

IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: COR 2007 1339

FINDING INTO DEATH WITH INQUEST

Form 37 Rule 60(1)

Section 67 of the Coroners Act 2008

Inquest into the Death of: Michael John JONSON

Hearing Dates: 14 July 2009, 12 October 2009, 28 & 29 January 2010

Appearances: Mr Lachlan Carter of Counsel on behalf of Mr Dennis O'Keefe
Mr Robert Taylor of Counsel on behalf of VicRoads

Police Coronial Support Unit: Leading Senior Constable Remo Antolini

Findings of: AUDREY JAMIESON, CORONER

Distributed on: 27 July 2015

I, AUDREY JAMIESON, Coroner having investigated the death of Michael John JONSON

AND having held an inquest in relation to this death on 14 July 2009, 12 October 2009 and 28 & 29 January 2010

at Melbourne

find that the identity of the deceased was Michael John JONSON

born on 17 January 1959

and the death occurred on 9 April 2007

at The Alfred Hospital, 55 Commercial Road, Melbourne, 3004 Victoria

from:

- 1 (a) MULTIPLE INJURIES SUSTAINED IN A MOTOR VEHICLE INCIDENT
(DRIVER)

in the following circumstances:

1. On 9 April 2007, two cars were travelling in opposite directions along the Melba Highway near the Vasey Houghton Bridge. The first vehicle, a white coloured Holden Frontier, was driven by Mr Donald Trythorn with a passenger, Mr Dennis O'Keefe. They were travelling in a southerly direction towing a three wheel tandem trailer which was loaded with parts and tools used during a weekend motorcar race at Bathurst.
2. Mr Michael Jonson, the deceased in this matter, was driving the second vehicle, a Toyota Corona station wagon, towards Yarra Glen from the opposite direction to Mr Trythorn and Mr O'Keefe. At about 5.30pm, he reached the eastern end of the Vasey Houghton Bridge, when the trailer that was being towed by the Frontier broke away from the drawbar and crossed onto the north-west bound lane and into the path of Mr Jonson, impacting with his vehicle. As a result, he suffered life-threatening injuries and died in hospital later that evening.

BACKGROUND CIRCUMSTANCES

3. Mr Jonson was 48-years of age at the time of his death. He was a long-time resident of the Yarra Glen Community and an active member of the local football club.
4. Mr Donald Trythorn was a retired 64-year old man at the time of the collision. He was the holder of a full Victorian license and had many years of experience driving on roads as well as in competitive motor sports racing. He was licensed by the Confederation of Australian Motor Sports and had been competing in such events for approximately 20 years. He was an experienced driver in towing trailers of various sizes and weights.

5. Over the course of the 2007 Easter break, a 12 hour endurance motorcar race was held at the Mount Panorama racetrack in Bathurst, New South Wales. Mr Trythorn participated in this event as one of four drivers in a team with Mr O'Keefe, Mr Paul Faulkner and Mr Richard Howe.
6. In order to take the required spare parts, tools and equipment that may be needed during the course of the event, Mr O'Keefe obtained the use of a tandem trailer from Mr David Brennan. The trailer was loaded with the required parts for the Bathurst trip. Unfortunately, no spare wheel for the trailer was able to be taken as the only available one had the wrong offset and rubbed the inside of the body of the trailer.¹
7. On 6 April 2007, Mr Trythorn and Mr O'Keefe towed the trailer to Bathurst using the Holden Frontier. They estimated that the trailer was carrying approximately 600kg although the evidence suggests it was approximately 800kg.² Over the course of the weekend, there were no problems with the trailer.³
8. At 7.00am on 9 April 2007, Mr O'Keefe and Mr Trythorn commenced the return journey to Melbourne with Mr O'Keefe driving. There was slightly less weight in the trailer as Mr Faulkner had taken some of his own equipment out⁴ but Mr O'Keefe estimated this would have been no more than approximately 50 kilograms.⁵ After travelling for some time, Mr O'Keefe heard a noise and felt a change in the car's handling. He then observed that the rear right tyre of the trailer had blown out and he pulled over to the side of the road.
9. Mr Trythorn and Mr O'Keefe did not have a spare wheel that would fit the trailer and knew that they could not continue with the wheel and tyre in the condition that they were in. They removed the damaged and deflated tyre and rearranged the load in the trailer to take the weight off the right side rear wheel from where the tyre had been removed. This put the weight of the load onto the remaining tyres and predominantly onto the left or passenger side of the trailer.
10. Mr O'Keefe continued driving after removing the tyre and rearranging the trailer's load. After a short time, they stopped again and inspected the condition of the remaining tyres and wheel bearing. They touched the tyre and hub of the wheels to feel for uneven temperatures between

¹ Statement of Dennis O'Keefe dated 9 April 2007, Inquest brief of evidence page (pg) 52, pg 2.

² Exhibit 2, Report of Bruce Field dated 24 February 2009, pg 8.

³ Statement of Dennis O'Keefe, above n 1, pg 2.

⁴ Statement of Paul Faulkner dated 28 April 2007, Inquest brief of evidence pg 47, pg 2.

⁵ Statement of Dennis O'Keefe, above n 1, pg 2.

the individual bearings and tyres. After a short time of driving, Mr O'Keefe found that the trailer had become unsteady as the vehicle and trailer combination exceeded 80km/h. He informed Mr Trythorn of this and they agreed that 80km/h was the maximum speed at which they would travel in order to keep the trailer stable.⁶ A number of times throughout their journey, they pulled over to the side of the road in order to allow other cars to pass them at a faster speed.

11. The duo continued driving and had a break along the Hume Highway before Mr Trythorn again took over the driving. From Benalla, they turned onto the Midland Highway towards Barjarg. At Barjarg, they stopped and had another break. At this stop, Mr Trythorn attempted to obtain a replacement wheel and tyre for the trailer but again found that the only ones available were the wrong pitch circle diameter.⁷ This was the only occasion since the 'blow out' near Holbrook in New South Wales that Mr Trythorn and Mr O'Keefe attempted to obtain a spare tyre for the trailer after travelling 220km. With no success in finding a replacement tyre or spare wheel and tyre, they continued towards Yarra Glen.

CIRCUMSTANCES OF THE INCIDENT:

12. Along the journey from Yea towards Yarra Glen, Mr Trythorn stopped on a number of occasions so that he and Mr O'Keefe could continue to check the condition of the remaining wheels and tyres. At about 5.30pm, Mr Trythorn drove onto the Vasey Houghton Bridge onto the Melba Highway over the Yarra River.
13. The Frontier was travelling south and drove through a sweeping left hand bend onto the short straight section of the road before entering the Vasey Houghton Bridge. The bitumen surface on the bridge is smoother than the road surfaces approaching the bridge from both directions, however there was a slight dip in the road prior to the bridge, immediately before southbound traffic would enter the bridge.
14. At this point, the right corner of the drawbar of the trailer broke away from the front right corner of the trailer frame. The trailer then pulled to the right as it was towed across the bridge. As the drawbar straightened, the left corner broke away from the frame of the trailer, propelling it onto the north-west bound lane. At the same time as this started to occur, Mr Jonson approached the eastern end of the bridge.

⁶ Ibid, pg 3-4.

⁷ Ibid, pg 4. Pitch Circle Diameter is the diameter of an imaginary circle drawn through the centre points of the studs in a hub or the stud holes of a wheel.

15. The trailer collided with Mr Jonson's vehicle and lifted up into the air. The vehicle rotated in a counter clockwise direction vertically and landed on its passenger side on the west bound lane. The front of the trailer also collided with the steel safety barrier along the northern edge of the road to the east of the bridge.
16. The Melba Highway is a two lane undivided highway set in a semi rural environment that runs in a general north west, south east direction. It has a flat horizontal alignment and is divided into two lanes by solid double white lines painted along the approximate centre of the bitumen road surface. The relevant section of road surface was in good condition with concrete bridge walls and railings along both the southern and north side of the road. The road was dry, traffic was light and it was a fine sunny day with good visibility at the time of the incident. The section of the Melba Highway where the incident occurred is a 60km/h speed zone.
17. Senior Constable (S/C) Angelo Maccagnini and S/C Glenn Piper from Yarra Glen Police Station arrived on the scene. S/C Maccagnini observed Mr Jonson's vehicle on the western side of Melba Highway, facing north-west and Mr. Jonson trapped in the driver's seat. He observed the dual axle trailer on the opposite side of the road lying on its left side, having collided with the guardrail. The contents of the trailer were strewn across the Melba Highway. The sides of the trailer, which were sheet metal, were severely damaged, allowing the contents to fall out. The dual axle trailer was missing the rear off-side wheel and the trailer was also missing its drawbar. The Frontier appeared to be undamaged and the drawbar which was constructed of steel tubing appeared to have broken off where it was attached to the trailer at the front of each corner.
18. Mr Jonson suffered life-threatening injuries and was air lifted to the Alfred Hospital. He was in cardiopulmonary arrest and Associate Professor Mark Fitzgerald performed a clam-shell thoracotomy and commenced open chest cardiac massage. Unfortunately, at 7.20pm, 15 minutes after arrival, Mr Jonson succumbed to his injuries and died.
19. Mr Trythorn underwent a preliminary breath test at the scene, which returned a negative result. He was later interviewed by police members from the Glen Waverley Major Collision Investigation Unit and subsequently a brief of evidence was completed for consideration of criminal charges against him. However, on 28 December 2007, Mr Trythorn suffered an intracerebral haemorrhage and an acute middle cerebral artery infarction and died as a result. No charges have been pursued against Mr O'Keefe.

FORENSIC PATHOLOGY

20. On 12 April 2007, Forensic Pathologist Dr Sarah Parsons from the Victorian Institute of Forensic Medicine conducted an autopsy upon the body of Mr Jonson and provided a written report of her findings. She identified multiple bruises, lacerations and abrasions on the skin and subcutaneous tissues, pulmonary contusions, cerebral oedema and multiple fractured ribs. Dr Parsons ascribed the cause of Mr Jonson's death to;

1 (a) MULTIPLE INJURIES SUSTAINED IN A MOTOR VEHICLE INCIDENT
(DRIVER).

21. Toxicological analysis of blood retrieved post mortem revealed the presence of 0.1mg/L of benztropine that was considered to be within the therapeutic range. No alcohol or other common drugs or poisons were detected.

JURISDICTION

22. At the time of Mr Jonson's death, the *Coroners Act 1985* (Vic) ('the old Act') applied. From 1 November 2009, the *Coroners Act 2008* (Vic) ('the new Act') has applied to the finalisation of investigations into deaths that occurred prior to the commencement of the new Act.⁸

23. It is therefore necessary to consider whether the Directions Hearings held on 14 July 2009 and 12 October 2009 could be classified as an 'Inquest' despite the fact that the subsequent hearings did not take place until after the commencement of the new Act in 2010.

24. According to section 3 of the old Act, 'Inquest' includes a formal hearing and 'investigation' is defined to include an Inquest. Mr Robert Taylor, Counsel for VicRoads submitted that the definition (being inclusive) recognises that an Inquest may also be constituted by things other than a formal hearing. The expression 'Inquest' is defined by what it does, that is, it 'inquires.' He therefore submitted that the inquiries made by the Coroner at the Directions Hearings form part of the inquisitorial process and are therefore part of the 'Inquest.'

25. In this instance, at the Directions Hearing of 14 July 2009, I requested that VicRoads file submissions touching upon the issues said to arise from the incident. In particular, I indicated that I wished to receive information from VicRoads about the registration scheme for interstate vehicles and trailers. At the further Directions Hearing on 12 October 2009, I requested VicRoads identify a suitable person to attend and give evidence at the hearing. Mr Taylor

⁸ Section 119 and Schedule 1 - *Coroners Act 2008*. The commencement day was 1 November 2009.

submitted that this was a further 'inquiry' and therefore the Inquest commenced on 14 July 2009 or at least 12 October 2009 as otherwise I would have had no power to require the information sought on 14 July 2009.

26. I accept the proposition that the two Directions Hearings did form part of the Inquest and therefore the old Act applies.

27. The primary purpose of the coronial investigation of a reportable death⁹ is to ascertain, if possible, the identity of the deceased, the cause of death (interpreted as the medical cause of death) and the circumstances in which the death occurred.¹⁰

28. Pursuant to section 19 (2) of the old Act, a Coroner may comment on any matter connected with the death including public health or safety or the administration of justice and under section 21 (2), can make recommendations to any Minister or public statutory authority on any matter connected with a death, including public health or safety or the administration of justice. This is referred to as the 'prevention role' of the coroner.

INQUEST:

29. The Inquest was held on 14 July 2009, 12 October 2009 and 28-29 January 2010. The following issues were identified as requiring further exploration;

- a. the manufacture of the trailer located in New South Wales;
- b. the subsequent modifications to the trailer made by Mr Ian Arkell and Mr David Brennan;
- c. the effects of the trailer travelling on three wheels during the return trip from Bathurst;
and
- d. the registration requirements for interstate vehicles and trailers used in Victoria.

30. Each of these issues will be considered in turn.

⁹ Section 4 of the *Coroners Act 2008* (Vic) requires certain deaths to be reported to the coroner for investigation. Apart from a jurisdictional nexus with the State of Victoria, the definition of a reportable death includes all deaths that appear 'to have been unexpected, unnatural or violent or to have resulted, directly or indirectly, from accident or injury. Mr Johnson's death falls within this definition.

¹⁰ *Coroners Act 2008* (Vic) s 67.

31. *Viva voce* evidence was heard from the following witnesses in relation to the death of Mr Jonson:

- a. Mr David Brennan;
- b. Consulting Engineer Associate Professor Bruce Field;
- c. Mr Ross McArthur- Manager Vehicle Safety and Policy VicRoads; and
- d. Coroner's Investigator Sergeant Mark Amos.

THE MANUFACTURE OF THE TRAILER:

32. The trailer involved in the collision was a tandem pig trailer that had been manufactured by Clarkes Country Campers in New South Wales in 2001 as a special order for its first owner, Mr Ian Arkell.
33. The order called for a flat trailer of minimum weight, to transport a Mini Minor car modified for racing. According to the trailer's designer Mr Raymond Clarke, he minimised the tare (bare trailer weight) by using parallel square steel tubes around the perimeter and extending the side tubes to form the drawbar. Mr Clarke reported that this method of construction saved some 120kg compared with a more conventionally constructed trailer with major longitudinal beams.¹¹
34. The drawbar design was similar to that of a side rail that comprised a 50mm square tube on the top and a 30mm square tube below, separated by a series of 50mm square spacing tubes along part of its length. At the rear of the frame, the 30mm lower tube was angled up to meet the 50mm tube where they were welded together. This same method of connecting the tubes was used at the drawbar.¹²
35. The trailer was registered in New South Wales as capable of carrying up to two tonne Gross Trailer Mass with a maximum payload of 1520kg. Apparently, the basic trailer as delivered had a tare of 480kg.¹³
36. The trailer frame was supported on two conventional square section axles. Near each end of the axle, a leaf spring assembly was clamped. The four leaf springs comprised three 45 x 6.4mm

¹¹ Exhibit 2, above n 2, pg 4.

¹² Ibid.

¹³ Statement of Raymond Clarke dated 17 August 2007, Inquest brief of evidence pg 71, pg 1.

(cross section) spring steel strips, bent into arcs. Associate Professor Bruce Field, a Consulting Engineer, prepared a report for the Court regarding the failure of the trailer drawbar. He noted that the springs used on the trailer would support a safe working load of 1.8 tonne. The chosen springs were probably some 10% under capacity for the 2 tonne GTM trailer.¹⁴

37. Professor Field stated that the general workmanship in the manufacture of the trailer appears to be of an acceptable quality, although there are regions of poor weld penetration around the junction of the drawbar and the trailer frame.¹⁵ He stated;

*The notching of the RHS members has not been carried out (i.e. a symmetrical notch that would fold up to a simple elbow with all four surfaces becoming continuous) but has instead been formed from one saw cut perpendicular to the RHS surface and a second angled, longer cut. Consequently, when the elbow was formed, there were different lengths of saw cut on each side of the upper and lower surfaces, and the inner vertical cuts did not meet. A separate strip was welded on to cover the opening left by the mismatched inner surfaces. It is difficult to predict the likely effects of this method of construction, but it most probably caused local increases in stresses around the welds because the discontinuous inner surfaces would be less stiff than the other three tube surfaces, and would therefore transfer additional stresses to those three continuous surfaces.*¹⁶

MODIFICATIONS TO THE TRAILER BY MR ARKELL:

38. In 2002, Mr Arkell modified the trailer by adding two wooden ramps to it. Some two years later, he enclosed the trailer with an aluminium-clad steel tubing frame welded to the existing trailer. Mr Arkell claims that the resulting modified trailer was re-registered after it was inspected, although the registering station no longer exists. The new unloaded trailer tare would have been approximately 660kg (this is the current mass of the trailer as determined by VicRoads on 26 February 2009).¹⁷

39. Professor Field opined that the welds that attached the new steel tubing frame to the original trailer base are sufficiently remote from the places where the drawbar joined the base to be

¹⁴ Exhibit 2, above n 2, pg 4-5.

¹⁵ Ibid, pg 7.

¹⁶ Ibid.

¹⁷ Ibid.

excluded as possible contributors to the fracture that occurred during the accident. He further noted that the enclosure added a significant amount to the trailer tare and consequently reduced the load capacity of the trailer. The enclosure at some 1.7metres high and 4 metres long also added a large vertical surface that could have been affected by strong side winds and could have created an incentive to stack contents high inside the trailer. These phenomena could have the effect of causing significant lateral load transfer in cornering and/or winds, and therefore additional loading on the suspension. For a properly designed suspension, these additional intermittent loads would be insignificant and in themselves would have no effects on the drawbar loadings.

40. Professor Field concluded that there was no direct connection between the modifications carried out by Mr Arkell and the subsequent accident.¹⁸

MODIFICATIONS TO THE TRAILER BY MR DAVID BRENNAN:

41. In 2006, Mr Arkell gave the trailer to his son, in order for him to sell his Formula Ford racing car with the trailer as a total package. On 12 June 2006, Mr David Brennan, a Victorian resident, in the company of his father, Mr Peter Brennan, purchased the car and trailer. The trailer came with a registration certificate and compliance plate.
42. Mr David Brennan serviced the trailer, which included fixing new mud guards and replacing the wheel bearings. He also lowered the trailer height by what he believed to be approximately 10mm¹⁹ so that it could be towed with a sedan. He indicated he could not find anything of concern regarding the structure of the trailer or damage to any of the tubing²⁰ and used the trailer on a number of occasions. The registration of the trailer expired on 25 July 2006 and the trailer was not registered in Victoria as Mr David Brennan had no intention to use it until he had rebuilt the Formula Ford racing car.²¹
43. Professor Field noted that at the time of the accident, there were two 12.7mm spacers (totalling one inch in height) under each of the axles at their mounts and there is no indication that any spacer had been fitted between the axle and suspension spring when the trailer was first constructed. A 'U' bolt from the rear off-side suspension had a light layer of rust but also retained a ring of galvanising slightly above mid-thread. This was indicative of long-term

¹⁸ Ibid.

¹⁹ Transcript (T), pg 60.

²⁰ Exhibit 1, Statement of David Brennan dated 27 April 2007, pg 1.

²¹ T, pg 46.

protection around the thread in that region, most probably due to the presence of a nut that excluded moisture. The upper extremity of the galvanised region is approximately 25mm above the top of the nut in its current location, with most of the 'U' bolt ends currently located beneath the lower surface of the nuts. There is no noticeable difference in the appearance of the rust on the 'U' bolt thread behind the nut in its current position, and on the thread adjacent to the nut.

44. Professor Field concluded that for the majority of its life, the suspension was not fitted with any lowering blocks, but that for a relatively short, recent period, the suspension was lowered by 25.4mm. It appears most likely that Mr David Brennan had lowered the suspension by the entire 25.4mm, although he reported he had lowered it by only about 10mm.²² The 25.4mm spacers reduced the suspension travel between the unloaded and bump stop positions from 60mm to 35mm, a reduction of more than 40% in travel. The VicRoads *Guide to Modifications for Motor Vehicles* (May 2003), Section 5 allows lowering up to 33.3% of the manufacturer's intended suspension travel.
45. The current suspension travel of 35mm corresponds to a trailer load of 760kg. Before the lowering blocks were added, the maximum static load before the bump stops were reached was 1300kg. These maximum loads of 760kg and 1300kg do not accommodate any extra suspension travel required by normal undulations in road surface.²³
46. Professor Field concluded that at the date of the accident, the trailer was incapable of carrying a load over 760kg on four wheels without riding on its bump stops, nor more than 600kg on three wheels, provided those loads were evenly distributed over these wheels. The evidence suggests that the trailer was loaded with nearly 800kg at the time of the accident.²⁴

USE OF THE TRAILER ON THE DAY OF THE ACCIDENT:

47. The trailer was loaded up to approximately 1500kg aggregate trailer mass (ATM) on 6 April 2007 for the trip to Bathurst. The 1500kg, if uniformly distributed over the trailer but for a modest downward load on the hitch, would normally deflect suspension springs by approximately 70mm. This loading would therefore cause both the axles to rest on the lower frame members.²⁵

²² Exhibit 2, above n 2, pg 7-8.

²³ Ibid, pg 8.

²⁴ Ibid.

²⁵ Ibid.

48. During the return trip from Bathurst on 9 April 2007, the rear off-side tyre deflated, the wheel removed, the load re-distributed and the drivers continued more slowly towards Melbourne on three wheels. The ATM for the journey was 1475kg.
49. On four wheels with modest allowance for the downward load from the towing hitch onto the car's towbar, the static tyre loads would have averaged 360kg each. The removal of one wheel would have redistributed the wheel loads unevenly, with the loads on the two near side wheels remaining near 360kg, and the single effective off side wheel load rising to over 700kg. It is not possible to predict how these wheel loads were altered following Mr O'Keefe and Mr Trythorn's redistribution of the trailer contents. However an indication of an extreme possibility can be gained by estimating that the load could have been shifted entirely into the near-side half of the trailer but was uniformly distributed over that half. This would shift the locations of the ATM 490mm towards the near-side from the centre. Professor Field calculated that depending on the degree of redistribution, the wheel loads could have varied from a uniform 491kg each to an off-side peak load of 700kg to the near side peak loads of some 530kg. In each instance however, at least one side of the trailer would have been running with the axle(s) firmly in contact with the frame (this occurred at an individual wheel load of approximately 310kg).²⁶
50. In Professor Field's inspection of the trailer, he concluded that the drawbar had experienced the growth of medium to long-term fatigue cracks and had completely fractured by fatigue at the off side member. This separation then placed high lateral bending loads on the partly-fatigued near-side drawbar joint, which led to the tensile failure of the remaining sound material on the near side.²⁷ Some of the welds on the elbow joints were of low quality, with minimal weld penetration. Professor Field considered the weld quality may have influenced the distribution of stress around the local material, and facilitated the growth of the fatigue crack.

MECHANICAL INSPECTION OF THE TRAILER:

51. Senior Sergeant (S/S) Robert Le Guier, a qualified mechanic from the Major Collision Investigation Group and Mr Mark Grulke from the Victoria Police Forensic Service Centre's Vehicle Examination Unit conducted an inspection of the trailer in order to determine its compliance with the Australian Design Rules (ADR) and the cause of the drawbar failure.

²⁶ Ibid, pg 9.

²⁷ Ibid, pg 10.

52. At the time of examination, the off-side rear wheel and tyre assembly were missing from the axle and located inside the trailer. Both off-side tyres were extensively damaged on the tread and walls. The trailer drawbar had been separated from the trailer frame and there was extensive damage to the canopy and off-side front of the trailer frame. The drawbar to trailer frame welding joints were predominantly intact with only a couple of small sections of the welding separating from the metal due to poor weld penetration. The materials had been separated adjacent to the welds by a combination of tearing and cracking of the metal. The cracking was through the weak and brittle area of the metal created by the heat of the welding process. The tearing in the metal and on the off-side where the drawbar had separated from the trailer frame side rail indicated a movement of the drawbar in an upward left direction (to the near side) prior to separation. The near side had predominantly broken cleanly with some minor tearing indicating that it had separated to the left.²⁸

53. The ADR 44.2.4.4 provides the requirements for drawbars, couplings, towbars and safety connections for passenger cars. The requirement for the drawbar states that it shall be of sufficient strength to prevent the trailer from becoming separated from the 'coupling' and must be securely attached to a substantial portion of the trailer.²⁹ The ADR does not state under what circumstances the drawbar must not separate from the coupling or define what is meant by 'substantial portion of the trailer' in relation to how it must be attached.

54. In relation to the trailer examined, Mr Grulke noted the towbar was welded directly to the trailer frame and therefore becomes part of the frame. This could be interpreted as a substantial portion of the trailer and therefore meets the ADR requirement. The drawbar did become separated from the trailer, however whether or not this meets the ADR requirement depends on the interpretation of same in relation to the circumstances under which it must not become separated. Mr Grulke relied on the assumption that this means whilst towing the trailer in a roadworthy condition and within the specified load limit for the trailer. He was therefore of the opinion that the trailer would have met the ADR requirement for drawbar strength prior to the event that caused it to separate and met the ADR requirements for couplings and safety connections.³⁰

²⁸ Statement of Mark Grulke dated 31 August 2007, Inquest brief of evidence pg 111, pg 2-3.

²⁹ ADR 44.2.4.4.5.

³⁰ Statement of Mark Grulke, above n 28, pg 3.

55. Mr Grulke also stated that the configuration of the trailer was possibly not the optimal way in which a trailer of this capacity could have been built.³¹ The use of welds in tension in this engineering environment is generally not recommended. The drawbar is normally attached at an angle across the front underside of the trailer frame, finishing forward of the wheels. Attaching the drawbar in this fashion puts the joining welds in shear meaning the drawbar material carries the bulk of the forward load of the trailer, rather than the load being taken by the welded joints, as was the case with the examined trailer. The quality of the workmanship employed in building the trailer was of an adequate standard, was sound and Mr Grulke was of the opinion that it would have been safe and serviceable while used in a roadworthy condition and within the specified load limits.
56. Mr Grulke concluded that the drawbar of the trailer had separated at its weakest point due to a sudden and traumatic overloading of the drawbar to trailer frame join on the off-side front of the trailer. This has caused a follow-on effect, which caused the near side join to break away and subsequently the drawbar and coupling to separate from the trailer frame.
57. S/S Le Guier found that the passenger's side brake drum on the front axle of the trailer was scored and that this may have caused uneven braking which may have caused the trailer to veer to the right when braking.³² He provided the opinion that towing of a loaded tandem trailer with the offside rear wheel not fitted would have caused torsional and beaming stresses to the welded section on the drawbar at the offside front, would have caused the ultimate failure of the drawbar and caused the collision.
58. Mr Grulke examined the trailer and concluded that it was possible that the drawbar in question could have complied with the ADR, yet still have separated at its weakest point due to a sudden overloading of the drawbar to trailer frame join caused, at least in part, by the excess tension caused by driving with only one offside wheel instead of two.

ANALYSIS OF THE TRAILER'S FAILURE:

59. Professor Field concluded that the modest damage to the trailer frame above the removed (rear off-side) wheel is indicative of an overloaded suspension while the trailer ran on four wheels. It appears that the load on the trailer three days prior to the accident was the greatest in the trailer's life, so the frame above the removed wheels was most probably damaged to the

³¹ Ibid, pg 4.

³² Statement of Robert Le Guier dated 19 April 2007, Inquest brief of evidence pg 115, \ pg 13-14.

observed level up to and during that time. It is very unlikely that the damage could have occurred after the wheel was removed, as it would have required at least 300kg of upward force on the free end of the axle to make the axle touch the frame. Although the free end of the axle could have vibrated vertically when the wheel was absent, its vibrating motion would not have reached the frame.³³

60. The damage above the two near-side axles is reasonably similar, suggesting similar loadings and impacts above those axles. The damage above the front off-side spring is less extensive. The reason for the difference in damage between near and off-side frames is not immediately obvious. Static loading of a few hundred kilograms could not cause such damage: it required repeated impact (hammering) which in turn required intermittent clearance. One plausible explanation for the pattern of damage after one wheel was removed is that the off-side single wheel was the more heavily loaded and the frame ran for most of the journey resting on the off-side front axle. Occasional bumps would have lifted the frame off this axle and caused a moderate amount of hammering-damage. The more lightly loaded near-side suspension would have lifted the frame off the axles more frequently over lesser bumps, resulting in a higher number of hammer impacts on the near-side ends of the axles, and therefore more extensive damage to the near-side frame.³⁴
61. An alternative explanation for the asymmetrical damage is the greater likely frequency by which the near-side wheels ran over rough off-road surfaces; the drivers frequently pulled off the road to allow faster vehicles to pass.
62. The impact of the axles onto the frame would have sent impulsive (short-term) stresses through the frame and drawbar. Additional pitching loads tending to bend the drawbar could arise from the shorter effective wheelbase with three wheels (a triangle formed by the wheels instead of a rectangle). The combined forces through the frame would have increased the rate of fatigue around the junction of the drawbar and the frame, resulting in the subsequent fracture. It seems probable that the failed junction was already cracked before the wheel was removed; but the crack grew more rapidly during the subsequent trip towards Yarra Glen due to the combined effects of the heavy load and the bottomed suspension.³⁵

³³ Exhibit 2, above n 2, pg 11.

³⁴ Ibid.

³⁵ Ibid, pg 12.

63. For small trailers of less than 4.5 tonne ATM, manufactures have a responsibility to ensure the trailer meets the requirements of the ADR. The VicRoads Vehicle Standards Information document 26: *Roadworthiness Requirements* (June 2001) requires adequate clearance between suspension components and the vehicle body. According to Professor Field, in this trailer, there would not have been any space at all between the axle and the trailer frame had it been loaded to its ATM for its first registration, and again for its re-registration in Victoria after being lowered. Under this interpretation, the trailer was never roadworthy.³⁶

EFFECT OF THE TRAILER TRAVELLING ON THREE WHEELS:

64. S/S Le Guier expressed the view that the removal of one wheel from the trailer would have placed additional loads onto the drawbar because of a ‘twisting’ or ‘bending’ effect on the frame arising from support by three asymmetrical wheels.³⁷

65. Professor Field stated that apart from:

- a. additional drawbar shock loading created by impact on the frame through overloaded suspension,
- b. some differently distributed loading on the whole drawbar arising from (adjustable) location of the centre of gravity; and
- c. some minor dynamic variations potentially introduced by uneven suspension movement arising from uneven wheel loading,

a tandem trailer would normally be capable of running on any three of its four wheels without materially affecting the drawbar loading. This counter-intuitive outcome arises from the inability of the ball-joint trailer hitch to resist any torque applied onto the drawbar from the frame. Any tendency of the frame to twist because of uneven suspension loads would be resisted by the whole frame, without loading the drawbar with additional forces.³⁸

66. At inquest, Professor Field clarified that going from four wheels to three wheels “*increased the impact loads on the front of the trailer and most probably accelerated the fatigue and fracture,*”³⁹ but that was not the main cause of the incident. He believed the trailer was always

³⁶ Ibid, pg 13.

³⁷ Statement of Robert Le Guier, above n 32, pg 14.

³⁸ Exhibit 2, above n 2, pg 13.

³⁹ T, pg 98.

going to break "possibly days, weeks or months later, but the actual loading from three wheels accelerated fatigue."⁴⁰

67. Despite Professor Field's conclusions, it appears counter-intuitive to accept a trailer travelling on three wheels rather than four. Whilst fundamentally the travel on three wheels alone did not cause the accident, I consider it to be an unsafe practice that should be dissuaded.

CONCLUSIONS OF ASSOCIATE PROFESSOR FIELD:

68. The drawbar as manufactured according to Professor Field was weaker than that required for the registered ATM (2000kg) of the trailer. Had the drawbar been formally tested prior to its first or subsequent registrations, it would have experienced a permanent distortion and therefore failed to comply with the National Code of Practice for Building Small Trailers Clause 12.1. Because of softening at the welded region where the drawbar joined the trailer's frame, the registered ATM, based on drawbar strength, should have been below 1600kg.

69. The drawbar was connected to the trailer base frame with incomplete welds around three sides of pieces of square hollow steel section at the regions of highest imposed bending stresses. It is well known that welded joints are especially prone to fatigue failure and should have been avoided in regions of high mechanical stress. Additional stress concentrations arose from a poorly conceived, stepped joint between the drawbar and the trailer's frame.

70. The trailer was fitted with four leaf springs that were rated at a lower capacity than the registered ATM. This had the potential to damage the springs, or create shock loads on the trailer frame and drawbar if the suspension reached its hard steel bump stops.

71. The trailer frame's lower member was placed 30mm below the suspension spring mounts, reducing both the suspension's movements and the potential loading capacity by some 650kg. This effect should have been apparent to the manufacturer and should have led to either a redesign of the spring mounting points (to be placed underneath the lower members) or the selection of a spring with increased load capacity. The suspension reached its uncushioned bump stops (against the trailer's frame) at an ATM of above 1900kg, leaving no room for normal suspension bounce clearance when towing over uneven surfaces.

72. As a result of the above, the trailer as initially manufactured should not have been rated above 1500kg ATM, corresponding to a loading capacity below 1000kg.

⁴⁰ T, pg 98.

73. Mr Brennan's lowering of the trailer by 25.4mm reduced the suspension travel by approximately 40%, contrary to the VicRoads *Guide to Modifications for Motor Vehicles* (May 2003), that allowed a reduction of no more than 33.3%. The act of lowering the suspension further reduced the load carrying capacity to less than 500kg and the safe ATM to less than 1100kg. Modifications made by Mr Arkell increased the tare and thereby reduced the safe carrying capacity, but did not affect the structural integrity or the safe ATM of the trailer.
74. A few days prior to the accident, the trailer had been loaded to a gross mass of approximately 1500kg, exceeding the safe ATM for the trailer. Even though Mr Trythorn and Mr O'Keefe correctly estimated that the gross load was well below the registered ATM, they should have been aware that at 1500kg gross load, the trailer's spring suspension had little or no travel.
75. On the day of the accident, the trailer was being towed on only three wheels with an ATM of 1450kg. This action further increased the loads on the three functioning suspension points and led to gross frame damage and increased shock loads onto the drawbar.⁴¹

THE VICTORIAN VEHICLE INSPECTION AND REGISTRATION SCHEME

76. The trailer in this matter was registered in New South Wales and was not and had never been registered in Victoria. The trailer's registration expiration occurred on 25 July 2006 and Mr David Brennan had no intentions to register the trailer in Victoria until he had rebuilt his Formula Ford racing car.
77. Despite this, Mr David Brennan indicated that he had lent the trailer out on two occasions prior to lending it to Mr O'Keefe.⁴² On each occasion, he had advised the recipient that the trailer was unregistered.⁴³ He also indicated at Inquest that the use of unregistered trailers is a common occurrence as trailers are "*not taken as seriously as unregistered motor vehicles.*"⁴⁴
78. The *Road Safety Act 1986* (Vic) prohibits the use of a vehicle that is unregistered unless it's exempt from registration.⁴⁵ The standards for registration are set out in the *Road Safety Vehicles (Regulations) 2009*.⁴⁶

⁴¹ Exhibit 2, above n 2, pg 14-15.

⁴² T, pg 52.

⁴³ Ibid.

⁴⁴ Ibid, pg 64.

⁴⁵ Section 7(1).

⁴⁶ These have superseded the *Road Safety (Vehicles) Regulations 1999*, which were in force at the time of the incident.

79. With respect to the registration of trailers, the practice of VicRoads is as follows;⁴⁷

- a. the majority of new trailers are registered at the point of sale by the dealer, acting as VicRoads' delegate in accordance with the Dealer Certification Scheme (DCS). As part of the registration process, dealers are required to undertake pre-registration checks of the vehicle to ensure that the vehicle and its identifiers match the particulars on the identification plate;
- b. some applications for registration of new trailers and most applications for registration of used trailers are made to a VicRoads Customer Service Centre (CSC). Before the vehicle is registered, CSC staff will undertake a pre-registration check. Like the check carried out by dealers under the CSC Scheme, the pre-registration check is a **visual inspection** aimed at ensuring that the vehicle matches its identifiers and description and to check that it has not been modified;
- c. a person who wishes to register a trailer that has been modified after manufacture or that has been individually constructed must provide a Vehicle Assessment Signatory Scheme (VASS) certificate. The VASS is a scheme under which VicRoads authorises persons with appropriate engineering qualifications to certify that modified vehicles and vehicles which do not otherwise bear an identification plate or certificate of the manufacture comply with the standards for registration. VASS signatories are persons who VicRoads considers to be qualified to issue such certificates;
- d. where a person applies to register a vehicle in Victoria that is registered interstate, the applicant is required to attend at a VicRoads CSC and to produce evidence of identity and proof of ownership of the vehicle. A CSC officer would ordinarily undertake a visual inspection and VicRoads would check that the vehicle and its identifiers match the description and identifiers recorded in the jurisdiction in which it is registered; and
- e. if the visual check indicates the vehicle has been modified, VicRoads will not register the vehicle without ascertaining that the modifications were approved in the State or Territory in which the vehicle was registered. VicRoads can access the interstate registration record to ensure the dimensions of the vehicle or trailer have not changed since its last registration. If there is evidence that the vehicle or trailer have been modified and the modification has not been approved in another State, VicRoads will

⁴⁷ Letter from DLA Phillips Fox dated 9 October 2009.

either not register the vehicle, or request production of a VASS certification prior to registering the vehicle.

80. The *Vehicle Standards Information 8: Guide to Modifications for Motor Vehicles May 2003*⁴⁸ (VSI 8) contains a list of Approved Modifications which generally do not affect a vehicle's continued compliance with the Standards for Registration in the *Road Safety Vehicle Regulations 2009*. Modifications made in accordance with this guide do not generally require approval unless specified in the guide. There is no list of approved modifications that apply specifically to trailers.⁴⁹ It is the responsibility of a person who modifies a trailer to ensure that the modified trailer continues to comply in full with the ADR and the Vehicle Safety Bulletin 1-Building Small Trailers (VSB1).

81. The modifications made to the trailer the subject of this incident do not appear on the New South Wales registration record.⁵⁰ If the vehicle had been presented to VicRoads for registration, VicRoads has advised that it is probable that the modifications (in particular the canopy and welding) would have been obvious on a visual inspection by a CSC officer and consequently, the officer would have referred the trailer to a VASS engineer. A VASS engineer would have likely refused a VASS certificate for the reasons set out in the report of Professor Field. The trailer would therefore not have been allowed to be registered in Victoria as a result.⁵¹

82. At Inquest, VicRoads Manager for Vehicle Safety and Policy, Mr Ross MacArthur, indicated that the visual examination as performed by the CSC officer is not likely to have identified the design deficiencies of the drawbar configuration or suspension inadequacies as determined by Professor Field.⁵² He also did not believe that these would have been identified by the compliance officers in New South Wales in assessing the trailer.⁵³

FINDINGS

1. I accept and adopt the cause of death as ascribed by Dr Sarah Parsons and I find that Michael John Jonson died from multiple injuries sustained in a motor vehicle incident in circumstances

⁴⁸ This has now been succeeded by *Vehicle Standards Information 8: Guide to Modifications for Motor Vehicles October 2011*.

⁴⁹ Letter from DLA Phillips Fox dated 26 March 2010.

⁵⁰ Letter from DLA Phillips Fox dated 9 October 2009.

⁵¹ Ibid.

⁵² T, pg 123.

⁵³ Ibid, pg 128.

where the vehicle he was driving collided with a trailer that had detached from the vehicle towing it and crossed into the path of Mr Jonson's vehicle.

2. I find that Mr Jonson neither caused nor contributed to the collision that tragically took his own life.
3. I find that the cause of the collision resulted from the trailer being towed by the driver, Mr Trythorn, and his passenger, Mr O'Keefe, having broken away from the drawbar whilst being towed on three wheels. Whilst towing a trailer on three wheels is to be discouraged, I accept the evidence of Professor Field and find that the primary cause of the rupturing of the drawbar resulted from substandard manufacturing which was unable to sustain subsequent modifications.

COMMENTS

Pursuant to section 67(3) of the **Coroners Act 2008**, I make the following comment(s) connected with the death:

1. I find that the failure of Mr David Brennan to register the trailer in Victoria was an opportunity lost to possibly identify the substandard manufacturing. However, it is not equivocal that any fault(s) would have been picked up by a visual VicRoads CSC.
2. The difficulty in examining the manufacture of the trailer for this investigation into Mr Jonson's death arose from the fact that the trailer was manufactured out of Victoria where I do not have jurisdiction.
3. I am satisfied that the requirements for registration of trailers in Victoria is rigorous, however, it does of course rely on members of the public to comply and adhere to the relevant laws and regulations. Therefore, in the circumstances, I make no recommendations in this matter.

I direct that a copy of this finding be provided to the following:

Ms Leanne Jonson

Mr Robert Taylor of Counsel

Ms Rachel Walsh, DLA Phillips Fox on behalf of VicRoads

Mr Sam Norton, Robert Stary Lawyers on behalf of Mr Dennis O'Keefe

Transport Accident Commission

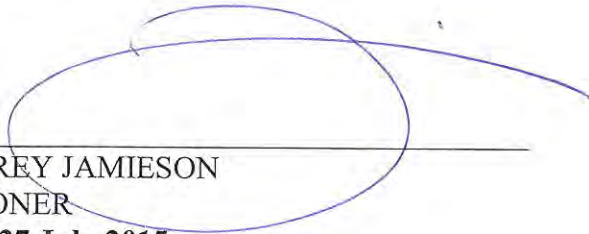
Australian Government, Department of Infrastructure and Regional Development

Police Coronial Support Unit

Leading Senior Constable Remo Antolini

Sergeant Mark Amos

Signature:



AUDREY JAMIESON

CORONER

Date: 27 July 2015

