IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: COR 2017 0344

FINDING INTO DEATH WITH INQUEST

Form 37 Rule 60(1)

Section 67 of the Coroners Act 2008

Findings of:	**IAIN TRELOAR WEST, ACTING STATE CORONER**
Deceased:	**CHRISTOPHER JOHN STEWART**, born 19 January 1969
Delivered on:	21 March 2019
Delivered at:	Coroners Court of Victoria, 65 Kavanagh Street, Southbank
Hearing date:	26 - 28 November 2018
Counsel assisting the Coroner:	Leading Senior Constable Darren Cathie, Police Coronial Support Unit
Representation:	Fiona Ellis, for the Australian National Drag Racing Association
Catchwords:	Motorsport, racing, collision, safety barrier

TABLE OF CONTENTS

BACKGROUND

1. Christopher John Stewart (**Mr Stewart**) was a 48-year-old man who lived in Glenelg North, South Australia. He was engaged to Kirsten Davis (**Ms Davis**) at the time of his death.

2. Mr Stewart was a mechanic and worked closely with his father, Michael Stewart, in his racing team and at their mechanical repairs business in South Australia. He had been involved with cars and motor racing for over 30 years.

3. On 20 January 2017, Mr Stewart, Ms Davis and the racing team drove from South Australia, to the Summit Sportsman Racing event, which was being held at the South Coast Raceway at Portland, Victoria.

4. Mr Stewart was entered in the '*Supercharged Outlaws*' drag racing category. He was racing a custom-built carbon fibre replica Chevrolet Camaro (**the car**), owned by John Edwards. Mr Stewart had rebuilt the car from a body and chassis that Mr Edwards had bought from America. The car was a left-hand drive vehicle which was capable of speeds between 230-250 miles (370-400 kilometres) per hour. It was outfitted with the mandatory safety equipment and had been inspected and approved by the Australian National Drag Race Association (**ANDRA**) and had a current racing certificate and log book.

5. The South Coast Raceway track (**the track**), a licenced motor racing track, is a 1/8th mile (202 metres), straight course and was originally built for social racing.

6. On 18 January 2015, the ANDRA completed a Track Specification Inspection of the track and the track has, since that date, been graded at the national standard, in accordance with the ANDRA's 2004 Minimum Track Specifications (**the 2004 specifications**).

7. The Track Specification Inspection report, dated 18 January 2015, includes all relevant measurements and photographs of the track and safety barriers, and recommendations in relation to areas for improvement. According to the Sanction Agreement,[1] ANDRA is required to inspect each race facility every two years, or after major modification to the track, and prepare a report based on their observations. ANDRA was due to re-inspect the track by 17 January 2017, but this had not been done as at 21 January 2017.

[1] Statement of Colin Brassington, Technical Officer for ANDRA, dated 3 January 2018, Coronial Brief, p.100

8. The track surface is specially designed for drag racing, being a concrete and bitumen race surface. It is 14.4 metres wide and has concrete safety barriers running alongside the racing track.

9. The barriers are separate lengths of concrete, which sit end-to-end to form a continuous, smooth concrete wall. They are free-standing as they are not connected to each other. Each barrier is 6.1 metres in length, 1200mm high and 150mm thick. When placing the individual barriers, they were partly buried with a minimum height (above the surface of the track) of 780 millimetres on the left side of the track and 820 millimetres on the right side of the track (when looking in the direction of travel).

10. Following placement, the continuous wall of concrete was back-filled on the non-racing side with earth (battered), to support the barriers and hence ensure they remained in position if impacted by a vehicle. As at 21 January 2017, the barriers were backed to approximately 70 per cent height above the ground.

11. This degree of structural support did not apply to the barrier first impacted by the deceased's vehicle. This barrier was adjacent to the event '*timing box*', with the earth backing falling away to accommodate the timing box and its related equipment. It was calculated that the percentage of the 6-metre section of concrete not supported or covered by earth, was in the vicinity of 13 per cent when compared to the other barriers.

12. The reduced level of earth was, in part, to accommodate the electrical attachments and sensors and, in part, believed to be due to erosion, as the grass in this section was poisoned and the area was prone to flooding.

13. I accept the evidence of Brett Stevens (**Mr Stevens**), ANDRA's General Manager: "*The earth-backed concrete barriers at Portland, save for the short fall of earth behind the Timing Box, appear to have complied with the 2004 standard and the CAMS 2012 update*."[2]

THE PURPOSE OF A CORONIAL INVESTIGATION

14. Mr Stewart's death constituted a '*reportable death*' under the *Coroners Act 2008* (Vic) (**the Act**), as the death occurred in Victoria and was the result of an accident.[3]

---

2 Supplementary statement of Brett Stevens, dated 22 November 2018 para 14, Ex 12
3 Section 4 *Coroners Act 2008*

15. The jurisdiction of the Coroners Court of Victoria is inquisitorial.[4] The Act provides for a system whereby reportable deaths are independently investigated to ascertain, if possible, the identity of the deceased person, the cause of death and the circumstances in which death occurred.[5]

16. It is not the role of the coroner to lay or apportion blame, but to establish the facts.[6] It is not the coroner's role to determine criminal or civil liability arising from the death under investigation,[7] or to determine disciplinary matters.

17. The expression "*cause of death*" refers to the medical cause of death, incorporating where possible, the mode or mechanism of death.

18. For coronial purposes, the phrase "*circumstances in which death occurred,*"[8] refers to the context or background and surrounding circumstances of the death. Rather than being a consideration of all circumstances which might form part of a narrative culminating in the death, it is confined to those circumstances which are sufficiently proximate and causally relevant to the death.

19. The broader purpose of coronial investigations is to contribute to a reduction in the number of preventable deaths, both through the observations made in the investigation findings and by the making of recommendations by coroners. This is generally referred to as the Court's "*prevention*" role.

20. Coroners are also empowered:

    (a) to report to the Attorney-General on a death;[9]

    (b) to comment on any matter connected with the death they have investigated, including matters of public health or safety and the administration of justice;[10] and

    (c) to make recommendations to any Minister or public statutory authority on any matter connected with the death, including public health or safety or the administration of justice.[11] These powers are the vehicles by which the prevention role may be advanced.

---

4 Section 89(4) *Coroners Act 2008*
5 See Preamble and s 67, *Coroners Act 2008*
6 *Keown v Khan* (1999) 1 VR 69
7 Section 69 (1)
8 Section 67(1)(c)
9 Section 72(1)
10 Section 67(3)

21. All coronial findings must be made based on proof of relevant facts on the balance of probabilities.[12] In determining these matters, I am guided by the principles enunciated in *Briginshaw* v *Briginshaw*.[13] The effect of this and similar authorities is that coroners should not make adverse findings against, or comments about individuals, unless the evidence provides a comfortable level of satisfaction that they caused or contributed to the death.

22. In conducting this investigation, I have made a thorough forensic examination of the evidence including reading and considering the witness statements and other documents in the coronial brief.

MATTERS IN RELATION TO WHICH A FINDING MUST, IF POSSIBLE, BE MADE

Identity of the Deceased pursuant to section 67(1)(a) of the Act

23. On 21 January 2017, Kirsten Davis identified the deceased person to be her fiancé, Christopher Stewart, born 19 January 1969.

24. Identity is not in dispute in this matter and requires no further investigation.

Medical cause of death pursuant to section 67(1)(b) of the Act

25. On 23 January 2017, Dr Matthew Joseph Lynch, a Forensic Pathologist practising at the Victorian Institute of Forensic Medicine, reviewed the post mortem CT scan and conducted an external examination upon Mr Stewart's body. Dr Lynch provided a written report, dated 24 January 2017, which concluded that Mr Stewart died from injuries sustained in a motor vehicle collision (driver).

26. Dr Lynch commented that there were multiple injuries and that the post mortem CT scan revealed multiple fractures, including fractured skull with pneumocranium.

27. Toxicological analysis of post mortem specimens taken from Mr Stewart identified the presence of the narcotic analgesic, tramadol, at 0.7mg/L. The toxicology report commented generally that post mortem blood concentrations in cases not attributed to tramadol intoxication range up to about 2mg/L.

28. I accept the cause of death proposed by Dr Lynch.

---

[11] Section 72(2)
[12] *Re State Coroner; ex parte Minister for Health* (2009) 261 ALR 152
[13] (1938) 60 CLR 336

Circumstances in which the death occurred pursuant to section 67(1)(c) of the Act

29. On 21 January 2017, Mr Stewart was participating in the Summit Sportsman Racing event. The weather on the day was fine and sunny, and the driving conditions were clear and dry.

30. At approximately 12.30pm, Mr Stewart's car was towed to the staging area to prepare for the first qualifying run. Mr Stewart was initially allocated the right lane of the racing strip but was moved to the left lane shortly prior to the start of the run.

31. Mr Stewart checked over the car and then put on his helmet. A team member assisted Mr Stewart to put on his neck brace and attach it to his helmet and then get into the car. Mr Stewart's racing harness was secured and tightened.

32. The car was guided through a water patch and then Mr Stewart performed a '*burnout*' to warm up the tyres for racing. Mr Stewart was then guided back to the start line and confirmed to his team member that everything was ready for the run.

33. The other car scheduled to compete withdrew shortly prior to the start, leaving Mr Stewart as the only driver on the track for the timed event, commencing at approximately 1.00pm.

34. The car fish-tailed slightly shortly after starting the run and Mr Stewart corrected it so that it then ran straight. As the car approached the finish line and timing box area, the left rear wheel appeared to lose traction, causing the right wheel to steer the vehicle sharply to the left. Despite Mr Stewart attempting to make a correction, the car impacted the wall and, specifically, the barrier adjacent to the timing box.

35. The timing box recorded the car to be travelling at 161.54 miles (259.97 kilometres) per hour at the finish line. The impact with this barrier caused that section to be pushed backwards, thereby partly exposing the end of the next, abutting barrier. As the car continued out of control, it slid along the wall, colliding with this exposed sharp edge of concrete which tore off the left side of the car's exterior and fatally injured Mr Stewart.

36. The impact with this exposed edge caused the car's parachutes to deploy and the car to ricochet across to the right side of the track, where it hit the right-side wall and ricocheted again, back to the left. The car then came to rest at the end of the track in the '*run-off*' area.

37. Paramedics examined Mr Stewart and declared him deceased at 1.15pm.

COMMENTS PURSUANT TO SECTION 67(3) OF THE ACT

38. On 3 May 2017, Acting Sergeant Nick Brickley of the Victoria Police Mechanical Inspection Unit conducted a thorough inspection of the car. He completed a report, dated 11 July 2017, in which he confirmed that there was no mechanical fault with the car which would have caused or contributed to the collision. I accept this report and opinion.

39. In the course of my investigation, it became clear that the shifting of the implicated barrier at the point of impact was a significant causal factor in the circumstances of Mr Stewart's death. I determined to hold an inquest into Mr Stewart's death, to examine the safety and efficacy of the barriers in place at the track, including the relevant safety standards overseen and administered by the ANDRA.

The concrete safety barrier

40. As stated previously, the barrier at the point of initial impact sat adjacent to the digital display timing box. At the time of the collision, there was a power box, electrical outlets, other boxes that housed the timing sensors, together with wiring which was attached to the back of the barrier. A small hole cut through the concrete at the bottom of the barrier provided an unobstructed passage for the timing sensor's laser beam, thus enabling it to record the car's speed at the time the front wheel crossed the finish line.

41. The timing sensor housing and electrical wiring were installed prior to the ANDRA Track Specification inspection in January 2015. As at 21 January 2017, there was no additional reinforcement to make up for the reduction in the packed earth that had been removed to accommodate the equipment.

42. Colin Brassington (**Mr Brassington**), who was then a Technical Officer for ANDRA and who inspected the track on 18 January 2015, gave evidence that his role was not only to make an assessment of the track surface, but also to make an assessment as to the integrity of the track safety wall.[14] This included measuring, ensuring the barriers made a continuous wall with no gaps and checking that there was earth backing to them.[15] To do this, he stated that when criss-crossing along the track to inspect it's surface, he would, every time he was close

[14] Inquest transcript, p 89
[15] Inquest transcript, pp 46, 47

to the wall, put his head over to '*have a look*'.[16] He did not walk the outer perimeter or earth side of the barriers, in order to undertake an inspection and could not offer an explanation for not doing so.[17] In my view, Mr Brassington's inspection undertaken on 18 January 2015 was inadequate.

43. Mr Brassington couldn't say whether he looked over the implicated barrier in the area of the timing box. Nevertheless, he stated that had he observed a reduction of earth backfill, he would have noted that it did not meet minimum construction requirements and put it in the program of works to be attended to, at the completion of his track inspection report.[18] As his report contains no reference to this, I conclude that he was unaware of the earth backing falling away.

44. Mr Brassington further stated that had he observed that the level of earth was as it presented at the time of the fatal collision, he would not have thought that the reduction was a major issue. In arriving at this conclusion, his evidence was: "*this is not the norm… it's one particular section, a barrier… and it's sort of surrounded by areas that are backfilled.*"[19]

45. I do not agree with Mr Brassington's belief that the reduction was not a major issue. On his own evidence, not only would he have noted it as work that needed to be done, but on being shown photos of the reduction, he conceded it did not meet minimum construction requirements.[20]

46. In his second statement in this investigation, Mr Stevens stated that, "*the shortfall of earth in the location of the collision would not have been considered to result in a loss of integrity of the safety barrier to the extent of exposing either the driver or spectating public to risk*."

47. I do not agree with Mr Stevens' view. He concedes in his statement that he is not an engineer and there is no indication of expertise upon which he has drawn to support his opinion. The photographic exhibits show that the reduction of backfill of the implicated barrier is obvious when compared to the backfilling of surrounding barriers making up the wall. This should have alerted any observer to the potential for movement of the barrier, and that any resulting separation caused by such movement could compromise the smooth continuous track-side

[16] Inquest transcript, p 46
[17] Inquest transcript, pp 45, 89
[18] Inquest transcript, p84
[19] Inquest transcript, pp 79, 80, 84, 86
[20] Inquest transcript, p84

surface of the wall. Any such compromise could have the potential to put driver safety at risk, as became evident in this incident.

48. The South Coast Raceway Association (**the club**) president, Andrew Smith (**Mr Smith**), gave evidence at the inquest. Relevantly, he stated that:

    (a) the track has evolved over time, in that the earth behind the barriers has sunk a bit and that "*there were some areas that had less dirt, to allow for the* (timing) *sensor*;"

    (b) the timing sensors:

        (i) must sit at ground level to catch the moment the front wheels of the cars pass through the sensor beam at the finish line;

        (ii) are temporary fixtures that are put in place at the commencement of the race event and removed at its conclusion; and

        (iii) could not be permanently fixed (and the area thus backfilled with dirt to the same level as the surrounding barriers) due to the flood-prone location of the track; and

    (c) the club has made changes to the track and barriers since the collision.

49. Mr Stevens attended the racetrack after the collision, in April 2017, and made some recommendations. In relation to the barriers, Mr Stevens directed that the club audit and replace any damaged or cracked barriers and to ensure that all barriers be pinned or supported adequately from behind, to reduce the possibility of a single barrier coming out of alignment.

50. Mr Smith confirmed that the club had since replaced all damaged or cracked barriers and ground all barrier edges to remove any sharp protrusions. He further stated that, "*(a)ll barriers are* (now) *pinned by large posts at each join and in the middle to prevent any movement*," and that the club was, "*replacing the backfill supporting the barriers, replacing the packed earth with clay to make it stronger*." In relation to the crash site, the club had, since Mr Stewart's death, "*put in concrete supports all over the wall areas that have sensors in place*."

51. The coronial brief contains photographs of the reinforcing work undertaken at the track, both along the wall as a whole and behind the areas where the timing sensors sit and there is lowered earth backfill.

52. I am satisfied that the South Coast Raceway Association responded appropriately to correct the barrier failings that existed at the time of the fatal collision on 21 January 2017. However, I note that, while the barriers have been reinforced to a degree acceptable to ANDRA, the new barrier reinforcement has not been structurally assessed by a qualified engineer.

Track specification standards for concrete safety barriers

53. It was clear from the testimony of both Mr Smith and Mr Stevens that ANDRA had not, prior to 21 January 2017, defined or specified "*suitable reinforced concrete barriers*" in the 2004 specifications for safety barriers. Further, Mr Stevens accepted in his second statement in this investigation that ANDRA was unaware of this oversight until it was identified in this investigation.

54. In 2017, in response to the identified deficiencies in the 2004 specifications, ANDRA issued a memorandum (**the 2017 amendment**) in which it updated the 2004 specification. In relation to earth-backed concrete barriers, the 2017 amendment states:

> "*3.01 The minimum thickness of earth-backed concrete barriers should be 120mm. The grade of concrete used should not be less than 30Mpa.*
>
> *3.02 Barriers should be backed by earth-fill (free of tyres or other compressible debris) to no lower than 70 per cent of the height from the top of the barrier, for a distance of at least one metre. The fill may then taper off gradually to ground level over at least another two metres.*"

55. The 2017 amendment incorporates and adopts the Confederation of Australian Motorsport Ltd's (**CAMS**) track operators' safety guide's recommended specifications for concrete barriers (**CAMS specifications**). The CAMS specifications include calculations of the static load on the wall and refer to adequate reinforcement and the requirement for certification by a qualified engineer (and a signed declaration to this effect being made available to the inspector at the circuit inspection).

56. At the conclusion of the inquest, I invited parties to make written submissions. Mr Stewart's family submitted:

    (a) that the inadequate reinforcement of the barrier that Mr Stewart collided with should have been identified at the January 2015 ANDRA Track Specification Inspection;

(b) the lack of prescriptive specification for safety barriers was a glaring oversight by ANDRA;

(c) the 2017 amendment:

(i) still requires interpretation by ANDRA member tracks and places the responsibility for ensuring structural assessment onto the member tracks;

(ii) does not prescribe the depth to which a barrier must be buried, nor terms of internal reinforcement or connection to abutting barriers;

(iii) should be incorporated in the Minimum Track Specifications, which should be accessible to all ANDRA-sanctioned track users (on the ANDRA website) and not just to the track owners/management;

(d) that although they appreciated that the risk of the barrier shifting was not realised prior to Mr Stewart's fatal collision, it is appreciable now (and, by inference, should be rectified);

(e) ANDRA should develop a communications strategy, to educate the industry and raise awareness of changes to the Minimum Track Specifications for safety barriers; and

(f) reiterated their hope that Mr Stewart's tragic death would be the catalyst for improvements to track regulations and inspection standards, in the pursuit of increased driver safety.

57. The submissions on behalf of ANDRA:

(a) argued that, between the date of construction of the track and 21 January 2017, the safety barriers had not been modified, which I accept based on the evidence of Mr Smith;

(b) accepted that the 2004 specifications lacked specificity in relation to what constitutes '*suitable reinforcement*' and that '*industry knowledge*' is the basis for which burying the concrete barrier and backing the barrier above ground with earth to 'about 70 per cent height' is considered a suitable reinforcement;

(c) concluded:

(i) that the barriers were built approximately 11 years prior to the incident and that since that time they had been subject to numerous high-speed collisions, without any loss of integrity that would suggest that they were vulnerable to separating;

(ii) that, prior to January 2017, there were no applicable national or international guidelines that offered any relevant assistance as to the minimum specifications or requirements to ensure that safety barriers are fit for purpose; and

(iii) based on industry experience and knowledge at the time of the collision, the deficiency in the barrier support could not have been predicted.

58. I agree with the Stewart family, that the risk of existing safety barriers at ANDRA-sanctioned race tracks in Australia being insufficiently reinforced as to lose integrity in a collision is now fully appreciable. I take that further to say that, as a matter of public health and safety, it is crucial that the risk is suitably mitigated to prevent further fatalities in similar circumstances at ANDRA-sanctioned tracks nation-wide. It is crucial that the current (and any future) minimum safety barrier specifications and the construction of safety barriers at all ANDRA-sanctioned race tracks are certified by a qualified engineer.

59. I note that, since the fatal collision at the South Coast Raceway, ANDRA has:

(a) considered the Federation Internationale de l'Automobile's (**FIA**), of which ANDRA has been a member since 1993, June 2018 publication, '*Standard FIA 3501-2017 Safety Barriers*' (**the June 2018 FIA publication**), which stipulates specific design requirements for safety barriers. The June 2018 FIA publication states:

> "*The height of the barrier system must be a minimum of one metre … The outer surface of the barrier must be of a form that prevents the possibility of protrusions of the barrier hitting the driver … The barrier system shall be designed such that its integrity is not compromised during its entire service life;*"

(b) issued the 2017 amendment;

(c) committed to:

(i) update the track inspection template, to require ANDRA inspectors to complete a detailed inspection of safety barriers, to ensure they comply with the current requirements;

(ii) update the 2004 specification to include the information in the 2017 amendment;

(iii) link annual track licences to the last track inspection date, so that ANDRA is prompted to schedule track inspections and ensure, as far as is practicable, that track inspections occur bi-annually;

(iv) provide training to its facility inspectors in the performance of track inspections, to ensure their knowledge of the 2017 amendment, being the updated minimum track requirements in relation to safety barriers;

(v) require any mandatory alterations to safety barriers to be completed within six months, with failure to comply resulting in an Event Permit not being issued (and all information to be included in the track inspection reports from January 2019 onward);

(vi) set up an electronic diary to schedule inspections of all ANDRA-sanctioned tracks;

(vii) update the ANDRA minimum track requirements to include the aspirational bi-annual (or as per track grading) inspection is permitted a grace period of no more than three months (with failure to complete inspection resulting in ANDRA not issuing an Event Permit); and

(viii) prior to entering into an Agreement with a facility, the facility must provide ANDRA with the details of the safety barriers, including a detailed library of images and measurements.

60. Finally, I take this opportunity to acknowledge the efforts of Mr Stewart's family in contributing to this investigation and inquest, and in championing the safety of drivers, spectators and staff/crew in the sport for which the family has held a strong passion for over four decades. I note that Mr Stewart's death has had a lasting impact on many of his associates and friends in the motorsport community.

RECOMMENDATIONS PURSUANT TO SECTION 72(2) OF THE ACT

61. I make the following recommendation:

(a) that ANDRA:

(i) obtain structural engineering advice in relation to the minimum requirements for reinforcing safety barriers to provide sufficient support and structural integrity;

(ii) update the 2004 specifications and associated documents, to prescribe the above engineer-approved structural integrity requirements as minimum standard for all ANDRA-sanctioned race tracks;

(iii) communicate the amended specifications and safety inspection information to all ANDRA-sanctioned track owners and users and make the information available on its website; and

(iv) undertake to assess and/or re-assess all ANDRA-sanctioned tracks within 12 months of the commencement of the new specifications, to ensure that all tracks meet the new minimum standard for safety barriers.

FINDINGS AND CONCLUSION

62. Having investigated the death of Christopher John Stewart and having held an Inquest in relation to his death on 26 - 28 November 2018, at Melbourne, I make the following findings, pursuant to section 67(1) of the Act:

(a) that the identity of the deceased was Christopher John Stewart, born 19 January 1969;

(b) that Mr Stewart died on 21 January 2017, at the South Coast Raceway, Portland, Victoria, from injuries sustained in a motor vehicle collision; and

(c) that the death occurred in the circumstances set out above.

63. I further find that ANDRA, in certifying the track fit for purpose without undertaking a thorough inspection of it, contributed to Mr Stewart's death.

64. Pursuant to section 73(1) of the Act, I order that this Finding be published on the internet.

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

(a) Michael Stewart, senior next of kin;

(b) South Coast Raceway Association;

(c) ANDRA;

(d) Leading Senior Constable Brendon Medley, Coroner's Investigator, Victoria Police.

Signature:

_____

IAIN WEST

ACTING STATE CORONER

Date: 26 March 2019