in the State of New South Wales as a result of abdominal crush injuries sustained when the Polaris Ranger Side by Side Vehicle that he was driving rolled over.

I find that ML died on 11 July 2012 at Kembla Grange in the State of New South Wales, as a result of a fracture to the base of her skull and jaw, those injuries being sustained when she lost control of the Yamaha Grizzly 550FI quad bike that she was riding with three pillion passengers.

I find that Anthony Waldron died on 17 April 2013 at Limpinwood, near Murwillumbah in northern New South Wales, as a result of traumatic asphyxiation, when his Yamaha Big Bear 350 quad bike overturned, trapping him underneath.

I find that Colin Reid died on 26 September 2013 at his macadamia farm at “Hogarth Range”, West of Casino in northern New South Wales, as a result of traumatic asphyxiation sustained when the Polaris 4 x 4 quad bike that he was riding overturned onto him.

I find that Bradley Jackson died on 28 June 2014 at Hadley Station, 41 km north-east of Crookwell, in the State of New South Wales, as a result of asphyxia, when the Honda 350cc (Honda X) quad bike rolled onto him after it left a dirt road.

I find that Robert Beamish died on 8 August 2014 at Lynchs Creek near Kyogle, in northern New South Wales, as a result of traumatic asphyxiation sustained when his CanAm 650 quad bike rolled onto him.

I find that LE died on 18 January 2015 at Walgett in the State of New South Wales as a result of injuries sustained when the 500cc CF Moto quad bike that he was riding overturned onto him.

Recommendations

For the reasons set out in these findings, I make the following recommendations pursuant to section 82 of the *Coroners Act 2009:*

To:

Martin Hoffman
Secretary, Better Regulation Division
Work Health & Safety
SafeWork NSW

The Chief Executive Officer
Safe Work Australia

The Executive Director
Federal Chamber of Automotive Industries

Cameron Cuthill
Executive Director – Government Relations
Polaris Industries Australia & New Zealand

Mr Ken Higgins
The Australian Quad Distributors Association
Chair

The Chief Executive Officer
National Farmers Federation

The Honourable Gabriel Upton MP
NSW Attorney-General

The Chairperson
NSW Law Reform Commission

David Robertson
QB Industries (Quadbar)
Managing Director

Matthew Tiplady
ATV Lifeguards
Managing Director

RECOMMENDATION #1:

a) That SafeWork NSW, in collaboration with Safe Work Australia, and Work Health and Safety Authorities in other States and Territories, develop, implement and support a safety rating system which provides independent information for the assistance of prospective purchasers of new Quad Bikes, side-by-side and related vehicles for the workplace environment.

b) That the Federal Chamber of Automotive Industries, and Polaris Industries, collaborate with Safework NSW, and other Work Health and Safety Authorities, to assist in the development and implementation of the safety rating system.

RECOMMENDATION #2:

a) That the Federal Chamber of Automotive Industries, Polaris Industries and the Australian Quad Distributors Association take steps to develop Australian Standards through Standards Australia, in consultation with other relevant stakeholders, relating

to the design, manufacture, importation and supply of Quad Bikes, side-by-side and related vehicles.

RECOMMENDATION #3:

a) SafeWork NSW, Safe Work Australia, the Federal Chamber of Automotive Industries, Polaris Industries, the Australian Quad Distributors Association, and the National Farmers Federation, in consultation with other relevant stakeholders, work to develop an improved and standardised nationally accredited training package for the operation of Quad Bikes, side-by-side and related vehicles.

b) That SafeWork NSW, Safe Work Australia, the Federal Chamber of Automotive Industries, Polaris Industries, the Australian Quad Distributors Association, and the National Farmers Federation, in consultation with other relevant stakeholders, work collaboratively to improve the uptake of training in the operation of Quad Bikes, side-by-side and related vehicles.

c) That the Federal Chamber of Automotive Industries, Polaris Industries and the Australian Quad Distributors Association work with their members to promote, at point of sale, the uptake of training in the operation of Quad Bikes, side-by-side and related vehicles.

d) That consideration be given, by the NSW Law Reform Commission and the NSW Attorney-General, to the introduction of legislation requiring mandatory training and/or licensing of all persons using Quad Bikes, side-by-side and related vehicles.

e) That SafeWork NSW give consideration to providing and promoting rebates to employers for the costs of providing training courses for employees concerning the safe use of Quad Bikes, side-by-side and related vehicles.

RECOMMENDATION #4:

a) That the Federal Chamber of Automotive Industries, Polaris Industries and the Australian Quad Distributors Association in consultation with SafeWork Australia take

steps to develop an Australian Standard through Standards Australia relating to the design and manufacture of helmets for use with Quad Bikes, side-by-side and related vehicles.

b) That until an Australian Standard for helmets is issued, SafeWork NSW consider adopting and promoting the use of helmets which comply with New Zealand Standard NZS 8600:2002.

c) That the Federal Chamber of Automotive Industries, Polaris Industries, and the Australian Quad Distributors Association work to promote the importance of helmets, and the range of suitable helmets, at point of sale.

d) That SafeWork NSW conduct a campaign, aimed at farming and other workplaces, to promote awareness of the criminal liability which may attach to persons and corporations who fail, in the course of a business or undertaking, to provide and enforce the use of helmets by persons using Quad Bikes, side-by-side and related vehicles.

e) That consideration be given, by the NSW Law Reform Commission and the NSW Attorney-General, to the introduction of legislation requiring the use of a suitable helmet by all persons using Quad Bikes, side-by-side and related vehicles.

RECOMMENDATION #5:

a) That SafeWork NSW, SafeWork Australia, and the manufacturers of the “Quadbar” and “Lifeguard” Crush Protection Devices, collaborate and attempt to reach agreement to conduct an independent survey study to assess the benefits, risks and general efficacy of Crush Protection Devices.

RECOMMENDATION #6:

a) That any Australian Standard for side-by-side or related (ride-in) vehicles that is developed in accordance with recommendation 2 above, include a requirement for

the fitting of a suitable occupant retention system and design measures aimed at encouraging seatbelt use.

b) That consideration be given, by the NSW Law Reform Commission and the NSW Attorney-General, to the introduction of legislation requiring the use of a seatbelt by all operators and passengers in side-by-side or related (ride-in) vehicles.

RECOMMENDATION #7:

a) That SafeWork NSW and Safe Work Australia conduct a campaign, aimed at farming and other workplaces, to promote awareness of the possible criminal liability which may attach to persons and corporations who expose children to risk by allowing them to use adult-sized quad bikes, side-by-side or related vehicles.

b) That consideration be given, by the NSW Law Reform Commission and the NSW Attorney-General, to the introduction of legislation prohibiting any child under 16 years from using an adult sized quad bike, side-by-side or related vehicle.

RECOMMENDATION #8:

a) That SafeWork NSW conduct a public media campaign to increase awareness in persons engaged in rural activities in NSW, of the following matters:
    i. The risk of death or serious harm from being crushed or asphyxiated in rollovers and other accidents involving quad bikes, side-by-side and related vehicles;
    ii. The risk of death or serious harm from head injury where a helmet is not worn in accidents involving quad bikes, side-by-side and related vehicles;
    iii. The risk of death or serious harm where seat belts are not worn in accidents involving side-by-side and related vehicles;
    iv. The risk of death or serious harm to children who use adult-sized quad bikes, side-by-side and related vehicles;
    v. The risk of death or serious injury to those who operate quad bikes, side-by-side and related vehicles without proper training;

vi. The risk of death or serious injury in carrying passengers on quad bikes and side-by-side that are not specifically designed to carry a passenger, or in carrying more passengers than the vehicle is designed to carry;

vii. The risk of death or serious injury to those who operate quad bikes, side-by-side and related vehicles whilst under the influence of alcohol, or in a reckless or careless manner.

b) That Safe Work Australia and the National Farmers Federation consider conducting a public media campaign to increase awareness in persons engaged in rural activities in NSW in respect of the matters outlined above.

I close this inquest.

26 November 2015
Magistrate Sharon Freund
Deputy State Coroner