CITATION: *Inquest into the deaths of Robin Riley, Thomas Turpin, Fabian Andrews and Cassandra Martin* [2019] NTLC 23

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| FINDING OF: | Judge Greg Cavanagh |
| **CATCHWORDS:** | **Single vehicle rollover, Kakadu Highway, gravel on bitumen at intersection with unsealed road** |

**REPRESENTATION:**

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| Counsel Assisting: | Kelvin Currie |
| Counsel for the Department Infrastructure, Planning and Logistics: | Helena Blundell |

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IN THE CORONERS COURT
AT DARWIN IN THE NORTHERN
TERRITORY OF AUSTRALIA

Nos. D0173/2018, D0174/2018, D0175/2018, D0176/2018

In the matter of an Inquest into the deaths of

**ROBIN RILEY, THOMAS TURPIN, FABIAN ANDREWS AND CASSANDRA MARTIN**

**ON: 11 October 2018**
**AT: Kakadu Highway near the intersection with Bukbukluk Road**

**FINDINGS**

Judge Greg Cavanagh

## Introduction

1. This inquest was into the deaths of four people that tragically died in a single car crash on the Kakadu Highway in the Northern Territory. The deceased are:

    a. Robin Riley. Born 5 March 1972 in Darwin. He was 46 years of age when he died. His death is mourned by his wife and six children;
    b. Thomas Turpin. Born 10 August 1979 in Katherine. He was 39 years of age when he died. He had one child;
    c. Fabian Andrews. Born 5 January 1973 in Barunga. He was a man with an affinity for Aboriginal languages and culture; and
    d. Cassandra Martin. Born 3 April 1986 in Katherine. She was 32 years of age when she died.

2. They were all staying at an Aboriginal Outstation at Putangga not far from Jim Jim Falls.

3. On 11 October 2018 they were socialising and drinking. With them was another woman (the publication of whose name I suppressed during the inquest), who had driven from Katherine day before.

4. That evening when the alcohol ran out, they travelled from Putangga down the Kakadu Highway in a silver Nissan X-Trail to the Mary River Roadhouse. Mr Riley drove, the woman from Katherine sat in the front passenger seat and the other three were in the back seat.

5. They arrived at the Roadhouse at about 8.00pm. They played pool and purchased a 30 pack of VB cans. At 8.30pm the proprietor closed the bar and they left.

6. They stopped shortly afterwards and drank some of the beer. They then travelled once more in the direction of Putangga. There is little doubt they were well intoxicated at that time.

7. Mr Riley was driving. The seating arrangements remained the same. The woman from Katherine recalls that Mr Riley was driving fast, from 120 to 160 kilometres per hour.

8. About 18 kilometres from the Mary River Roadhouse they came to a right hand bend. In negotiating the bend the wheels on the Nissan X-Trail lost traction. The vehicle went into a clockwise yaw and crossed to the other side of the Highway in a broadside, before the rims dug into the bitumen and the vehicle tripped and rolled off the roadway. The vehicle came to rest on its wheels.

9. Mr Riley and the woman from Katherine were wearing their seatbelts and remained in the vehicle. The three back seat passengers were not wearing seatbelts and were thrown from the vehicle as it rolled.

10. Because of the dark and the lack of traffic on the Highway, the accident was not noticed until the following morning. The first on the scene were Kakadu Rangers.

***Mr Robin Riley***

11. Mr Riley, the driver, remained inside the vehicle with his seatbelt fastened. He likely died soon after impact. An autopsy was conducted by Forensic Pathologist, Dr Marianne Tiemensma. Her summary indicated:

Summary of Main Pathological Findings

- External examination showed:
  - The body of an obese adult male.
  - Moderate decomposition changes.
  - Large gaping laceration and abrasion to the head.
  - Injuries in keeping with seatbelt injuries to the abdomen and right shoulder.
  - Superficial penetration of the abdominal wall by a wooden stick.
  - No skeletal injuries.
- Internal examination showed:
  - Diffuse scalp haemorrhage.
  - Decompositional changes of the brain which precluded reliable evaluation.
  - Intact chest and abdominal organs.

Conclusions

The cause of death is **in keeping with head injury due to blunt force trauma due to a reported motor vehicle accident (driver).**

Comments

- The autopsy findings were impeded by the degree of decomposition, especially the brain, and the presence of any traumatic or natural pathology could not be determined.
- The most significant injury present was to the scalp (large gaping laceration and diffuse scalp haemorrhage).
- There were no skeletal injuries or internal injuries of the chest, abdomen or pelvis.

- It was noted in the decedent's medical history that he was a non-compliant diabetic, and it would have been ideal to ascertain the glucose level in the vitreous fluid, however there was no vitreous fluid present due to decomposition.
- No blood could be obtained, and therefore a sample of decomposition fluid and a section of psoas muscle will be submitted for toxicological analysis.

12. The toxicological analysis provided the following result:

- 0.27 % alcohol was detected in the decomposition fluid (preserved).

***Mr Thomas Turpin***

13. Mr Turpin had been in the back seat. He was thrown from the vehicle during the rollover. He was located 10 metres further into the bush from where the vehicle came to rest. An autopsy was conducted by Forensic Pathologist, Dr Marianne Tiemensma. She summarised her findings:

Summary of Main Pathological Findings

- External examination showed:
    - The body of a morbidly obese adult male.
    - Moderate decomposition changes.
    - Large brush abrasion ("road rash") covering the right anterior and lateral aspects of the torso and lateral aspects of the right buttocks and right upper thigh.
    - Scalp laceration to the left side of the forehead.
- Internal examination showed:
    - Dense scalp haemorrhage.
    - Atlanto-occipital dislocation fracture with disruption of the upper cervical spinal cord.
    - Multiple, bilateral rib fractures at different levels, and sternum fractures.
    - Cardiac contusion.
    - Lung and liver lacerations.
    - Dislocation fracture at the level of T3/T4.

Conclusions

The cause of death is **multiple injuries (head, neck and torso) due to blunt force trauma due to a reported motor vehicle accident (passenger).**

Comments

- The autopsy findings were impeded by the degree of decomposition.
- The external findings suggested that the main site of impact was the right lateral aspect of the torso.
- No injuries suggestive of seatbelt injuries were present.
- Multiple internal injuries were present, and the atlanto-occipital dislocation fracture with disruption of the upper cervical spinal cord, would have resulted in immediate death.

14. The toxicological analysis provided the following result:

- 0.28 % alcohol was detected in the decomposition fluid (preserved).

***Ms Cassandra Martin***

15. Ms Martin was also an unrestrained backseat passenger. She was thrown from the vehicle during the rollover. She was found on the edge of the drain near the Highway. An autopsy was conducted by Forensic Pathologist, Dr Marianne Tiemensma. She summarised her findings thus:

Summary of Main Pathological Findings

- External examination showed:
    - The body of an overweight adult female.
    - Moderate decomposition changes.
    - Bilateral humerus fractures.
    - Brush abrasions to the left forearm, left side of the torso and the back.
    - Lacerations to the left lower leg and ankle.

- Internal examination showed:
    - Atlanto-occipital dislocation fractures with associated disruption of the upper cervical spinal cord.
    - Multiple, bilateral rib fractures.
    - Bilateral superior pubic rami fractures.

Conclusions

The cause of death is **multiple injuries due to blunt force trauma due to a reported motor vehicle accident (passenger).**

Comments

- The external findings suggested that the main site of impact was the left side of the body.
- No injuries suggestive of seatbelt injuries were present.
- The atlanto-occipital dislocation fracture with disruption of the upper cervical spinal cord, would have resulted in immediate death.

16. Toxicological analysis provided the following results:

- 0.29 % alcohol was detected in the chest cavity blood.
- 6 µg 11-nor-9-carboxy-$\Delta^9$-tetrahydrocannabinol per L detected in the chest cavity blood.

***Mr Fabian Andrews***

17. Mr Andrews was a back seat passenger and was thrown from the vehicle during the rollover. He was located at the scene, unconscious and having difficulty breathing. The ambulance arrived from Jabiru Community Health Centre at 9.35am. They found Mr Andrews to be unconscious, with an unstable airway and shallow and laboured breathing and a respiratory rate of 40 breaths a minute. He was stabilised and left the scene in the ambulance at 10.35am.

18. Fifteen minutes after leaving the scene the ambulance met up with the Careflight medical retrieval team. The retrieval team intubated Mr Andrews and stabilised him further for the remaining trip to the airstrip at Cooinda.

They arrived at the airstrip at about 12.50pm. However just as they were pulling up Mr Andrews went into cardiac arrest. Cardiopulmonary resuscitation (CPR) was commenced but he was unable to be revived. He was pronounced life extinct at 1.06pm.

19. An autopsy was conducted by Forensic Pathologist, Dr Marianne Tiemensma. Her summary was:

Summary of Main Pathological Findings

- External examination showed:
  - The body of a well-nourished adult male.
  - Evidence of medical intervention.
  - Abrasions to the right forehead, both arms and shoulders, back and both legs.
  - Right femur fracture.

- Internal examination showed:
  - Scalp contusion and haemorrhage into the right temporal muscle.
  - Diffuse traumatic brain injury (subdural haemorrhage, gliding contusions and petechial haemorrhages).
  - Multiple, bilateral rib fractures.
  - Lung and liver lacerations.

Conclusions

The cause of death is **multiple injuries (head, torso and right leg) due to blunt force trauma due to a reported motor vehicle accident (passenger).**

Comments

- No injuries suggestive of seatbelt injuries were present.

20. The toxicological results indicated that at the time Mr Andrews died he did not have alcohol in his system. Rather, it showed the drugs he received during stabilisation and CPR:

Detected in the chest cavity blood (preserved):

- Approximately 1.3 mg ketamine per L (consistent with non-toxic concentrations)
- 0.06 mg morphine per L (consistent with non-toxic concentrations)
- Approximately 0.02 mg midazolam per L (consistent with non-toxic concentrations)
- Approximately 0.06 mg amlodipine per L (consistent with non-toxic concentrations)

***Woman from Katherine***

21. The front seat passenger told me that everything went black at the time of the accident. In her opinion she also died. However she heard a voice that told her it was not her time and she awoke. She found the driver to be deceased. She undid her seatbelt and got out of the vehicle. The others did not answer her. It was very dark. She walked to the Highway. There were no lights and no vehicles approaching. She returned to the crashed vehicle, kissed the driver on the forehead and then headed up the road toward Jabiru following the white line on its edge.

22. Her left shoulder, arm and hand were broken. She took off her bra and made a sling. She walked until she needed to rest. She thinks she slept a little. By morning she had walked about 12 kilometres. The third car that passed her was occupied by Italian tourists. They stopped for her and took her to the Health Clinic at Pine Creek. From there she was evacuated to Royal Darwin Hospital where she spent a week before being released. To this day she has little function in her left arm and hand.

**Kakadu Highway**

23. The Kakadu Highway is a 207 kilometre stretch of roadway that runs from the Stuart Highway near Pine Creek in the south to Jabiru in the north. I am told that it was built in the early 1980's. It is sealed and has a posted speed limit for most of its length of 110 kilometres per hour.

24. It is one of the two entrances to the Kakadu National Park, an area with a world heritage listing for its natural and cultural significance. It is however a road that receives a relatively low volume of traffic. There is an average of 370 vehicles per day that travel the Highway at the northern end and less than 150 vehicles per day at the southern end. Those numbers hit a peak in the months of July and August with 750 vehicles in the north and 330 vehicles in the south using the road.

25. Seventy-six kilometres from the southern end is a turnoff to Bukbukluk Lookout where the crash occurred.

The intersection of Kakadu Highway and Bukbukluk Lookout Road (travelling north).

26. The Northern Territory Department of Infrastructure, Planning and Logistics (DIPL) is responsible for maintaining the Kakadu Highway.

**Police Investigation**

27. The police first responders arrived at the scene of the crash at about 9.50am. Officers from the Major Crash Unit in Darwin arrived at about 12.50am. That day a Commander of Police was quoted in the media as stating:

> "Speed and alcohol were definitely factors and [the car] has rolled multiple times."

28. On 17 October 2018 the Investigators provided to DIPL an email that in part stated:

> "In summary the initial assessment indicates that, as with many crashes on this road, the cause is likely to be driver error, however, a sealed shoulder may have prevented this crash.
>
> The matter is still under investigation and there is more analysis to undertake before making definitive conclusions."

29. After further investigation, the Major Crash Unit calculated that at the time the vehicle started to lose traction it was travelling at 101 kilometres per hour (in a 110 kilometre per hour zone).

30. On the edge of the Highway surface at the intersection with the side road going to Bukbukluk Lookout gravel was deposited onto the Highway surface. Police calculated that the gravel on the road surface reduced the friction by about one third (0.690g to 0.432g).

31. In the opinion of the Major Crash Investigators, the curve was also a "substandard curve" meaning that if the Highway had been to Australian Standard 1742.2 it would have had an advisory speed of 90 kilometres per hour.

32. In approaching the curve Mr Riley did not take the optimal line. His outside wheels were close to the edge of the bitumen surface. In the opinion of the investigators the X-Trail vehicle began to slide while still on the bitumen surface. The left hand side wheels then left the sealed surface and travelled along the gravel shoulder until the vehicle went into a clockwise yaw and crossed the Highway before tripping while still on the bitumen and rolling.

33. The path of the vehicle as it went into the yaw and its final position can be seen in the following photographs.

34. On 29 October 2018 the Major Crash investigators sent an email to the Principal Traffic Engineer of DIPL. It stated in part:

> "Steering commenced while the vehicle was still on the sealed surface, however due to the lower friction from loose gravel the vehicle entered a critical speed yaw. It is possible to negotiate the curve at 110 km/h with a peak lateral acceleration of 0.303 following the constant curve. If you did not follow a constant curve you would exceed 0.303 and with a friction supply of 0.4, it is not leaving much room for driver error.
>
> The subsequent curve has a lower lateral acceleration, yet the road has a sealed shoulder. The issues of concern on Kakadu Highway are:
>
> - The amount of loose gravel on the outside of curves;
> - The absence of sealed shoulders along the curves with high lateral accelerations;
> - Low friction supply on the outside of the seal (loose gravel) and on the gravel shoulder (0.4g's);

- The absence of any curve advisory speed signs."

35. Since 2008 there had been one death on Kakadu Highway every year or two. However, 2018 had been a particularly tragic year on the Highway. Prior to these deaths there had been three crashes in which five people had died. Due to those crashes DIPL had sought a comprehensive independent audit of the Kakadu Highway. The audit commenced shortly after this crash.

36. The Principal Engineer from DIPL responded on 31 October 2018 to the email from the Police Investigators stating that the audit was being conducted and that "road safety treatments would be developed".

37. The second draft was provided to Police Investigators on 19 February 2019. It identified 1250 areas where improvements were recommended. It set out a risk assessment in relation to all substandard areas. In relation to the curve and intersection where the crash happened the auditors rated the risk at the highest category, "Intolerable" and recommended that the risk would be mitigated by putting a sealed apron on the Bukbukluk Road so that the gravel would not be deposited onto the Highway.

38. In anticipation of providing the investigation brief to my Office, the Major Crash investigators sought from DIPL on 3 April 2019 a copy of the final audit report, an indication as to whether speed advisory signs had been installed, and an indication of what remedial works, if any, were to be undertaken.

39. No response was forthcoming. Accordingly on 30 April 2019 in my discretion I set this matter down for inquest and requested the Police Investigators to ascertain if DIPL had taken or were taking any remedial action relating to the safety concerns raised in response to these deaths.

40. On 20 May 2019 the investigators interviewed the Principal Engineer at DIPL. He indicated that speed and curve advisory signs would be installed.[1] As to the gravel on the roadway he said:

> "you're trying to blame the road conditions and I would have no clue what happened on the day and how those gravels on the road would have played in this crash."[2]

41. On 20 June 2019 the Police Investigators spoke to the DIPL Project Director for Civil Asset Management. He said that the gravel on the bitumen surface was "pretty normal"[3], that it had not reached the level at which intervention would normally be taken, and that it wasn't regarded as a hazard unless it extended to the normal "wheel path" on the roadway.[4]

42. In his opinion if the wheels of the vehicle were on the sealed roadway the gravel would not have been sufficient to cause the crash.[5]

43. Signage for the curve and speed of the curve had been installed by 19 June 2019.

44. During the inquest the Project Director, contrary to his earlier position, conceded that the gravel on the bitumen was one of the contributing causes of the crash. He indicated that the Department were hoping to commence a tender to put aprons on all such intersections on the Kakadu Highway. He hoped that the intersection where the crash occurred would have the sealed apron installed by the end of August 2019.

**Comment**

45. There were clearly a number of aspects that led to the crash that ended these peoples' lives. It is evident that the road surface was not in an appropriate

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condition given the speed limit of the Kakadu Highway at that point. The road surface on such a roadway should be sufficient to prevent a vehicle from losing traction. That is the essence of the issue. However, the causes for the crash can be broken down into discrete areas:

1) The first was the level of alcohol. It is likely that intoxication led to the driver being a little later than he might have otherwise been, in turning into the bend. That meant the wheels of the vehicle did not remain in the usual driving line. The left wheels of the vehicle were on the outer edge of the bitumen.

2) The second reason was the substandard curve. The curve was tighter than one might ordinarily experience on a highway with a sign posted speed limit of 110 kilometres per hour. It led to the requirement for a greater level of friction.

3) The third reason may have been that there was no signage warning of the substandard curve and an advisory speed limit for the curve.

4) The fourth reason was the gravel on the road surface. That meant that the friction required to negotiate the curve at 101 kilometres per hour near the edge of the bitumen was not available.

5) The fifth reason was the lack of sealed shoulders on that curve. Once the vehicle started to slide it made it much more difficult to recover and it did not recover.

46. Initially the Department seemed reticent to accept that the gravel on the road surface contributed to this crash. They pointed to their “intervention levels” that were not reached. They pointed to the fact that no other vehicle is recorded as having crashed on that curve.

47. The Department did not, however, undertake any testing to support their view that the gravel was not an issue. They did not obtain expert assistance or an expert opinion.

48. I said during the course of submissions:

> If you are really going to disagree with the contribution of the gravel road, if that was going to be the Department's position, which in the end it wasn't, but if there was going to be that position you would think they would have an independent expert review that issue, instead of coming along (which they reversed), "Well we're not sure the police were right about it".

49. It was gratifying to be told at the end of the inquest that the Department recognised gravel was a contributing factor to the crash. That recognition was important given the potentially hazardous nature of gravel on bitumen roadways throughout the Northern Territory. It was said that the Department will be reviewing their maintenance schedules and will enter into discussions about the prospect of removing gravel from road surfaces.

**Formal Findings**

***Robin Riley***

50. Pursuant to section 34 of the *Coroner's Act*, I find as follows:

    (i) The identity of the deceased was Robin Riley born on 5 March 1972 in Darwin, Northern Territory.

    (ii) The time of death was 11 October 2018. The place of death was Kakadu Highway near the turnoff to Bukbukluk Lookout in the Northern Territory.

    (iii) The cause of death was **blunt force head injuries received in a single motor vehicle accident where he was the driver**.

    (iv) The particulars required to register the death:

1. The deceased was Robin Riley.

2. The deceased was of Aboriginal descent.

3. The deceased was unemployed.

4. The death was reported to the Coroner by Police.

5. The cause of death was confirmed by Forensic Pathologist, Dr Marianne Tiemensma.

6. The deceased's mother was Bessie Riley Liyawaitpat and his father was Rosco Riley.

***Thomas Turpin***

51. Pursuant to section 34 of the *Coroner's Act*, I find as follows:

(i) The identity of the deceased was Thomas Turpin (also known as Dick Turpin) born on 10 August 1979 in Katherine Hospital, Northern Territory.

(ii) The time of death was 11 October 2018. The place of death was Kakadu Highway near the turnoff to Bukbukluk Lookout in the Northern Territory.

(iii) The cause of death was **multiple injuries (head, neck and torso) due to blunt force trauma due to a motor vehicle accident (passenger)**.

(iv) The particulars required to register the death:

1. The deceased was Thomas Turpin (registered at birth as Dick Turpin).

2. The deceased was of Aboriginal descent.

3. The deceased was unemployed.

4. The death was reported to the Coroner by Police.

5. The cause of death was confirmed by Forensic Pathologist, Dr Marianne Tiemensma.

6. The deceased's mother was Sarah Algindali and his father was Dick Maru Turpin.

***Cassandra Martin***

52. Pursuant to section 34 of the *Coroner's Act*, I find as follows:

(i) The identity of the deceased was Cassandra Anne Martin born on 3 April 1986 in Katherine Hospital, Northern Territory.

(ii) The time of death was 11 October 2018. The place of death was Kakadu Highway near the turnoff to Bukbukluk Lookout in the Northern Territory.

(iii) The cause of death was **multiple injuries due to blunt force trauma due to a motor vehicle accident (passenger)**.

(iv) The particulars required to register the death:

1. The deceased was Cassandra Anne Martin.

2. The deceased was of Aboriginal descent.

3. The deceased was unemployed.

4. The death was reported to the Coroner by Police.

5. The cause of death was confirmed by Forensic Pathologist, Dr Marianne Tiemensma.

6. The deceased's mother was Vivian Lee Bordudu Martin and her father was Scott Martin.

***Fabian Andrews***

53. Pursuant to section 34 of the *Coroner's Act*, I find as follows:

(i) The identity of the deceased was Fabian Andrews born on 5 January 1973 in Bamyili, Northern Territory.

(ii) The time of death was 1.06pm 12 October 2018. The place of death was the Cooinda Airstrip, Cooinda in the Northern Territory.

(iii) The cause of death was **multiple injuries (head, torso and right leg) due to blunt force trauma due to a motor vehicle accident (passenger)**.

(iv) The particulars required to register the death:

1. The deceased was Fabian Andrews.

2. The deceased was of Aboriginal descent.

3. The deceased was unemployed.

4. The death was reported to the Coroner by Police.

5. The cause of death was confirmed by Forensic Pathologist, Dr Marianne Tiemensma.

6. The deceased's mother was Judy Galmur and his father was Captain Bamodji Andrews.

**Recommendations**

54. I recommend that the Department of Infrastructure, Planning and Logistics ensure that removing gravel from sealed surfaces is added to the schedule of maintenance items.

55. I recommend that the Department of Infrastructure, Planning and Logistics ensure that an apron is installed as soon as possible on the road to Bukbukluk Lookout to prevent gravel from being deposited on the Kakadu Highway.

Dated this 9th day of August 2019.

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GREG CAVANAGH
TERRITORY CORONER