QUEENSLAND COURTS

OFFICE OF THE STATE CORONER

FINDINGS OF INQUEST

CITATION:	**Inquest into the deaths of Sanglin Chung, Moira Therese McGreevy, Glen Raymond McGreevy, Rachel Gai Purdy,Cory James Whitmore and Mark Hamilton**
TITLE OF COURT:	Coroner's Court
JURISDICTION:	Gympie
FILE NO(s):	COR 2009/733; 2008/475; 2008/476; 2008/480; 2008/482; 2008/483
DELIVERED ON:	8 June 2011
DELIVERED AT:	Gympie
FINDINGS OF:	Ms Maxine Baldwin, Coroner
CATCHWORDS:	CORONERS: Inquest – motor vehicle accidents, Bruce Highway south of Gympie

REPRESENTATION:

Counsel assisting:	Mr Andrew Wallace, Inns of Court of Sunshine Coast
Department of Transport:	Ms Kay Phillipson, instructed by Crown Law; Benjamin Murdoch: Michael Horvat of Counsel

Introduction

These are my findings in relation to the deaths of Sanglin Chung, Moira and Glen McGreevy, Mark Hamilton, Rachel Purdy and Cory Whitmore. These findings seek to explain how these deaths occurred on a 15-kilometre stretch of the Bruce Highway south of Gympie. It also considers whether any changes to policies or practices could reduce the likelihood of deaths occurring in similar circumstances. The findings will be given to the family of each of the persons who died and each of the persons or organizations granted leave to appear at the inquest.

Coroner's role and Jurisdiction

A coroner has jurisdiction to conduct the inquiry into the cause and circumstances of the reportable death. If possible, he/she must attempt to find:

1. Whether the death happened
2. The identity of the deceased
3. When, where and how the death occurred
4. What caused the person to die

To conduct an inquest is to conduct an inquiry. Inquest differs from a trial between opposing parties. In the case of the South London Coroner ex parte Thompson (1996) 126SJ625 the court said:

"It is an inquisitorial process, a process of investigation quite unlike a criminal trial where the prosecutor accuses and the accused defends. The function of an inquest is to seek out and record as many of the facts concerning the death as the public interest requires."

The focus of an inquest is to discover what happened, not to attribute guilt, blame or apportion any liability. The purpose of the inquest is to inform, as far as possible the family of the loved ones and the general public on how the death occurred with an emphasis on reducing the likelihood of similar deaths. Section 46 of the Coroner's Act authorises the coroner to make preventative recommendations concerning public health or safety, the administration of justice or ways to prevent deaths from happening in similar circumstances in the future.

A. Section 45 (5) and Section 46 (3) of the Coroner's Act require that a coroner must not include in the findings or any comments or recommendations or statements that a person is or may be guilty of an offence or be civilly liable for something.

B. However, Section 48 of the Coroner's Act requires that if the coroner reasonably suspects that a person may be guilty of a criminal affair after considering the information gathered at the inquest, the coroner must refer the information to the appropriate prosecuting authority.

Being an inquisitorial inquiry, the proceedings in the coroner's court are not bound by the rules of evidence and the court may inform itself in any way it considers appropriate. (See Section 37 of the Coroner's Act of 2003.)

The coroner must apply the civil standard of proof, namely, that of the balance of probabilities. However, the standard established in Briginshaw v. Briginshaw 1938 (60 CLR 336) requires that the more significant the issue to be determined, the more serious an allegation or the more inherently unlikely in occurrence, the clearer and more persuasive the evidence needed for the trial of fact to be sufficiently satisfied that it has been proven to the civil standard.

The rules of natural justice apply and the Coroner is obliged to comply with them and to act judicially. Consequently, no findings adverse to the interest of any party may be made without that party first being given the right to be heard in opposition to that finding.

It is the obligation of any coroner to give considerations to any prospects of making recommendations that would reduce the likelihood of similar deaths occurring in the future or otherwise contribute to public health or safety. I consider it appropriate in this case, as it is clear on all the evidence before me, to find that the road is indeed hazardous with little margin for error although there is no evidence to support any finding that the road design or condition was in any way defective.

A Findings for the death of Sanglin Chung

1. Sanglin Chung was a 27 year old South Korean national who had been in Australia for approximately 18 months on a working holiday visa. He was identified by family members and I am satisfied the deceased was Sanglin Chung.

2. He worked as a commercial cleaner, which included being contracted to clean the Coles complex at Gympie. It was to this place of employment that he was driving when he was involved in a motor vehicle accident on the morning of Sunday the 25th of January 2009. On this morning at approximately 8.50 am Mr Chung, travelling north from his home at the Sunshine Coast was approximately 5 kilometres south of Gympie on the Bruce Highway. He was driving a maroon Mitsubishi Magna registration number 948 LHQ which collided with a motor vehicle that was travelling south on the highway. As a result of this accident he suffered fatal head injuries and died at the scene.

3. The purpose of the inquest is to determine the circumstances and cause of Mr Chung's death and whether the conditions of the road contributed to the accident and if so, how.

Police Evidence

4. A thorough and comprehensive police investigation was carried out by Senior Constable Dave Longergang who was responsible for providing the police report. He gave evidence that the section of the Bruce Highway where the accident occurred was separated by double continuous lines separating a single north

bound lane and a single southbound lane. The speed limit for the area was 90 kilometres per hour in both directions. Constable Longergang gave evidence that Mr Chung's vehicle was driving north along the Bruce Highway having just exited a sweeping right hand bend whereas the Nissan Blue Bird with which it ultimately collided was travelling in the opposition direction on a straight stretch of road. Consistent with the evidence given by the witnesses, Mr Longergang concluded that the reconstruction (as shown in the two sketched drawings being Exhibit 1) reveals the final resting place of both vehicles after the collision, the second sketch identifying the path of the vehicles leading up to and after the collision. He also confirmed the evidence given by Giuseppe Scuderi that forensic toxicology screening of Mr Chung's blood and urine had been performed and no alcohol or drugs were detected. Although Senior Constable Longergang was unable to identify the speed of either vehicle prior to the collision, the markings on the road revealed that the Nissan Blue Bird had braked prior to the collision whereas there was no evidence to suggest that Mr Chung had applied his brakes. Senior Constable Longergang also confirmed that mechanical inspections of Mr Chung's vehicle revealed that it was in a satisfactory mechanical condition and that there were no defects which would have contributed to the cause of the accident.

Witness Evidence

5. The driver of the Nissan Blue Bird, Mr Mark Owen, gave evidence that he was driving southbound with his wife, travelling from Hervey Bay through to Maroochydore. He had indicated that, whilst they had passed some heavy rain, the road when he encountered Mr Chung's vehicle was damp but it had no water lying over it. He gave evidence that he sighted the vehicle driven by Mr Chung being the Magna travelling towards him when it saw it wander across the centre line. He said this was as if he had lost concentration. It then appeared, according to Mr Owen, that the driver corrected and the Magna returned to its own side of the road. However as the driver had sharply over corrected, it appeared that the Magna was in fact going to go off the side of the road on the northbound side causing the driver to again to over correct which caused the vehicle to slide into the southbound lane. Mr Owen indicated that he did not see anything, such as the Magna's bonnet dipping down, suggesting that Mr Chung applied the brakes suddenly or at all. He was unable to avoid Mr Chung's car and the collision occurred. His version of events was corroborated by his wife who indicated that she also recalled that the weather had been showering and that they were travelling south and she was reading a magazine. She recalled her husband saying "what's this fellow doing" which caused her to look up and saw a car travelling sideways towards them. The collisions ensured and she was subsequently taken to hospital. Their version of events was also corroborated by Mr Benjamin Basanko who gave evidence that he and his wife were travelling north along the Bruce Highway towards Gympie behind Mr Chung's vehicle. They also indicated that the weather was overcast and that it had previously been showering but there were no pools of water on the road. He also recalls seeing the Magna "commence a very gentle turn to the right". It appeared to Mr Basanko that he was intending to turn right into a side road but the vehicle did not appear to

decelerate and Mr Basanko indicated that Mr Chung's vehicle did not have an indicator on. Mr Basanko also indicated that Mr Chung had driven well up to the time of the accident.

6. Mr Dunstan Johnson was travelling behind Mr Basanko's vehicle and he gave evidence that he believed that he saw the indicator and brake lights although under cross-examination he indicated that this only happened on impact.

7. All witnesses who were driving vehicles in the vicinity of the accident gave similar evidence that, although it had been showering, there were no pools of water on the road. There did not appear to be any rutting according to Mr Longergang. None of the witnesses could think or recall anything that may have caused Mr Chung to take evasive action on the highway.

Independent Expert Evidence

8. An independent report was commissioned and was completed by Mr John Patane, a Civil Engineer who is retained by the Office of the State Coroner. Mr Patane prepared two reports having examined whether the road contributed to the death of Mr Chung. Mr Patane gave expert, cogent and well thought out evidence in relation to the road. The road surface at the crash site was stonemastic asphalt, the alternatives being open graded asphalt and dense graded asphalt. Mr Patane acknowledged the balancing act that is required to determine which surface should be used. Dense graded asphalt providing more gripping ability in dry conditions whereas the open graded asphalt provided quick release of water and was more suitable in wet conditions. He considered stonemastic asphalt to be in between. He gave evidence that stonemastic asphalt provided a much higher durability surface, was more cost effective taking into account it's whole of life, and was rut resistant in heavy trafficking. He acknowledged the difficulties in choosing between surface properties depending on whether the roadway would be predominantly wet or dry as well as considering other factors such cost, noise and water spray.

9. Mr Patane considered the crash investigation report completed by the Department of Main Roads and noted that the report indicated that the stonemastic asphalt surfacing appeared to provide adequate friction (that is, skid resistance) well in excess of that required to dry that road section. This was based on the Vericom skid resistance testing conducted on 15 July 2009. In his report Mr Patane, however, had some concerns and suggested that the right hand curve radius should be surveyed and further investigated to ensure that there were no possible geometric deficiencies. As result of Mr Patane's report, the Department subsequently undertook those investigations. It appears in evidence that, based on the results of that report, the super elevation of the bend was within the Planning and Design Manual guidelines. He gave evidence that he was of the view there was no further need to conduct any further tests to satisfy himself of the adequacy of the bend in the road. Mr Patane's report also addresses the high level of demand on the relevant section of road in terms of volume of traffic and I quote: *"The volume of traffic on this road is 14,900 average annual daily traffic with*

a commercial vehicle content of 19 per cent. In terms of traffic this equates to an average of around one vehicle passing a point on the road in either direction every 4.2 seconds during daylight hours, that is, from 6 am to 6 pm." Mr Patane continues *"The 19 per cent commercial vehicle content on the road equates to around one in five vehicles being a commercial vehicle ranging from single axle trucks over three and a half tonnes up to 62.5 tonne V-Doubles."* He concludes *"For this traffic volume and the vehicle type mix, there is generally a need for a high level of attentiveness while operating on this single lane two-way road given the likelihood of possible conflict with traffic in the opposing direction."* Mr Patane opined that the accident appeared to be related to one or more of driver error in braking, steering or acceleration, or of fatigue or distraction. Although he considered that the wet, damp road surface combined with these conditions may have contributed, he did not consider that the road surface could be a contributing factor to the cause of crash.

Department of Transport Evidence

10. Mr Luke Kidd who is a Technical Officer for the Department of Transport and Main Roads also gave evidence in relation to his report which was compiled on 3 September 2009 addressing the technical aspects of the investigation taken by the Department. Mr Kidd concluded *"There appeared to be no reason why the driver shouldn't have been able to maintain control of his vehicle and stay within the traffic lanes. All the traffic control devices that should have been there were in place. There was adequate delineation of the curve in terms of guidepost, raised reflective pavement of markers. The edge lines and centre lines were in good condition. Also based on testing carried out by the Vericom unit which looked at the friction being supplied by the road surface and also the friction that a vehicle is demanding of the road surface when it is being driven through that area in a normal fashion."* It did not according to Mr Kidd indicate there was any reason why a driver should have lost control as he was driving through a section in the normal fashion. He continued *"There is a very low demand of friction required to drive that section and the friction been supplied by the surface is very high so there is a very large difference and that indicates to us that to lose control the driver has to make a very severe steering input or either the very severe acceleration or braking manoeuvre which has caused the vehicle to overcome that available friction and lose control."*

11. Mr Pearce gave evidence that the road surface upon which Mr Kidd had performed his test was indeed the same road surface upon which the collision occurred. This was to dispel any concerns that there had been resurfacing after the accident. However, Mr Pearce gave evidence that this road resurfacing was performed in 1998.

12. In the light of these findings it is necessary to look at Mr Chung's driving to ascertain what may have caused his vehicle to lose control. His girlfriend at the time of the accident Ms Yujin Jeon gave evidence that she and Mr Chung had been in a relationship for approximately one and a half years and that they had lived in Kawana Waters. She said that Mr Chung had gone to bed around midnight

prior to the accident and the next morning had left for work and that she believed that he had had plenty of sleep and would not have been tired. She gave evidence that she considered his driving ability to be okay and she had not experienced any problems with his driving in the 18 months they were together. Ms Jeon, however, did give evidence that she spoke to one of his co-workers at the police station following the accident and that he had indicated that he had spoken to Mr Chung on the mobile phone and he had told him that he would be arriving in Gympie in approximately 15 minutes. This would appear to be approximately 10 minutes prior to the accident. Unfortunately the co-worker had returned to Korea and Ms Jeon could not recall his name.

13. Evidence was also received from Mr Chung's employer who confirmed that she was a director of the company which employed him on a casual basis as a supervisor and cleaner. She confirmed that he worked 25 to 30 hours a week usually from 7am until 12 midday but that he had a degree of flexibility in his hours. She produced his work roster from 21 December 2008 to 25 January 2009 which showed that he was due to work on the day of the collision from 7 am to 12 am. The work roster showed that he had worked five hours on the previous Friday from 12 midnight to 5 am and he did not work the Saturday and was commencing work again on the date of the accident. It was conceded the work roster was not necessarily accurate because of the flexibility afforded to Mr Chung and nothing really arose out of it.

14. Arising out of that evidence, of course, is the fact that it was clear that Mr Chung had been on the mobile phone to his co-worker approximately 10 minutes prior to the accident. Senior Constable Longergang gave evidence that he had investigated Mr Chung's mobile phone usage at the time and that he had obtained his records from Optus. These records reveal that Mr Chung had in fact made three phone calls during the time in which he was likely to be driving. The last call being approximately 25 minutes prior to the accident. The records however did not show any recording of calls received by him as those records are deleted by the carrier after eight weeks of the calls being received. Based on Ms Jeon's evidence, the co-worker would have telephoned Mr Chung as the last call made by Mr Chung was some 25 minutes prior and Ms Jeon indicated that the co-worker had said that Mr Chung would be arriving in 15 minutes presumably to meet his co-worker. It is therefore reasonable to infer that the co-worker had rung Mr Chung on the mobile phone. There was no evidence of any hands free device being used but it appears it was not specifically looked for and Mr Chung's mobile phone was not in possession of the police so a definitive reconstruction of the mobile phone use and its manner cannot be made.

15. I note the evidence from Ms Marrington who together with her husband came across the accident and rendered assistance. She gave evidence that she saw a mobile phone being a flip phone open around the gear stick centre console. Obviously she was unable to say whether the phone had been in use at the time of the accident but the fact that it was open lends some weight to the fact that Mr Chung may have been at least handling his phone.

16. Basanko and to an extent by Mr Johnson and certainly supported by the reconstruction of the accident by Senior Constable Longergang. I find that either because Mr Chung was about to use his mobile phone either to make or receive a call or some other function, or that he was momentarily distracted by something else or that he simply lost concentration, he began to drift too far to the right towards the oncoming traffic. On becoming aware of that, he has corrected quickly to return to his correct side of the road but in doing so has overcorrected and was heading towards running off the left hand side of the road. In an attempt to correct himself again, he has steered back to his right, this overcorrection causing the vehicle to turn right and began to slide sideways along the highway into the path of the vehicle driven by Mr and Mrs Owens. Their vehicle consequently collided with the passenger side of Mr Chung's vehicle forcing it off the road down the eastern embankment. Although the road was damp there is no evidence to suggest that any excess of water caused the loss of control and I cannot find that to be the case. No doubt the overcorrection in the steering and the loss of the control of the vehicle would not have been assisted by the damp road but it could not have caused it.

17. As a result of the head injuries sustained and as provided in the autopsy report provided by Dr Chin-Guan Tam, Mr Chung died as a result of head injuries sustained in this motor vehicle accident. There are a number of reasons why Mr Chung could have lost concentration namely –

    a) His use or intended use of the mobile phone;
    b) Preoccupation with rushing to work;
    c) Any distraction in the car (it was noted by Ms Carr who attended upon him that the radio was playing extremely loudly to the extent that she requested someone to disconnect the battery so she wasn't distracted by it).

18. I accepted the evidence of Mr Patane and Mr Luke and Mr Pearce from the Department of Main Roads. I accept that the design of the road provided sufficient friction for the road use, in fact it has supplied far greater than the demand. I am satisfied that the further tests carried out by the Department have satisfied Mr Patane that the road is in all respect suitable. I note however that the road was damp although there was no water pooling on it. Whilst Mr and Mrs Marrington gave evidence that it was slippery, that evidence is based on the fact that they were wearing thongs and were walking on the road surface which had been the subject of the vehicle collision and may well have included other fluids or chemicals as a result of the collision. I am satisfied the Vericom testing performed by the Department which satisfied Mr Patane demonstrates that the road surface was more than adequate.

19. Much research was carried out by the Department and provided in the evidence of Mr Kidd in relation to the remedial action that may be taken to prevent deaths from happening in similar circumstances in the future. One of the possible improvements detailed in Mr Kidd's report was the installation of a painted medium

or appropriate safety barrier in the vicinity of the sweeping bend. In giving his evidence, however, Mr Kidd appeared to have some doubts in regard to the benefits of this approach. This appeared to be because Mr Kidd was concerned with the ability to widen the road laneway extending on to a sealed shoulder to enable the installation of a painted medium. However Mr Patane indicated that he supported the installation of a painted medium and advocated a reduction in speed which would enable a narrowing of the actual lane width and therefore provide a better medium in the middle of the road. Mr Patane stated *"I think there is an issue of speed on that road and by narrowing the lane it will together with audio tactile marking devices would minimise the risk of accident caused by inattention momentary loss of concentration and assist in ensuring that vehicles remain in their own lane".*

Recommendations

20. It is therefore recommended that the painted median strip project continue to effectively narrow the lanes to provide greater margin for error against the oncoming traffic and encourage a lower vehicle speed. Audio tactile marking devices installed on the centre lines are recommended to minimise the chance of a lapse in concentration leading to vehicles crossing into the oncoming lane.

B Findings into the death of Glen McGreevy and Moira McGreevy

1. Mr and Mrs McGreevy were travelling towards Gympie to attend voluntary duties for their local soccer club. At approximately 11.10 on 30 January they were travelling north along the Bruce Highway about 70 metres south of the intersection of Coles Creek Road and Bruce Highway at Coles Creek when they were involved in a motor vehicle accident.

2. There had been heavy intermittent rain on the day although the witnesses at the accident indicated that it was not raining at the time of the accident.

3. The accident occurred in a 100 kilometres per hour speed restricted zone under traffic conditions described as "moderate" in a southerly direction and "light" travelling north.

Identification

4. Although the injuries sustained by Mr and Mr McGreevy made visual identification impossible and no medical or dental records were able to be located to assist with that identification, I am in no doubt that the bodies were those of Glen Raymond McGreevy and Moira Teresa McGreevy.

5. Sergeant Kennedy gave evidence that he was handed a handbag at the scene that contained Mrs McGreevy's driver's license. He also said that he spoke to the McGreevy's children and Mr McGreevy's business partner Mr Porter. Mr Porter was wearing the same shirt as the deceased and the shirt was embroidered with the name "Glen McGreevy Concreting". Mr Porter confirmed to Sergeant Kennedy

that only he and Mr McGreevy possessed the work shirts. The people at the McGreevy residence advised Sergeant Kennedy that the McGreevy's were indeed on their way to Gympie to attend a meeting for their local soccer club.

Police Investigation

6. The accident was investigated by the Forensic Crash Investigators with both Senior Constable Carl Christensen and Senior Constable Church giving evidence. The police officers had arrived at the scene at approximately 11.45 at which time both Mr and Mrs McGreevy were still in their motor vehicle. Senior Constable Christensen gave evidence that he walked 700 metres either side of the incident and he could find no evidence of any damage to the road or any other explanation as to why unit 1 (the McGreevy's car) may have lost control.

7. Senior Constables Christensen and Church had located gouge marks in the south bound lane indicating the point of impact which was some 61.7 meters from the final resting position of the vehicles. They also located tyre marks in the south bound lane indicating that the oncoming truck had applied its brakes prior to impact.

8. Senior Constable Christensen indicated that he assessed the tyres of the McGreevey's vehicle and found that the left wheel tyre was devoid of tread to a certain degree or at least under the legal limit and that the right rear tyre at the time of inspection was only 16 PSI. Senior Constable Christensen confirmed that he had taken the tyre pressure of the right rear tyre and that he had tested it three times over approximately 60 seconds and received the same reading of 16. He also confirmed that he examined the tyre and rim for any impact damage that may have caused an expulsion of air but found none. He expressly stated that he was satisfied that the tyre pressure of 16 PSI was the tyre pressure prior to the accident. Senior Constable Christensen also stated that the type of tyre installed on the McGreevy's vehicle could give the impression of almost being inflated even with a low pressure of 16 PSI although there is still likely to be some bulging on the outer wall on the lower side of the tyre.

9. Senior Constable Christensen gave evidence that he organised the salvage of the vehicle to ensure that there was minimal damage and that he was satisfied that no damage was done to the right rear unit of McGreevy's vehicle. He was satisfied that no external object pierced the right rear tyre and also that the tyre did not separate from its rim even momentarily in the sideways sliding motion before or after the impact. Senior Constable Christensen was satisfied that the tyre had sufficient tread depth adding that the minimum legal tread depth was 2 millimetres. Senior Constable Church concurred with that and indicated that the rear right hand tyre was certainly road worthy - "almost a new tyre".although this view is not supported by other evidence.

10. Senior Constable Church gave evidence in relation to the forces on the McGreevy's vehicle as it rounded a sweeping left hand bend. He stated that, in his

opinion, as the McGreevy's vehicle rounded the sweeping left hand bend, the weight of the vehicle would have shifted to the right hand side.

11. He went on to say that the strength of the right rear tyre wheel was compromised due to its under-inflation leading to a lateral movement of the tyre wall on the wheel rim. The right rear tyre could have been under such stresses that, as the weight of the vehicle shifted to the right hand side, it could have come close to separating from the wheel. He conceded it had not done so, which corroborated the evidence of Senior Constable Christensen.

12. He opined that because the right rear tyre was so under inflated, the centre of the tyre would have become concave as it connected with the road surface resulting in water that was on the road being channeled through the concave void.

13. Senior Constable Church was of the opinion that this would lead to as much as a 40 per cent reduction in the loss of traction, that is, the contact between the road surface and the tyre. According to Senior Constable Church, Mr McGreevy has attempted to steer out of the involuntary anti-clockwise rotation and has subsequently over corrected resulting in a shift in the weight of the vehicle to the left hand side where the rear tyre was almost devoid of tread.

14. He opined that this was likely to have lead to the rear left tyre spinning a lot faster than the right rear tyre due to the loss of traction. It appears, according to Mr Church, that Mr McGreevy then over corrected his steering.

15. Senior Constable Church's evidence supported that of Senior Constable Christensen, who also retraced the likely movements of the vehicle as it rounded the left hand curve.

16. Mr Christensen gave evidence also of the combined in transit effect of the lack of adequate tread on the left rear tyre and the possibility that the right rear tyre was under-inflated with marginal tread. Senior Constable Christensen concluded that, even though they were quite different in appearance, both tyres would have had difficulty in dispersing in water. The left hand tyre with negligible tread would have been unable to disperse any water. The low pressure of 16 PSI in the right hand tyre would result in an arched effect whereby the shoulder of the tyre would be in contact with the road but the part of the tyre which should have provided the contact patch would be arched in the middle so that again, if the water builds up, it has problems dispersing it. When questioned whether the arch affect gave a concave affect he replied –

    "The concave effect so that the outer extremities of the tyre are both touching the road".

    When questioned on the tyre under-inflation and its impact on the control of the vehicle Senior Constable Christensen replied –

"Again depending on the quantity of water on the roads. As I've indicated with that arch, with that concave, it can't disperse the water quick enough. So if he has accelerated harshly and considering the condition of the left tyre, there's no way in the world once the rear end went, that way that vehicle is not going to slide."

17. Senior Constable Christensen indicated that he walked the road surface and he could not find anything in the road surface that contributed to the crash and considered that the cause was the driver input in some form – a combination of steering and acceleration - coupled with a mechanical condition being the tyres on the vehicle at the time.

Other Witnesses

18. This reconstruction of the accident by the Sunshine Coast Forensic Crash investigators appeared to be supported by the witnesses to the accident. Mr Bruce Mills was driving his Isuzu truck, which was fully laden with logs, south along the Bruce Highway. He gave evidence that just prior to the collision site, he actually put his parking lights on as he had passed through a heavy shower of rain. He estimated he was travelling at approximately 80 to 85 kilometres per hour and that the road appeared to be slippery. He gave evidence that there was a film of water on the road all the time because the showers were quite frequent and quite heavy although he did not consider the film of water to be excessive. He gave evidence that by the time he got to the intersection which was just north of the accident scene, the rain had ceased. As he approached the Coles Creek Road, he saw a car coming around a slight sweeping left hand bend. Mr Mills gave evidence that he could see the back of the car sliding out to the car's right, over the double centre lines and into the south bound lane of traffic, over almost as far as the Armco guardrail. He then saw the McGreevy vehicle brake around to the left, as he said:

"He appeared to be trying to drive out of the skid and he then went forward towards my right hand side (that is his side of the road) and then the back of the car broke the other way and he came around and started to head to me with his left hand side. As he came around he lost it and went right around and came back to me."

19. Mr Mills gave evidence that he had steered his truck over to the left hand side of the road as far as he could to about a foot off the guardrail and locked his brakes but he simply had nowhere to go. His vehicle then collided with the McGreevy's vehicle and the McGreevy's vehicle went under the front of his truck. He lost all of his brakes on impact. Mr Mills was unable to comment on whether there was any debris or object near the road that may have caused Mr McGreevy to lose control but he opined that the road was in good condition and opined of the view that speed may have had some role in the loss of control as he considered that "*Mr McGreevy was going fairly quick because of the degree of impact when he hit me*".

20. Mr Mills' version of events was supported by Amanda Franks who was travelling in a four wheel drive behind Mr Mills. She gave evidence that she was driving behind

Mr Mills through intermittent showers and that she was travelling at about 90 to 100 kilometres an hour, roughly the same speed as Mr Mills. She confirmed that the road was very wet but at the time she was driving south towards Eumundi it was not raining. She stated that she saw Mr Mills truck drive around the sweeping bend and she saw the McGreevy's Statesman sliding sideways to the road in what she thought was a U-turn manoeuvre. She soon realised that the Statesman was actually out of control as it slid sideways into the southbound lane with the passenger side heading towards the truck. She gave evidence that the car was encased in mist although she said later she realised that that was the water on the road being pushed up and forward around the car.

21. Mr William Davis was also travelling south on the Bruce Highway behind Ms Franks. He also described the road as damp but not adversely affected by rain and that at the time of the incident there may have been a very light misty drizzle. He stated that he was travelling between 80 and 90 kilometres an hour and as he came around a bend he could see a car coming north on the far right hand side *"doing a gigantic sliding U-turn in front of us."* He saw the McGreevy's vehicle sliding towards the southbound truck with the passenger side facing into it. He also saw the truck try to manoeuvre over to the left hand side of road as much as he could but there was no room left for it to go.

The Technical Evidence

22. The evidence of the Senior Constables Christensen and Church was corroborated by the expert witnesses Mr Andrew Alexandra McDonald and Mr Gary Ryan. Both are police service vehicle inspection officers. Mr McDonald gave evidence that he inspected the McGreevy's vehicle and found that the brakes and the steering were functional but that he was unable to test the electrical system. He was satisfied that at the time of the crash, the suspension also appeared to be satisfactory.

23. In regard to the tyres fitted, Mr McDonald gave evidence that Queensland Legislation required a tyre to have a minimum of 1.5 millimetres of tread and that from his experience, the proper tyre pressure for the McGreevy's vehicle was 32 PSI. He gave evidence that the tyres fitted to the McGreevy's vehicle would have had 8 millimetres of tread when they were new and indicated that once tread reduces to 3 millimetres, wet weather handling capabilities begin to diminish. He disagreed with Senior Constable Church who indicated that he thought it was a near new tyre as Mr McDonald would not consider a tyre with 2 millimetres of tread to be near new. Mr McDonald was satisfied that the tread on the front tyres was satisfactory although, of course, both tyres received impact damage as a result of the collision. The relevant left rear tyre when inspected by Mr McDonald was inflated but had insufficient tread depth having only 0.5 of a millimetre on the inside and 1 millimetre in the centre rising to 2 millimetres on the outside edge. It was relevant that the outer edge had greater tread than the inner tread. As Mr McDonald stated *"If you just walk past the tyre and just sort of looked at it you wouldn't have seen it. You actually have to get right down to have a good look."*

24. The rear left tyre had a steel valve cap whereas the right tyre did not. Mr McDonald opined that the varying tread depths were most probably a wheel alignment issue. However, it could also stem from the fact that the McGreevy's vehicle, which had independent rear suspension, was susceptible to this type of irregular wearing of tyres. In regard to the rear right tyre, Mr McDonald gave evidence that there was a uniform depth of 2 millimetres but he that he had noticed there were two foreign objects, being a small rock and a piece of glass, embedded in the tyre. These could have caused a very minor air leak and loss of pressure. Mr McDonald, however, was of the view that both foreign objects were embedded into the tyre as a result of the collision. Following discussions with Mr Christensen regarding the pressure of the right rear tyre when it was examined at the scene, Mr McDonald confirmed that the pressure was 16 PSI. Given this information, Mr McDonald was adamant that the tyre could not have been inflated to 32 PSI prior to the accident. He stated –

"I find it highly unlikely that it's dropped from 32 to 16 in that short period of time. Highly unlikely."

25. Mr McDonald also located a tang from a valve core removing tool imbedded inside the valve. He indicated that it had been there for some time as it was corroded and difficult to remove. He was of the opinion that it was probable that the embedded and corroded tang had caused the loss of pressure in the right rear tyre. Mr McDonald also opined that the lack of tread on the left rear tyre and the loss of pressure in the right rear tyre would have contributed to the loss of control and the subsequent collision. He also concurred with the police officer's view that the lack of pressure in the right rear tyre, being only 16 PSI, would result in a concave tread section which cannot push water from the tread which, in turn, can lead to an aquaplane situation. He stated –

"You add that to the fact that it only had 2 millimetre of tread and once you deform that tread section the tread locks instead of being open and it will close up. Hence you've got all these factors that come into account and will aid lifting the tyre in that wall of water on the road surface."

26. Mr McDonald was of the view that this would result in a reduction in the contact between the tyre and the road surface by as much as 75 per cent.

27. The evidence of Mr McDonald was corroborated largely by Mr Gary Ryan who was also called to give an opinion in relation to the investigation carried out by Mr McDonald.

28. He confirmed Mr McDonald's view that the tread on the rear left tyre was unsatisfactory because it did not have at least 1.5 millimetres of tread across the part of the tyre that comes in contact with the road. In regard to the right rear tyre, Mr Ryan stated that although 2 millimetres is legal, in his opinion it is insufficient in wet conditions to give a dry patch contact and allows for no margin for error. He

was of the opinion that at a tread of 2 millimetres the adequacy of the tyre was very marginal.

29. Mr Ryan then gave an account of forces that were brought to bear on the right hand tyre as it rounded the left hand bend when it was inflated at only 16 PSI. He stated that the side walls of the tyre would not be as firm as the left hand side walls. Although there were many variables in this situation it would give the sensation to the driver that the vehicle h wandering in the tail end. The outside of the right rear tyre would then be rolling underneath itself and it would be slightly twisted and distorted. He indicated that the bottom of the tyre would indeed be concave and that 30 to 40 per cent of the base of the tyre would lift off the road surface. However, undoubtedly, the tyre rolling underneath itself would result in even more than 30 to 40 per cent of the face lifting off the road surface.

30. Mr Ryan also indicated that, even if the tyre was inflated to 32 PSI, there would be some flexing because of the forces being applied to it as it rounded the left hand bend. Given the tyre had only two millimetres of tread, its adequacy would be marginal. Mr Ryan continued that the forces being exerted on the car as they were switched from the left hand side when Mr McGreevy overcorrected his steering meant that the left rear tyre tread would be totally inadequate leading to the loss of traction and loss of steering control.

31. In Mr Ryan's opinion the predominant cause of the overcorrection was the insufficient tread on the rear tyres in wet weather. He accepted the proposition that even if the right rear tyre was inflated correctly, the dominant defect in the overcorrecting was where the weight had shifted to the left hand side of the car, and thus the unworthy left rear tyre was the dominant defect.

Issues Of The Road

32. Although all the witnesses were questioned on the state of the road, none of them were experts other than to the extent that they were frequent road users.

33. Mr Mills gave evidence that he would rate the road as nine out of ten and that in his opinion there was nothing wrong with it.

34. Ms Franks also gave evidence that she had driven the stretch of road once a week for eight years and she had also had no difficulties with it.

35. Mr Dean Kellcot, who was driving a truck behind Mr Mills, Ms Franks and Mr Short, also indicated that he had never had difficulties with the section of the highway. When asked to rate it one to ten he considered the road was between a seven and eight and that he didn't consider it a particularly bad stretch of road but conceded it is a stretch of road that needs respect. Having driven a truck from Brisbane to Bundaberg return every business day for Woolworths for the previous six to seven

months, Mr Kellcot considered he was familiar with the particular stretch of highway. He said –

"You've got to have your wits about you, on coming vehicles, there's narrow windy stretches there. There are numerous side roads where people turn off and come in front of you, like turn in front of you. It's just a road you have to have your wits about you."

36. Mr Davis who was also travelling behind Mr Mills in the line of traffic stated that he had travelled that section of the highway all the time and that he had never had any problems with the road.

Evidence of the Department

37. Evidence was also received from two employees of the Department of Transport, Mr Justin Valks and Mr Ricky Cox. Mr Valks is employed as Principal Technical Officer of Traffic and Road Safety and, as such, prepared two reports in relation to the McGreevy's accident. The first was a preliminary followed by his final report. Mr Valks gave extensive evidence in relation to the road and was in a position to do so having attended the scene of the collision within a couple of hours of the accident. He had returned three days later when various tests were carried out at his request. Mr Valks provided some evidence in regard to rutting in the road but much of this was irrelevant as it was neither on the north bound lane nor in the estimated area of the impact. He gave evidence that whilst there was some rutting in the north bound lane it had not reached the initial inter-suspension stage which is the stage where maintenance is logged for general maintenance. Even though there was some rutting in the south bound lane, Mr Valks was of the view that it would have had no impact upon Mr McGreevy's ability because he had lost control and, having done so, it was difficult to regain control. He gave evidence that he would not consider that the rutting alone was responsible but conceded that the combination of weather conditions, driver input conditions, condition of the tyres, combined with some otherwise acceptable rutting could have played a part in the loss of control.

38. The loss of control was reflected mostly in the skid testing and the testing done on the road to establish the skid resistance. Skid resistance was measured using both the ROAR and the British pendulum testing methods. Both reflected acceptable results - the ROAR skid resistance found the road had only 11 per cent probability of failure to meet the required criteria and on that basis, he considered that the road was satisfactory. However, he noted that the ROAR testing was too broad in nature and that the vericom testing was a preferred method. The British pendulum testing results were also satisfactory in that all of the results, with one exception, had a wet skid resistance factor above 45 which was acceptable. Mr Valks noted that, in his reports, he had recommended the removal of some vegetation from the inside of the curve to increase visibility. He also noted that the rutting in the south bound lane had been listed for maintenance. Although the rutting in the northbound lane was not considered to be affecting the road, it too had been remedied along with the southbound lane. He was of the view, however,

that neither contributed to the accident. He also advised the Department was taking remedial action by overlaying a 500 metre section of the stonemastic asphalt with open graded asphalt. Whilst this was not considered to be necessary as the Department had not detected any particular problem with that section of road, the high number of wet weather accidents had raised a possibility that the road surface may have contributed in ways unknown to the Department and thus the action was more of a preventative nature. Mr Valks stated, however, that he had examined data for vehicle collisions over a period of almost seven year in that area. He was adamant that there was nothing to suggest that there was a high proportion of wet weather crashes. He indicated that there would have been approximately 17 million vehicles travel in the north bound lanes over this period and there was not a high number of crashes. His photographs tendered to the court also illustrated the state of the road after a shower rain when the road was damp compared with when the road was very wet or just after a major rain event. Mr Valks conceded that the painted medium strip recommend by Mr Patane would have the impact of allowing for a greater margin of error simply because it provided greater separation between vehicles travelling in opposite directions allowing for recovery time in the event of loss of control.

39. David Tulloch is also a crash investigator employed by the Department and his evidence certainly carried a great deal of weight. Mr Tulloch had 20 years experience working as a crash investigator, 18 years with the Queensland Police Service and now two years for the Department. He advises on technical aspects and in particular skid resistance using a Vericom Accelerometer referred to by Mr Valks as *the vericom testing.* Explaining the technical aspect of the vericom testing, Mr Tulloch said that the vehicles were tested at various speeds with an emergency breaking bringing the vehicle to a stop. He then calculated the forces on the vehicle in a longitudinal direction and from there can establish the friction available from the surface for that particular vehicle. Since the road was wet, a rain event was simulated using a water truck. Once established, the friction supply of the wet road is compared to the expected vehicle friction demand taking into consideration driving behaviour and traffic conditions in particular.
Mr Tulloch was extremely knowledgeable and concluded the wet friction supply at the point of the accident was adequate for the demand required for normal driving and moderate driving steering correction. Of course the demand may have been greater depending on driver breaking and steering input. Obviously, as Mr Tulloch pointed out, if there are certain aspects and variables such as driver input or defective tyres or excess water on the road, then the friction demand of the vehicle could be higher while available friction is reduced. If the actual friction supply is less than required, the vehicle will loose traction. Mr Tulloch was in agreement with Mr Patene and Mr Valks that the vericom testing was more accurate than the ROAR or the British pendulum test. Mr Tulloch was quite firm in his view in that if the right rear tyre was under inflated then it would also over deflect in the centre and allow more water to get between the footprint of the tyre and the road thus reducing the surface area of the tyre on the road. This, combined with the low tread on the left hand tyre was, in his words, “a double whammy”. It was clear

from Mr Tulloch's evidence that the testing reflected an adequate supply of friction for the road in normal driving conditions but obviously a combination of the wet road, the concave tyre, the lack of tread on the other tyre all combined to upset this supply level.

Independent Expert Evidence

40. However the vital evidence came from the report commissioned by the Office of State Coroner, Civil Engineer and expert Mr John Patane. Mr Patane indicated that while there was some rutting in the southbound lane it would not have contributed to the accident. Although there was some minor rutting in the northbound lane it was well and truly below intervention levels and would not have contributed to the cause of the collision. He reviewed the Department of Main Roads investigation referring to various methods of skid resistance testing which were used to measure the performance of the road in terms of the micro texture and macro texture of the road and what resistance it plays in actually providing the stopping, that is, helping the cars physically stop on the road. Mr Patane was of the view that the result of the tests performed by the Department of Main Roads showed that there was more than adequate skid resistance for that geometry under normal type of traffic movement in wet or dry conditions. He did indicate, however, that in a wet surface supply scenario, safe vehicle control may be compromised, particularly if braking and/or other vehicle specific safety conditions are present. Mr Patane also referred to the (ROAR) testing performed by the Department which was demonstrated in the report of Mr Justin Box. Mr Patane's view was that the relevant section of the highway did not require intermediate friction demand but a normal friction demand. Where there was a normal demand, there was only an 11 per cent probability of failure to meet the adopted criteria. In his opinion, this was a low probability. He conceded that applying the intermediate friction demand factor, there was a 61 per cent probability of failure to meet the adopted criteria but this is far in excess of the normal requirements.

41. It is also noteworthy that, while the ROAR testing of the Department was discussed at length, it is clear that, for section A of the road which included the impact site, Mr Patane was satisfied that the skid resistance exceeded the normal demand on the road. Whilst there are other sections of the road that exceeded intermediate demand, this has no bearing on the fact that section A exceeded normal demand. Thus it is inconsequential that other sections of the road exceeded this criterion.

42. In regard the British pendulum skid resistance tests, Mr Patane accepted the results as being satisfactory given that the geometry of the site meant it was classified as an easy site. It was conceded that one section only achieved this result in favourable conditions, but the overall average coincided with the results of the ROAR and vericom testing. Whilst 42% of the results had a factor of less than 50 they were still above the minimum of 45. While it was not possible for Mr Patane to say how long it might take to deteriorate to below 45 as it was outside his area of expertise, he did offer 5 – 15 years as a guide.

43. In relation to the rutting, Mr Patane was clear that the road in the northbound lane in which the McGreevy's were travelling was satisfactory in that the average rut depth values of the inner wheels were around five millimetres to seven millimetres and thus had not reached intervention level of 25 millimetres. Whilst of course they may not reach intervention levels, it is clear that there may have been some water ponding and increased water film thickness on the road in wet conditions but not sufficient to require intervention. Indeed Mr Patane was of the view that the results of the surface texture analysis performed by the Department were normal. He was satisfied there were no significant water ponding or draining issues.

44. I accepted the evidence Mr Patane presented as an independent expert who had been commissioned to review the case and the testing carried out by the Department of Transport and Main Roads. He carried out numerous site inspections himself and I was satisfied with the quality of his evidence. In particular I note that Mr Patane's opinion was that the road did not contribute at all to the loss of control of Mr McGreevy's vehicle. He concurred with the view that the inadequate tread depth of the rear left tyre may have contributed to the initial loss of control when combined with the damp road surface. Mr Patane was of the opinion given the high volume of traffic the road provided little margin for error and thus even if the rear tyre was not underinflated once the car lost control the probability of accident was high.

Findings

45. I find that the two people killed in this tragic accident were in fact Glenn Raymond McGreevy and his wife Moira Theresa McGreevy. There is little doubt that the couple were travelling to Gympie to attend a soccer meeting. Mr McGreevy was dressed in his work t-shirt and Mrs McGreevy's handbag, including a driver's licence, was found at the scene. The car was their vehicle and the vehicle in which they left their home earlier. Both died as a result of receiving multiple injuries at the scene of the motor vehicle collision on the 30th January.

46. It would appear that the Holden Statesman registration number 084-ILA in which the McGreevy's were travelling had defects in its tyres. I accept the evidence of Mr Andrew McDonald and Mr Gary Ryan in regard to the state of the tyres. Mr McDonald indicated that the defective tread on the left rear tyre may not have been obvious without a thorough investigation. Probably due to wheel alignment, the inside of the tyre had worn which, combined with the low inflation of the right hand tyre, resulted in catastrophic consequences. I find that, as Mr McGreevy rounded the gentle left hand bend, he has accelerated out of it but lost traction possibly due to the under inflation of his rear right hand tyre seriously decreasing the friction supply. As the back of his car has proceeded over the centre line into the southbound lane, Mr McGreevy, on the evidence, has attempted to steer to his right but over-corrected resulting in the back of the car coming around in a clockwise direction and the vehicle sliding down the highway in the direct path of the truck driven by Mr Bruce Mills.

47. I accepted the evidence of the driver of the truck Mr Mills, which was supported by the other witnesses, Ms Amanda Franks and Mr Davis, that he pulled as far as he could to the left hand side of the road in the time available but was prevented by the Armco guardrail from going any further and had no time to avoid the collision with Mr McGreevy's car which was now sliding down on his side of the road. The collision resulted in the instantaneous death of Mr and Mrs McGreevy.

48. Whilst a reconstruction after the event can be fraught with some uncertainty I accept that the evidence of Mr McDonald that the measurement of the tread meant that the tyre had very little ability to disperse any water on the road, which would have been a major factor in Mr McGreevy losing control of the vehicle. Since the left rear tyre had reduced contact with the road, as the vehicle rounded the bend, pressure would have been exerted on the right tyre which, I find, was in fact under inflated and thus likely to have been concave also causing a significant reduction in contact between the tyre and the road. It would have had reduced ability to disperse water also and, with the pressure from the lack of tread on the left tyre forcing sideways pressure on the right, caused it to slide out over the road.

49. I accept that there was no evidence to suggest that the road having a stonemastic surface, its design or construction or indeed maintenance contributed in anyway to Mr McGreevy initially loosing control. Whether he lost control when he accelerated too quickly out of the bend due to a combination of the factors of the high demand due to the wet conditions and the inability of the tyres to maximise the supply friction, it remains that once he lost control, and with the tyre defects and the added demand of the wet conditions he was unable to regain control. Certainly if the road was a dual carriageway in each direction and there were no other vehicles the impact may not have occurred and the accident may not have happened. However, the reality is that the section of highway is a dual carriage way with one lane in either direction and drivers need to drive to the conditions and in vehicles which are free of any defects. Driving slower to cater for the wet weather conditions and having a vehicle free from defect is the highest way to minimise any risk travelling on the carriageway.

Recommendations

50. There can be little doubt as was the case for Sanglin Chung that the dual carriageway provides little margin for error especially given the high volume of traffic. However unlike Mr Chung's vehicle which appears to have crossed into the oncoming lane due to loss of concentration, Mr McGreevy lost control of his vehicle due to the combination of factors above. Thus a widening of the width between oncoming traffic through painted centre median strips again would provide more margin for error in this high traffic zone. This would have the impact of slowing traffic to assist the accident rate in the case of error.

C Findings for Mark John Hamilton, Rachel Gai Purdy, and Cory James Whitmore

Introduction

1. Rachel Gai Purdy and her partner, Cory James Whitmore, were travelling to Gympie from Tewantin to attend a doctor's appointment on the 4th of September 2008. At that time, Ms Purdy was sixteen weeks and five days pregnant. Ms Purdy and Mr Whitmore were travelling in a blue Ford sedan following a Suzuki Swift driven by Mrs Conis and followed by a B-Double driven by Mr Murdoch. Mr Hamilton was driving his Pantech truck on route to the Sunshine coast. Ahead of Mr Hamilton was a four-wheel drive towing a boat being driven by Stephen Mortimer, who was accompanied by passenger, Clinton Stjernquist. Behind Mr Hamilton's vehicle was a timber truck driven by Mr Wade Hawkins.

2. On the fourth of September, this line of traffic was in the vicinity of Coles Creek approximately one half of a kilometre south of the northern T-intersection between Carlson Road and the Bruce Highway. It was clear from the evidence that the weather was inclement and there had been periods of heavy rain. The weather conditions were described variously as ranging between light and heavy rain, and intermittent showers.

Identification

3. All three deceased were identified and autopsies carried out revealed

Evidence of witnesses

4. It would appear from the evidence that the first incident occurred as the four-wheel drive towing the boat and driven by Mr Mortimer passed through Gympie on route to the Sunshine Coast. Mr Mortimer gave evidence that he recalled following the log truck to Gympie, had passed the truck in the centre of Gympie and was then following a white Pantech truck. He passed the Pantech truck and he was then aware from looking in his rear vision mirror that the log truck was very close to the Pantech truck. He assumed this was in an effort to pass the Pantech as well. Mr Mortimer gave evidence that as he headed towards Coles Creek Road, the vehicles in front were braking hard and consequently he also braked hard. He then looked in his rear vision mirror aware of the Pantech truck and saw it sliding sideways. He was concerned that it might hit the back of his boat. It was obvious from the testimony of Mr Mortimer that he did not see other vehicles as he was preoccupied with the Pantech truck which he recalled very vividly as being very close to him and being just a sheet of white.

5. Mr Stjernquist's evidence largely supported the accounts given by Mr Mortimer in that he also recalled passing the log truck and the Pantech truck and recalled Mr Mortimer braking as the traffic ahead had slowed quite considerably. He indicated that the brake was not a sudden stop or a skid, but just a brake to pull up in view of the traffic ahead. He gave evidence that he looked at Mr Mortimer

when he braked and he saw him looking in the rear vision mirror. Mr Stjernquist gave evidence indicating that between six and ten seconds later, he heard an explosion and felt the heat. He tried to look behind, but his vision was initially obscured by the boat and so he looked in the exterior rear vision when he saw the log truck go over the bank and the burning car coming to his vision on the side of the road.

6. Mrs Conis gave evidence that she was the driver of the lead car of the three relevant vehicles which were travelling north to Gympie. She was travelling to Gympie to see her daughter and estimated that she was travelling between 80 and 90 kilometres an hour. She also described weather conditions as raining quite heavily requiring her to have her wipers on full speed. Mrs. Conis indicated that she had been travelling for some time and was being followed by what she thought was a semi-trailer. She was of the view that she was being tailgated for a significant amount of time and she was distressed at that. She indicated that when she looked in the rear vision she could see only the grill of the truck, but some time later a blue car overtook the truck and was caught in-between her and the truck. She did not consider that she was being tailgated by the blue vehicle and indicated that it was at a comfortable distance. She could not indicate how far behind the blue vehicle the truck was. She indicated that she was driving along and she felt a heavy thud or hit, but had no idea what it was so she pulled over onto the side of the road. As she pulled over she saw the Pantech truck losing control and then saw that it had hit something, although she did not know what, and then, of course, saw the explosion.

7. Mr Hawkins was the driver of the Kenworth logging truck which had been overtaken by Mr Mortimer and was travelling behind the Pantech truck driven by Mr Hamilton. He was travelling south along the Bruce Highway towards Burpengary in convoy with his brother who was driving a logging truck behind him. He recalled the plywood truck driven by Mr Hamilton and believed that he caught up to it in the vicinity of the Matilda service station. Mr Hawkins also recalled being overtaken by Mr Mortimer, although he believed that this was at the Traveston overtaking lanes which differed from the evidence of Mr Mortimer and Mr Stjernquist but is immaterial. Mr Hawkins indicated that he was behind the Pantech truck somewhere by between 30 and 50 meters. As he was going up the hill towards Coles Creek, he dropped behind Mr Hamilton's truck as his vehicle was larger and heavier. As he came up to the crest of the hill, he saw Mr Hamilton brake. Almost immediately he saw the rear left of the truck slide out to the left down the fog line sliding sideways. Mr Hawkins did not see the brake lights of the four wheel drive illuminate, but it may have been that the Pantech truck obscured his vision. Mr Hawkins could not recall with clarity the presence of the oncoming vehicles, but was aware of their presence. He estimated that it would have been only a few seconds from when he saw the brake lights on Mr Hamilton's truck illuminate to when the explosion happened. Mr Hawkins was probably the witness who was able to describe the accident in the most detail. He indicated that there appeared to be an impact prior to the explosion, which was so great that he saw the Pantech truck lift from the road and he could see

under every wheel. He said that within a second or two there was an explosion. He was locking the wheels of his truck having applied his brakes prior to the impact, but despite beginning to jackknife, he was able to regain control until he collided with Mr Hamilton's vehicle. Under cross examination, he was adamant that Mr Hamilton's vehicle was hit hard by the oncoming falcon causing the Pantech to launch totally in the air, in that the vehicle left the road and then bounced back. The Pantech then spun back in a clockwise manner and headed back towards Mr Hawkins' vehicle and he collided with the front of the Pantech truck. He also gave evidence that he did not see a driver in the cabin and was adamant that he did not close his eyes until after he had hit the vehicle. He was adamant also that the scenario as suggested by Mr Tulloch, which I will refer to later, was not the case. He was adamant that the whole cab remained on the truck and that the windscreen wasn't smashed. Under cross-examination, he admitted that it was very quick but it was also slow. He also gave evidence that he would have been travelling about 70 kilometres an hour as he pulled over the hill and would have increased speed to 70 or 80 as he came down the hill.

8. Mr Benjamin Murdoch was the driver of the third vehicle in the north-bound lane, being the B-Double trailer, and he also gave evidence. He indicated that he had travelled from Bundaberg to the NQX depot in Brisbane the previous day. On the morning of the accident, he had accompanied the person (who was responsible for the loading of the truck) to the port of Brisbane as he was then to drive the B-Double from the port of Brisbane to Bundaberg. The vehicle was loaded with two solid steel rollers which were to be delivered to Bundaberg. Mr Murdoch was employed in his role as a driver of transport for six to eight months prior to the accident. He gave evidence that he dropped the person who loaded at the NQX Depot at approximate 11 AM and travelled north towards Bundaberg. He also concurred that it was raining, drizzling rain in constant showers. Interestingly, he gave evidence that he travelled in convoy with another B-Double owned by the same transport company from around Brisbane when this vehicle overtook him at around Burpengary. This is significant in the light of the evidence of Mrs. Conis in being tailgated by a truck. Mr Murdoch gave evidence of being passed by the Falcon as he was going up a hill and indicated that he would have been travelling about 80 kilometres per hour. He gave evidence that he did not recall seeing the Suzuki driven by Mrs. Conis at all that day. Mr Murdoch admitted that he recalled telling the police after the collision that he was travelling behind the Falcon by about one and a half times the length of his D-Double. However, in his evidence given to the court, he stated that he was travelling behind the Falcon by about 5 seconds and indicated that his early response was due to being messed up as a result of the accident. He did recall that as he was approaching the accident scene, he remembered seeing the four-wheel drive that was towing the boat coming in the line of oncoming traffic. He then saw the Pantech truck driven by Mr Hamilton spin out, but he did not see it hit any other car before the accident with the Falcon. He estimated that the Pantech truck was out of control for less than a hundred meters in front of the Falcon and that the Falcon had no way to go nor time to brake or do anything to stop. Mr Murdoch gave evidence that he panicked and shut his eyes and hung on and reopened them when he

was less than two feet away from the side of the Pantech truck. He shut his eyes again and then could only recall getting out of his cabin. He could not recall whether he applied the brakes or whether he tried to manoeuvre his vehicle off the side of the road. He did not recall hitting anything nor did he recall the explosion. He did, however, recall hearing gravel flicking as the truck went over the side of the road. Mr Murdoch was clearly unable to recall specifics of the accident, although he did remember telling the police that he was one and a half times the length behind. This, however, would not correspond to what he now considered to be a safe travelling distance of five seconds separation. He now believes that he was travelling behind by about five seconds. Of course, Mr Murdoch's evidence was in hindsight and to an extent governed by self-interest. Under cross-examination from Mr Horvat, Mr Murdoch indicated that he at no stage was speeding and that the vehicle he was driving had a speed limiter which was set at 98 kilometres per hour. He, denied that he was tailgating at any time in the 15-20 minutes that he was following the Falcon.

9. Mr Murdoch also gave evidence that he recalled the brakes of the vehicle as being pretty good, although he did concede that it was not his regular truck as his regular truck was having its gear box fixed.

Police Investigation

10. Senior Constable Steven Knight was the principal crash investigator stationed at the Sunshine Coast Forensic Crash Unit. Mr Knight had prepared the report to the Coroner on the 6th of March 2007 (Exhibit 42) and also directed that the series of photographs be taken which were tendered (Exhibit 42-A). Senior Constable Knight attended the accident scene shortly after the accident . He gave the evidence and said it was on the Bruce Highway where it was a then designated 100 Km per hour zone with one lane travelling north, one lane travelling south and that the carriageway was divided by a centre broken white line. He also gave evidence that at the time of the incident, the weather was overcast with prolonged periods of moderate rain and showers.

11. Senior Constable Knight then gave evidence of the seven impacts which he believed occurred and submitted a sketch diagram of the five vehicles and the seven impacts. This was marked and tendered as Exhibit 42-C. He gave evidence as follows:

First Impact

12. The Isuzu truck driven by Mr Hamilton has lost control upon braking and has begun to rotate in a clockwise direction with the cabin crossing over onto the northbound carriageway across the centre broken lines. The front driver side has collided slightly with the rear side drive of the Suzuki Swift driven by Mrs. Conis.

Second Impact

13. The Isuzu truck driven by Mr Hamilton has continued to slide sideways south on the highway as it was rotating clockwise. The Falcon driven by Ms Purdy with Mr

Whitmore in the passenger seat has driven underneath the tray of the Isuzu truck and its front end has collided with the fuel tank, which was situated underneath the tray on the front passenger side. This collision led to the explosion.

Third Impact

14. Mr Murdoch was travelling behind Mr Whitmore's vehicle. According to Senior Constable Knight, Ms Purdy would not have perceived anything untoward as the vehicles in front were travelling in a normal manner. As the Pantech truck then went out of control, she was likely, according to Mr Knight, to have had only two seconds to react (assuming she and the Pantech truck were travelling at approximately 80 Km per hour, or 22 metres per second). Given that the reaction time is approximately 1.5 seconds, Mr Knight is of the opinion she would not have had time even to put her foot on the brake. Given that Pantech truck weighed approximately twenty-four tons and Ms Purdy's vehicle weighed only 1.5 tons, it is assumed that her vehicle was pushed backwards as the truck continued to spin clockwise and southbound. Mr Murdoch driving the B-Double would have been in a similar position to Ms Purdy. Even if he was travelling 88 meters behind Ms Purdy, he would have had only approximately four seconds from the impact of Ms Purdy's vehicle and Mr Hamilton's. Senior Constable Knight indicated that the weight of the truck being 70 tons would mean that the vehicle would take 120-180 metres to stop. Mr Knight indicated that both Ms Purdy and Mr Murdoch were denied the natural time and distance to brake given that the object in front of them, and in fact, more than in front of them but moving towards them. He concluded that it negated all the natural braking distance and time. He concluded that the third impact was when Mr Murdoch's vehicle collided very hard directly into the rear of Ms Purdy's Falcon. Mr Knight indicated that both Ms Purdy and Mr Murdoch were denied the notional time and distance needed to brake given that the object was not only in front of them, them but was moving towards them. He concluded that the third impact was when Mr Murdoch's vehicle collided very hard directly into the rear of Ms Purdy's Falcon.

Fourth impact

15. Mr Knight then concluded that as the Falcon was pushed further underneath the tray of the Pantech truck, the front end of Mr Murdoch's vehicle collided with the passenger side tray of the Pantech truck. This was evidenced from the photographs submitted, being Photographs 86, 87, 88, 89, and 92.

Fifth Impact

16. The impact has launched the Pantech truck into the air approximately two to three feet in a clockwise manner. It was then pivoted on the rear driver side of the tray and the rear passenger side wheels have gone over the top of the bonnet and windscreen area of the Falcon. He gave evidence of this pivoting action being reflected by the gouge mark in the road surface as depicted in his diagram of Exhibit 42-C. At this point, Mr Knight assumed that the Falcon had continued backwards and across the southbound easement shoulder for

approximately fifteen metres as a result of the continued forces of the collision between Mr Hamilton and Mr Murdoch's vehicles and of the explosion.

17. It also appears at this time, that the 15-ton solid steel mill roller which was fixed to the rear trailer of Mr Murdoch's B-Double has snapped free from its one of its chains and catapulted towards the collision. Mr Knight could not say with clarity if there was any contact between the roller from the rear trailer and the cabin of Mr Hamilton's vehicle, although he was certain that it did not go through the cabin as he believed that, given the weight of the roller, the cabin would have been taken with it. At this point (that is, by the fifth impact), it is also clear that Mr Hamilton had been thrown from his driver's seat to the grass shoulder at the side of northbound lane. This was about 40 metres to the south of the resting position of the vehicles. It is unclear exactly when Mr Hamilton was catapulted from his vehicle. This could have been as a result of any or a combination of the impacts two, three, four, or five or indeed the explosion. The fact that Mr Hamilton's seat belt was still engaged did not assist in trying to ascertain which impact may have caused him to be thrown from his vehicle.

Sixth Impact

18. Mr Hamilton's Pantech truck has continued in its clockwise movement, so that the passenger side of the tray has collided with Mr Murdoch's front trailer, driver's side. When the rear chain holding the 15-ton solid steel mill roller has snapped, the front chains have remained intact. This subsequently caused a pendulum effect where the rear end of the mill roller swung at a 90-degree angle to the driver's side and has struck and collapsed the two steel uprights on the rear corner of Mr Hamilton's tray. It also knocked both swinging doors off the steel frame.

Seventh Impact

19. Mr Hamilton's vehicle has continued in its clockwise movement and was facing in the direction of southbound traffic. Mr Hawkins who was driving his logging truck has collided with the front of Mr Hamilton's truck. Mr Knight was of the opinion that the force with which Mr Hawkins has hit Mr Hamilton's vehicle has resulted in significant damage to the front of Mr Hawkins' vehicle, into the right side and to the trailer. Mr Knight also gave evidence that the roof of Mr Hamilton's Pantech truck had been removed and was wrapped around the bull bar of Mr Hawkins' truck. He was not able to explain how the roof was removed. Although other evidence was provided suggesting there was no contact directly between Mr Hamilton's truck and Mr Hawkins' truck and that Mr Hawkins struck only debris, I am not persuaded by that argument. I shall return to it later.

20. Mr Knight's conclusion in relation to the accident was supported by the inspection of the scene. He noted there were no skid marks, but only a small number of gouge marks in the northbound lane in which Mrs Conis, Ms Purdy, and Mr Murdoch were travelling. This would indeed support the view that Ms Purdy had no time to respond or brake and accordingly, Mr Murdoch had little time. Mr

Knight's evidence was complemented by that of Sergeant Terry John Kennedy who was tasked to attend the accident and arrived at approximately 1:15 PM. He gave evidence it was raining when he was there and he remained the senior officer at the site.

21. Mr Gary Ryan was also called to give evidence. Mr Ryan is the principal vehicle inspection officer at the Queensland Police Service Vehicle Inspection Unit. Mr Ryan had also worked previously in the road accident squads reconstructing road collisions for 23 years and had left the squad ten years ago but had not any recent experience in this area. In relation to the Isuzu truck, Mr Ryan had concluded that it was in a satisfactory mechanical condition at the time of the crash. He further stated, however, that there was a difference in the length of pushrods on the brakes (the left hand being 22 millimetres long and the right hand 25) which was not significant in itself but could impact if the circumstances were outside of the normal braking application. Mr Ryan indicated that, where there were wet roads and unladen vehicles, then the combination of these factors and the difference in the pushrod measurements could affect the performance of the vehicle. Although Mr Ryan had concluded that the Isuzu truck was in a satisfactory condition, once being advised of the surrounding circumstances, he came to the conclusion that those defects could have been contributory to the accident. Mr Ryan was of the opinion that if brakes were applied in an emergency situation, then combined with the pushrod length discrepancies, the brakes would have a tendency to lock up because of the weight transference in the vehicle. The wet road would have exacerbated the conditions. Given the evidence that the load was minimal being 30 sheets of melamine and 12 sheets of plywood weighing only 1.366 tons, Mr Ryan was of the opinion that the rear tyres of the truck would be more likely to lock up than they would in a more heavily laden truck. He concluded that the inconsistencies in the length of the pushrods would have exacerbated the problem due to the inconsistencies in the rate at which the rear brakes were being applied. His summary was that taking into account the camber of the road, with a near unladen truck travelling down a slight incline in wet weather, braking heavily would mean that the rear of the vehicle would travel out to its left and the vehicle would start to rotate clockwise. This would have been exacerbated by the pushrod deficiencies.

22. Mr Ryan was unable to give a totally accurate assessment of the mechanical condition of the Falcon due to its extensive damage, but he noted there were no defects that he believed could have contributed to the accident.

23. In relation to the Scania B Double driven by Mr Murdoch, Mr Ryan was also of the view that it was in a satisfactory mechanical condition and it had no defects which contributed to the accident. However, Mr Ryan had concerns about both of the trailers of the B Double. Mr Ryan outlined the difficulties with Trailer A which he considered to be in a unsatisfactory mechanical condition because of the maladjustment of the braking system on all three axles and that there was excessive clearance between the brake linings and drums, being four millimetres on the rear axle and similar on the centre, but not to the same extent. In relation

to the second trailer, Mr Ryan also opined that it seemed to be in unsatisfactory mechanical condition due to maladjustment of the braking system on all axles. Effectively, he believed that the effect of these defects would be that the wheels would start to fight each other when heavy braking was applied. Although he noted some rust in one of twelve wheels, which would be considered unroadworthy, he did not consider them to be a problem in terms of this accident.

24. He was, however, concerned that the maladjusted trailer brakes were significant, and considered there was no or very little contact between the brake linings and the brake drum. He considered both of them unsatisfactory and it would have reduced the braking efficiency of the Scania B Double driven by Mr Murdoch.

25. Finally, in relation to the Kenworth prime mover logging truck, Mr Ryan was of the opinion that it was in satisfactory mechanical condition and did not detect any defects that would have contributed to the cause of the accident. However, in relation to the trailer, Mr Ryan concluded that the trailer was in a non-satisfactory mechanical condition because the brakes on the front axle on the left hand side and the centre axle and rear axle would be on adjustment limits. Mr Ryan, however, did not believe that this had any impact on the accident and would have had a minimal effect on the control of the logging truck in the emergency because the prime mover brakes were in good condition.

Independent Expert Evidence

26. Mr Patane, who was retained as an expert witness to provide a report in relation to the road surface and its possible contribution to the cause of the collisions, also gave evidence at the inquest. His draft report and final report dated the 19th of March 2010 were tendered and marked as Exhibit 57 and 58. He gave evidence that the road surface where the impact occurred was Stone mastic Asphalt (SMA), but it was in fact close to a point where there is a change in the road surface between SMA and the NovaChip open graded asphalt. It was clear from Mr Patane's explanations of the various road surfaces that the design of the pavement surfaces requires balancing using asphalt that has sufficient wearing capabilities whilst providing skid resistance qualities in both wet and dry conditions, but also taking in to account factors such as costs, noise, and water spray. Mr Patane had previously given evidence that mastic provided much higher durability. It was more cost effective taking into account its total life and its rough resistance in heavy trafficking. So whilst it appeared to be conceded that stone mastic asphalt was not as effective in wet conditions, Mr Patane believed it was still satisfactory as far as skid resistance. He confirmed that the Vericom testing had been done in wet conditions and he considered, even accounting for the 50% reduction between dry and wet roads, that the SMA was still satisfactory. He concluded the actual value provided by the road exceeded what was required and concluded that the 0.47 was more than sufficient for the conditions. He indicated he considered that the normal requirement would be above 0.35. Mr Patane had also carried out a surface texture tests and was satisfied that the depth of the stone mastic surface was also satisfactory.

27. There was reference to the transition point as the accident had, in fact, occurred close to a change in the road surface between stone mastic asphalt and the NovaChip open graded asphalt. He noted the department's tests revealed a depth of 3.5 millimetre of water film at the transition point and indicated that it was desirable to achieve 2.5 millimetre, but the absolute maximum was 4 millimetre. Mr Patane also noted that since the accident, the join had been had been changed from straight across the road to a diagonal join, which would allow the water to get away more quickly. Since the time of the accident the section north of the join has been relaid and the NovaChip open graded asphalt has been replaced as it was resurfaced to open grade asphalt. When questioned as to why that section was resurfaced, Mr Patane indicated that the NovaChip open grade asphalt that was replaced had been laid in 1996 and was resurfaced in 2009 having therefore had a life of thirteen years. He indicated that it would have been getting to the end of its life span, although it would not have been deficient. The stone mastic section, however, was on laid in 2001 and was only seven years old at that time and therefore would not have required any resurfacing. Mr Patane was adamant that the NovaChip open grade asphalt would not have been deficient but simply that the glue would have been losing its adherence and thus the surface would be losing stones. He indicated that in terms of skid resistance, this would make a rougher surface and thus improve the skid resistance as it would have a lot more texture.

28. Mr Patane, in considering the department's report, agreed that the wet road surface combined with the heavy breaking of Mr Hamilton's Pantech truck would have contributed to the loss of control of his vehicle. He indicated that the need for heavy braking may be related to the gap between him and the four-wheel drive trying to brake in front of him. When questioned on any recommendations, Mr Patane was unable to make any suggestions regarding design changes to prevent similar types of crashes. He indicated that the department were already addressing the issue by constructing a bypass.

29. His report of course suggested that a reduction in speed could assist as he said "*I think there is an issue of speed on that road and by narrowing the lane will actually give that – a feel to actually go slower*".

Evidence of the Department of Transport

30. Mr Rod Tibbett gave evidence on behalf of the department as the project manager for the delivery of the Cooroy to Curra upgrade of the Bruce Highway. He gave evidence of the carriage section of the highway being upgraded (referred to as section B in the plans which indicated a section from the Cooroy Southern Interchange and stretching to Sankeys Road). The section was due to be completed in mid to late 2010. When this section is completed it is estimated that on the figures of 2006, 18,800 vehicles will use the upgraded section of the highway while only 3246 will remain on the existing highway.

31. Mr Justin Valks, employed as principal technical officer with the Department of Transport and Main Road also gave evidence in regard to the department's

investigation into the accident. As well as being a crash investigator, Mr Valks was also travelling a couple of hundred metres behind Mr Hamilton and so was quickly on the scene. Although he was in close vicinity (some 300 metres away), Mr Valks did not see the collision or how it happened due to the heavy rain. His opinion of the chain of events of the accident was mere conjecture from what he had attempted to reconstruct. His role was to conduct testing on the behalf of the department in relation to the road surface.

32. Mr Valks also carried out an audit of the traffic collision history of the previous 15 years in the kilometre - 500 hundred meters to either side - around the crash site. There had been a total of 14 crashes there since 2001, which was when audio-tactile line marking was installed 90 metres north of the crash site. According to Mr Valks, the crash history did not reveal any significant trends. In fact, many of the crashes appeared to have occurred for no other reason than inattention or falling asleep. Mr Valks commissioned Mr Tulloch to provide a report based on the Vericom skid testing, and he also examined the texture depth test results which had been obtained by the department in the months prior to the accident. He indicated that Vericom testing had showed that the open-graded asphalt which was north of the join had a higher wet skid resistance than the mastic south of the join. However, Mr Valks indicated that the testing showed that, although the stone mastic had a lower value, it was still suitable for the conditions. He also conceded that it was always difficult to have a join on a road but considered it was better to have it on a straight section or a slight down grade rather than on a curve and thus, he considered the placement of the join was in an ideal position.

33. Mr Valks did accept that when Mr Hamilton started to brake, it would have been somewhere near the area of transition from the open-graded asphalt to the stone mastic, but could not say where precisely. Mr Valks conceded that if Mr Hamilton had begun to brake in the open-graded asphalt and then transitioned to the stone mastic asphalt, it may have been enough to lock up his wheels.

34. In relation to the water build-up at the transition point, Mr Valks had taken photographs as part of his investigations and taken them during the heavy rain. These were labelled A, A-1, and B. Tendered as Exhibit 78C, Mr Valks pointed out that there was no build up of water at the transition point from the NovaChip open graded asphalt to the stone mastic asphalt. Mr Valks did not consider that there was a problem with the transition and he felt it was still well below the maximum flow depth. Mr Valks denied that the resurfacing of the NovaChip had anything to do with the accident, although it was resurfaced approximately nine months after the accident. Mr Volks indicated that the resurfacing had been part of the maintenance program. Exhibit 78-A and 78-B were tendered providing the program maintenance of the department showing the resurfacing of the relevant section of the highway had been scheduled prior to the crash. Mr Valks was adamant that, although Mr Patane believed it was being resurfaced because it was reaching the end of its life, based on the Vericom skid testing, the road had not displayed any signs that it was failing. This is consistent with Mr Patane's

view that the friction on the surface was suitable and was adequate for the conditions of the road.

35. Mr David Tulloch also provided evidence in relation to the highway in regard to the skid resistance of the relevant section. Mr Tulloch was responsible for performing and analysing the Vericom testing where the collision occurred. The testing was performed on the 16th of September 2008, twelve days after the accident. Mr Tulloch performed the Vericom testing 30 meters each side of the transition joint from the NovaChip open-graded asphalt to the stone mastic. His test results showed that the stone mastic had a 40% higher coefficient of friction than the NovaChip in dry conditions. However, Mr Tulloch stated that his test revealed that in wet conditions, the friction supplied reduced by 33% for NovaChip open asphalt, and for the stone mastic, the reduction was 50%. Mr Tulloch indicated that the acceptable G Force rating for wet conditions was 0.4. He gave evidence that the typical result would be between 0.4 and 0.6 in the wet. The value for the stone mastic asphalt was 0.47, which he described as mid-range, and the open grade asphalt produced a result of 0.55 which he described as good.

36. Most notably, however, Mr Tulloch indicated that surface transitions would affect the skid dynamic. Mr Tulloch was of the opinion that if a vehicle is maintaining a brake application force with the wheels still rotating but close to locking up, then as it co-transitions to a low friction surface (onto the stone mastic in this case), this may be sufficient to lock the brakes. Mr Tulloch was of the opinion that the Pantech's brakes locked up close to the transition, but he could not say if it could be determined absolutely. Mr Tulloch, given the information that the Pantech truck was almost empty of cargo and had braked heavily, described the significance of this resulting weight transfer from the rear axle to the front axle, which makes it easy for the rear wheels to lock up. He likened this to a hand brake turning with immediate loss of steering capacity causing the vehicle to rotate. Further, because of the cross fall of the road, the Pantech truck would have entered into a clockwise rotation, which supported the evidence given by other witnesses.

37. Mr Tulloch was also of the view that the B-Double driven by Mr Murdoch was more likely to have crashed into the back of the Falcon causing this car to crash instantaneously into the side of the Pantech. He believed that the damage to the Falcon was so square that it looked like a typical rear-end collision from a very heavy vehicle to a light vehicle which are not aligned. He believed that, if the Falcon has collided with the Pantech first, then the vehicle would have been misaligned and damage would have been more square rather than at an angle. However, Mr Tulloch was relying only on photos of damage to the rear of the Falcon vehicle as he did not inspect it. Further he wouldn't rule out the possibility that the Falcon was stationary or had slowed significantly when it was hit by Mr Murdoch. Mr Tulloch could not say what he determined to have caused the explosion. He stated that the collision by Mr Murdoch from behind could have ruptured the fuel tank or it may have been when the Falcon hit the fuel tank of Mr

Hamilton's vehicle or a combination of both. He was of the view the sandwiching effect had caused the Falcon to be spat out from between the trucks. Mr Tulloch was of the view that Mr Murdoch's vehicle then had struck the left side of the cabin of Mr Hamilton and resulting in the 15-ton steel roller becoming free and disintegrating the cabin of the truck. When given the evidence of Mr Hawkins, Mr Tulloch rejected Mr Hawkins' version of events and would not accept that the damage sustained by the cabin of Mr Hamilton could have been done in a vehicle-to-vehicle collision and believed that it was, in fact, done by the 15-ton steel roller. He initially considered the damage to Mr Hawkins' vehicle as relatively minor but conceded there was fairly significant impact damage when he viewed the photographs. He maintained his view, however, that the damage could have been sustained as a result of leaving the road and furrowing in the dirt rather than hitting Mr Hamilton's vehicle.

38. Mr Tulloch was also of the view that Mr Hamilton would have been thrown from the Pantech truck when its cabin was hit by the 15-ton steel roller from Mr Murdoch's vehicle. He held this view as the body had travelled so far that, he said, nothing had interfered with it. He believed that the only way a body could project that far travelling, as it would have been, at 60 or 70 kilometres an hour was that basically it had come free of everything and travelled through the air without hitting anything.

39. Although Mr Tulloch was extremely helpful in his summations, his expertise was in relation to the skid resistance of the highway. I accepted his expertise as he indicated that he investigated well over 500 multiple car crashes having previously worked as a crash investigator with the Queensland Police Services. However, Senior Constable Knight was the principal crash investigator involved in the incident and he attended the site. Overall I preferred his evidence in relation to the sequence of the impacts as it was more in accord with that given by the other witnesses, particularly Mr Hawkins. These areas of differentiation were really only conjectural in ascertaining the exact timing of the actual collisions, which were, of course, only seconds apart if that. The main area of conjecture is whether Mr Murdoch hit the Falcon prior to it colliding with Mr Hamilton's Pantech.

Findings

40. It is impossible to determine with certainty the sequence of impacts but what is certain is that as a result of the accident on the 4th of September 2009, three people lost their lives. Mark John Hamilton, the driver of the Pantech truck died of multiple injuries from the motor vehicle accident, Rachel Gai Purdy, who was 16 weeks and five days pregnant at the time of the collision, died of incineration as the consequence of the motor vehicle collision. Cory James Whitmore died of incineration as a consequence of the motor vehicle collision.

41. I find that at about 12:50pm on the 4th of September 2008, a Pantech truck being driven by Mr Mark Hamilton was forced to brake heavily as a result of the vehicle in front, a Land Cruiser towing a boat, braking in response to a line up of traffic.

It is highly probable that Mr Hamilton was travelling too close to the vehicle in front taking into account the weight of his vehicle, the fact that it was only partially laden and the intense weather conditions meaning that the road was wet. There was no evidence that there were sheets of water over the road but the road was wet as the weather alternated between showers and heavy rains. The abrupt application of brakes by Mr Hamilton coupled with the combination of the wet conditions, the unladen vehicle and the discrepancy in the length of the pushrods caused three wheels to lock up. The weight transference to the front of the vehicle reduced the traction of the rear wheels which have lost traction and the vehicle has commenced sliding in a clockwise direction down the centre of the road. The cabin of Mr Hamilton's vehicle has then crossed over into the northbound lane where it has clipped the rear of Mrs. Conis' Suzuki Swift. Having lost control of his vehicle, Mr Hamilton would have been powerless to stop it and it has continued to slide in a clockwise manner down the highway. At this stage, the vehicle would have been transverse across and effectively blocking the road. The vehicle driven by Rachel Purdy would have had little, if any, time to react to the cabin and front part of the truck being in her lane. The evidence, which I accepted, was that vehicles were likely to be travelling at approximately 80 to 90 kilometres per hour. I accepted Ms Purdy would have had only approximately two seconds to react once she perceived Mr Hamilton's vehicle had crossed onto her side of the road.

42. I find that Ms Purdy's vehicle has collided with the passenger's side of Mr Hamilton's truck behind the cabin and in the vicinity of the fuel tank. This impact would have had the effect of pushing the Falcon motor vehicle containing Ms Purdy and Mr Whitmore backwards in the direction from which they had come. Travelling behind the Falcon was the B-Double driven Mr Murdoch.

43. I accept the evidence of Mr Knight and Mr Murdoch finding that it is more likely that the Falcon collided with the vehicle driven by Mr Hamilton prior to Mr Murdoch hitting the vehicle with all might square on.

44. I accept Mr Murdoch's uncontested evidence that his vehicle was equipped with a speed limiting device set at 98 kilometres per hour and accept that there was no evidence that he was travelling above the speed limit. His evidence was that he was travelling at approximately 80 kph at that time of the incident. Regardless of this time, I accept the evidence that, like Ms Purdy, he would have had very little time to react to the situation. While there is always a concern of tailgating (which, anecdotally, seems to be a common practice on this stretch of highway) there is insufficient evidence to conclude that Mr Murdoch was travelling too close to Ms Purdy's car. Mrs. Conis gave evidence that she believed Mr Murdoch was tailgating her but Mr Murdoch also gave evidence that he was travelling with a similar vehicle in tandem and that vehicle had passed him earlier. I accept Mrs. Conis's view that the vehicle behind her was travelling very close to her as the disparity in the size of the vehicles can be extremely intimidating for a vehicle being followed by a large truck. As I indicated, I prefer the evidence of Senior Constable Knight, supported by that of Mr Valks and Mr

Murdoch, indicating that Ms Purdy had little time to perceive the problem, much less react to decelerate or come to a stop. Unless she had decelerated significantly, there would be no basis for suggesting that Mr Murdoch caught her up effectively to shunt the vehicle into the Pantech truck. I reject the suggestion that the collision was square on and note from the photographic evidence that the right rear of Ms Purdy's vehicle sustained greater impact then the left rear. This was clearly evident in Photo 33.

45. Although Rachel Purdy's mother and Cory James Whitmore's parents supported the submission of Mr Tulloch that he believed the first collision involved Mr Murdoch impacting on the Falcon, on the balance of probabilities, this does not appear to be the case. Despite there being some evidence of it being a square-on impact, the photographic evidence simply did not reflect this. It suggested that the drivers rear side was impacted more indicating that the vehicle was at an angle consistent with being pushed in a clockwise direction while it was under the Pantech vehicle. This also is consistent with the fact that neither Mr Stjernquist nor Mr Mortimer recalled seeing the blue Ford sedan indicating that it was, in all probability, virtually on the point of impact and thus Ms Purdy would have no time to react to be able to stop. In all probability she was stopped by the collision and then Mr Murdoch was stopped also by the collision.

46. The family has submitted also, that the statement of Ms Conis should be given heavy weight in relation to her being tailgated. I accept that at one point Mrs Conis was tailgated. I also accept that it is possible that it was Mr Murdoch's vehicle bearing down heavily on her and thus he was travelling in close proximity to the vehicles. However, I've already indicated that I preferred the evidence of Constable Knight and therefore find that Rachel and Cory died at the point of impact with the Pantech truck prior to the collision of their vehicle with Mr Murdoch's. I accept Mr Murdoch's inconsistencies and prefer to consider that he was more likely the one and half trailer lengths behind Ms Purdy's car rather the reconstruction he has inadvertently tried to carry out. This is not a criticism of Mr Murdoch, but a traumatic event like this must weigh heavily and no doubt he has been over and over it in his mind.

47. Mr Purdy, Rachel's father, also submitted that she was hit from the back and pushed directly into the Pantech straight on. Although Mr Tulloch suggested this, it was obvious that she was not hit directly square on as there was more damage to the rear right as I have indicated. Given the speed and the distances involved, even accepting that Ms. Purdy was a very competent driver and would have done everything in her power to avoid the oncoming truck, the reality is she would have had very little time to perceive the problem and little or no time to actually implement any avoidance action.

48. I find that soon after Ms Purdy's vehicle collided with the Pantech truck, Mr Murdoch's vehicle collided with the back of the vehicle which was slightly skewed in a clockwise position. This is the most probable outcome given that the car was probably wedged under the truck which had continued also to move in a clockwise direction. I find that soon after Mr Murdoch's truck collided with the

back of the Falcon, and the Pantech truck continued to move in the clockwise direction, Mr Murdoch's vehicle continued and shortly thereafter collided with the side of the Pantech truck just behind its cabin. As a result and with the combination of the impacts, the Pantech truck was then forced farther around in a clockwise direction such that it was facing the southbound traffic. This is consistent with the evidence of Mr Hawkins. The steel mill roller, which was chained onto the second B-Double, had broken one of its chains causing the roller to swing like a pendulum hitting the rear of the Pantech truck as the Pantech was continuing to spin back to face the direction from which it came. The steel mill roller demolished the rear stanchions and cargo doors of the Pantech truck. As Mr Murdoch's truck has come through the scene, it has impacted on the left rear of the Pantech truck and the vehicle containing Ms Purdy and Mr Whitmore, well alight from the explosion, has been ejected to the eastern shoulder of the road. It is not possible to pinpoint exactly what caused the explosion but there were two potential fuel explosions: the fuel tank of the Pantech truck, which was struck by the Falcon, and the fuel tank of the Falcon itself when it was hit from behind by Mr Murdoch. The bonnet of the Falcon was peeled back by the force of going underneath the tray of the Pantech, and thus it's highly likely that the fuel would have spilled over the engine bay and ignited.

49. I find that I accepted the evidence of Mr Hawkins that the Pantech truck was coming back at him and that he saw the cabin, but no one was in it. I found that by this point, Mr Hamilton had been ejected. Again, it is not possible to say at what point exactly Mr Hamilton had been ejected. I accepted Mr Hawkins' evidence that he believed that the cabin was intact. It may well have been intact as it spun back towards him before the steel roller collided with it causing the cabin to disintegrate effectively at virtually the same time as the timber truck collided with the Pantech. In the process of the short milliseconds, it would be impossible for Mr Hawkins to note exactly when the disintegration actually occurred. I accepted and preferred the evidence of Mr Hawkins and that of Senior Constable Knight over that of Mr Tulloch. Given that Mr Knight saw the vehicle and Mr Hawkins was in the vehicle, it is more likely that their evidence that Mr Hawkins' Kenworth timber truck impacted with the vehicle is more accurate. Mr Tulloch was of the view that Mr Hawkins vehicle impacted only with the roof and the debris from the collision of the mill roller and the cabin.

50. I find that after impacting with the cabin of the Pantech truck, the Kenworth has gone over the side of the road and sustained further damage, particularly as the trailer tipped on its side. I accept the evidence of Mr Hawkins that his vehicle impacted with the cabin of the Pantech as it spun around especially as the photographs support this view.

51. I find that the road surface design and geometry didn't play any significant role in the cause of the collision. I accept the evidence of Mr Tulloch, who presented as an expert and was a very thorough witness, that the section of the highway had sufficient coefficient of friction in wet conditions. This applied to the NovaChip open-graded asphalt and the stone mastic asphalt, although it is accepted that

stone mastic loses a greater proportion than the open graded asphalt in wet weather. While it is possible that Mr Hamilton applied his brakes in the transition area, I find this could not have caused him to lose control but could have exacerbated the problem which occurred as a result of his travelling too closely and braking harshly in wet conditions with maladjusted brakes and a lightly laden truck. I accept the evidence of Mr Tulloch that the transition area did not show any excessive build up of water particularly at the time of the Vericom testing. This was also the evidence of Mr Valks, which was uncontested.

52. Clearly, this accident occurred because Mr Hamilton, probably driving too close to the vehicle travelling in front and probably too fast for the road conditions, has applied the brakes. As a result of a sudden brake pressure with an almost empty truck exacerbated by the maladjusted brakes on a wet road, he lost control and was not able recover. Ms Purdy's vehicle was not overtaking or attempting to overtake and there was no evidence at all that she was speeding. Ms Purdy could not possibly have caused or even contributed to the cause of the collision but was unfortunately in a position where she could not have perceived the problem, much less responded to it within the time available. I find that Mr Murdoch was travelling behind Ms Purdy and while it is possible that he was travelling closer to her than was safe to do so in the wet conditions, he could not have avoided colliding with the accident in the time available to him given the vehicles would have continued towards him. On the evidence, Mr Murdoch's collision with the first impact is unlikely to have contributed to the deaths of Ms Purdy or Mr Whitmore who, on all evidence, would have died instantaneously on the first collision.

Recommendations

53. There can be no doubt that Mr Hamilton was unable to brake safely when the vehicle in front of him braked to account for the slowing traffic ahead of that vehicle. Mr Hamilton was on all accounts driving too close to stop safely when the need arose and this combined with the lack of weight in his truck and the wet conditions to exacerbate the problem. There can be little doubt that travelling too close to the vehicle in front is fraught with danger especially on a road with high volume of traffic. Legislation to mandate actual distances required between vehicles may assist to minimise the circumstances where braking in high traffic areas could lead to these tragedies. Reducing the speed limit would also assist in reducing the distance required for stopping. The current speed limit of 90 kph is one step in the direction but a speed limit for wet and dry conditions as in other jurisdictions may also assist.

Overall Conclusion

The highway between Gympie and Cooroy on which these three accidents occurred has been and continues to be the source of much debate.

On the evidence before me the road design, construction and surfacing is acceptable and of sufficient standard to meet the demands of the road and the vehicles.

However the high volume of traffic means the margin for error is very minimal.

Mr Chung's lapse of concentration, the defects in the vehicle of Mr McGreevy and Mr Hamilton's lack of ability to safely brake were the causes of the accidents that took the six lives as well as the unborn child of Ms Purdy and Mr Whitmore.

These errors on high traffic and fast moving highway lead to the fatalities.

Reducing the speed limit, creating or widening the painted median strip and installing audio tactile devices all assist to give greater margin for error but cannot prevent the errors.

It is recommended that until the highway upgrade is completed and a dual lane carriageway is available in both directions, the speed limit should remain reduced especially for wet weather conditions, the painted median strip project continue and the audio tactile devices be installed. I especially have regard to Mr Patane's evidence in this regard. These recommendations must be considered in the light of the current upgrade and the cost of the interim measures.

Finally I express my deepest sympathy to the families of those loved ones who lost their lives on the road on the 4th September. I thank those who have contributed in the most trying of circumstances. I apologise for the delay in finalising this matter but the investigation and independent expert commissioned reflect a thorough and extensive investigation.

Ms Maxine Baldwin
Coroner
8 June 2011
Gympie