CORONERS ACT, 2003

SOUTH *AUSTRALIA*

FINDING OF INQUEST

An Inquest taken on behalf of our Sovereign Lady the Queen at Adelaide in the State of South Australia, on the 5th day of February 2014, the 24th day of September 2014, the 13th, 14th, 15th, 16th, 17th,20th, 21st, 22nd, 23rd, 24th, 27th, 28th and 30th days of October 2014, the 4th and 28th days of November 2014, the 18th day of December 2014 and the 12th day of January 2015, by the Coroner's Court of the said State, constituted of Anthony Ernest Schapel, Deputy State Coroner, into the death of James William Venning.

The said Court finds that James William Venning aged 41 years, late of 10 Lovers Lane, Pinnaroo, South Australia died at Cross Road, Myrtle Bank, South Australia on the 18th day of January 2014 as a result of blunt head trauma. The said Court finds that the circumstances of his death were as follows:

1. Introduction and cause of death

1.1. Mr James William Venning, aged 41 years, was the driver and sole occupant of a loaded semi-trailer that crashed at the traffic light controlled intersection of Mount Barker Road, Cross Road, Glen Osmond Road and Portrush Road at Myrtle Bank. Mount Barker Road at that location is the culmination of the South-Eastern Freeway.

1.2. As a result of the collision between his semi-trailer and a wall that is adjacent to the northern carriageway and footpath of Cross Road in the vicinity of the intersection, Mr Venning died of blunt head trauma. The deceased died at the scene. The gravity of the injuries that he sustained would suggest that there would have been little or no period of survival following the trauma. In his post-mortem report[1], Professor Roger

[1] Exhibit C4a

Byard who performed an autopsy in respect of Mr Venning, expresses the cause of his death as blunt head trauma. I find that to have been the cause of Mr Venning's death.

1.3. At autopsy a low blood alcohol level of 0.026% was detected in Mr Venning's blood. However, Professor Byard noted that there were changes of early putrefaction and so the level of alcohol that was detected may be an artefact of decomposition. There is no evidence that Mr Venning had consumed alcohol prior to the collision. There is no evidence of overt impairment of Mr Venning's ability to control a motor vehicle. For those reasons the blood alcohol content can be put to one side.

1.4. The collision occurred at 12:58am on the morning of Saturday 18 January 2014. Although at the time other vehicles were present at the intersection, fortunately none of those vehicles were struck by Mr Venning's semi-trailer.

1.5. Mr Venning had driven the semi-trailer from the Pinnaroo district in South Australia. The trailer, which was an enclosed tautliner, contained a load of potatoes in bins. According to Senior Constable Tony Madigan of the SAPOL Heavy Vehicle Enforcement Unit[2], information was received from the operator of the semi-trailer, the Mitolo Group (Mitolo), that the trailer was carrying six, four tonne potato bins full of potatoes. Mr Venning had been tasked by Mitolo to deliver the produce to Mitolo's depot at Virginia. Mitolo operated a number of produce farms in the Pinnaroo area. Mitolo conducted regular truck runs between Pinnaroo and Virginia for the purpose of delivering produce. For the most part, the runs were carried out by B Double combinations that were not stationed in the Pinnaroo area. The drivers were employees of Mitolo. The usual and preferred, but not exclusive, route between Pinnaroo and Virginia was said to be by way of the Riverland, a route that is relatively flat. Mr Venning's load was being carried by way of a semi-trailer combination, that is to say a 3 axle prime mover and a 3 axle trailer. This combination was stationed in the Pinnaroo area and was mostly used by Mitolo for local transportation purposes.

1.6. On the night in question, Mr Venning had originally intended to take the Riverland route between Pinnaroo and Virginia. However, due to the possible presence of bushfires along that route, he chose to travel to Virginia by way of the South-Eastern Freeway and through Adelaide. His employers knew that he was intending to do so.

[2] Exhibit C36a

This route naturally involved Mr Venning having to negotiate the long and steep downhill section of the freeway between Crafers and the intersection at Cross Road. It is believed that Mr Venning had never driven an articulated heavy vehicle down the freeway on any previous occasion.

1.7. The collision between Mr Venning's semi-trailer and the wall on the northern side of Cross Road, as well as Mr Venning's journey along the South-Eastern Freeway from Crafers, were captured by DTEI CCTV cameras stationed along the route. The CCTV footage was made available to the Court. The footage makes it evident that traffic along the section of the South-Eastern Freeway with which this Inquest is concerned was light at the time of Mr Venning's descent.

1.8. Although there had been some rain that night, there is no evidence that the weather conditions, which were essentially dry at the time of the accident, had any bearing on the causation of this incident.

1.9. I will deal with the journey of this semi-trailer down the South-Eastern Freeway culminating in the fatal collision with the wall at Cross Road, but it is appropriate at this point to record that the estimated speed of the semi-trailer at the time of the collision was in excess of 140 kilometres per hour. Although Mr Venning had lost control of the speed of the semi-trailer, it is clear that he had maintained directional control of it until the final moments before the crash. Mr Venning attempted to negotiate a left turn into Cross Road through a slip lane situated for that purpose, but the speed of the rig caused it to overturn onto its right hand side, slide across Cross Road and strike the wall, narrowly missing cars waiting for the lights at the intersection.

1.10. This Inquest examined the circumstances in which the semi-trailer was being driven at such a dangerous speed.

2. <u>The Freeway</u>

2.1. It is necessary to describe the features of the relevant section of the South-Eastern Freeway. The relevant section in this case is that section between the Mount Lofty Road overpass at Crafers and the traffic light controlled intersection where the accident occurred. This is a distance measured by the odometer of a police vehicle to be 8.2 kilometres. Of this distance approximately 7 kilometres is constituted by a

steep and constant downhill incline for traffic travelling towards Adelaide. At the time with which this Inquest is concerned the general speed limit for the major portion of that section of the freeway was 100 kilometres per hour except for trucks with five axles or more, in which case the speed limit was 60 kilometres per hour. The semi-trailer driven by Mr Venning comprised six axles, three on the prime mover and three at the rear of the trailer. The speed limit for trucks of the kind driven by Mr Venning persisted for the entire length of the journey along the freeway from Crafers to the traffic light controlled intersection at Cross Road. The speed limit for Mr Venning's semi-trailer was therefore, at all material locations, 60 kilometres per hour. The speed limit for cars and other vehicles varied along the route, but the variations are not material for these purposes. The only speed limit of materiality is the 60 kilometres per hour limit that applied to semi-trailers such as the one in question here.

2.2. At Crafers the freeway carriageway expands from two lanes to three lanes which persists towards the intersection, except that a short distance before the intersection a fourth lane exclusively used by traffic turning left from Mount Barker Road into Cross Road through the slip lane I have mentioned comes into being, and two additional right hand lanes used by traffic turning right from Mt Barker Road into Portrush Road also come into being. Therefore, at busy times at the intersection Mt Barker Road can have six lanes all occupied with traffic.

2.3. The other important feature of the road rules as they applied to trucks utilising the down section of the freeway from Crafers is that at Crafers there was signage to the clear effect that trucks must use low gear. This was not a mere advisory sign. The sign triggered an important obligation under the Australian Road Rules. It applied to the truck driven by Mr Venning for the length of his journey down the freeway from Crafers. Rule 108 of the Australian Road Rules under the Road Traffic Act 1961 is set out as follows:

> '**108—Trucks and buses low gear signs**
>
> (1) If the driver of a truck or bus is driving on a length of road to which a trucks and buses low gear sign applies, the driver must drive the truck or bus in a gear that is low enough to limit the speed of the truck or bus without the use of a primary brake.
>
> Offence provision.
>
> **Note—**
>
> ***Bus***, ***length*** of road and ***truck*** are defined in the dictionary.

(2) Subrule (1) does not apply to the driver of a bus if information on or with the sign indicates that it applies only to trucks.

Note—

With is defined in the dictionary.

(3) A trucks and buses low gear sign on a road applies to the length of road beginning at the sign and ending—

(a) if information on or with the sign indicates a distance—at that distance on the road from the sign; or

(b) in any other case—at an end trucks and buses low gear sign on the road.

(4) In this rule—

primary brake means the footbrake, or other brake, fitted to a truck or bus that is normally used to slow or stop the vehicle.'

Ms Doecke, who appeared at the Inquest as counsel on behalf of the Department of Planning, Transport and Infrastructure (DPTI), helpfully explained to the Court the penalty regime in respect of breaches of Rule 108. A breach of Rule 108 is an expiable offence. If an offence is expiated pursuant to the Expiation of Offences Act 1996, no prosecution ensues. Rather, the offence is dealt with by way of the payment of a fine, in this case $334. Certain traffic offences must be the subject of an expiation notice in the first instance. A breach of Rule 108 is not such an offence. This means that a prosecuting authority is not required to issue an expiation notice for this offence. The prosecuting authority is at liberty to prosecute the alleged offender in court. If a prosecution in respect of a breach of Rule 108 occurs, the maximum penalty that the court may impose for the offence is a fine of $2,500. Ms Doecke points out that in either situation, be it expiation or prosecution, a breach of Rule 108 automatically attracts 3 demerit points. An accumulation of 12 demerit points leads to a licence disqualification. Section 168 of the Road Traffic Act 1961 enables a Court convicting a person of certain offences under that Act, or of offences committed in other circumstances involving the use of a motor vehicle, to impose a licence disqualification. However, the imposition of disqualification by this means is in any event discretionary, and is only available when a road traffic matter is dealt with other than by way of expiation. Whether a prosecution as opposed to expiation occurs in respect of a breach of Rule 108 is also discretionary, the discretion in this case residing with the prosecuting authority. One matter that would be taken into consideration by the prosecuting authority would be the seriousness of the breach and its consequences. As Ms Doecke points out, however, serious breaches or breaches

with serious consequences might involve a prosecution for a more serious offence including driving without due care, dangerous driving and so on.

2.4. Nevertheless, a driver who drives a truck down the South-Eastern Freeway not in an appropriate gear but constantly using the brakes to control the speed of the truck, in other words coasting and riding the brakes, might only be issued with an expiation notice in respect of that behaviour and that would only attract a fine of $334 and 3 demerit points. To my mind, having regard to the danger such driving behaviour imposes on the public, this would represent a wholly disproportionate prosecutorial response to such an offence, particularly if the offence occurred on the South-Eastern Freeway. In the opinion of the Court such behaviour in and of itself should attract a significant licence disqualification, and in serious cases even imprisonment. In the opinion of the Court the penalties for a breach of Rule 108 are inadequate.

2.5. As is well known, there are two arrester beds, now renamed 'safety ramps', on the downhill section of the freeway. In this document I shall refer to these features as safety ramps. The first safety ramp is situated immediately before the entry to the Heysen Tunnel on the down track. The second and final safety ramp is situated to the northwest of the Mount Osmond overpass and is positioned approximately 1.4 kilometres from the traffic light controlled intersection at Cross Road, Myrtle Bank. The Court has concluded that the second safety ramp is effective in its ability to stop a truck the speed of which cannot be controlled. The second safety ramp represents the final opportunity for the driver of a truck, the speed of which cannot be controlled, to stop the truck before the traffic light controlled intersection at Myrtle Bank except by extraordinary means that would usually be catastrophic. The light traffic conditions on the night in question here meant that there would not have been any difficulty in, or obstacles in the way of, Mr Venning utilising the second safety ramp if he believed at that point that the speed of his semi-trailer could not be controlled. The evidence in this case demonstrates that Mr Venning must have entertained that belief. And yet he drove past the entrance to the second safety ramp at a speed in excess of 100 kilometres per hour as if this device, a device that would have saved his life, was not even there. It is an imperative that those who drive heavy vehicles down the freeway have knowledge of the existence of, the position of and the purpose of safety ramps. If drivers do not have that knowledge, or they do not have the correct temperament to use a safety ramp, these drivers represent a potential danger to the public. It is

incumbent on drivers to utilise safety ramps in an emergency. If the safety ramps are available and accessible, there can be no excuse for their not being used, and there is nothing heroic about using a safety ramp especially if the need for its use arises out of incompetent or culpable driving in the first place.

3. The driving behaviour of Mr Venning down the South-Eastern Freeway

3.1. As indicated earlier Mr Venning's journey down the South-Eastern Freeway was captured by a number of CCTV cameras positioned at various intervals along the freeway. The footage from these cameras was analysed by Brevet Sergeant William Bakker of the SAPOL Major Crash Investigation Section. From that footage Mr Bakker was able to calculate the approximate average speeds of Mr Venning's semi-trailer between various locations along the down section of the freeway. Using the odometer of a police vehicle, he measured the distances between the various positions of the semi-trailer depicted in the CCTV footage as it progressed down the freeway. By reference to the CCTV footage itself, and in particular to the actual times displayed on that footage, Mr Bakker was able to calculate the durations of time that it took the semi-trailer to cover the various distances between sightings captured by the cameras. By that means Mr Bakker was able to calculate an average speed of the semi-trailer between the semi-trailer's various locations as depicted in the CCTV footage. The average speeds have been calculated in some instances to 2 decimal places, but due to the fact that Mr Bakker's distances were calculated for the most part to only 2 significant figures, the average speed calculations will need to be so restricted.

3.2. The police investigation into this matter revealed the presence of two vehicles on the South-Eastern Freeway in respect of which the occupants could be identified. One of those vehicles was a B-Double operated by another produce company known as Parilla. This vehicle was being driven by a Mr Dwayne Rowe. Mr Rowe provided a statement to police[3]. His B-Double vehicle is also depicted in much of the CCTV footage. Mr Bakker was able to perform the same exercise in respect of average speeds of Mr Rowe's B-Double as he had been with Mr Venning's semi-trailer. One can see from the CCTV footage, as well as from Mr Bakker's calculations, that between the Crafers Mount Lofty Road overpass and the Heysen Tunnel, Mr Venning's semi-trailer was travelling at a slightly higher speed than the B-Double and

[3] Exhibit C6a

was gaining on it. Not far from the exit of the Heysen Tunnel, Mr Venning's semi-trailer is seen in the CCTV footage to overtake the B-Double. The activity of the B-Double from that point is of no further relevance except that its driver, by way of radio, attempted to urge Mr Venning to utilise the safety ramp.

3.3. The other identifiable vehicle was a privately owned black Holden Commodore Club Sport sedan which was also being driven downhill on the South-Eastern Freeway between Crafers and the intersection. That vehicle was occupied by four men whose names are James Anthony Birbas, Theofanis Chris Birbas, David Michael Gates and Robert Neil Thomas. These men also provided statements to police[4]. It is not completely certain as to whether or not the black Holden Commodore is depicted in the CCTV footage. A vehicle that is consistent in appearance with such a vehicle is seen to overtake Mr Venning's semi-trailer in the Heysen Tunnel. However, the contents of the statements of the occupants of that vehicle do not wholly support that identification. I will mention more of that in a moment.

3.4. I deal with Mr Venning's journey down the freeway in three parts. The first part is his journey between Crafers and the entrance to the Heysen Tunnel. The second part is the journey within the tunnel. The third is the journey between the exit of the tunnel and the intersection where the crash occurred.

3.5. <u>Crafers to the tunnel</u>

When both Mr Venning's semi-trailer and Mr Rowe's B-Double are seen in footage taken from camera 130 in the vicinity of the Mount Lofty Road overpass at Crafers, Mr Venning's semi-trailer was estimated to be approximately 450 metres behind the B-Double. At that point the topography of the South-Eastern Freeway is such that for Mr Venning's direction of travel, the freeway is on an uphill incline which is said to provide the drivers of heavy vehicles with an opportunity to select the appropriate gear before the summit is reached and the long descent is commenced. Depending upon the manner in which the CCTV footage is viewed there are slight discrepancies in estimates of time as between those recorded by Mr Bakker and those calculated by others who took part in the Inquest. The discrepancies are not material and it is convenient to work from the times given by Mr Bakker in his evidence on oath. Between the vicinity of camera 130 and the vicinity of camera 123, which is situated near the entrance to the Heysen Tunnel, which is an approximate distance of 3.3

[4] Exhibits C7a, C8a, C9a and C10a respectively

kilometres, Mr Venning's average speeds as calculated by Mr Bakker are as follows (rounded to 2 significant figures):

Camera 130 to Camera 129	42 kilometres per hour
Camera 129 to Camera 128	37 kilometres per hour
Camera 128 to Camera 127	45 kilometres per hour
Camera 127 to Camera 125	39 kilometres per hour
Camera 125 to Camera 124	46 kilometres per hour
Camera 124 to Camera 123	25 kilometres per hour

It will be seen from these calculations that Mr Venning's semi-trailer was being driven within the speed limit of 60 kilometres per hour and was being driven at a reasonably constant speed of below 50 kilometres per hour. In fact it appears that at times Mr Venning was able to slow the semi-trailer as indicated by slower average speeds in different sections of the journey as revealed by the CCTV footage.

3.6. It is not necessary to mention the calculations of the average speeds of Mr Rowe's vehicle. Suffice it to say the B-Double was also being driven at moderate speeds, and significantly less than the speed limit of 60 kilometres per hour.

3.7. In the vicinity of camera 130 near Crafers, Mr Venning's rig was approximately 29 seconds behind Mr Rowe's rig. By the time the vehicles had reached the vicinity of camera 123, which is situated near the entrance to the Heysen Tunnel, Mr Venning's vehicle is approximately 9 seconds behind Mr Rowe. Therefore, over that distance Mr Venning's rig has almost caught Mr Rowe's, reducing the duration between them by about 20 seconds. Camera 123 also depicts the entrance to the first safety ramp. It depicts Mr Venning's semi-trailer in the left hand or outside lane of the freeway. The entrance to the safety ramp is unobstructed and there was nothing in it at the time. If Mr Venning had seen the need, he could easily have entered that safety ramp. However, as seen, the average speed of the semi-trailer between the vicinity of camera 124 and the vicinity of camera 123 was, according to Mr Bakker's calculation, only 25 kilometres per hour which would not be suggestive of a need to use the safety ramp.

3.8. It is difficult to be completely certain about the quality of Mr Venning's driving behaviour between the Mt Lofty Road overpass and the entrance to the Heysen Tunnel. The speed of the vehicle was controlled in the sense that it was kept

consistently below the speed limit of 60 kilometres per hour and for the most part was being driven at a speed that would not be regarded as unsafe for that descent. The question is, however, how was his speed being controlled? There is evidence to suggest that in Mr Venning's case the use of his primary brake, that is the foot brake, was a component in the vehicle's ability to maintain the speeds which I have identified. For example, it seems clear enough that, as revealed by camera 129, for 9 seconds Mr Venning was applying the brakes constantly. As revealed by camera 124 there seems little doubt that the brakes are constantly on for approximately 20 seconds. This is revealed by the illumination of the rear brake lights as detected by the footage. It has to be understood that the fact that brake lights are seen does not reveal how much pressure Mr Venning was applying to the brakes nor which of the rig's 12 individual brakes were working effectively if any. However, it does appear that by one means or another Mr Venning has a measure of control of the speed of the vehicle. Of course, Rule 108 of the Australian Road Rules stipulates that by this point along the journey Mr Venning should have been using the gearbox to control the speed of the semi-trailer without using the foot brake at all. Why there was a need for Mr Venning to utilise the foot brakes is a question that is obviously posed by his driving behaviour as seen in the CCTV footage. One possible reason for his use of the foot brake is that he had the rig in too high a gear, or even in no gear at all.

3.9. <u>The journey through the tunnel</u>

As revealed by several cameras situated along the length of the tunnel, Mr Venning's semi-trailer is not far behind the B-Double of Mr Rowe. As revealed by camera 116 he is only 5 seconds behind Mr Rowe at the exit of the tunnel. Within the tunnel Mr Bakker has calculated an average speed for Mr Venning's semi-trailer of approximately 40 kilometres per hour, which is again an acceptable speed. There is further evidence, as revealed by lights, of Mr Venning using his brakes within the tunnel.

3.10. <u>The journey from the exit of the tunnel</u>

Camera 116 reveals that when Mr Venning's semi-trailer and Mr Rowe's B-Double exit the Heysen Tunnel, Mr Venning's vehicle is still behind that of Mr Rowe. Both trucks are travelling in the left hand lane. Mr Bakker's statement reveals that from this point the downhill gradient becomes more pronounced. The still image taken

from the camera 116 CCTV footage, reproduced in Mr Bakker's statement[5], is timed at 0:56:05 which is precisely 2 minutes and 53 seconds before the crash.

3.11. Camera 115 footage displays the semi-trailer driven by Mr Venning overtaking Mr Rowe's B-Double. The footage reveals that Mr Venning's semi-trailer overtakes the B-Double very quickly. Mr Venning's semi-trailer will be seen to pick up speed quite rapidly for the rest of the journey down the South-Eastern Freeway and it will remain in front of Mr Rowe's B-Double. The dramatic increase in the speed of the semi-trailer is illustrated as follows. In the approximate 580 metres between the location of the semi-trailer as captured by camera 116 and it being captured by camera 115, Mr Venning's semi-trailer was calculated by Mr Bakker to be travelling at an average speed of 49 kilometres per hour. In a similar distance between the vicinities of camera 115 and camera 114 further down the hill, the average speed of the semi-trailer has increased to approximately 90 kilometres per hour. Thereafter the average speeds are calculated to have been as follows:

Camera 114 to Camera 113	98 kilometres per hour
Camera 113 to Camera 112	99 kilometres per hour
Camera 112 to Camera 111	98 kilometres per hour
Camera 111 to Camera 110	148 kilometres per hour

3.12. It will be observed that all of these average speeds are now significantly in excess of the speed limit of 60 kilometres per hour for that type of vehicle and that they exhibit a lack of control on Mr Venning's part. The images of Mr Venning's semi-trailer as revealed by these cameras demonstrate that Mr Venning was endeavouring, without success, to use the primary brake to control the speed of the semi-trailer. This is evidenced by constant illumination of the rear brake lights of the trailer and a failure to maintain the speed of the trailer at an acceptable level. The images do not show, one way or the other, evidence of any smoke associated with braking efforts.

3.13. On the stretch of the South-Eastern Freeway between cameras 114 and 113 there was a fixed speed camera. Due to a power failure that had occurred earlier that evening, an image of Mr Venning's semi-trailer was not able to be captured by that camera. However, the device detected a multi-axle vehicle passing the camera's location at a recorded speed of 104.6 kilometres per hour. I am satisfied that the vehicle in

[5] Exhibit C27a, page 16, image 11

question is none other than Mr Venning's semi-trailer. The location at which this speed was recorded exists prior to, and not far from, the entrance to the second safety ramp. Camera 113 depicts the entrance to the second safety ramp. The entrance to the safety ramp and the length of the safety ramp are unobstructed. The footage obtained from camera 113 shows Mr Venning's semi-trailer in the right hand or innermost of the three lanes passing the entrance to the safety ramp. It is not clear why Mr Venning would be driving the semi-trailer in that lane because the two outer lanes do not have any traffic in either. Mr Venning appears to have been oblivious to the presence of the safety ramp or its purpose. Be that as it may, the safety ramp is not utilised when it could and should have been, having regard to Mr Venning's speed and lack of control at that point. The brake lights of the trailer are constantly illuminated for the entire time it is captured by camera 113. A still picture obtained from the camera 113 footage and which is exhibited in the statement of Mr Bakker[6] shows Mr Venning's semi-trailer passing the entrance to the safety ramp at 0:58:01 which is precisely 54 seconds before the crash.

3.14. The imagery taken from cameras 114, 113, 112, 111 and other cameras situated near the Tollgate demonstrate that Mr Venning was constantly using the footbrake of the rig as evidenced by the illumination of the brake lights. Whether the brakes were having any effect at all on the speed of the vehicle can only be a matter of conjecture. Clearly, though, the brakes at that point were incapable of reducing the speed of the vehicle. In fact as seen from the above figures, the rig picked up speed very rapidly as it approached the intersection such that it was travelling at an average speed of somewhere between 140 and 150 kilometres per hour in the 370 metres immediately prior to the point of the collision.

3.15. Although Mr Venning was able to maintain directional control of the truck except at the intersection where it ultimately overturned, it is obvious that from the time Mr Venning overtook the B-Double driven by Mr Rowe, not far from the exit of the tunnel, he was unable to control the speed of the rig, using either the gearbox or the braking systems of the semi-trailer. I so find.

3.16. In another section of this finding I will discuss the reasons why Mr Venning had been unable to control the speed of the semi-trailer. In the Inquest there was some considerable debate about the efficiency of the braking systems of the semi-trailer, in

[6] Exhibit C27a, page 20, image 15

particular the efficiency of the 12 brakes directly affixed to the 12 wheels of the rig. The prime mover also had what is known as a 'jake' brake which is a function of the compression within the engine when the transmission is in an appropriate gear, but unless Mr Venning was in such a gear, the braking effect from the jake brake would have been negligible or non-existent. I will deal with the question of the gearbox in another section, but it is as well to record here that it is obvious that Mr Venning, for whatever reason, at least from the point where he overtook Mr Rowe, was not driving the prime mover in an appropriate gear.

3.17. I should say something here about the eyewitness evidence to which I have already alluded. Mr Rowe states that he first encountered the semi-trailer driven by Mr Venning approximately one kilometre prior to the crest of the hill, that is to say as he ascended. Mr Rowe's impression was that the semi-trailer was struggling to climb the ascent. In the event, Mr Rowe had to pass the semi-trailer. He did so at a speed of 30 to 40 kilometres per hour. He said that the semi-trailer was travelling at about 20 kilometres per hour which in his experience is 'shockingly slow'[7]. There is no explanation as to why Mr Venning was driving the semi-trailer in that fashion at that point except perhaps by reference to inexperience. Mr Rowe goes on to describe the same semi-trailer then approaching him from the rear and passing him. Mr Rowe's statement suggests that this overtaking manoeuvre occurred approximately 100 metres before the Heysen Tunnel. This cannot be correct as the CCTV footage clearly shows Mr Venning's semi-trailer behind Mr Rowe's B-Double at all times before, during and at the exit of the tunnel. The overtaking manoeuvre actually occurred on the Adelaide side of the tunnel. However, Mr Rowe's observations do require stating. When the semi-trailer passed him he estimates that it was travelling at twice his speed and was doing approximately 80 kilometres per hour. The truck lights including the brake lights were all illuminated. Mr Rowe claims that the engine noise was increasing as it passed him. I am not certain what that latter observation signifies, but if it is suggested that the semi-trailer was in an appropriate gear and that the engine noise emanated from that circumstance, that would have to be rejected. Mr Venning's truck was travelling at too high a speed for it to have been in an appropriately low gear. Mr Rowe states that when the semi-trailer was approximately 50 to 100 metres ahead of him he could see smoke coming from both the trailer wheels and the drive wheels of the prime mover. He said it was clearly brake smoke indicating that the

[7] Exhibit C6a, page 2

brakes were overheating. This raised his concern because he believed that if the semi-trailer continued to be driven in that manner '*the driver would lose his brakes*'. At that point the brake lights were still on. Mr Rowe used his UHF radio and tried to call the driver of the semi-trailer, saying:

> 'Single who just passed the Parilla, you've got smoke coming from your wheels. You'd better get off the brakes and think about using the arrester bed.'

It occurred to Mr Rowe that because the brake lights were constantly illuminated but that the vehicle was not slowing, the vehicle had lost all brakes, or the majority of them. Mr Rowe said that he used his radio and tried to call the driver three times with no response. Regardless of Mr Rowe's obvious error as far as the position where he was overtaken is concerned, I find that Mr Rowe's observations of Mr Venning's semi-trailer are mostly accurate and that he called Mr Venning at a time while Mr Venning still had an opportunity to use the safety ramp. Mr Rowe said that he was able to observe the semi-trailer for some period and could still see smoke emanating from the brakes and that it had increased quite significantly. It appears that Mr Rowe eventually lost sight of the semi-trailer but ultimately came across the collision scene at Cross Road. Mr Rowe states that he did not notice if the wheels of the semi-trailer were still smoking or not. I understand from his statement that Mr Rowe did not stop as there were other bystanders already in attendance.

3.18. The occupants of the black Holden Commodore Club Sport all provided statements to police. This vehicle entered the South-Eastern Freeway at Crafers. The vehicle was being driven by Mr James Birbas. Mr Birbas has a HC (heavy combination) driver's licence and so has some knowledge of the characteristics of a heavy vehicle and the manner in which one is commonly driven. Before dealing with the observations of these four witnesses, it is appropriate to say something about the location at which they say the semi-trailer was observed. Mr James Birbas suggests that he first observed and then overtook the semi-trailer at a location somewhere between the Crafters entrance to the freeway and the Heysen Tunnel. Mr Birbas' brother, Theofanis, who was occupying the front left passenger seat of the vehicle, also suggests that the semi-trailer was first sighted between the Crafers entrance to the freeway and the Heysen Tunnel. It is not clear from his statement whether the semi-trailer was completely overtaken at a time before the vehicles entered the tunnel or whether the overtaking may have at least taken place in part in the tunnel. Mr David

Gates, who was occupying the left hand rear passenger seat, suggests that the semi-trailer was first sighted after they had passed through the Heysen Tunnel and that Mr James Birbas passed the semi-trailer on the Adelaide side of the tunnel. The fourth occupant, Mr Robert Thomas, who was occupying the right hand rear passenger seat, does not say in his statement where the semi-trailer was first sighted, nor where it was overtaken. He appears to have paid only limited attention to the semi-trailer.

3.19. As indicated earlier, the CCTV footage shows a vehicle that would be consistent in description with Mr Birbas' Commodore overtaking the semi-trailer in the Heysen Tunnel. Footage of the semi-trailer's journey prior to entering the tunnel does not display any traffic that would overtly be consistent with Mr Birbas' Commodore. However, the CCTV footage does not show the entire journey of the semi-trailer but only parts of that journey as captured by the individual cameras. At another section of his statement Mr Theo Birbas said that they would have been at about the area of the first safety ramp when they first saw the semi-trailer. The first safety ramp is very close to the entrance of the tunnel and so it may well be that when they passed the truck, the truck was in the tunnel. This would indicate that the Commodore may be the vehicle that is seen in the CCTV footage overtaking the truck in the tunnel.

3.20. Mr James Birbas, the driver of the Holden Commodore, states that the first thing that drew his attention to the semi-trailer was the fact that its brake lights were constantly illuminated. Mr Birbas overtook the semi-trailer and estimated that its speed at that point was approximately 70 kilometres per hour. Mr Birbas states that he did not recall seeing any smoke coming from the wheels of the truck, nor did he smell anything consistent with burning brakes as he overtook the vehicle. One thing that Mr Birbas does say he noticed was that even with the windows of his car down he was unable to hear the motor of the vehicle as would be consistent with the use of the exhaust brake. This indicated to him that the truck was either in a high gear or in neutral with the motor idling. Out of those two alternatives Mr Birbas suggests that the lack of engine noise was more in keeping with the prime mover being in neutral with the motor idling. Mr Birbas said he did not hear anything to indicate that the driver was trying to engage a gear. Sometime later when approaching Greenhill Road along Glen Osmond Road, the occupants of the car heard on a mobile phone app that a truck had crashed.

3.21. Mr Theo Birbas states that when he first observed the semi-trailer the driver appeared to be 'pumping' the brakes. He could see that the brake lights would come on for about 4 or 5 seconds, then be extinguished for a couple of seconds and then be reapplied. This sequence occurred on a number of occasions as his vehicle approached the rear of the truck. Mr Theo Birbas said that the occupants of the car were intrigued about the manner in which the vehicle was being driven. It was clear to them that the driver of the vehicle was in difficulty. As they approached the truck Mr Theo Birbas wound down his window. As they overtook the truck Mr Theo Birbas, like his brother, noticed that the truck was very quiet with no engine noise which made him think that it was in a high gear or no gear at all and that the engine was simply idling. The truck was travelling at around 70 kilometres per hour when they passed it. Mr Theo Birbas' impression was that the truck was in neutral and that the driver was unsuccessfully attempting to stop it using the foot brake.

3.22. Mr David Gates states that he also observed the truck's brakes pulsing on and off as if the driver was pumping the brakes. He said that the semi-trailer was travelling at about 70 to 80 kilometres per hour. He also lowered his car window and noticed that it sounded like the semi-trailer was not in gear.

3.23. Mr Thomas who was sitting in the rear right hand passenger seat appears to have gained an impression, as distinct from accurate absorption of detail, about the event. He describes the truck as travelling fairly quickly taking into account the steep descent. He could see brake lights on and adds that he could hear and smell the brakes. His view of the truck was obstructed by the person sitting next to him.

3.24. I am satisfied that these four men witnessed Mr Venning's semi-trailer. Three of them state that when they passed the semi-trailer it was travelling at a speed in excess of the 60 kilometres per hour speed limit. As well, there appeared to them to be excessive use of the brakes and that the semi-trailer driver appeared to be in trouble in terms of his ability to control the speed of the vehicle. On the other hand, it seems clear from the evidence of Mr Bakker and from the CCTV footage that speeds of less than 50 kilometres per hour were being maintained by the semi-trailer both before and during its journey through the tunnel and that it was only after the tunnel that it exhibited the high speed that in the first instance resulted in the semi-trailer having to overtake Mr Rowe's B-Double. None of the four occupants of the Commodore speak of the presence of another heavy vehicle, that is to say Mr Rowe's B-Double, either

travelling behind or in front of the semi-trailer. There is a lack of consistency between the four gentlemen as to where the semi-trailer was overtaken. The two Birbas brothers state that it was either before or possibly within the tunnel that the semi-trailer was passed. If that was the case then they would be wrong in their estimation of the speed of the truck. Mr Gates on the other hand states that the truck had already left the tunnel when they passed it. This might be a more accurate observation. In any event I am satisfied that the occupants of this Commodore did in fact pass Mr Venning's semi-trailer. I am further satisfied that at the time they observed and passed the semi-trailer they were concerned about the level of the driver's control and that their concern was based on what appeared to be excessive use of the brakes and an absence of any noise consistent with the prime mover being in gear and using the engine brake.

3.25. The notion that Mr Venning was driving in neutral and was endeavouring to control the speed of the semi-trailer by use of the primary brake, while also unsuccessfully endeavouring to select a low enough gear, is supported by evidence that was adduced in respect of the inspection of the gearbox which I will come to in due course.

4. Mr Venning and his employer, the Mitolo Group

4.1. Mr Venning died while driving in the course of his employment with Mitolo. Mr Venning had been an employee of Mitolo since 2007. He was employed as a general farm hand. Mr Venning had held a heavy combination (HC) driver's licence for several years. This licence entitled him to drive a semi-trailer. A semi-trailer is comprised of a prime mover and one articulated trailer. It was this configuration that was involved in the fatal incident. Such a configuration usually has six axles. The prime mover has three axles which comprise a front steering axle with two single wheels and two rear driving axles each of which have two wheels on either side. The trailer generally comprised three axles at the rear, all axles having two wheels on either side. In 2013 Mr Venning obtained his multiple combination (MC) licence through an authority in Mildura, Victoria. This licence entitled him to drive a B-Double combination that would consist of a prime mover and two trailers in the configuration of a road train. Such a vehicle would generally comprise more than six axles.

4.2. The business of Mitolo and Mr Venning's connection with it was explained in the evidence of Mr Giovanni (John) Mitolo who is a Director of Mitolo. The business of Mitolo consists of the cultivation and packaging of produce including potatoes and onions. The head office and packing facility is situated at Virginia to the north of Adelaide. As explained by Mr Mitolo the Group operates produce farms in Virginia, the Riverland and near Pinnaroo. Mr Mitolo told the Court that he has overall responsibility in respect of the management of those farms. He is personally based at premises at Woolpunda near Waikerie in the Riverland. At Woolpunda there is a head office for farming operations. Mr Mitolo explained that Mr Simon Samon was the on-site Manager of the Pinnaroo operation.

4.3. The Pinnaroo operation was acquired as a going concern by Mitolo in 2007. The operation, that included farming land and plant and equipment, was purchased from a person by the name of Mason. Mitolo acquired a number of properties in the Pinnaroo area including a property over the border in Victoria. Mitolo operated a cool room in the Pinnaroo township. There was also a workshop situated on one of the properties. On another property named Midway there was a shed in which plant was housed.

4.4. Included in the plant acquired from Mason's were two prime movers, one of which was the prime mover that was involved in the fatal accident. It was registered SA BBK-859. Also acquired were two tautliner trailers. One of the tautliners was that involved in the fatal accident, namely trailer registered number SA YCS-180. The other tautliner would be converted into a flatbed trailer, registered number SA YCS-178.

4.5. When Mitolo acquired the Pinnaroo operation from Mason's they also acquired the services of a number of Mason's employees. These persons included Mr Venning, a Mr Peter Redden, a Mr Graham Phelps and the Manager to whom I have already referred, Mr Simon Samon. Those four persons became employees of Mitolo in various capacities. I have already mentioned the fact that Mr Venning was a general farm hand. His duties included the driving of the semi-trailer or trailers that were situated in the Pinnaroo area. Most of his driving responsibilities were carried out locally. Mr Peter Redden was also a truck driver who had driven semi-trailers for Mitolo but who more recently had elected to curtail his driving responsibilities. Mr Phelps was the workshop manager who had responsibility for the maintenance of the

Pinnaroo operation's plant and equipment that included responsibility in relation to the maintenance of vehicles. For the most part mechanical work that was required in respect of the prime movers was outsourced to a qualified and professional mechanic such as Tatiara Truck and Trailers in Bordertown. Although from time to time Mr Phelps undertook some responsibility in relation to the adjustment of trailer brakes, he was not a qualified mechanic,.

4.6. During the Pinnaroo harvesting period, which included the month of January, produce harvested from the Pinnaroo properties would generally be transported by Mitolo owned B-Doubles, driven either from Virginia or from the Riverland to the Pinnaroo area where they were loaded. Mitolo operated a number of B-Double combinations that were driven by qualified drivers stationed at locations other than Pinnaroo. Mitolo employed those drivers. Mr Mitolo explained that these vehicles were regularly maintained, both in respect of the prime movers and trailers, and that appropriate records were made and kept in relation to their maintenance. In fact, as also explained by Mr Mitolo, the maintenance of these vehicles was the subject of voluntary audit pursuant to the National Heavy Vehicle Accreditation Scheme. This voluntary scheme involved an arrangement whereby periodic auditing of heavy vehicle maintenance records would be conducted by the relevant authority.

4.7. A body of evidence adduced in the Inquest suggested that the B-Double drivers preferred to drive from the Pinnaroo location to the packing facility at Virginia via the Riverland. This route, which was perhaps longer than the route along the Dukes and Princes Highway into Adelaide, was favoured for a number of reasons that can be readily understood. However, Mr Mitolo explained to the Court that his belief was that in respect of the southernmost Mitolo properties at Pinnaroo, some drivers would prefer to use the Princes Highway, and ultimately the South-Eastern Freeway, to travel to the Virginia depot. Mr Mitolo told the Court that in effect there was no difficulty about drivers using this route and that at no stage had there ever been an incident in which a driver had to use a safety ramp on the South-Eastern Freeway.

4.8. The prime movers and trailers that Mitolo acquired from Mason's in 2007 were mostly used locally for various purposes including the transportation of seed and fertiliser to the farms. This transport was generally conducted by the prime mover that would ultimately be involved in the fatal incident and by the converted flatbed trailer. The evidence suggested that the tautliner trailer that would be involved in the

fatal accident was used only sparingly and was housed in a shed at the property known as Midway. The local transportation work was undertaken by Mr Redden and Mr Venning. Within Mitolo, Mr Venning was considered to have been a competent truck driver. In his evidence Mr Mitolo also explained that there had been occasional instances in which the semi-trailers stationed at Pinnaroo were used to transport to Virginia produce that had been harvested in the Pinnaroo area. This occurred in circumstances where the size of the load would not warrant the use of a B-Double. Due to the need to keep the produce away from the elements, I understood that the enclosed tautliner trailer may have been used for these purposes, although I also understood that from time to time produce would be tarped on the flatbed trailer for this purpose. In any event the evidence did not demonstrate any specific instances of the use of the tautliner for these purposes other than one occasion in mid 2013 and two occasions in January 2014, the second of which was the occasion of the fatal accident. Each of these journeys had been undertaken by Mr Venning. I will come back to that in a moment.

4.9. The evidence suggested that the tautliner trailer in question remained for extended periods in the shed on the Midway property. Mr Phelps, the workshop manager, gave oral evidence in the Inquest and told the Court that the tautliner trailer had been acquired from Mason's. He believed that Mason's had originally acquired the trailer about 4 or 5 years prior to the Mitolo acquisition in 2007. He thus had an association with that trailer for approximately 11 or 12 years[8]. When asked as to what maintenance work he had performed in respect of that trailer over that period of time he said:

> 'Would have only been the occasional brake adjustment or from the time Mitolo's took over that trailer did very little work.' [9]

When asked as to whether he had ever replaced the brake linings of that trailer he said not to his recollection, and when asked as to whether to his knowledge anyone else had performed that work he said no. Having regard to his position in respect of the maintenance of Mitolo plant and equipment, it would seem astonishing for Mr Phelps not to know of any brake lining replacement in respect of that trailer if it had occurred. In any event there is no convincing evidence that the parts of the tautliner braking system, either in terms of brake linings or brake drums, were replaced in the

[8] Transcript, page 1030
[9] Transcript, page 1030

period in which it was owned either by Mason's or by Mitolo. Unlike the situation regarding the Mitolo B-Doubles, Mitolo did not keep any records of maintenance work undertaken in respect of trailers situated at Pinnaroo. There was in existence a job card system of record maintenance in respect of some plant and equipment, but there were no job cards kept in respect of trailers until after the accident in January of 2014. It was explained to the Court that Mitolo did not acquire any records from Mason's and they did not keep any records of their own. Of course, there were records in the form of invoices in respect of outsourced work undertaken in respect of prime movers, but maintenance work, if any, conducted in respect of trailers was not outsourced. What work that was required was the responsibility of the workshop manager, Mr Phelps. The lack of any such records in respect of trailer maintenance is a matter that is, to say the least, unsatisfactory. What evidence there is in this Inquest about the maintenance of trailers came from the oral evidence of witnesses such as Mr Phelps and the driver Mr Redden, evidence that could not be supported by written records. Unlike the B-Double combinations that Mitolo operated, the vehicles that were situated within the Pinnaroo operation, including prime movers and trailers, were not declared pursuant to the National Heavy Vehicle Accreditation Scheme which meant that there was no auditing of maintenance records in respect of those vehicles, nor inspection by an outside authority. Mr Mitolo explained to the Court that the reason why the Pinnaroo vehicles were not subject to the National Heavy Vehicle Accreditation Scheme was that the level of use of the vehicles did not warrant it.

4.10. I have already referred to the possibility that the brake linings or brake drums of the tautliner trailer were never replaced during Mr Phelps' association with it, either at Mason's or at Mitolo. Mr Mitolo said in his evidence that his recollection was that brake linings had been replaced on at least one trailer situated at Pinnaroo, but did not identify that particular trailer with certainty and, as will be remembered, Mr Phelps had no recollection or knowledge at all of replacement of brake linings in respect of the tautliner trailer.

4.11. I have already referred to the existence of a flatbed trailer that was possessed by Mitolo at Pinnaroo. This was the vehicle YCS-178 that had been converted from a tautliner and which had also been acquired from Mason's. This trailer together with the prime mover that would be involved in the fatal accident were both sent to Tatiara

Truck and Trailers in Bordertown in November 2013, primarily for the prime mover to be inspected and worked on if necessary. The various statements of a Mr John Jenkin, who is a Director of Tatiara Truck and Trailers, explained what took place in respect of the prime mover and trailer YCS-178[10]. Tatiara Truck and Trailers invoices in respect of both the prime mover and trailer were produced to the Court[11]. Within Mr Jenkins' various statements there is an element of inconsistency in relation to the question as to whether or not the brakes of the prime mover were the subject of any particular work or whether they were checked. The issue is somewhat immaterial because the invoice in respect of the prime mover mentions nothing about its brakes, and in any event the roadworthiness of the prime mover is not in issue. The inspection of the flatbed trailer YCS-178 at Tatiara Truck and Trailers seems to have been something of an afterthought. An invoice was raised in respect of that inspection. Mr Jenkins' statement suggests that this invoice would have been sent to the Mitolo head office in Virginia. Mr Jenkins explains in his statement that a number of issues were identified in respect of the trailer. He enquired of Mitolo as to whether they should undertake the necessary work and was told that it would be undertaken by Mitolo themselves. The work that Tatiara Truck and Trailers identified involved 'low' brake linings and the fact that the rear left hand brake S-cam was seized. There is no evidence as to how worn the brake linings of this trailer were, but there is no reason to doubt the assertion contained within the invoice that they were low and required work. In the event Mr Phelps told the Court that on 13 February 2014, which was nearly a month after the fatal accident, the brakes of the flatbed trailer were effectively rebuilt. The work included the replacement of all six brake drums and linings. It so happens that this work was completed the day before a Major Crash Investigation Section inspection of that trailer was conducted. It was found to be roadworthy. The date on the Tatiara Truck and Trailers' invoice regarding the flatbed trailer YCS-178 is 7 November 2013. The evidence is unclear as to whether that trailer was used between that date and 13 February 2014 when the brakes were rebuilt. The fact that in November the brake linings of the flatbed trailer had been found to be low replicates the state of four of the brakes of the tautliner trailer after they were inspected by police following the fatality.

[10] Exhibits C18, C18a, C18c and C18d
[11] Exhibits C18a and C18b

4.12. As is made clear by Mr Jenkins in his statements, Tatiara Truck and Trailers possesses no record of any other trailer, including the trailer that was involved in the fatal accident, having been seen or worked on by his company. This was the case even when the tautliner trailer was owned by the Mason family. As already indicated there is no record in respect of the maintenance of that trailer. I am satisfied that in fact no record was ever kept by Mitolo in respect of any maintenance work undertaken in respect of that trailer.

4.13. I have already referred to Mr Venning's truck driving responsibilities. No person who gave evidence in the Inquest, including persons who had known and/or worked with Mr Venning for many years, could recall Mr Venning ever having driven a heavy vehicle down the South-Eastern Freeway prior to the occasion when he was killed. However, two previous instances of Mr Venning driving the prime mover and tautliner trailer to Virginia have been identified. Both of these journeys were undertaken via the Riverland. The first such journey involved Mr Venning carting produce to Virginia on 7 June 2013. There was some evidence that this journey was originally intended to be the first of a number of such journeys that Mr Venning would be asked to regularly perform. I am not certain about this. As explained by Mr Mitolo, there had been a suggestion that having regard to Mr Venning's recent acquisition of an MC licence, he might become one of Mitolo's B-Double drivers and that a B-Double could be stationed at Pinnaroo for this purpose. Mr Mitolo told the Court that he rejected that suggestion as being not being capable of feasible implementation. Regardless of that, the journey of 7 June 2013 would be an isolated event at that time and would not be repeated until January 2014. That the journey took place on 7 June 2013 is substantiated by Mr Venning's heavy vehicle work diary and other Mitolo records. As will be seen, there are assertions in the evidence taken before the Court that prior to Mr Venning undertaking that journey the brakes of the trailer were inspected, adjusted and tested and were found to be in proper order. I will come to that in some detail in due course. I would add here, however, that there is no evidence that Mr Venning made any complaint about the trailer brakes during or after that journey. Of course, that journey would not have involved anything in the nature of the descent on the South-Eastern Freeway culminating as it does in the need to negotiate and possibly stop at traffic lights at the bottom.

4.14. It appears that during the course of this journey on 7 June 2013 Mr Venning had become lost. There was a suggestion faintly made during the course of the Inquest that the plan that Mr Venning would regularly deliver produce to Virginia was shelved due to a lack of competence on his part, as evidenced by his getting lost. This was not substantiated and I make no finding about that. In any event an almost identical journey using the same prime mover and trailer was made by Mr Venning via the same route during the night of Thursday 16 January and the morning of 17 January 2014 without incident and without there being, as far as the evidence reveals, any complaint made by Mr Venning about the roadworthiness of the rig. Again, there is an assertion that the brakes of the trailer were tested prior to that journey and were found to be in working order. There is no evidence that the tautliner trailer was used between Mr Venning's journey in June 2013 and his journey commencing on 16 January 2014. In fact the evidence suggests the contrary. It appears to have been housed at the Midway shed for the entirety of that period. In any event, while there is an assertion that the trailer brakes were tested by way of a tug test in the day or so prior to Mr Venning's first January journey, no person has suggested that the brake linings were inspected and no person has suggested that the trailer brakes were again adjusted. The fatal journey was commenced on Friday evening, 17 January 2014 and the accident occurred just before 1am the following morning. I have already briefly mentioned the circumstances in which Mr Venning elected to use the South-Eastern Freeway for that journey.

4.15. Before leaving the topic of Mr Venning's association with Mitolo, and his association with the equipment that it possessed, I should mention something about Mr Venning's work diary which was located in the wreckage of the prime mover. I do not need to deal in any great detail with the various requirements that were in existence in respect of the maintenance of heavy vehicle work diaries except to say that Mr Venning's journeys to Virginia in June 2013 and January 2014 needed to be recorded in his diary. The diary recorded some heavy vehicle driving activity on Mr Venning's part in respect of a bus that he drove in connection with his football club. I need say no more about that. With regard to Mr Venning's return journey from Pinnaroo to Virginia on 7 June 2013, his diary recorded that during the course of that 24 hour period he performed a total of 14½ hours solo work with only very short rest periods. If this activity has been recorded correctly, Mr Venning's solo work hours exceeded the maximum 12 hours that is allowable in any 24 hour period. The existence within

the diary of the yellow carbon copy in respect of that page also constitutes a failure to comply with the work diary requirements because it should have been provided to his employer, Mitolo, within 21 days of that journey. Mr Mitolo made it clear that this shortcoming would have been contrary to Mitolo's work practices insofar as the regular drivers were required to submit the yellow carbon copies within a week of a journey. As far as the journey of 16 and 17 January 2014 overnight is concerned, Mr Venning appears to have recorded within the diary the whole of that journey as having taken place throughout the daylight hours of 16 January 2014 when it is known that he left the Pinnaroo area that evening and did not return to Pinnaroo until the morning of 17 January 2014. The proforma work diary pages end at midnight, and so his activity in the early hours of the morning of 17 January 2014 should have been recorded on a wholly new page. The document, however, does record that the return journey to Pinnaroo concluded at 7 o'clock, although it is stated as 7 o'clock in the evening as opposed to 7 o'clock in the morning of 17 January 2014. There is no record made in respect of Mr Venning's fatal overnight journey commencing on the evening of Friday 17 January 2014. Mr Venning's work diary practices appear to have been sloppy and contrary to Mitolo policy. This provides some further evidence that the Mitolo Pinnaroo operation was somewhat out on a limb when compared to the rigour that Mr Mitolo says was required in respect of other aspects of Mitolo's operations.

4.16. If Mr Venning's work diary can be regarded as having any accuracy at all, it establishes that he probably concluded his solo work on the morning of Friday 17 January 2014 at about 7am. Friday 17 January 2014 was a very hot day throughout South Australia. Mr Samon told the Court that at approximately 1pm that day he saw Mr Venning with his mother at the Pinnaroo Roadhouse and that they were there to enjoy the air-conditioning that the roadhouse presumably provided[12]. Mr Samon appears to have entertained some concern as to whether or not Mr Venning had adequately rested since the conclusion of his work that morning, even to the point of suggesting that Mr Venning should go home and get some more sleep before his next shift commenced at 6pm. In any event Mr Venning duly reported for duty that evening and was involved in the loading process in respect of that night's Virginia load. He set off with the load some time after 9pm. It has not been possible to reconstruct with any degree of accuracy whether or not Mr Venning in real terms had

[12] Transcript, page 310

taken sufficient rest during the course of the Friday. It is not possible to determine whether or not fatigue played any part in Mr Venning's inability to control the speed of the semi-trailer down the freeway that night, particularly by means of the appropriate use of the prime mover's gearbox, but the possible role of fatigue has not been eliminated either.

4.17. As to the circumstances in which the fatal journey was commenced, I have already mentioned the fact that Mr Venning had originally planned to travel to Virginia with his load via the Riverland and would have done so but for the possibility of encountering bushfires along the way. Mr Samon told the Court that on the evening in question he and Mr Venning discussed whether or not Mr Venning should use the South-Eastern Freeway instead. Mr Samon told the Court that he had no reason to be apprehensive about Mr Venning travelling by that route as far as Mr Venning's competence to negotiate the South-Eastern Freeway was concerned, although it was believed that he had not previously undertaken such a journey in a heavy vehicle of this type. There is no evidence to suggest that specific concern, based on any perceived incompetence on Mr Venning's part as a driver holding an MC licence, ought to have been entertained by anyone at Mitolo, including by Mr John Mitolo himself who knew about the proposed journey. To my mind, however, there is a need for employers of heavy vehicle drivers to be completely satisfied that an individual driver does have the necessary competence, training and experience to negotiate the descent on the South-Eastern Freeway, particularly where the descent is known to be the first such descent for that driver. I say more about this matter later.

4.18. I would also add here that there is no evidence to suggest that Mr Venning was under any pressure by his employer to conduct the journey that night. Nor is there any evidence that Mr Venning was under pressure from his employer not to delay the departure until such time as the viability of the Riverland route became known. The evidence, which I accept, is that the delivery of the load of potatoes could have been delayed until the following day. Whether Mr Venning placed internal pressure upon himself to please his employer, or whether it suited his personal convenience to undertake the journey that night and not delay it, cannot be known.

5. The examinations of the roadworthiness of the semi-trailer

5.1. The semi-trailer consisting of the prime mover and trailer driven by Mr Venning was formally examined by a police mechanic, Mr Eliot McDonald.

5.2. Mr McDonald is the Senior Vehicle Examiner within SAPOL Major Crash Investigation Section (MCIS). He has been with that Section since 1998. He was promoted to the position of Senior Vehicle Examiner in 2001. Mr McDonald is a qualified motor mechanic. His original motor mechanic qualifications were obtained in 1988 after serving an apprenticeship of 4 years. Since that time he has successfully completed an electronic engine control systems training course, a computer command control training course, a total wheel alignment course, an electronic control fuel injection training course, an updated electronic engine control systems (EEEC1V) training course, a vehicle inspection techniques course, a heavy vehicle braking course (Brakes 2 and Brakes 3), a steering and stability systems training course as well as a number of other courses. Mr McDonald has had 22 years' experience as a mechanic. He has worked on all types of motor vehicles including cars, motorcycles and heavy vehicles. Between 1993 and 1995 he worked as a motor mechanic at the SAPOL workshops at Novar Gardens. During that time he maintained part of the police vehicle fleet and also examined vehicles in connection with criminal offences when required. In September 1998 he transferred to MCIS as a vehicle examiner. His duties have included the examination of vehicles in relation to fatal and other serious collisions as well as vehicles used in the commission of criminal offences. Since 1998 he has successfully completed a number of courses relevant to his work within SAPOL including a vehicle inspection techniques course, the heavy vehicle braking courses to which I have referred, relevant modules of the crime scene investigators course conducted in February 2007 by the Forensic Services Branch of SAPOL, included in the syllabus of which were photographic and forensic science subjects relating to the collection and preservation of trace materials and physical evidence so as to avoid contamination. In his capacity as the Senior Vehicle Examiner at SAPOL he has attended training workshops run by Bendix who were the manufacturers of air braking systems most commonly used in Australia. He has also attended workshops operated by Eaton Fuller who construct 18 speed and 13 speed gearboxes used in heavy vehicles in Australia. Mr McDonald himself holds a heavy vehicle combination licence. Mr McDonald explained that during his training he

drove a semi-trailer combination on a number of occasions down the South-Eastern Freeway with heavy loads. I regarded Mr McDonald as an expert in respect of the examination of heavy vehicles for the purpose of assessing the roadworthiness of heavy vehicles.

5.3. The trailer was separately examined by Mr Christopher Hall who is an engineer. Mr Hall's participation in this matter was instigated by Minicozzi Lawyers on behalf of their client, Mitolo. Mr Hall is a mechanical engineer consulting in the field of motor vehicle accident reconstruction. He holds an Honours Degree in Mechanical Engineering from the University of Adelaide (1974). His principal area of practice involves examining the circumstances around motor vehicle, pedestrian and bicycle accidents and providing an opinion as to the cause of an accident taking into consideration the speeds of the vehicles involved and the influence of the collision dynamics on the forces applied to vehicle occupants, riders and pedestrians. Mr Hall's statement reveals that he has attended numerous accidents scenes and has reconstructed the circumstances of collisions, a number of which have involved analysis of component failure including brake failure in respect of domestic vehicles, light trucks and semi-trailer combinations[13]. Mr Hall has prepared many reports and has given evidence in Australian and overseas courts in respect of detailed accident reconstruction, brake failures, truck accidents and other fields of automotive expertise. I regarded Mr Hall as an expert in respect of the examination of heavy vehicles for the purpose of assessing the roadworthiness of heavy vehicles.

5.4. Both Mr McDonald[14] and Mr Hall provided written reports in relation to their findings and gave oral evidence in the Inquest.

5.5. In the course of the Inquest, evidence was adduced of observations made by other individuals in respect of the state of the brakes of the semi-trailer, and in particular the trailer brakes. These observations were made variously by a number of individuals who were tasked to retrieve the wreckage from the scene and then transport it to the police vehicle compound at Ottoway. At Ottoway on 20 January 2014, two days after the accident, Senior Constable Tony Madigan of the SAPOL Heavy Vehicle Enforcement Section made an initial inspection of the trailer. As well as being a police officer, SC Madigan is also a qualified motor mechanic and is a member of the

[13] Exhibit C32
[14] Exhibit C27j

Institute of Automotive and Mechanical Engineers. SC Madigan provided a statement to the Inquest[15] and gave oral evidence. He also produced the photographs that he took. Using a mock-up brake assembly that he brought into Court, SC Madigan provided the Court with a demonstration of how a brake of the type in question works. SC Madigan qualified as a motor mechanic in 1986 after a four year apprenticeship. He worked two years in private industry upon completing his apprenticeship which was followed by six years at the police workshops where he worked on light and heavy vehicles and conducted vehicle examinations for the Major Crash Investigation Section. He also examined vehicles in relation to alleged criminal offences. In 1993 he was promoted to the SAPOL vehicle workshop leading hand position and he became a police officer in 1995. SC Madigan has lectured to members of the SAPOL heavy vehicle personnel in respect of defect techniques. SC Madigan has successfully completed a course at TAFE SA in heavy vehicle braking systems. This course covered the operation of air mechanical and air hydraulic braking systems used in heavy vehicles. SC Madigan has successfully completed other TAFE SA courses in respect of heavy vehicle componentry. SC Madigan assists the Traffic Training Unit at the South Australia Police Academy by conducting a vehicle inspection techniques course which involves the training of police officers regarding the inspection of motorcycles, light vehicles and heavy vehicles. To my mind SC Madigan demonstrated a thorough knowledge of heavy vehicle braking system componentry. I regarded him as an expert in respect of the examination of heavy vehicles for the purpose of assessing the roadworthiness of heavy vehicles. SC Madigan did not formally examine the trailer of the rig, but made certain observations of the braking system of the trailer at a time before Mr McDonald formally examined it. He did not alter the componentry before Mr McDonald's examination. SC Madigan took photographs of some of the braking components. SC Madigan offered a number of opinions about the effectiveness of the braking componentry based upon his observations of it. SC Madigan's initial inspection of the componentry of the braking system of the trailer proved to be of importance in establishing the state of the system at a time prior to Mr McDonald's formal examination. In the event, save and except for the issue of dissipation of heat from the braking system after it came to rest following the accident, I was persuaded that the state of the individual brakes when

[15] Exhibit C36a

inspected by Madigan were as they had been when the wreckage had come to rest at the scene.

5.6. Before dealing with the examination of the wreckage, I should say something about the evidence concerning the manner in which this type of brake operates. Each of the six dual wheels of the trailer possessed an individual brake. The brake is operated by way of the introduction of air pressure provided through the prime mover. Compressed air is injected into brake actuators that are attached to each axle of the trailer. There are two actuators on each axle, one for the left and one for the right wheel brakes. The air pressure is injected into the actuators by operation of the footbrake situated in the usual place within the cabin of the prime mover. Each of the individual brake's actuators contains a diaphragm that is activated by air pressure introduced into the actuator when the brake is applied. The diaphragm then extends a push rod out of the housing of the actuator. The push rod applies force to an instrument known as a slack adjuster. When that force is applied, the slack adjustor will rotate. When the brake is in the applied condition, the angle formed between the join of the push rod and the slack adjuster is said to be critical to the effective operation of the individual brake. I will come back to that angle in a moment. The top of the slack adjuster is attached to a camshaft by way of a spline. At the opposing end of the camshaft there is a cam, known as the S-cam, that sits flush with two rollers on each end of the brake shoes. When the slack adjuster rotates upon application of the foot brake, the camshaft will also rotate and this movement will cause the cam to rotate. The rotation of the cam causes the rollers of the brake shoes to travel outwards towards, and apply pressure to, the inner aspects of a brake drum that is attached to the wheel of the vehicle. The brake drum is affixed to, and rotates with, the wheel. The pressure exerted by the brake shoes upon the inner aspects of the brake drum will retard the rotation of both the brake drum and of the wheel to which the brake drum is attached. When a brake is in the unapplied condition there will usually be very little space if any between the brake shoe and brake drum, but there will be insufficient force to retard the rotation of the brake drum and wheel. However, when the brake is applied, the extension of the brake shoes and the force that they apply against the drum should slow and retard the progress of the brake drum, the wheel and of course the trailer itself.

5.7. I have mentioned the slack adjuster angle. When a brake is applied, the angle formed between the end of the actuator push rod and the bottom of the slack adjuster should not exceed 90 degrees. As well, the push rod stroke length, which is a measurement of the distance that the push rod moves when he brake is applied, should not exceed 51mm for the type of brakes under discussion here. And when the push rod extends as far as 64mm it means that there is in reality no effective braking due to insufficient force being exerted by the brake shoe linings against the brake drum. All of this is readily understandable in that it seems clear enough that when the slack adjuster angle exceeds 90 degrees in the applied position, there will be a reduction in the leverage and mechanical advantage that is created by the movement of the slack adjuster and there will be a consequent reduction in the force applied by way of the cam between the brake shoe linings and the brake drum. I was also informed that the position of the S-cam is also an important matter in determining the amount of force that will be exerted by the brake shoes against a brake drum.

5.8. During the braking process the friction between the brake shoe linings and the inner surfaces of the brake drum causes heat to build up within those components. In the normal course of events, and with braking that is not emergency braking, the heat will generally be dissipated without undue damage to the brake componentry. However, the evidence was clear that in circumstances where there is constant braking over an extended period of time, heat that will not be dissipated in the usual fashion will build up within the braking componentry and, as a result, the braking effectiveness can be severely reduced. In short, the brakes will fail. Evidence of such severe overheating can usually be seen within the braking componentry after such an event. Such evidence was described as ‘blueing’ to the brake linings or the inner surfaces of the brake drum.

5.9. The components of a brake of the kind I have described will wear with use. In particular, the linings of the brake shoes over time will become thinner and will need to be replaced. I heard evidence that new brake shoes can variously have thicknesses of somewhere between 16mm and 19mm. Similarly, there were various figures quoted as to the thickness of brake shoe linings at the time that they should be replaced. It was clear, though, that brake linings will be regarded as excessively thin and in need of replacement at the 3mm, 4mm or 5mm levels. The inside of the brake drums also will wear and require replacement in due course.

5.10. As brake linings become thinner due to normal wear, it will become necessary to adjust the brake. As I understood the evidence there will come a time when it will not be possible to properly adjust a brake when the linings have become excessively thin. Excessive thinness can sometimes be evidenced by the protrusion of the rivets that bind the brake shoe linings to the brake shoe. The exposed rivets can score the drum. Clearly when this occurs it is time to replace the brake shoe linings.

5.11. In some braking systems the slack adjusters will adjust automatically as the brake shoe linings become thinner. The slack adjusters attached to the brakes on this trailer were not of that kind. For brakes of the type involved here, as the brake lining thickness decreases, the need to manually adjust the brakes is an ongoing one. Mr Mitolo told the Court that as far as the company's B-Doubles were concerned the brakes were adjusted on a weekly basis. One can readily understand this in the case of vehicles in extensive use. The trailers at Pinnaroo on the other hand were not used as extensively. As indicated earlier there are no records of brake componentry replacement or brake adjustment in respect of the two trailers at Pinnaroo, save for the rebuild of the brake system that took place in respect of the flatbed trailer after the fatal accident.

5.12. There is one other matter I should mention in relation to the activation of trailer brakes of the type under discussion. All of the service brakes on the trailer, that is to say the brakes that are activated by use of the brake pedal while the vehicle is in motion, possessed type 30 actuators. The front and rear axles of the trailer had type 30/30 actuators which means that in the case of each brake there was an additional braking system. This is termed a maxi brake or spring brake. This brake acted as either a parking brake or as an emergency brake depending upon the circumstances. When no compressed air is applied to the braking system when the trailer is not in use, or where, say, if the air system should fail during motion, a spring is activated within the actuator and this has the effect of applying each brake. Thus, when the trailer and prime mover are parked, and there is no air being applied to the system, the brakes on the front and rear axles of the trailer would automatically be applied. In order to deactivate the maxi brakes, compressed air has to be separately applied to that part of the actuator. This has the effect of releasing the activating spring. Thereafter, separate air supply is applied to the service brakes when they need to be applied in order to stop a moving vehicle. What this means is that when this trailer

ultimately came to rest after the accident, and its braking system was therefore bled of compressed air, the brakes of the front and rear axles of the trailer should be in the applied position. However, I understood from the evidence that the force applied by the spring brake is slightly less than the force that might be applied when the service brake is actively and fully applied during the course of a vehicle's motion. Nevertheless, the condition of the braking componentry in terms of S-cam position, slack adjuster angle and other braking facets after the trailer came to rest was a relevant consideration when it came to assessing the roadworthiness of the braking system during the course of its fatal journey down the South-Eastern Freeway.

5.13. It can be seen from that analysis that it would have been desirable for a professional and detailed examination of the braking componentry of the trailer to have taken place at the Cross Road scene after the trailer had come to rest. Unfortunately such an examination did not occur in this case.

5.14. An assessment of the braking capabilities of the semi-trailer was disadvantaged to an extent by the fact that no qualified mechanic examined the wreck in situ at Cross Road. What observations that were made in relation to the brakes on the prime mover and of those on the trailer were made by the individuals who had been tasked to retrieve the wreckage and transport it to the police compound at Ottoway. Save and except for SC Madigan's initial inspection at Ottoway, police would not conduct a formal examination of the brakes of the prime mover and trailer until several days following the accident.

5.15. For future reference, an investigation of this kind should comprise the following essential elements:

- The attendance of a qualified police mechanic at the scene of the incident;
- At the earliest available opportunity observations should be made as to the temperature of the braking componentry. It is to be acknowledged that this may not always be possible depending upon how expeditiously police can attend the scene;
- If feasible, having regard to the position of a wreck and associated intrinsic dangers, observations at the scene should be made in relation to:
  - Slack adjuster angles;
  - The positions of S-cams relative to the brake shoe rollers;

- The condition of brake shoe linings;
- The existence or otherwise of gaps between brake shoe linings and brake drums;
- Whether an individual brake is fitted with a maxi or spring brake and whether the maxi or spring brake is applied or not;
- The ability of an individual wheel to spin or rotate.

It will be acknowledged that depending upon the nature of the accident scene it may not be possible to make those observations. If such observations can be made, photographic evidence should be obtained in relation to each observation.

- Observations should be made and records kept in relation to any alterations made at the scene to the brake adjustment parameters to which I have referred;
- If possible, observations should be made and video recordings obtained of the ability of an individual wheel to rotate or not. Such an opportunity to so observe may be afforded by the fact that, as in the case of the Venning semi-trailer, a set of wheels may be elevated off the ground;
- Observations should be made and video evidence obtained of the movement of a wreck, and in particular whether the wheels of the prime mover or trailer are capable of rotating when such movement of the wreckage occurs;
- The same observations need to be made and recorded when the wreckage is deposited at a police compound prior to any formal examination;
- When a formal examination takes place photographs should be taken of the brake assemblies in situ before any alteration is made;
- Observations should be made and photographs should be taken of the brake adjustment parameters before any examination takes place;
- Observations should be made and photographs taken with respect to an examination of the brake adjustment parameters both before and after the brakes have been applied;
- Any examination of braking systems should include observations as to the ability of a particular wheel to rotate despite the application of that brake. If this involves jacking the wheel up then so be it;

- Any examination of a braking system should involve the removal of the particular wheel and involve a thorough and detailed examination of the brake linings and interior of brake drums including measurements of the same;

- An initial examination of the gearbox of the vehicle should be conducted and observations made and photographed in relation to external damage, gear lever position, range switch position, split switch position, exhaust brake switch position.

- A detailed internal examination should be conducted in respect of the gearbox. It should be conducted by a qualified expert. The examination should include an assessment of internal damage, an assessment of possible malfunction, an identification of the gear that the gearbox is in, and in particular whether it is in neutral, an identification of the range that the gearbox is in and an identification of the split that a gear might be in.

6. The roadworthiness of the prime mover

6.1. I will deal firstly with the state of the prime mover. I have already referred to the fact that the gearbox of the vehicle has been inspected and that the result of the inspection supports the suggestion that the prime mover was in neutral as it made the descent and that Mr Venning was endeavouring to control the speed of the semi-trailer by use of the primary brake. The gearbox of the prime mover was examined by Mr Simon Stribbling who is a representative of Eaton Industries Pty Ltd, the manufacturers of the gearbox. Mr Stribbling provided two reports verified by way of statement[16] with respect to his examination of the gearbox. I did not understand the evidence of Mr Stribbling to be in dispute. Before dealing with Mr Stribbling's material I should record that when Mr McDonald performed an external examination of the gearing system of the prime mover, the switch that selects the range of the gearbox was in the low position and the gear lever was in the first gear position. I do not believe that this accurately reflects the state of the gearbox as it was being driven down the South-Eastern Freeway. Firstly, the switch for the range selector would not necessarily reflect the range that the transmission was actually in. Due to the forces of the collision, the switch itself could have been moved to a position without actually selecting the corresponding range of the gearbox. Secondly, it is impossible for the

[16] Exhibits C31, C31a and C31b

prime mover to have been in first gear when regard is had to the speeds at which the prime mover was driven as it came down the freeway. This much is reflected in Mr Stribbling's reports. Mr Stribbling postulates that the lever could have been forced into the first gear position due to '*lever whip*' as a result of the collision. Alternatively, heavy items flying around the cabin colliding with the gear lever could have moved it.

6.2. Mr Stribbling indicates that the gearbox was in high range and in high split. He opines that the transmission main box was in neutral and that the driver of the vehicle had been exerting great force endeavouring to select third or fourth gear. He suggests that the driver was more than likely unable to select a gear before the accident occurred and that the transmission main box was still in neutral at the time of the accident. There was also significant wear and signs of friction generated heat marks on the sliding clutch consistent with the driver trying to force the transmission into gear when the speed was not matched.

6.3. In my opinion the conclusion that Mr Stribbling expresses is correct and is consistent with the eyewitness evidence of a lack of engine noise as the semi-trailer descended the freeway. I find that the gearbox was in neutral as it descended the South-Eastern Freeway but that Mr Venning was unsuccessfully endeavouring to select a gear as he progressed. He was unable to select a low enough gear due to the speed of the semi-trailer. The precise time at which the prime mover was placed into neutral cannot be known with complete certainty. The possibility that Mr Venning took the prime mover out of a gear that he believed was too high but then could not select a low enough gear due to the increasing speed of the vehicle is one possible scenario to explain why it was in neutral. The possibility that Mr Venning deliberately elected to coast in neutral and to control the speed of the semi-trailer exclusively by way of the primary brake has also not been completely eliminated, but it has to be said that this would seem to be an unlikely scenario in the case of a man who has had experience in driving vehicles of this type. Only a complete fool would do this. And, as seen above, there is evidence of unsuccessful attempts to select a gear as provided by damage to third and fourth gears and to the clutch.

6.4. There is no evidence that there was any mechanical failure within the gearbox. Mr Stribbling's opinion is that the damage to any of the gear components was either caused by Mr Venning's efforts in endeavouring to select an appropriate gear or by

accident damage. In Mr Stribbling's opinion there were no faults found in the transmission that would have contributed to the crash. A conclusion is available that Mr Venning's inability to control the speed of the semi-trailer was as the result of an inability to select the appropriate gear. A further conclusion is available that this occurred through lack of appropriate experience on this stretch of road coupled with a failure of the braking system of the semi-trailer for whatever reason. I will come back to the question of braking in a moment, but there was evidence to suggest that Mr Venning was using the primary brake excessively, even before he caught up with and overtook Mr Rowe, the Parilla B-Double driver. All of this suggests that Mr Venning simply did not have the wit to control the speed of the semi-trailer in the appropriate way.

6.5. The only other matter concerning the gearbox is that Mr Stribbling identified within it a non-standard pulse rotor. This pulse rotor was an aftermarket modification. A pulse rotor is a device that is used to limit the speed of a prime mover to 100 kilometres per hour. The vehicle speed is actually controlled by the engine ECU. The standard pulse rotor has 16 teeth which corresponds to the number of pulses per revolution from the transmission output shaft. When there are a lesser number of teeth, in this case 15, the engine ECU in effect is induced into '*thinking*', as it were, that the vehicle is travelling slower than it actually is which in turn enables the vehicle to travel faster. There is no evidence that any person at Mitolo was responsible for the introduction of the aftermarket pulse rotor within the transmission of this particular prime mover. There is no evidence to suggest when it was that the device had been introduced to the gearbox or by whom. In any event when the ECU of the prime mover was examined by police, there appears to have been an adjustment made that took into account the extra speed capability of the vehicle as created by the non-standard pulse rotor and that the speed of the vehicle had been appropriately limited in any event by that modification. It is not known how and when that modification took place. It is not necessary to make any finding in respect of the introduction of this non-standard part because it clearly did not have any bearing on this accident. Mr Stribbling makes it plain in his report that if a vehicle was travelling at speeds in excess of 100 kilometres per hour, as it obviously was, the speed limiter would have exerted no control over the speed in any event. Rather, the gravitational forces and the vehicle brakes would have played the principal role in determining vehicle speed. All of that is perfectly understandable and I so find.

6.6. Mr McDonald examined the brakes of the prime mover. As far as the front steer axle is concerned the push rod stroke lengths were appropriate for the type of actuator. There was 17mm of brake material in respect of the brake shoes which is more than adequate. The four brakes attached to the two rear drive axles had type 30/30 actuators which contain both a service brake and the maxi or spring brake to which I have already referred. This would mean that when the vehicle was stationary and bled of all air to the braking system, the brakes should be activated. In the case of the prime mover brakes, the push rod stroke lengths on the front drive axle brakes were slightly in excess of the ideal maximum length of 51mm. Mr McDonald found that there was 12mm of brake material to the brake shoe linings which is adequate. His findings in respect of the rear drive axle brakes were similar. The maxi brakes operated correctly when applied. The most significant finding in respect of the drive axle brakes of the prime mover is clear evidence that those brakes, which are the brakes that provide the majority of braking effect of a prime mover, were overheated and were blued from the excessive heat. The significance of this is twofold; firstly it indicates that the brakes were being applied as the semi-trailer descended the freeway and that there was significant contact and braking force as between brake shoes and brake drum and, secondly, in Mr McDonald's opinion the condition of these brakes is to be contrasted with a relative lack of evidence of such overheating in the brakes of the trailer, with one exception. Heat damage within the trailer brakes is the subject of some difference of opinion between Mr McDonald and Mr Hall, but it is obvious that there was clear evidence of overheating in the brakes of the drive axles of the prime mover consistent with a considerable duration of application culminating in excessive overheating of the brakes and a consequent brake failure before the crash. Although the push rod stroke lengths for the prime mover's drive axle brakes were slightly in excess of the length at which one would adjust the brakes, namely 51mm, Mr McDonald was of the opinion that the excessive push rod stroke lengths were the product of the constant application of the brakes down the hill and the overheating of those brakes. He suggests that the adjustment in respect of these brakes would have been appropriate prior to this. In short, there is no suggestion that the brakes of the prime mover were anything other than roadworthy, were within the appropriate parameters of adjustment and had adequate brake shoe material.

6.7. I find that the prime mover was roadworthy, had a faultless gearbox and had adequate brakes.

7. The roadworthiness of the tautliner trailer

7.1. I have mentioned that the state of the trailer brakes is the subject of divergent expert opinion as between Mr McDonald and Mr Hall. The divergence for the most part relates to the performance of individual brakes within the trailer's braking system. However, they have both formed the identical opinion that the brakes of the trailer were in poor condition[17]. It is as well to begin an analysis of the state of the trailer brakes by referring to factual circumstances that are either not in dispute or which I find to have been the case after considering evidence of observations made by a number of individuals including Senior Constable Madigan to whom I have already referred. Not in dispute is Mr McDonald's assertion that the prime mover drive axle trailer brakes had been the subject of overheating. Secondly, when the trailer brakes were inspected by both Mr McDonald and then subsequently by Mr Hall, the brake shoe linings on the majority of the trailer brakes were found to be very thin, inadequate and in need of replacement. Mr Hall used a more precise implement by which to measure the thickness of brake linings in each case, but the pattern as between his measurements and Mr McDonald's measurements is very similar and the differences are immaterial.

Brake Shoes	Mr McDonald's Measurement	Mr Hall's Measurement
Front right	10mm	10/11mm
Front left	3mm (worn down to rivets)	Top 4.8mm Bottom 4.2mm (rivets worn)
Centre right	6mm	Top 5.8mm Bottom 5.5mm
Centre left	8mm	Top 8.2mm Bottom 7.8mm
Rear right	4mm (worn down to rivets)	Top 5mm Bottom 4.5mm
Rear left	4mm (worn down to rivets)	Top 4/5mm Bottom 4/5mm

It is common ground that anything less than 6.5mm in thickness is the limit for brake shoes fitted to semi-trailers. This figure is taken from the report of Mr Hall[18]. Other evidence suggested that the brake linings require replacement at 8mm. Mr Hall

[17] Exhibit C30, page 27 and Exhibit C32, page 20, paragraph 9.1
[18] Exhibit C32, page 15, paragraph 7.1

suggests that there were only two brakes that had serviceable brake shoe linings, being the front right and centre left. I do not believe Mr McDonald would disagree with that assessment, although some of his measurements were less than those of Mr Hall. Mr McDonald does add that the front left axle brake shoes and the rear axle brake shoes on both sides had worn down to the rivets. I find that the only two trailer brakes that had serviceable brake linings were the front right and the centre left. Mr Hall states in his report that while there would have been some lining wear involved in the trips undertaken between 16 and 18 January 2014, the thickness of the linings would not have altered significantly during those trips. I accept that evidence and find accordingly. In respect of the front right brake, Mr McDonald and Mr Hall agree that the brake shoes had been overheated and blued from excessive heat which is consistent with that brake working effectively to begin with and then failing. It is also consistent with that particular brake having been within proper adjustment parameters at the time of the journey down the South-Eastern Freeway. The front right axle push rod stroke length of 21mm would also be consistent with appropriate adjustment. I find that the front right brake of the trailer was working effectively down the freeway to begin with and then failed due to excessive application and overheating.

7.2. The other significant area of common ground between Mr McDonald and Mr Hall is that there is little or no evidence of excessive heating to the rear axle brake components on either side.

7.3. Before dealing with the divergent opinions of Messrs McDonald and Hall, it is necessary to discuss the observations of the semi-trailer made by certain persons at the scene at Cross Road. I have already referred to the evidence of Mr Rowe, the driver of the Parilla B-Double. Mr Rowe's statement[19] says that he could see smoke coming from both the trailer wheels and the drive wheels of the prime mover. At that point the truck was 50 to 100 metres ahead of him. He interpreted the smoke that he saw as brake smoke, indicating that the brakes were overheating which raised a concern on his part that the driver would lose the brakes of the rig. There would be little doubt that at some point along the descent Mr Venning's prime mover's drive axle brakes would have been overheating and smoking. As well, at least the front right brake would have been exhibiting the same thing. Mr Rowe's evidence in my view does not establish that all of the trailer brakes were operative to the point of

[19] Exhibit C6a

overheating and smoking. The undisputed evidence as to the state of both rear axle trailer brakes would negate the suggestion that the rear brakes were smoking. Mr James Birbas' statement[20] states that he does not recall seeing any smoke coming from the wheels of the semi-trailer. The statement of Mr Theofanis Birbas[21] says nothing about smoking brakes one way or the other. The statement of Mr David Gates[22] also says nothing about that topic one way or the other. The statement of Mr Robert Thomas[23] says that he could see the brake lights of the semi-trailer illuminated and could hear and smell the brakes. His statement does not say anything about sighting any evidence of smoke emanating from the brakes. The smell of brakes could be consistent with the smell of burning emanating from the prime mover driving axles and those, or that, of the trailer that were operating, namely the front right brake.

7.4. There are statements of bystanders and police officers who attended the scene following the accident. The statement of Mr Matthew Nesbitt[24] says nothing about a smell of, or of any observation in relation to, the brakes of the prime mover or trailer. He attended the scene very shortly after the accident. The statement of Mr Trevor Healy[25] states that he went to the vicinity of the wrecked prime mover very shortly after the accident and could see:

> '… a lot of smoke and there was a strong smell of burnt brakes coming off the prime mover tyres, but I didn't take much notice of the trailer.'

Mr Michael Perrse[26] was waiting at the traffic lights on Cross Road. The semi-trailer overturned and crashed behind his vehicle. He recalls smelling an acrid odour which he has associated with burning or hot brakes. He states that he has smelt the same odour on numerous occasions, mostly when passing large trucks travelling down the freeway. Mr Trafford Kageler[27] was also at the traffic lights on Cross Road. The semi-trailer crashed behind his vehicle. What view Mr Kageler had of the semi-trailer prior to it crashing enabled him to see that smoke or dust was emanating from the front wheels of the truck. Ms Amy Baker[28] who was in Mr Kageler's vehicle says

[20] Exhibit C7a
[21] Exhibit C8a
[22] Exhibit C9a
[23] Exhibit C10a
[24] Exhibit C11a
[25] Exhibit C12a
[26] Exhibit C13a
[27] Exhibit C14a
[28] Exhibit C15a

nothing in her statement about this subject matter. Mr Marcos Sanguinetti[29] was also on Cross Road waiting for the lights. He saw the prime mover before it crashed behind him. He alighted from his vehicle after the crash. His statement says nothing about smoke or the brakes in general. Mr Robert Horne[30] attended the scene on foot. His statement says nothing about smoke or brakes.

7.5. Adam Stott[31] is a Constable of Police who attended the scene at 1:25am, approximately 25 minutes after the accident. His statement is silent about the state of the brakes of either the prime mover or the trailer in terms of heat, smoke or odour. Officers of the Major Crash Investigation Section attended the scene. Senior Constable First Class Shane Mudge[32] arrived at the scene at about 2:50am where he was met by Mr Stott. He made certain observations at the scene which did not include any recorded observations in respect of the brakes of the prime mover or trailer. He did take a number of photographs.

7.6. What observations there are of smoking wheels and/or of the odour admitted by the vehicle to my mind is not conclusive in respect of which if any of the trailer brakes were operating correctly.

7.7. The retrieval process at Cross Road took place over several hours. No police officer who had specific expertise in the examination of braking systems attended the scene. Four witnesses who were involved in the retrieval of the wreckage were called to give evidence in the Inquest. Mr Brenton Levi is a tow truck driver and is the Tow Manager of a company by the name of Truckworks. He attended the scene and had responsibility for righting the wreck of the chassis of the prime mover and the trailer, which were still attached to each other. The cabin of the prime mover had become detached from its chassis at impact. The semi-trailer had come to rest on its right hand side which meant that the left had side wheels were all elevated above ground level. All of the right hand side wheels of the wreckage were flat on the ground and immovable for that reason. The wreckage was pointing in a general westerly direction on Cross Road with the prime mover chassis at the westernmost point of the wreckage. The wreckage was situated on a slight downhill incline.

[29] Exhibit C16a
[30] Exhibit C17a
[31] Exhibit C21a
[32] Exhibit C23a

7.8. Three gentlemen employed by Dial-A-Tow, namely Messrs Brett Wilkeson[33], Roger Day[34] and Leon Crafter[35], were involved in the placement of the wreckage of the prime mover and trailer, still attached, onto a low loader for the purposes of transportation to the police compound at Ottoway. The statements of Messrs Wilkeson, Day and Crafter were only taken in November 2014, some 10 months after the accident. Mr Levi's statement[36] was taken on 19 February 2014.

7.9. In the evidence of the three Dial-A-Tow employees there is inconsistency in respect of the method by which the wreckage was placed upon the low loader. Two of the witnesses, Messrs Wilkeson and Day, were of the belief that the wreckage had been wholly winched onto the stationary low loader, with the prime mover end of the wreck being winched on first. If that was the case it would mean that the wheels of the prime mover and of the trailer would have had to have been rolled or dragged in contact with the surface of the road in the process of loading. Rotation of the wheels of the prime mover and trailer, or the lack of it, may have provided some indication as to whether or not the maxi brakes were applied and effective. Mr Crafter, on the other hand, told the Court that what in fact took place was that the prime mover and trailer wreckage were mounted on the low loader by way of the low loader being winched and slid underneath the prime mover in the first instance and that the rear end of the trailer, including the trailer wheels, was hoisted by way of Mr Levi's equipment and then placed by further winching onto the low loader. This would mean that the wheels of the trailer were not required to move along the surface of the road in the process of loading. I was satisfied that Mr Crafter's evidence is to be preferred and that he accurately described the method by which the wreckage was loaded. The evidence of the manner in which the wreckage was loaded is of some significance due to the fact that some of the witnesses declared that they were able to witness some rotation of the trailer wheels during the loading process. It will be remembered that the front axle and rear axle brakes were maxi brakes and that when the braking system of the trailer was bled of air, these brakes should have been in the applied condition. Rotation of the wheels in that state would provide some indication that the brakes in the applied condition were not in a proper state of adjustment. The centre axle brakes

[33] Exhibit C49
[34] Exhibit C50
[35] Exhibit C52a
[36] Exhibit C39a

were not of the maxi brake type, would therefore not have been applied and would have been able to rotate in any event.

7.10. I was satisfied that at the scene the maxi brakes of the prime mover's driving axles were applied and effective. There was some resistance provided by those wheels when the low loader was slid underneath them. This is evidenced by visible tyre marks on the low loader tray consistent with those wheels having been dragged in a locked position across the surface of the tray. On the other hand, I was not satisfied that the evidence given by individuals that they saw some of the trailer wheels rotate during the process of loading was accurate.

7.11. A number of photographs were taken by different people during the course of the loading process. Photograph 20 of Exhibit C51, which is a bundle of photographs taken by Mr Crafter, appears to show the right hand side wheels of the trailer after it has been loaded onto the low loader. Photograph 4 of a bundle of photographs[37] which were taken by Mr Levi show the same trailer wheels but at a point before the front axle wheels were fully loaded onto the low loader. It is evident from a comparison of these two photographs that by reference to the position of visible damage to the wheel rims that the front right and rear right wheels have not rotated between the taking of the two photographs. On the other hand the centre wheel does appear to have rotated, or at least moved from its original position as seen in Mr Levi's photograph.

7.12. Whereas the evidence suggested that the rear wheels of the trailer had been lifted into the air in order to place the rear of the trailer onto the low loader, and that therefore there would have been no need for them to have moved in contact either with the ground or the tray of the low loader, the evidence was that when the wreckage was unloaded at the police compound at Ottoway the low loader was pulled from underneath the prime mover and trailer which would have enabled observations to have been made as to whether trailer wheels moved or not in that process. Photographs taken by Senior Constable Madigan following the unloading process at Ottoway, and in particular photograph 10[38], show that the right hand wheels of the trailer have moved from the position they were in when the trailer was positioned on the low loader.

[37] Exhibit C39a
[38] Exhibit C36b

7.13. Mr Brenton Levi, who had responsibility for righting the wreckage at the scene, told the Court that he examined the trailer brakes to determine whether they were applied or not. He said that task involved '*a physical looking at them*'[39]. He said wanted to be sure that when the vehicle was righted and landed on its wheels it would not roll away. There seems little doubt that his concern in that regard would in any case have been allayed by the fact that the prime mover drive axle brakes were locked; he said that his memory was that he could not get them to move at all[40]. Mr Levi told the Court that in his opinion as a qualified mechanic himself, some of the trailer brakes were out of adjustment but would nevertheless lock up the wheel. He said that he attempted to spin the left side wheels and told cross-examining counsel Mr Roberts that there were wheels on the trailer that did spin but could not recall which ones they had been. The only wheels of the trailer that could have been examined for their ability to spin were the three elevated left wheels. Mr Levi spoke in plural terms in respect of the number of wheels on the trailer that would spin. Mr Levi acknowledged that the centre axle wheels would spin in any event because they did not have a maxi brake. Mr Levi suggested that the wheels on the ground could be seen to still be in adjustment and still locked. He is probably correct in relation to the front right wheel, but other evidence that I will deal with in a moment would suggest that this was not the case with at least the rear right wheel. Mr Levi told the Court that he examined the thickness of brake linings and noticed some of them were low. In addition he observed that the 'stroke', meaning the push rod stroke length, was a long way out which meant to him that they were a '*fair way out of adjustment*'[41]. He could not say which brakes he was recalling in that regard. Clearly Mr Levi was referring to the position of the push rod relative to the slack adjusters. I observe that Mr Levi's witness statement[42] taken in February 2014 did not deal with the question of brake adjustment in respect of the trailer or prime mover.

7.14. The other three witnesses to whom I have referred gave varying accounts of what could be seen in respect of the brakes of the vehicle and the ability of the wheels to rotate at the scene and at Ottoway. None of these gentlemen had statements taken from them until, as I say, November 2014. In his oral evidence Mr Wilkeson told the Court that when the rig was being winched onto the low loader he noticed that the

[39] Transcript, page 1396
[40] Transcript, page 1407
[41] Transcript, page 1409
[42] Exhibit C39

trailer brakes were not applied and they were free spooling. He said that this was the case in respect of all three axles on both sides[43]. Mr Wilkeson told the Court that he had a specific reason for recalling this; he had toyed with the idea of allowing the axles at the rear end of the trailer to free wheel on the road during its transportation. I am not certain whether Mr Wilkeson was referring to a plan that all three axles might be left trailing on the ground or simply the wheels of the rear axle. The other reason that Mr Wilkeson said that he had for remembering the state of the trailer wheels was his knowledge that the springs should have been applying the brakes of the trailer wheels and they were not. Mr Wilkeson was adamant that at Cross Road the wreckage had not been used as the anchor point during the loading process. There is evidence to suggest that he is incorrect about that. He believed that the wreckage was pulled onto the trailer. He told Mr Roberts in cross-examination that he was certain that the front right wheel of the trailer was capable of rotating. The objective evidence that showed that this brake had been in a state of proper adjustment would tend to contradict Mr Wilkeson about that.

7.15. Mr Day also gave oral evidence. He told the Court that he recalls indicating to Mr Levi that a wheel that he accidentally spun by leaning on it should not have spun in that fashion. He believed that this wheel was the front left. He said that when he looked at that brake he noticed a gap between the brake and the drum[44]. The evidence of Mr McDonald suggests that there was a visible gap when he subsequently examined that brake in the applied condition. Mr Day was confident that the wheel that spun was not the centre left wheel which should have spun in any event. Mr Day said that he thought that one brake was still locked up and he thought it may have been the rear left. Mr Day told the Court it occurred to him at the time that the ability of a wheel or wheels to spin was something that would be mentioned in Court at a later time. Mr Day also said that he observed the trailer wheels rotating as it was being winched onto the low loader whereas the prime mover wheels had been locked up and dragging. He described the same method of loading as had been described by Mr Wilkeson. He said that all three wheels on the left hand side rotated during the winching process. Mr Day's statement to police dated 19 November 2014[45] contains the assertion that the front left wheel which was in the air, spun freely. His statement also says that they spun '*a couple of other tyres*' which spun freely with little or no

[43] Transcript, page 1876
[44] Transcript, page 1907
[45] Exhibit C50

resistance. He said he could not remember exactly which wheels had this capability, but that there had been more than one on the left hand side. He said nothing in the statement about the rear left wheel being fixed and not able to spin. However, as seen in his oral evidence, he did indicate that his recollection was that this wheel did not spin, although he pointed out that a wheel locked to what he described as a '*hand spin*' would not mean that it would lock when there was 10 tonne on the back of it[46]. In his police statement Mr Day said that at Ottoway, from the position that he was in relative to the wreckage, he could not see whether any of the wheels on the wreck were still locked or were moving.

7.16. Mr Leon Crafter gave evidence. He had also given a statement to police for the first time in November 2014[47]. Mr Crafter was the witness who stated that the method of loading involved the low loader being pulled underneath the wreckage as opposed to dragging the wreckage onto the trailer. Mr Crafter said that the rear of the trailer was lifted into mid air and the low loader was backed underneath them after which they were lowered onto the trailer. From his position he was unable to see what was happening at the rear of the wreckage. He did not say anything about the ability of the wheels of the trailer to spin. Mr Crafter's description of the method of loading was corroborated by Mr Levi and also by photographs that clearly showed Mr Levi's equipment lifting the rear wheels of the trailer. This meant that none of the trailer wheels were actually winched onto the trailer by rolling or dragging. This would tend to negate any suggestion that other people present had an opportunity to see whether the wheels of the trailer could rotate or not.

7.17. Unfortunately, in respect of the issue currently under discussion there is no available evidence of any observation, made by police at the Cross Road scene. The statement of Sergeant Vaughan Roberts[48], however, deals with his observations of the unloading process at the Ottoway compound. Mr Roberts describes an unloading process that is not inconsistent with that described by the other witnesses. He suggests that the unloading process was slightly hindered by a lack of rotation of some of the combination's wheels. He did not take particular note of which wheels were freely rotating and which were not, but his belief was that it was the drive wheels on the prime mover that were causing most of the problems.

[46] Transcript, page 1920
[47] Exhibit C52a
[48] Exhibit C52

7.18. It is difficult to determine what if anything can be made of the evidence of the witnesses who were involved in the loading and unloading process. The difficulty is not helped by the fact that observations were not made by police at the time. The unaided recollections of lay witnesses whose statements were taken several months after the event may or may not be wholly reliable. Having regard to the method of loading as described by Mr Crafter and as supported by Mr Levi, I was not persuaded that any person present at Cross Road was in a position to be able to determine whether any of the wheels of the trailer could rotate during the loading process. Although the positions of the trailer's right hand wheels appear to have altered once unloaded at the Ottoway compound, indicating a possible ability to rotate, in my view it would be dangerous to place too much stock on this. It would have been much better if police had made observations as to the ability of the wheels to rotate or not at a time before the wheels were examined at the compound.

7.19. I have carefully considered the evidence of Mr Day who states that he was able to hand spin the front left wheel and was unable to hand spin the rear left wheel. He was adamant that it was not the centre wheel that he accidentally spun. I have accepted as accurate Mr Day's evidence that he accidentally spun one of the trailer's left wheels and that the wheel he was referring to was not the centre left wheel. I am less certain about his assertions in relation to an inability to hand spin the rear left wheel. However, I observe that even if he was unable to spin that wheel this would not give any clear indication that it was in a state of ideal adjustment having regard to the forces that would be applied to that wheel when rotating at speed and under load as distinct from the manual rotation of a stationary wheel.

7.20. The evidence of witnesses who were involved in the loading and unloading process is relevant in one other manner. There is an effective consensus that nothing that occurred in either process would have altered the state of the brakes as they were before the wreckage was righted onto all wheels.

7.21. I have referred to the evidence of Senior Constable Tony Madigan. SC Madigan took a number of photographs at the compound before the truck was examined by Mr McDonald. Three of those photographs were isolated and tendered as a discrete exhibit, C30e. The three photographs depict the rear right brake slack adjuster and push rod assembly, the rear left brake slack adjuster and push rod assembly as well as the position of the S-cams on the brake shoe rollers and the third photograph depicts

the front left slack adjuster and push rod assembly. All three of these brakes were of the 30/30 actuator type which means that they were fitted with maxi or spring brakes. This meant that when SC Madigan examined and photographed these brake assemblies they were in the applied positions. Each brake assembly can be seen to involve a slack adjuster angle that is significantly in excess of the 90 degrees. Also, in respect of the rear left assembly, the S-cams can be seen to have almost rolled over in the sense that the rollers are on the very tip of those cams. SC Madigan's photographs are, I think, the first photographs that were taken specifically of the trailer's brake assemblies. There are various photographs that were taken at the Cross Road scene that depict the brake assemblies from a distance and on various angles. The photographs were not taken specifically for the purpose of depicting the condition of the brake assemblies. One photograph taken by Mr Levi[49] in particular shows all six brake assemblies at a time when the vehicle was still on its side. The photograph was taken from an angle and from the rear. There is a similar photograph taken by Mr Crafter in Exhibit C51[50]. In my view the angles at which the photographs are taken do not allow for any accurate assessment to be made of the slack adjuster angles in respect of the front and centre axles of the trailer. However, there appears to be a measure of consistency between the angles in respect of the two rear axle brakes as depicted in those photographs and SC Madigan's photographs taken at Ottoway, or at least there does not appear to be any inconsistency in that regard. I find that SC Madigan's photographs taken at Ottoway accurately depict the three brake assemblies in the state that they had been in immediately before the trailer was righted. I also find that they were in the same state when Mr McDonald came to inspect more closely the brakes on that trailer.

7.22. SC Madigan gave evidence as to the significance of what he observed and photographed. I regarded SC Madigan as an expert in respect of these matters. He said that in respect of the rear left brake assembly, which was in the applied position due to the application of the maxi brake, the slack adjuster angle exceeded 90 degrees and that the brake shoe rollers were right on the tips of the S-cams. In his opinion both of these matters indicated that the brake was out of adjustment. SC Madigan stated that if the rollers had gone over the tips of the S-cam, and they were close to doing so, this would have rendered the brakes inoperable. He said that the reason the

[49] Exhibit C39a
[50] Photograph 3

rollers were on the edge of the S-cam was due to the thinness of the brake linings and because the brakes had not been adjusted for some time. He said that the brake would not work effectively in the state it was in. He said that a stage is reached where the brake shoe linings are no longer able to touch the drum and that it was this that rendered the S-cam liable to roll over. Because there is no contact and no friction between the linings and the drum, there is no force between the linings and the drum and the S-cam keeps turning until it rolls over, rendering the brakes inoperable[51]. SC Madigan told the Court that in the photograph that he took[52] he could see a gap between the brake shoes and the brake drum and that this is of some significance because this was a brake that was meant to be in the applied position. Another observation that SC Madigan made about this particular brake assembly was that it did not appear to have been greased in some time. SC Madigan added that having regard to the state of those brake linings, he regarded it as difficult to determine whether or not the brake was effectively adjustable. He said that the linings were so worn that it might not be possible to attain proper adjustment, and that in particular the S-cam might not be able to be situated in the appropriate position. He postulated that even with the brakes off, the slack adjuster angle would already have been over 90 degrees such that when the brake was activated there would be no mechanical advantage. He said '*so when you put it on they're actually not going to do anything*'[53]. It will be seen when I discuss the evidence of Mr McDonald in relation to this particular brake assembly that when Mr McDonald injected air pressure into the braking system, the brake did in fact roll over the S-cam which was the possibility postulated by SC Madigan. As will be seen the likely explanation for this is that when Mr McDonald performed his examination he injected more air pressure into the system than had been available at the time the semi-trailer was in motion coming down the freeway, or more pressure than the maxi spring brake had applied to that braking assembly once it had become stationary after the accident. The other significant feature of SC Madigan's inspection of the rear left brake assembly was that he did not detect any evidence of heat in the brake drums which might have been expected if this particular brake assembly had been working as it was being driven down the hill.

[51] Transcript, page 1153
[52] Exhibit C36f, photograph 11
[53] Transcript, page 1171

7.23. SC Madigan also inspected and photographed the rear right braking assembly of the trailer. The significant features as observed by him were firstly that the brake linings again were too thin, secondly that the dirt adhering to the adjuster was an indication that the brake had not been adjusted recently and thirdly that the slack adjuster angle significantly exceeded 90 degrees. SC Madigan told the Court that he did not observe the position of the S-cam in relation to the brake lining rollers, but as will be seen in the evidence of Mr McDonald, the rear right S-cam was in a similar position to the S-cam of the rear left braking assembly and that it too rolled past the S-cam when air was injected into the braking system. SC Madigan also made an observation that the rear right braking assembly had not been greased for some time.

7.24. SC Madigan also inspected and photographed the front left braking assembly of the trailer. The slack adjuster angle exceeded 90 degrees, the brake shoe linings were thin and had worn down to the rivets. He observed indications that the brake drum had been wearing the heads of the rivets. SC Madigan was of the view that there did not appear to be features associated with heat damage to that braking assembly, but conceded that it had '*some heat in it*'[54]. However, he suggested that from what he could observe there was no indication of anything excessive in terms of heat[55]. I add here that SC Madigan, and for that matter Mr McDonald, did not deconstruct this braking assembly by taking off the wheels and removing the drums, unlike Mr Hall who ultimately did this.

7.25. SC Madigan made notes in relation to his inspection[56]. In relation to the centre axle brakes he made a note that they both bore thin linings. He also made a note that he observed no discolouration of the brake drums and that all this suggested that the brakes had been ineffective.

7.26. Another matter of relevance about which SC Madigan gave evidence is that with riveted linings as these were, 8mm would be considered to be a thin lining.

7.27. I now deal with the evidence of Mr McDonald and Mr Hall. In his oral evidence Mr McDonald confirmed much of what Senior Constable Madigan said in respect of the general topic of brake adjustment. Mr McDonald spoke of worn brake shoes having an effect on the travel of the S-cam such that the roller of the brake shoes would be on

[54] Transcript, page 1244
[55] Transcript, page 1245
[56] Exhibit C36g

the edge of the S. He explained that if the brake shoes are worn out and the brake shoes are incorrectly adjusted, the brakes will roll over the S-cam completely or jam and stop on the edge such that the brake shoes will not move any further and will not contact the drum with sufficient force, thereby only applying partial braking or no braking at all. Mr McDonald also spoke of the effect of push rod stroke length on braking effect as well as the significance of slack adjuster angle. If the slack adjuster angle exceeds 90 degrees it may twist the S-cam right around to the edge. In addition, worn brake shoes may not contact the drum, such that there is an air gap between the working parts giving rise to no braking at all[57]. As far as the slack adjuster angle is concerned, Mr McDonald told the Court that if the push rod stroke length is less than 51mm for this type of actuator there should be good adjustment of a brake as long as the slack adjuster angle has not exceeded 90 degrees[58]. Asked as to what determines whether a slack adjuster angle exceeded 90 degrees or not, Mr McDonald stated that this depended upon whether the brakes were correctly adjusted. He explained that once a brake wears, the brakes can become maladjusted and even though the push rod travel may be low, the slack adjuster travel angle may be greater than 90 degrees with the result that mechanical advantage, or leverage, is lost[59]. I did not understand Mr Hall to disagree with any of that analysis.

7.28. The analysis of both Mr McDonald and Mr Hall of the condition and effectiveness of the front right braking assembly of the trailer is a matter that can be disposed of relatively quickly. There is no material inconsistency between the evidence of Mr McDonald and Mr Hall in relation to that assembly. There was sufficient brake lining in respect of the brake's shoes and there was undoubted evidence of severe overheating in respect of that brake assembly, indicating that up to the point of it ultimately failing due to severe overheating, it had been working effectively. Mr McDonald was able to determine that there was evidence of severe overheating in respect of that brake and had reported the same in his preliminary report[60] and in his witness statement of 12 June 2014. As had been the case with the prime mover's driving axle braking assemblies, Mr McDonald was able to observe evidence of overheating in the front right brake assembly of the trailer without having to disassemble the componentry of those braking assemblies.

[57] Transcript, page 415
[58] Transcript, page 376
[59] Transcript, page 377
[60] Exhibit C30h

7.29. Although Mr McDonald did not disassemble any of the trailer's braking assemblies, he found within them no overt evidence of overheating of the kind that he was easily able to see in the front right brake of the trailer and in the brakes of the driving axles of the prime mover. On the other hand, when Mr Hall conducted his examination several months after Mr McDonald's examination, he disassembled the braking componentry in respect of five of the six trailer brakes. The only brake he did not pull down was the rear left brake. This had been due to time constraints.

7.30. It is convenient to deal firstly with the rear axle braking assemblies. I have already referred to SC Madigan's evidence that both of these assemblies, in the applied position, exhibited slack adjuster angles significantly in excess of 90 degrees. Mr McDonald confirmed that. Mr McDonald's report, which is attached to his witness statement dated 12 June 2014, contained a number of factual errors and misdescriptions of photographs contained within the report. Mr McDonald's analysis of the rear axle braking assemblies exemplified this. Mr McDonald originally reported that both rear axle brake assemblies '*had rolled past the brake 'S'-cams*'. This was taken to be an indication that this was how Mr McDonald found those brake assemblies when he first examined them. As it transpires, this was not in fact the case. It will be remembered that in the case of the rear left brake, SC Madigan found that this brake, in the applied position by virtue of the operation of the maxi brake, was on the tips of the S-cam but had not rolled past. In his oral evidence before the Court, Mr McDonald confirmed this. He stated that in fact both rear brake S-cams were in the same position, that is to say on the tips of the S-cams but not rolled over. Mr McDonald told the Court that the brakes only rolled over the S-cams after he had released the maxi brakes and had then applied the service brakes with the injection of air into the system. Following this exercise, Mr McDonald was not able to reposition the S-cams in either rear axle brake. Mr McDonald told the Court that it would have required both assemblies to be disassembled and reassembled for that to occur, an exercise that Mr Hall would in due course perform in relation to the rear right brake assembly.

7.31. The other discrepancy in Mr McDonald's material involved the rear axle brakes push rod stroke lengths. In his report of June 2014, Mr McDonald quoted the push rod stroke length for the rear left brake assembly to have been 55mm and quoted the push rod stroke length for the rear right brake to have been 64mm, indicating in both

instances that the brakes had been out of adjustment. However, in his oral evidence Mr McDonald told the Court that in the case of each rear brake only 20mm of push rod travel had occurred upon the application of the service brake and that this movement had caused both brakes to roll over the S-cams. Mr McDonald produced his original notes to the Court and it is clear that the note that he made at the time of his examination indicated push rod travel in respect of each brake of only 20mm. I see no reason to doubt Mr McDonald's assertions that these measurements were the correct measurements. I prefer Mr McDonald's original handwritten notations to what is reported in his typed report of June 2014.

7.32. Thus I find that when Mr McDonald first examined the rear brakes, the brakes were on the tips of the S-cams in the applied position and that when the maxi brakes were released and the service brakes were then applied, the brakes irretrievably rolled over the S-cams and the push rod stroke length had been only 20mm. I find that the brakes were not over the S-cams when SC Madigan and Mr McDonald conducted their observations. The push rod movement of only 20mm before both brakes rolled over the S-cams would be consistent with the slack adjuster angles being in excess of 90 degrees even when both brakes were in the unapplied positions. Mr McDonald also told the Court that both rear brakes exhibited gaps between brake shoe and brake drum[61]. I accept that evidence.

7.33. Mr Hall told the Court that when he came to examine the rear trailer brake assemblies, both brakes had rolled over the S-cams. This is the position in which Mr McDonald had left them after his examination. When Mr Hall pulled down the rear right brake and then reassembled it, he endeavoured to reconstruct the brake assembly as it had been before the brake had rolled over the S-cam. After reassembling the rear right brake, Mr Hall tested it by injecting air into the system. When he did so, he achieved a push rod stroke length of 56mm, which is consistent with maladjustment. Unlike Mr McDonald's test, Mr Hall's testing did not cause the brake to roll over the S-cam. In my view the explanation for that is that Mr McDonald had applied greater air pressure to the braking system than Mr Hall would several months later. I think a similar explanation is available to explain why the brakes did not roll over the S-cams during Mr Venning's journey down the freeway; that is that the intrinsic air pressure within the braking system upon Mr Venning's application of the brakes was not

[61] Transcript, pages 444-446

sufficient to roll the brakes over the S-cam. Similarly, the pressure applied by the maxi brake after the trailer came to rest and was bled of air had also not been enough to roll the brakes over the S-cam. There is no readily available explanation why, after Mr Hall had reconstructed the brake, it involved a longer stroke length on application. However, I accept Mr McDonald's evidence that when he tested both brakes, only 20mm of movement of the push rod was required to tip both brakes over the S-cam. I also accept the evidence of SC Madigan and Mr McDonald that both brakes in the applied position, as facilitated by the maxi spring brake, were already on the tips of the S-cam and had slack adjuster angles significantly in excess of the 90 degrees.

7.34. Mr Hall reported that in respect of the rear brakes there was an absence of heat effect as might be evidenced by blueing and crazing of the drum surfaces. He reported that there were signs of drum contact but no evidence of excessive heat. He also suggests that there was likely to have been some braking at the rear right wheel but that it had not been prolonged. The state of these brakes was to be contrasted with what Mr Hall says he found in relation to the other four braking assemblies where he opined that there was evidence of excessive heat. The question, therefore, is why there would have been any material difference in the performance of the rear brake assemblies when compared to what appears to have been adequate performance of the front right brake. Mr Hall postulated that the discrepancy was possibly due to loss of air pressure to the rear axle braking assemblies during the descent down the South-Eastern Freeway. It is true that there was probably less air pressure applied to the system when the vehicle was in motion than what would be applied by Mr McDonald when he came to test the brake, and for that reason the brake did not roll over the S-cam when the semi-trailer was being driven down the freeway, but to my mind there is a more credible explanation than that postulated by Mr Hall and one which is supported by the evidence. That is that the brake linings on both brakes were so thin that the brakes had been wholly out of adjustment to begin with. This is evidenced by the fact that in the applied position the slack adjuster angle in each case was in excess of 90 degrees, meaning that there was significantly less than ideal force being applied between brake shoes and brake drum, and as evidenced by the fact that in the applied position both brakes were on the tips of the S-cams and in the case of the rear left brake there was, according to SC Madigan, a visible gab between brake shoes and brake drum in that applied position. To my mind the clear reason for there being relatively little evidence of brake heating in respect of the rear axle brakes was that

they were not working effectively if at all during Mr Venning's descent down the South-Eastern Freeway. I so find.

7.35. Mr McDonald told the Court of what he found in relation to the front left brake of the trailer. There was a difference of opinion between Mr McDonald and Mr Hall in relation to the effectiveness of this particular brake assembly. I have already referred to SC Madigan's finding that the slack adjuster angle exceeded 90 degrees in respect of this brake in the applied position. Mr McDonald confirmed that this was the case. Mr McDonald found that when this brake was applied there was a push rod stroke length of only 15mm which is within acceptable limits, but it involved the slack adjuster moving to a greater than 90 degree angle. Mr McDonald originally reported that the front left brake had rolled past the S-cam. This also is not correct insofar as the brake was about to roll over the S-cam and was right at the tip of the S-cam. Mr McDonald now states that the front left S-cam was about was at the point of rolling over[62]. Unlike the situation with the rear axle brakes, the S-cam on the front left brake did not roll over with the application of the brake, either when Mr McDonald tested it or when Mr Hall tested it. Mr McDonald noted two further things about this brake. Firstly, he observed that the brake shoes had worn down to 3mm. I observe that Mr Hall measured the brake shoe thickness of this brake as 4.8mm and 4.2mm respectively. The difference is immaterial. On either version the brake linings were insufficient. Mr McDonald summed up the state of the front left brake shoe as follows:

> 'The brake shoe on the left side was worn down to 3 mm so there was insufficient brake-shoe material and the brake had been adjusted incorrectly so the S-cam was further round than where it should be, and where the brake applied, the pushrod stroke was within specifications, however, the slack adjuster angle had gone well past the 90 degrees, therefore reducing the amount of force applied to the brake shoe to the drum and has actually - part of the brake shoes were not connecting to the drum at all, there was an air gap between the shoe and the drum in the applied position.' [63]

Mr McDonald opined that the front left brake had been ineffective. In cross-examination Mr McDonald told the Court that the air gap of which he spoke existed in the lower brake shoe and that there was partial contact between brake shoe and brake drum. The air gap was not uniformly existent over the entire surface of the

[62] Transcript, pages 625-626
[63] Transcript, page 433

brake shoe. He said that the upper brake shoe had contact[64]. Mr McDonald did not disassemble this brake componentry. He did not remove the wheels and the brake drum.

7.36. Mr Hall reported matters similarly to Mr McDonald insofar as upon application of the brake the push rod reached almost full extension, the S-cam had almost reached full extension and that the slack adjuster angle was well past 90 degrees. Yet Mr Hall reported that this brake was operating at 93% of the braking force that could be achieved when compared with a well adjusted brake in good condition. There was a discrepancy between Mr McDonald's examination and that of Mr Hall in terms of the push rod stroke length. This I think can probably be explained by the fact that when Mr McDonald released the brake it only moved a fraction[65]. It may well have moved back further at the time Mr Hall came to examine it. To my mind the discrepancy is immaterial having regard to the consistency of their findings in relation to S-cam position and slack adjuster angles when the brake was in the applied position. As I understood Mr Hall's evidence about the effectiveness of this brake, it was based upon his observation that the brake drum was heat affected and crazed. This was an observation that was not made by Mr McDonald who did not pull down this brake.

7.37. Mr Hall's opinion that the brake had been working at 93% of its capability does not sit well with the objective facts about the state of adjustment of this brake as observed by both himself and Mr McDonald. The state of adjustment, as evidenced by an excessive push rod angle in the applied position is all in keeping with excessively worn brake shoes. The suggestion that this brake could have been working at such a high degree of effectiveness notwithstanding all of this does not make a lot of sense.

7.38. Regarding the centre left brake, both Mr McDonald and Mr Hall found brake lining thickness of approximately 8mm which both considered to be adequate, although as earlier seen, some might view that figure as indicating a need to change the brake shoes. In any event I accept for these purposes that 8mm was adequate brake material. Mr McDonald opined that as the push rod stroke length was 55mm it was out of adjustment. However, he acknowledged that there had been partial braking in respect of that brake. Mr McDonald also stated that the S-cam was in the correct position, although he says that the amount of force applied by the S-cams would have

[64] Transcript, pages 1568-1569
[65] Transcript, pages 434-435

been reduced because of the excessive push rod stroke length[66]. Mr Hall, on the other hand, found that the push rod stroke length for this brake was 43mm and that the slack adjuster angle was approximately 90 degrees. The drum surface was heat crazed and the brake shoes were beginning to break down due to excessive heat. Mr McDonald did not disassemble this brake and examine the interior of the brake drum. This brake appears to have been effective to a degree. Mr Hall suggested that this brake was working to a figure of 99% of the braking force that could be achieved compared with a well adjusted brake in good condition.

7.39. I turn to a discussion of the centre right brake. Mr McDonald told the Court that he measured 6mm of brake lining material in respect of this brake which he suggested indicated a need for the linings to be replaced[67]. When Mr McDonald applied this brake he found that the push rod extended to its maximum length of 64mm. Mr McDonald suggested, therefore, that there would have been minimal braking associated with that assembly. On the other hand Mr Hall found that when he tested the brake, the push rod stroke length was 56mm and that although this means that the brake is out of adjustment, the slack adjuster angle was approximately only 90 degrees. He produced photographs to illustrate the centre right brake in both the non-applied and applied positions. Mr Hall's brake lining measurements were 5.8mm and 5.5mm respectively and that the rivets were almost in contact with the drum which showed evidence of heating but to a lesser extent than that observed in respect of the centre left brake. He opined that this brake would have been producing 88% of the braking force that could be achieved when compared with a well adjusted brake in good condition.

7.40. It will be seen from this analysis that on anyone's version there is a measure of inconsistency between the various parameters of the six trailer brakes. The variations concern brake lining thickness, push rod stroke length, slack adjuster angle in the applied position, the position of S-cams in the applied position and heat damage to the various brakes. This is so on both Mr McDonald's analysis and on Mr Hall's analysis. The variations that I have identified appear to be closely associated with what is said to have been the performance of these individual brakes. For example, the effective performance of the front right brake appears to have a close association with the fact that its brake linings were adequate. Similarly, there is some evidence of

[66] Transcript, page 440
[67] Transcript, page 442

effective braking in respect of the centre left brake which also had thicker brake linings than the remaining brakes. At the other end of the spectrum the two rear axle brakes which show no evidence of overheating had linings that were very thin. In addition, the slack adjuster angles were significantly in excess of 90 degrees when applied and the brakes had almost rolled over the S-cams prior to Mr McDonald's testing. The pattern of brake effectiveness vis-à-vis brake lining thinness was the subject of a series of questions to Mr Hall as follows:

'Q. If during the life of a brake lining, you did not adjust the brake and it say, began life at 16 or 16 mm and got down to as low as, say, four or five, then unless you did adjust those brakes from time to time, the brake would inevitably come out of adjustment wouldn't it.

A. Yes.

Q. Can I just pose this scenario to you; out of all these six brakes, which in your view were the best adjusted.

A. Certainly the front right and on my measurement the centre left I believe.

Q. Was that where the best evidence of actual use down the hill was available due to heat damage.

A. Yes. So it is a reflection of also the pushrod stroke.

Q. Given the fact that the lining thickness in each case, front right, centre left, was greater than the others and within acceptable limits, the fact that they've appeared to work more efficiently is a reflection of their adjustment.

A. Yes.

Q. Whereas the others are below the replacement threshold, aren't they.

A. Yes.

Q. In the case of those other four brakes, there's the least evidence of use coming down the hill.

A. That's right, yes.

Q. In fact, there's very little evidence of their use coming down the hill in respect of the two rear brakes.

A. Two rear brakes, yes but I don't believe that is a consequence of their adjustment, I believe it's more a consequence of insufficient pressure.

Q. Air pressure. Well, let's leave that issue for a moment. Can I ask you to consider this scenario; let's deal with the front two brakes of the trailer, on your measurements the two brake shoe linings on the left were 4.8 and 4.2.

A. Yes.

Q. Below the replacement threshold.

A. Yes.

Q. On the right between 10 and 11 acceptable, is that right.

A. Yes.

Q. Centre, 8.2 mm and 7.8 mm, acceptable.

A. Yes.

Q. On the right centre, 5.8 to 5.5 below the replacement threshold.

A. Yes.

Q. At the rear, we have 4 to 5 on the left brakes shoes and 5 and 4.5 on the right.

A. Yes.

Q. And it so happens that the two best working brakes were the ones that had the most brake lining left, is that right.

A. Yes.

Q. If we accept that if you don't adjust brakes and the linings wear, they will inevitably become out of adjustment.

A. Yes.

Q. Isn't this the classic pattern reflected here of that, that they were never adjusted.

A. It could certainly be - that could be a conclusion but equally they could have been adjusted by just movement of the slack adjuster.

Q. You see you've got two brakes where the linings are perfectly okay.

A. Yes.

Q. You say that both brakes were working efficiently.

A. Yes.

Q. And the others not so efficiently, is that right.

A. Yes.

Q. In the case of the rear brakes, perhaps not at all, right.

A. Yes.

Q. Isn't that just reflective of the fact that in respect of four of those brakes, they have worn to such an extent and not been adjusted that they were grossly out of adjustment at the time that Mr Venning came down the hill.

A. It is reflective of that, yes, your Honour.' [68]

7.41. The Court has concluded that during the semi-trailer's journey down the freeway there had been effective braking in the front right brake of the trailer until it failed through overheating, that there had been some degree of braking with respect to the centre left brake until it failed through overheating, and that there had been little or no effective braking on either rear axle brake. I am deeply sceptical of Mr Hall's assertion that there had been 93% effective braking in the front left brake. The state of this brake as observed by both SC Madigan and Mr McDonald seemed wholly inconsistent with there having been effective braking on that brake. I accept their observations as to the state of adjustment of that brake including the position of the slack adjuster, the position of the S-cams, the thinness of the brake linings and the existence of only partial contact between brake shoes and brake drum in the applied

[68] Transcript, pages 847-849

position. I am mindful that Mr Hall asserts that he found some evidence of overheating in respect of that brake. However, the competing observations of SC Madigan and Mr McDonald do not make it possible for the Court to reach any firm conclusion about the effectiveness of that particular brake. As to the performance of the centre right brake, I am prepared for these purposes to accept that there was some effective braking as opined by Mr Hall.

7.42. Mr McDonald expressed an opinion in his report that the trailer had been in poor condition prior to the collision and that the incorrect brake adjustment would have contributed towards or caused the collision. To my mind Mr McDonald is not qualified to express a view about the state of the brakes' contribution to or in respect of a cause of the collision. He does not elaborate on that opinion. In his report Mr Hall expressed a view that on the assumption that the rear brakes of the trailer were not working, their overall effectiveness would be reduced to 82% of the braking force that could be achieved with well adjusted brakes in good condition. That figure was based upon a conclusion that the front left brake had been operating at 93%. I am unable to make such a finding for the reasons I have already mentioned. Thus Mr Hall's overall estimate of braking effectiveness of 82% also cannot be the subject of any finding. Mr Hall does say that the brakes fitted to the semi-trailer were likely to fail under constant and prolonged brake application during the descent from Crafers to Adelaide if they were being relied upon to maintain to a constant speed without the aid of significant engine braking. My finding is that Mr Venning was relying on the brakes in precisely those circumstances. Mr Hall also expresses the opinion that it could be expected that the brakes fitted to the semi-trailer driven by Mr Venning would have failed more rapidly than properly adjusted and well maintained brakes being operated under similar circumstances. What neither Mr Hall, nor for that matter Mr McDonald, could do is provide an opinion as to whether or not the fully laden semi-trailer without assistance from engine braking but fitted with properly adjusted and well maintained brakes would have traversed the decline into Adelaide without loss of brakes. The Court is also unable to reach any such conclusion. It has been stated on many occasions both in the context of this Inquest and that of Mr Posnakidis that it is unlikely that a fully laden semi-trailer with well adjusted brakes, the brakes of which have been ridden all the way down the South-Eastern Freeway, would survive constant application so as not to fail before the end of the journey. There is no hard evidence to support this contention, but it seems to be one that is universally

accepted. However, Mr Hall states that the brakes fitted to the semi-trailer would have failed more rapidly than properly adjusted and well maintained brakes being operated under similar circumstances and that a well-braked semi-trailer would have reached the intersection with Cross Road at a lower speed than did Mr Venning's semi-trailer. I have accepted that evidence. There is another question, however, that can be posed and that is whether Mr Venning's brakes in the first instance would have been capable of bringing the vehicle to a sudden halt if Mr Venning, upon discovering his inability to select an appropriate gear, had elected to adopt that course. It is not known whether Mr Venning did adopt that course and with what effect.

7.43. I deal with the evidence of Messrs Samon, Redden and Phelps in relation to the maintenance of the trailer prior to Mr Venning's use of it in mid 2013 and January 2014. I have already referred to the earlier journey that Mr Venning undertook in 2013. The journey from Pinnaroo to Virginia via the Riverland undoubtedly occurred on 7 June 2103. Mr Venning used the same prime mover and trailer. There is no evidence as to when the trailer had last been used, although Mr Redden appeared to have a recollection of that he used the trailer to collect fertiliser in Adelaide about a year prior to mid 2013[69]. He believes that on that occasion he had driven through the Riverland. Mr Redden could not tell the Court when the trailer brakes had last been adjusted prior to mid 2013. Mr Redden was also of the belief that the trailer had not been used between mid 2013 and January 2014[70].

7.44. Mr Redden and Mr Phelps, the workshop manager, both gave evidence that the tautliner trailer had its brakes inspected and adjusted in 2013. Mr Samon told the Court that in anticipation of Mr Venning undertaking what he believed would have been the first of a number of journeys commencing in mid 2013 he asked Mr Redden to take the tautliner trailer to the workshop so that Mr Phelps could give the trailer a '*once over*'. Mr Redden told the Court that the last occasion on which the tautliner's brakes would have been adjusted was when Mr Venning undertook the journey to Adelaide in which he became lost. He said that he had helped Mr Phelps to perform that adjustment. On Mr Redden's version of this adjustment exercise he would not have physically seen what Mr Phelps did to the brakes on the trailer because he did not himself get underneath the truck[71]. Mr Redden did say that following the check he

[69] Transcript, page 933
[70] Transcript, page 987
[71] Transcript, page 915

performed a skid test and that the wheels locked up on the concrete because he could see the resulting black marks. He said they dragged it for probably about a foot[72]. I did not understand the trailer to be loaded at that time. In his statement to police[73], although Mr Redden mentioned the one run to Adelaide by Mr Venning in 2013, he mentioned nothing of any brake adjustment at that time nor having performed a skid test at that time. Nor did he mention this in a statement that he gave to a SafeWork SA inspector[74]. When challenged about this Mr Redden said that when giving the statement he was only answering the questions that he was asked[75]. Mr Redden believed that following Mr Venning's journey in 2013 the tautliner remained at the Midway location until the January. On that occasion Mr Redden told the Court that he performed another tug test in respect of the trailer on that occasion. This time the trailer was on dirt and not loaded. It was then driven to the Mitolo cool room in Pinnaroo where some brake lights were replaced. No further brake adjustment or inspection took place on that occasion.

7.45. Mr Phelps said that he had adjusted the brakes in connection with the single journey performed by Mr Venning in 2013. A statement given by Mr Phelps to a SafeWork inspector[76] also mentioned his having performed the adjustment, he believed in approximately August or September 2013. He said that the work had been carried out as a proactive and preventative measure because the trailer had been sitting unused in the shed for approximately six months from early 2013. He said in his statement that other than that adjustment, the brake assemblies on the trailer were not adjusted or repaired by any other colleague on any other occasion[77]. In his oral evidence Mr Phelps told the Court that he performed the brake adjustment on the tautliner in July 2013[78]. He told the Court that the truck came into the workshop for a brake adjustment. When asked as to what work had been in mind for the trailer at that time, Mr Phelps said that at that stage he believed it was being readied for a trip to take a load of potatoes to Virginia via the Riverland and that the driver was going to be Mr Venning. Mr Phelps was acquainted with the fact that there had just been the one trip on that occasion and that it had not been used again until January 2014. He said that the trip in 2013 had taken place after his brake adjustment. However, he later stated

[72] Transcript, page 923
[73] Exhibit C35a
[74] Exhibit C35b
[75] Transcript, page 988
[76] Exhibit C43b
[77] Exhibit C43b, page 5
[78] Transcript, page 1023

that he could not be sure whether the adjustment had occurred before or after that trip. It will be noted, however, that Mr Phelps originally said that his belief had been that the work that had been contemplated for that trailer was that trip. The evidence of Mr Samon was that he had asked for the trailer to be inspected in connection with Mr Venning's proposed trip in 2013.

7.46. Mr Phelps was adamant that the occasion on which he performed the brake adjustment in 2013 coincided with a diary entry that he had made at the time and which had been intended to record the physical pain that he experienced after he performed the brake adjustment exercise. He made the diary entry, as with other diary entries, in connection with unrelated civil litigation that he was contemplating. In his evidence Mr Phelps at first did not produce the diary or its relevant entry and it was only after I sought production of it, and Mr Phelps waived any asserted legal professional privilege in respect of it, that it was revealed that the diary entry was dated Friday 26 July 2013. Mr Phelps told the Court that by reference to that date and to the contents of the diary entry for that date, namely '*PAIN IN HIP + BACK (AFTER CRAWLING AROUND UNDER TRUCK)*', he could say that the brake adjustment occurred the day before, namely on Thursday 25 July 2013. This is several weeks after Mr Venning's only trip to Adelaide with this trailer on 7 June 2013. If Mr Phelps performed a brake adjustment on Thursday 25 July 2013 he could not have done so in connection with Mr Venning's sole trip. No other reason was revealed in the evidence as to why the brakes were adjusted. No use for the trailer, other than the proposed use by Mr Venning, had been contemplated in 2013. Mr Phelps' insistence that he had adjusted the brakes on 25 July 2013 caused me to be suspicious as to the veracity of his evidence that he adjusted the brakes, or at least had done so in connection with any proposed journey to Virginia.

7.47. Mr Phelps was naturally asked what the state of the brake linings had been when he performed his inspection and adjustment. In connection with that issue he told the Court that he would be looking at replacing brake shoes when they were down to about 8mm, whereas he believed that 16mm is the approximate thickness when brake linings are new. Mr Phelps said that if upon his inspection the brake linings had been less than 8mm he would have arranged for a brake replacement[79]. He mentioned this repeatedly in his oral evidence. He told the Court that all of the brakes would have

[79] Transcript, page 1084

been at or better than 8mm. He told the Court that he did not measure the brake shoe thickness on this occasion[80] and said that over the years he could '*pick an 8mm piece of steel from a 20mm or 6mm*'[81]. Mr Phelps said that the first thing that he would examine when adjusting brakes would be the brake shoes, in order to determine what material remained. If the brake shoe material was too thin and one could not obtain a proper adjustment for that reason, he said that one would have to park the trailer and undertake a rebuild on all six brakes[82].

7.48. Save and except for the front right and centre left brakes which were around 10mm or 11mm and 8mm respectively, the brake lining measurements taken by Mr McDonald and Mr Hall were significantly different from Mr Phelps' estimation as to brake lining thickness when he inspected the brakes in 2013. All of the other measurements made either by Mr McDonald or Mr Hall were below 8mm; at a level that Mr Phelps himself said would dictate replacement of the linings of all brakes. Indeed, when Mr Phelps was shown SC Madigan's photograph of the rear left brake[83] he said that if he had been confronted with a brake in that condition, he would have identified the brake as capable of applying no braking at all due to the slack adjuster angle being in excess of 90 degrees and the brake shoe rollers being right on the tips of the S-cam. He said that in his opinion that brake was '*past adjusting anyway*'[84]. He explained this by saying:

> 'Well, assuming, if you like, that's in the applied position you can't get any more travel on the brake shoes through the S-cam and slack adjuster because it's right on the tip of the S-cam, and probably another 2 degrees rotation and they would drop onto the inner surface of the S-cam and be totally useless.'[85]

Mr Phelps said that in order to rectify that brake, one would have to replace the brake shoes and drums. This is the brake which Mr Hall opined would have been working with 93% effectiveness. Clearly Mr Phelps would reject such a proposition.

7.49. All of that evidence begged the obvious inquiry of Mr Phelps as to how, with relatively little use since his brake inspection and adjustment, four of the trailer's brake lining thicknesses had deteriorated from the acceptable, at worst the borderline, to the unacceptable. All Mr Phelps could proffer by way of explanation was the

[80] Transcript, page 1049
[81] Transcript, page 1050
[82] Transcript, pages 1007 and 1062
[83] Exhibit C30e, second photograph
[84] Transcript, page 1014
[85] Transcript, page 1014

suggestion that something unusual could have happened, either the introduction of excessive road material such as mud, dirt, sand and water, or that the handbrake was partially left on at some stage. When asked to explain the significant variation between the thickness of the brake linings of the six individual brakes, Mr Phelps offered that he had never seen brakes wear evenly, but when asked to explain why there would be such a marked difference between the front right brake at 10mm or 11mm and the front left of around 4.8mm he said that the only thing would be '*road grime or something like that*'[86]. He denied in the case of four of the brake linings that at the time of his 2013 inspection they were visibly inadequate and that they had required replacement. As seen, he repeatedly insisted that he would have replaced them if that had been the case[87].

7.50. It will be remembered that since June 2013 only three trips were conducted using the trailer. They were Mr Venning's journey to Virginia via the Riverland on 7 June 2013, his journey to Virginia via the Riverland on the night of 16/17 January 2014 and the fatal journey via the freeway on the night of 17/18 January 2014. If Mr Phelps is to be accepted, only two of those journeys occurred after he adjusted the brakes, he insists, on 25 July 2013. In Senior Constable Madigan's evidence he told the Court that friction is the principal cause of brake lining wear[88]. When asked as to whether foreign material such as mud could cause brake lining wear, he told the Court that trucks from the Northern Territory that he had pulled over and which had been stuck in mud up to the axles such that the bottom of the drum was full of mud, had not exhibited any abnormal wear to linings. He did say that if material such as dirt, small rocks and stones are caught between the lining and the drums, stones may gouge the drum but he had never seen it adversely wear a brake lining[89]. His experience also had been that foreign material tends to make its way out back onto the road[90]. SC Madigan gave evidence that a reduction of 5mm of brake lining, from say 8mm to 3mm in the three trips that we know Mr Venning performed, would be surprising because that would mean that one would have to change one's brake linings about every 10,000 kilometres or even less. He said that brake linings should not wear like that[91]. He said he could not see brakes wearing to the extent of 5mm in say 1,000

[86] Transcript, page 1104
[87] Transcript, page 1105
[88] Transcript, page 1183
[89] Transcript, page 1184
[90] Transcript, page 1184
[91] Transcript, page 1187

kilometres. He said the same thing in relation to wear from 8mm to 4mm or 5mm. It will also be recalled that in Mr Hall's opinion, while there would have been some lining wear involved in the two trips undertaken on 17 and 18 January 2014, the thickness of the shoes would not have altered significantly during those trips. It will be noted that Mr Hall makes this assertion notwithstanding the fact that when he removed the rear right wheel he cleared it of dirt and stones. I have accepted the evidence of SC Madigan and Mr Hall on this subject. To my mind the suggestion that following Mr Phelps' inspection and adjustment in 2013 the brake linings wore to the extent that he would suggest is fanciful and I reject it as a possibility. It may well be that Mr Phelps did adjust the brakes, or at least attempted to adjust the brakes, at a point in time in 2013 and that a brief skid test resulted in some or all of the wheels skidding whilst not under load, but I do not accept Mr Phelps' evidence that the brake linings were all at, or in excess of, 8mm when he adjusted them. As to the suggestion that the handbrake may have been left on, I regard that as fanciful and unsupported by evidence. Mr Venning was the only person to drive the rig between mid 2013 and the fatal journey. There is no evidence that he complained of sluggish performance of the semi-trailer.

7.51. When the trailer came to be used in January 2014 no further brake inspection or adjustment was performed. Mr Redden told the Court that he performed a skid test at the location where the trailer had been housed and that the trailer wheels had all locked on both sides. He did not perform this test with any other person observing. He performed it in circumstances where he had to move the prime mover to the left and to the right to enable him to see the wheels of the trailer in each case. He said that he moved the prime mover about four metres on either side. This, he said, enabled him to view the wheels and, in the case of this trailer, that they were not rotating but skidding. His description of what he did is somewhat unconvincing and in any event was performed with an unloaded trailer on dirt. It would have been far preferable if the brakes had been inspected and adjusted. If they had been so inspected, the only proper course would have been for the linings to be replaced. When Mr Phelps was asked as to why this did not occur when the trailer was brought into the cool room and the brake lights were replaced, he said it was because he was not asked to do so. This begs the question as to why, if there was any truth in the notion that brake linings were vulnerable to the local dirt roads, there would not have been a further inspection in January 2014.

7.52. To my mind when Mr Venning set out on the first of his journeys in January 2014, the trailer brakes had been in much the same condition as they were in when inspected firstly by Senior Constable Madigan and then by Mr McDonald after the accident.

7.53. I accept that Mr Venning at no stage ever complained to any person at Mitolo about the performance of the brakes of the trailer. This has to be considered against the fact that he only drove it for the first time down the South-Eastern Freeway on the occasion of his death.

7.54. Mr John Mitolo told the Court that he was not certain as to how frequently the tautliner had been used prior to the accident in January 2014 and had had no discussion with Mr Samon, the Pinnaroo manager, about the condition of the tautliner and in particular about its roadworthiness[92]. He never enquired of Mr Samon nor Mr Phelps of the work that was actually undertaken from time to time in respect of trailers at Pinnaroo. He said that he simply relied on their expertise, competence and diligence in respect of that issue[93]. He told the Court that he had been aware that the braking system of the flatbed trailer had been effectively replaced at Mr Phelps' initiative after the accident, but he did not ask Mr Phelps whether Phelps had performed any work in respect of the tautliner trailer at any stage. When asked why he had not enquired of Mr Phelps whether any work had been undertaken in respect of the trailer involved in the fatality, Mr Mitolo surprisingly told the Court that he did not believe it was relevant. He said that he had not made any personal investigation about the state of the brakes on that trailer and, as seen before, no records were ever raised or kept in relation to maintenance on trailers at the Pinnaroo operation.

8. Mr Venning's training and competence as a truck driver

8.1. Mr Venning held a multi combination (MC) licence that he obtained in 2013. Evidence was adduced in respect of the circumstances in which he obtained that licence. Prior to his obtaining that licence, Mr Venning had held a heavy combination (HC) licence that he obtained in about 2002. Evidence was adduced in the Inquest as to the requirements for the obtaining of the MC licence that Mr Venning possessed. It will be noted, however, that Mr Venning did not require an MC licence in order to drive the semi-trailer that he was driving at the time of his death. His already existing HC licence would have lawfully entitled him to drive that vehicle.

[92] Transcript, page 1677
[93] Transcript, page 1718

8.2. It is not known with precision what training Mr Venning received when he obtained his HC licence in 2002, or through what organisation he was able to obtain it. Mr Venning obtained his MC qualification in 2013 through Aust-Link Pty Ltd in Mildura, Victoria. Aust-Link had not had any involvement in Mr Venning's training at the time he obtained his HC licence. Both of Mr Venning's heavy vehicle licences were South Australian licences, notwithstanding that he received his training for the MC licence in Victoria. A statement was taken from Mr Roland Paver[94] who is a certified trainer and assessor for Aust-Link. This statement was taken by a SafeWork SA investigator on 18 June 2014. It is clear from that statement that Mr Paver had some significant responsibility in relation to Mr Venning's training and assessment for his MC licence. A prerequisite for the issue of an MC licence is the holding of an HC licence which Mr Venning had held for several years. According to Mr Paver's statement, Mr Venning undertook his assessment in a truck with a synchromesh gearbox. Thus Mr Paver did not assess Mr Venning's competence in respect of a non-synchromesh gearbox such as the one that belonged to the prime mover he was driving at the time of the accident. A synchromesh gearbox is one in which the gears are easier to select when changing up or down. However, there is no reason to suppose that Mr Venning did not have some familiarity with the 18 speed non-synchromesh Roadranger gearbox that was fitted in the prime mover he was driving when he died. In any event the statement of Mr Paver states that he remembers that Mr Venning '*did seem reasonably inexperienced in driving trucks*'[95]. In a questionnaire that was sent to him during the currency of this Inquest, Mr Paver was asked to clarify this observation among others. The questions and his answers are exhibited to a further witness statement of Mr Paver signed on 30 October 2014[96]. In respect of the observation concerning Mr Venning's inexperience Mr Paver stated:

> 'It is not unusual for people presenting for heavy vehicle training to appear inexperienced. My definition of an experienced driver is a full-time driver with years of experience and I made my comment in that context.'

8.3. When Mr Venning sought his MC licence in Mildura he unsuccessfully completed the assessment due to immaterial deficiencies. However, in March 2013, when Mr Venning returned to complete his assessment, it was noted that he had improved with

[94] Exhibit C19a
[95] Exhibit C19a, page 3
[96] Exhibit C19e

reversing and driving skills and that he should be able to pass his assessment. He did in fact pass his assessment on that occasion.

8.4. Mr Paver's material including his original statement and questionnaire makes it reasonably clear that much of Mr Venning's training for his MC licence, insofar as it related to the driving of a B-Double down a hill, was theoretical as opposed to the practical because in Mr Paver's words:

> 'In Mildura our test routes do not have hills and slopes as the terrain is flat.' [97]

In any event it is not clear from Mr Paver's material that any training regarding hill descent was directed towards the necessary skills that are required to negotiate the South-Eastern Freeway safely. I do note that Mr Paver states that there is some tuition or information provided about the use of safety ramps on the South-Eastern Freeway insofar as the use of safety ramps is mentioned in general in the theory component regarding brake failure[98].

8.5. The Court was assisted by the evidence of a heavy vehicle driving instructor, Mr Philip Neill. Mr Neill also gave detailed evidence in the Inquest in relation to the death of Mr Posnakidis[99]. Mr Neill's statement[100] for the Posnakidis Inquest as well as his oral evidence there[101] were tendered to the Court. Mr Neill also gave oral evidence in this Inquest.

8.6. Mr Neill is currently employed by Adelaide Truck Training Centre at Wingfield. He is a subcontractor within that employment. He has previously worked at Transport Training Solutions, also known as Allan Miller Driving School. He worked within that organisation for two years. Prior to that, for six years he had worked as a driver training officer for the Department of Transport. Mr Neill holds a class MC licence which he obtained in about 2003. He had held an HC licence since about 1997. Mr Neill has held a heavy vehicle licence of one type or another since 1984. Mr Neill is obviously a very experienced heavy vehicle driving instructor.

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[97] Exhibit C19e, Appendix RP1, Answer 3
[98] Exhibit C19e, Appendix RP1, Answer 13
[99] Inquest 33/2013
[100] Exhibit C44
[101] Exhibit C44a

8.7. Although the rigours of Mr Venning's original HC licence training are not known in detail, Mr Neill gave evidence about the current regime in respect of the obtaining of a HC licence as well as that which applies to an MC licence.

8.8. Mr Neill explained that training and assessment for an HC licence is usually conducted with a prime mover that has a non-synchromeshed gearbox such as the 18 speed Roadranger. One of the components in relation to HC training is the undertaking of a hill descent. Training and assessment for an HC licence contains no requirement to acquire or demonstrate competency in respect of the South-Eastern Freeway descent. This is to be contrasted with the requirements for an MC licence which include a requirement to acquire and demonstrate competency in respect of the South-Eastern Freeway. However, this requirement only exists where the training and assessment occurs in the metropolitan area. If the candidate for an MC licence is stationed in the country or interstate, that requirement is not mandatory. It will be remembered that Mr Venning obtained his MC qualification in Mildura in Victoria. As the training and assessment was conducted there, as distinct from the Adelaide metropolitan area, there was no requirement for him to demonstrate competency in relation to the South-Eastern Freeway descent. In addition, it was said almost universally during the course of this Inquest that the fatal descent conducted by Mr Venning was the first time that he had driven a heavy vehicle down the South-Eastern Freeway.

8.9. Mr Neill did tell the Court that for an HC licence that might be currently applied for, one of the training components is the undertaking of a hill descent. Tuition is provided in relation to the legal requirements attached to that activity such as Rule 108 of the Australian Road Rules. In this context Mr Neill said that he would like to stress that coming down a hill is the most dangerous time for a truck driver.

8.10. In his evidence Mr Neill referred to the situation that exists in Mildura as far as training for South Australian licensed drivers is concerned. He knew that the course delivered in Mildura simply involves local area driver training. He also referred to other districts in South Australia where there is no requirement that a negotiation of the South-Eastern Freeway be undertaken. As far as Mildura specifically was concerned, Mr Neill was of the belief that all of the driving that is entailed in training and assessment in that district occurs in Mildura where it is '*all pretty flat land*

around there'[102]. He believes that a heavy vehicle qualification is easier to achieve in that district and that the standard is lower.

8.11. Mr Neill also pointed out that any testing that might be undertaken in relation to competency to negotiate a steep descent in areas other than Adelaide might not necessarily involve descents that enliven the Rule 108 requirement that the vehicle be controlled by the gearbox without resort to the footbrake.

8.12. Mr Neill gave further evidence, as he had in the Posnakidis Inquest, about the manner in which the South-Eastern Freeway should be negotiated. I set out here what I have also set out in the Posnakidis finding. As indicated Mr Neill adopted his evidence from the Posnakidis Inquest when giving evidence in the current Inquest.

8.13. Mr Neill succinctly explained how one should negotiate the down section of the South-Eastern Freeway in this passage of his evidence:

> 'The way to do it is to come down the hill without needing to press your footbrake, selecting the appropriate gear to retard your progress and with subsequent use of the supplementary braking system, the engine brake - Jacobs brake, *(known as the jake brake)* whatever you like to call it - that thing which gives you the big barking exhaust note - using that to retard your progress coming down the bottom of the hill so that when you get to the bottom of the hill your brakes are no warmer than any other part of your drive line.' [103] (the italicised portion has been added)

8.14. Mr Neill said in his statement that the appropriate gear to select is the gear that enables the driver to safely come down the hill without the use of the vehicles primary brake. This of course is a reflection of the obligation contained within Rule 108 of the Australian Road Rules. If Mr Neill was driving along the down section of the freeway in a laden vehicle of the kind under discussion here, he would have selected third or fourth gear in the low range prior to commencing the descent. He pointed out that there is in existence an incline along the freeway before the descent commences and that this incline provides drivers with ample opportunity to down change. A selection of third or fourth gear in the low range would provide a forward speed of between 20 and 40 kilometres per hour, maintaining the engine revs below 2000 rpm.

8.15. The other matter that Mr Neill emphasised in his evidence is that if for whatever reason a low enough gear cannot be selected, the driver should immediately apply the brakes hard and virtually stop the vehicle, thereby providing the driver with another

[102] Transcript, page 1622
[103] Transcript, page 264

opportunity to select the appropriate gear. This approach is to be distinguished from endeavouring to control the downhill speed by use of the primary brake, which is of contrary to law in any event. Mr Neill said that when a gear is missed the proper approach should involve an instantaneous action to the effect:

> 'You have a very instantaneous reaction and say well hang on, I've missed my gear, I've lost gears, slow it right down while everything is still working appropriately, select a gear and then take it from that point.' [104]

All of the above tends very much to suggest that the South Eastern Freeway has peculiarities such that local knowledge on the part of heavy vehicle drivers is a prerequisite for consistently safe negotiation.

8.16. I was interested to learn from Mr Peter Redden, when he gave oral evidence, that although he was aware as an experienced truck driver of the desirability of avoiding the use of the footbrake while negotiating the South-Eastern Freeway, he was unaware that this practice was legally enshrined and was mandatory[105]. He did not know that it was actually a legal requirement as distinct from a good idea. Regardless of that, Mr Redden was of the view that as a truck driver one would need to almost '*crawl*' down the freeway[106]. He obviously adopted a very cautious approach himself. Mr Redden, who also obtained his MC licence in Mildura, told the Court that he did not receive any training in relation to the use of safety ramps or receive any theoretical or practical training about how to undertake a long descent[107]. He was also taught nothing about the signs applicable to trucks on the South-Eastern Freeway[108]. At the time he undertook his training and assessment in Mildura, no enquiry was made of him as to whether or not he would be driving a heavy vehicle into Adelaide and no training was provided to him in relation to the South-Eastern Freeway specifically. Mr Redden stated that in his view practical training on steep hills for the MC licence should be a requirement[109]. He did not believe that the training he received in Mildura had given him sufficient knowledge to be able to travel down the South-Eastern Freeway for the first time[110]. He added that they had not told him

[104] Transcript, page 279
[105] Transcript, page 972
[106] Transcript, page 941
[107] Transcript, pages 944-945
[108] Transcript, page 945
[109] Transcript, page 948
[110] Transcript, page 949

anything about safety ramps and traffic lights at the bottom of the freeway. He had received no tuition about the Rule 108 requirement.

8.17. Mr Redden also said that he did not receive any on the job training when working for Mitolo in respect of driving a loaded vehicle on the South-Eastern Freeway or training in respect of the signage on the freeway. It is not known whether Mr Venning received any such tuition.

8.18. Mr Redden had not seen the publication called '*The Right Gear*'[111] which provides instructions to drivers as to how a truck should be driven down the freeway.

8.19. Mr Redden told the Court that although he considered Mr Venning to be a truck driver who was '*quite capable*' and '*competent*'[112], if he had been made aware that Mr Venning was contemplating using the freeway, he said he would have told him about the gear that he himself used to negotiate the hill. He would have told him that he should not use his brakes and that if he got into trouble he should use the safety ramp[113].

8.20. Nevertheless, as indicated earlier, there was no specific concern that was, or needed to be, entertained at Mitolo that Mr Venning was at risk of a catastrophe. To my mind this is so having regard to the fact that Mr Venning did have the necessary qualifications in terms of licensing and was a heavy vehicle driver of some experience.

9. The Court's conclusions

9.1. In this matter the Court reached the following conclusions and findings:

1) Mr Venning died from injuries that he sustained when the semi-trailer that he was driving overturned and collided with a wall at the intersection of Cross Road and Mount Barker Road, Myrtle Bank;

2) Mr Venning's semi-trailer was travelling at a speed in excess of 140 kilometres per hour when Mr Venning lost control of it. The speed limit for this location was 60 kilometres per hour;

[111] Exhibit C37e
[112] Transcript, page 964
[113] Transcript, page 975

3) Mr Venning had travelled from Pinnaroo to Adelaide utilising the South-Eastern Freeway. On the relevant section of the freeway the speed limit for articulated vehicles of the type driven by Mr Venning was 60 kilometres per hour;

4) At the time of the accident the gearbox of the prime mover of the semi-trailer was in neutral;

5) The section of freeway with which this Inquest is concerned was subject to Rule 108 of the Australian Road Rules. This meant that Mr Venning was obliged to drive the semi-trailer in a gear that was low enough to control its speed without use of the primary brake;

6) From the crest of the hill at Crafers to the entrance to the Heysen Tunnel, Mr Venning was able to maintain the speed of the semi-trailer, which was loaded with six, four tonne potato bins full of potatoes, below the speed limit of 60 kilometres per hour. I find that a significant component in Mr Venning's ability to control speed was his use of the primary brake. His use of the primary brake may have been intermittent at first, but was nevertheless significant and was in contravention of Rule 108;

7) Not far from the exit of the Heysen Tunnel the speed of Mr Venning's semi-trailer had increased to a point where he was forced to overtake a B-Double that was being driven and controlled at a moderate speed. Thereafter Mr Venning's semi-trailer dramatically increased in speed. At a point shortly before the second safety ramp, the vehicle was travelling in excess of 100 kilometres per hour. From that point the speed of the semi-trailer continued to increase until it reached a maximum velocity of over 140 kilometres per hour which was the approximate speed at which it overturned and crashed;

8) It is not known at precisely what point along the journey from the crest of the hill that the semi-trailer was placed into neutral. As to the reason for the vehicle being in neutral, an election on Mr Venning's part to allow the vehicle to coast in neutral while endeavouring to control its speed with the footbrake seems to be the least likely explanation. There are other possibilities including that Mr Venning selected too high a gear in the first instance, perhaps believing that he could negotiate the descent at the speed limit of 60 kilometres per hour, and found that the gear he had selected was incapable of controlling the vehicle. I

believe this to be the most likely scenario. In an endeavour to select a lower gear, Mr Venning took the semi-trailer out of the gear that he had selected and, due to the increase in speed of the vehicle, was unable to select a lower and appropriate gear. Thus the vehicle remained in neutral for the remainder of the descent. As evidenced by damage to the gearbox and the clutch, I find that Mr Venning continued unsuccessfully to attempt to select a low gear. His lack of success meant that the prime mover was at all material times in neutral. This meant that engine braking was unavailable and it also meant that Mr Venning was wholly reliant on the primary footbrake in an effort to control the speed of the vehicle;

9) Ultimately, due to constant and excessive use of the primary footbrake, the brakes on both the driving axles of the prime mover and those brakes that were in adequate adjustment on the trailer failed due to the generation of excessive heat within the brake componentry;

10) It is not known whether, when Mr Venning realised that he was unable to control the speed of the semi-trailer by use of the gearbox, he attempted to stop the vehicle by heavy braking or chose to allow the vehicle to continue believing or hoping that he could control its speed by use of the primary footbrake. I think it more likely that Mr Venning believed that he would be able to maintain control over the speed of the semi-trailer by use of the primary footbrake, all the while still unsuccessfully endeavouring to select a lower gear. If Mr Venning had endeavoured to bring the semi-trailer to a halt at the time he realised that he was in too high a gear, the braking capabilities of the rig as a whole may have enabled him to do that, or at least have enabled a reduction of the speed of the vehicle to a point where he could have selected a low gear. It is not known why he did not, or could not, adopt that strategy;

11) Mr Venning did not utilise either of the two safety ramps that were available to him. It may be that he did not use the first safety ramp because at that point he believed that he would be able to maintain control over the speed of the vehicle. The same reasoning cannot apply in relation to his failure to use the second safety ramp. At the time Mr Venning passed the second safety ramp the semi-trailer was travelling in excess of 100 kilometres per hour in a 60 kilometres per hour zone for that type of vehicle. Mr Venning must have realised at that point,

and I find that he did so realise, that he would not be able to maintain control of the speed of the vehicle. It is not known why Mr Venning did not use the safety ramp. Mr Venning was travelling in the inside of three lanes when he passed the second safety ramp. The possibility that Mr Venning did not realise that he was in the vicinity of a safety ramp has not been eliminated as an explanation. I think it is unlikely that Mr Venning was completely unaware of its existence. It is possible that he did not know exactly where it was situated relative to his vehicle. There is no evidence that would support the notion that Mr Venning consciously elected not to use the second safety ramp. If Mr Venning had used the second safety ramp, it is highly likely that he would have survived;

12) The Inquest has not discovered any evidence that Mr Venning would have been deterred by his employer from using a safety ramp on grounds of cost of removal or on other grounds;

13) I find that this was the first journey undertaken by Mr Venning along the South-Eastern Freeway in a heavy vehicle of this kind. Mr Venning's driving behaviour along this stretch of the South-Eastern Freeway is possibly explained by inexperience and a lack of knowledge as to how the South-Eastern Freeway should be negotiated in a fully loaded heavy vehicle. The possibility that Mr Venning was fatigued has also not been eliminated;

14) There is no evidence that Mr Venning considered himself to be under pressure from his employer, the Mitolo Group, to deliver the load that his vehicle was carrying;

15) I find that there was no fault associated with the gearbox that in anyway contributed to this incident;

16) I find that there was no other mechanical fault within the prime mover that contributed to this incident;

17) The trailer of the rig possessed six air brakes. It was fitted with three axles, with two air brakes fitted to each wheel of each axle. I have found that the two brakes on the rear axle were not properly adjusted, were worn and contributed little or no effective braking. I find that the front right brake of the trailer was properly adjusted, had sufficient brake linings and was working effectively. I

find that the centre left brake was working effectively to a degree, but that the extent to which it was working is unquantifiable. I make a similar finding in relation to the centre right brake. In any event, it is clear in my view that neither centre brake could have been operating as it should. I have been unable to make any finding in relation to the effectiveness of the front left brake. To my mind the inconsistency in the effectiveness of the six individual brakes of the trailer is a reflection of the variation of brake lining thickness in respect of the individual brakes and is a product of poor adjustment, lack of proper maintenance and a lack of adequate preparation having regard to the task that the trailer had to perform on the occasion in question. That any of the brakes of the trailer were in proper adjustment and were operating to a degree of effectiveness was in my view more due to happenstance than to proper maintenance;

18) It is clear and I find that the brakes of the semi-trailer were incapable of controlling its speed during its descent on the freeway. Ultimately they failed. I am satisfied that at least from the exit of the Heysen Tunnel, due to the neutrality of the gearbox, the primary brake was the only means available to Mr Venning to control the speed of the vehicle. It is not possible to conclude with certainty whether properly adjusted brakes with adequate brake linings would have been capable of controlling the speed of the semi-trailer, either to have enabled it to stop at the traffic lights at the bottom of the freeway or to have restricted the speed of the semi-trailer to a speed that may have enabled Mr Venning to negotiate the intersection safely without overturning or striking another object. I find that the brakes fitted to the semi-trailer driven by Mr Venning would have failed more rapidly than properly adjusted and well-maintained brakes being operated under similar circumstances. That finding is in accordance with Mr Hall's opinion[114]. This being so, it would follow that if properly adjusted and well-maintained brakes would have failed before Mr Venning reached the intersection at Cross Road, they would have done so at a later point in time or, put in another way, further along Mr Venning's journey down the freeway, than the brakes on this trailer. Although it cannot be said where, if at all, Mr Venning's brakes would have failed if they had been properly adjusted and well-maintained, I infer that the velocity at which Mr Venning's semi-trailer was forced to attempt to negotiate a left hand turn from

[114] Exhibit C32, page 19, paragraph 8.3

Mount Barker Road into Cross Road would have been less if the brakes on the trailer had been properly adjusted and well-maintained. Mr Hall has reached the same conclusion[115]. In that event, the question as to whether Mr Venning might have been able to control the semi-trailer's direction of travel without it overturning is a relevant question. The Court has been unable to reach any definitive answer to that question except to say that heavy vehicles that are driven down the South-Eastern Freeway quite clearly will have a greater chance of avoiding catastrophic consequences of brake failure if the brakes to begin with are properly adjusted and well-maintained.

19) I find that the condition of the trailer brakes when inspected following the accident reflects the condition that they were in when Mr Venning began his journey to Virginia on 16 January 2014. In particular, I have found that the condition and thickness of the brake linings before he commenced those journeys was substantially the same as noted by Mr McDonald and by Mr Hall after the accident. I accept that Mr Redden conducted a tug/skid test in relation to the brakes on or about 16 January 2014, but I am not satisfied that it was an adequate test having regard to its brevity, the fact that it was unobserved by an independent individual and that the test was conducted in respect of an unloaded trailer on dirt. I was not persuaded that the performance of the brakes in such a test could replicate their expected performance in an emergency situation on the freeway descent. In any event I find that the braking system of the semi-trailer as a whole was not in a state of proper adjustment before Mr Venning set off on his first journey on 16 January 2014, and in particular I find that the brake linings on four of those brakes were inadequate and in need of replacement. It is not known whether Mr Venning himself conducted any tug test in respect of the loaded semi-trailer, either before commencing the journey on 16 January 2014 or before the fatal journey;

20) I find that an inspection of the trailer brakes should have taken place before Mr Venning was asked to drive the semi-trailer to Virginia on 16 January 2014 and certainly before he set out on his fatal journey down the South-Eastern Freeway on 17 January 2014. If such an inspection had taken place, I find either that the

[115] Exhibit C32, page 20, paragraph 8.7

trailer should not have been utilised for those purposes or that the brakes should have been repaired prior to the undertaking of any such journey;

21) I am uncertain whether Mr Phelps told the Court the complete truth when he testified that he adjusted the brakes on an occasion in mid 2013 and that the brake linings were adequate and not in need of immediate replacement.

10. Recommendations

10.1. Pursuant to Section 25(2) of the Coroners Act 2003 I am empowered to make recommendations that in the opinion of the Court might prevent, or reduce the likelihood of, a recurrence of an event similar to the event that was the subject of the Inquest.

10.2. The Court prefaces what follows by stating that the message that the Venning and Posnakidis matters has sent is that heavy vehicle driver competence and proper heavy vehicle roadworthiness and maintenance, insofar as they have an impact on safety on the South-Eastern Freeway, cannot be assumed. Thus changes designed to improve safety on the freeway will need to address those matters.

10.3. Since the events with which this Inquest is concerned a number of measures have been proposed, and in some cases implemented, to prevent or minimise the risk of an event such as this from reoccurring. I would observe that much of what has been proposed or implemented has been stimulated by a further incident that occurred in August 2014 and which involved the deaths of two individuals when another heavy vehicle crashed at the bottom of the freeway. This Court has commenced an Inquest into the cause and circumstances of the deaths of those two individuals. Preliminary findings and recommendations were delivered by the Court on 22 August 2014. The Inquest into that matter is ongoing.

10.4. I will come to what has been proposed in a moment, but it is as well to record here that since the incident in August 2014, changes designed to improve safety on the freeway have included the following:

- All heavy vehicles with a gross vehicle mass of 4.5 tonnes or over, regardless of the number of axles, are subject to a 60 kilometres per hour speed limit on the down track of the South-Eastern Freeway. This has also involved the reduction of

the speed limit for light vehicles from 100 kilometres per hour to 90 kilometres per hour. It also involves an obligation that all heavy vehicles remain in the left lane from the Crafers Interchange to the vicinity of the Measdays Bridge;

- A Government publication entitled 'The Right Gear' has been updated. The document outlines the requirement for drivers of heavy vehicles to adhere to Rule 108 of the Australian Road Rules insofar as it applies to the down track of the South-Eastern Freeway. This document has been distributed to various industry stakeholders, including the South Australian Road Transport Association, with a view to reminding transport operators and drivers of this legal obligation. The document has also been distributed to drivers in the Monteith heavy vehicle checking station during operations conducted there since 1 September 2014;

- The portion of the down track of the South-Eastern Freeway to which Rule 108 applies has been extended[116];

- New signage and road markings that emphasise the Rule 108 obligation have been implemented. The new signage includes the renaming of arrester beds to safety ramps. The signage is also said to involve the transmission of information about the position of safety ramps;

- A national information campaign using road authorities and peak industry organisations to promote adherence to Rule 108 has been implemented;

- The distribution of a new brochure to South Australian licensed heavy vehicle and bus drivers in relation to the requirement to use low gear on the freeway descent has occurred;

- There has been vegetation removal from around safety ramps for improved line of sight for drivers;

- There has been an announcement that the Government will meet the cost of heavy vehicle removal from safety ramps after emergency use;

- The Heavy Vehicle Licensed Drivers Handbook will include a section on Rule 108 of the Australian Road Rules in respect of driving on very long steep descents has been updated;

[116] Ministerial Statement of the Honourable Stephen Mullighan, Minister for Transport and Infrastructure, Exhibit C45

- Registered Training Organisations will amend heavy vehicle driver training packages to include more information on Rule 108 of the Australian Road Rules concerning downhill driving, the use of brakes and the use of safety ramps.

10.5. There are a number of other measures that are still under consideration. On 10 October 2014 an industry stakeholder workshop in respect of road safety on the South-Eastern Freeway was conducted. A document was promulgated for the purpose of this workshop[117]. The document listed 22 potential safety measures as topics for discussion. The document is appended to these findings as Annexure A. Following this workshop a number of the 22 measures were prioritised. For the purposes of a community information session to have been held on 25 October 2014, ten further publications were promulgated by the Department of Planning, Transport and Infrastructure explaining each of the top 10 priorities. The top 10 priorities, in descending order of priority, are as follows:

- Education campaign;
- Speed limit reduction;
- Improve signage;
- Promote safety ramp use and bust myths;
- Tollgate intersection upgrade;
- In-depth investigation to understand the decision making of heavy vehicle drivers;
- Cover removal costs from safety ramp;
- Introduce formal 'Maintenance / Road Worthiness' components of heavy vehicle chain;
- Third safety ramp;
- Annual heavy vehicle inspections as part of registration.

10.6. During the evidence given in the Inquest there was considerable discussion and debate concerning the 22 options for discussion as well as other possible measures. I heard from a number of industry representatives including Mr Steven Shearer, Executive Director of the South Australian Road Transport Association, Mr Charles Mountain, Senior Manager Road Safety, Royal Automobile Association and Mr Andrew Excell, Regional Manager of the Metropolitan Traffic and Road Operations Group, DPTI. I also heard from Mr Nigel Ielassi, who is a truck driver and partner in the transport

[117] Exhibit C38

company, Ielassi Carriers, who was in a sense randomly selected to assist the Court in relation to heavy vehicle driving practices but who was identified by virtue of the fact that he is a licensed HC driver who provided a demonstration to the Road Safety Minister Mr Tony Piccolo in respect of the manner in which a semi-trailer should be driven down the freeway.

10.7. The evidence of those individuals has enabled the Court to identify a matter that is of importance. A number of those individuals are of the view that there is a need for heavy vehicle drivers who use the South-Eastern Freeway to be subject to a high level of personal accountability. Mr Shearer told the Court that annually some 638,000 journeys of heavy vehicles are conducted down the freeway with what can be described as a 99.999% success rate. However, the very few adverse incidents can and do have catastrophic consequences. The Venning, Posnakidis matters and the incident in August 2014 are obvious cases in point. Mr Shearer believes that it is not the road that is the problem in these small number of cases, but that the difficulty lies in the driver behaviour that is involved in them. He suggested that a small percentage of drivers, for whatever reason, have a lack of awareness and even that some are foolhardy[118]. Mr Shearer cited an inability to select the appropriate gear by which to descend the freeway and decisions not to use a safety ramp in an obvious emergency as examples of errors that can have catastrophic consequences. It is for that reason that he strongly advocated that an investigation be conducted into why such errors are made. I note that such an investigation is one of the measures that the Government has initiated. It will be undertaken by the Centre for Automotive Safety Research (CASR) at the University of Adelaide. Mr Shearer made the point very strongly that '*we need to stop this handful who don't know what they're doing*'[119]. I do not believe that Mr Shearer said this disparagingly, but it is a fact that inexperience, driver insouciance and a lack of knowledge of the road can be a deadly combination. Mr Ielassi who has been a partner in a family transport business for 28 years, and who is a semi-trailer driver himself, told the Court that in his view the core difficulty lies in a lack of proper driving education and that there is a need to ensure that:

> '… drivers become more accountable for what they are doing and educating them in a way that they take more ownership and get their truck down to a speed that they can manage the hill correctly. ' [120]

[118] Transcript, page 1289
[119] Transcript, page 1293
[120] Transcript, page 1432

He stated that in his opinion drivers who utilise the South-Eastern Freeway need to:

> '… start taking more responsibility in and knowing and understanding the vehicle that they are in, its weight, how it operates and be less, if I could say - use the word 'gung-ho' about it. Go about it sensibly and correctly.' [121]

The Court finds itself in complete agreement with what both Mr Shearer and Mr Ielassi stated with regard to driver accountability. To my mind the importance of this issue has been somewhat lost in the overall discussion. It can only be the driver who makes the decision at the top of the hill to send the truck down the hill, who has to decide what gear the truck needs to be in to negotiate the hill safely and it is the only the driver who in an emergency can make the decision to utilise a safety ramp or not. Driver education and competency assessment should be sufficiently rigorous such that when a driver of a heavy vehicle is detected driving in a dangerous manner at the foot of the freeway, he or she should never again be heard to say by way of excuse, '*I missed a gear shift*' or '*my brakes failed*' or '*I didn't know what the road was like*' or '*I didn't know about safety ramps*' or '*I didn't use the safety ramp because I thought I could bring the truck under control*'.

10.8. Both Mr Shearer and Mr Ielassi discussed the difficulties associated with novice drivers. Mr Shearer posed the situation of the novice driver descending the freeway in a heavy vehicle believing that they would be able to rescue the situation by reference to the misleading appearance that the road levels out when in fact it does not. This difficulty might be compounded where the inexperienced driver perceives employer pressure and for that reason becomes less inclined to use a safety ramp. Mr Shearer believes that first time solo drivers of a heavy vehicle down the freeway would not be an uncommon circumstance. Mr Shearer agreed that this is not a desirable circumstance even if the driver has received a briefing beforehand. He believes that most people would regard this as undesirable[122], and Mr Venning's circumstances would appear to exemplify what Mr Shearer is contemplating. In this regard Mr Shearer told the Court that his organisation has been attempting to secure funding at Federal and State level for a '*buddy system*' of training where an experienced driver could accompany a trainee driver, or even an inexperienced but licensed driver, while the novice makes their first descent on the freeway. Mr Shearer suspects that of the 638,000 journeys that take place per year, there would be tens of

[121] Transcript, page 1438
[122] Transcript, pages 1336-1337

thousands conducted where there has not been any prior supervisory presence in respect of the driver. Mr Ielassi also spoke of first time drivers. He said:

> 'For a first timer, it could be sheer hell to come over the top of that hill and really not know what to do, and that is a scary thing …' [123]

Mr Ielassi regards the expectation upon a driver to negotiate the freeway in a fully loaded semi-trailer for the first time on their own and without supervision as creating an undesirable set of circumstances. He believes that an employer has an obligation to make drivers aware of the difficulties involved and that drivers themselves need to have their own awareness and understanding of the undertaking[124]. Mr Ielassi believes that heavy vehicle driver training should involve more descent training, where the training includes multiple descents on the freeway. This should be undertaken in order to engender positive habits and to provide drivers with greater familiarity as to how the road feels. Mr Ielassi believes that such a regime of training and supervision should occur before a driver of a heavy vehicle obtains their licence.

10.9. In this context it will be remembered that even though Mr Venning had held an HC licence for a number of years and, as well, an MC licence for approximately 18 months, his first negotiation of the South-Eastern Freeway in a heavy vehicle was a fatal one for him. I also point out that the driver involved in the Posnakidis matter was also inexperienced. It was his third journey down that stretch of the freeway and the evidence suggested that one of his previous journeys may not have been an uncomplicated one in terms of the use of the primary brake. In both cases, neither the driver in Mr Posnakidis' case nor Mr Venning had ever negotiated the down stretch of the South-Eastern Freeway with another more experienced driver actually in the vehicle. In the Court's opinion there is an obvious need for a regime of training and licensing that will prevent a first time solo driver from driving a heavy vehicle on the South-Eastern Freeway descent. This is so regardless of the origin of the driver and where that driver has been trained, and is so regardless of the nature of any descent training that a driver may have received in other places.

10.10. I will now deal with some other possible measures that were discussed in the evidence. There is a proposal that the speed limit for the descent on the South-Eastern Freeway be set at 40 kilometres per hour for all heavy vehicles that have a GVM in

[123] Transcript, page 1432
[124] Transcript, page 1441

excess of 4.5 tonnes. The current speed limit for all such vehicles is 60 kilometres per hour. The proposal for a reduction of the speed limit has widespread support including within the transport industry itself. Mr Ielassi, though, expressed some reservations based on his belief that some heavy vehicles, particularly those that are unladen, can safely negotiate the South-Eastern Freeway at a speed of 60 kilometres per hour. However, Mr Ielassi acknowledged that unladen vehicles could still comfortably descend at 40 kilometres per hour in any event. For the Court's part any notion that a heavy vehicle descending the freeway cannot be properly controlled with the use of the gearbox and the exhaust brake at speeds less than 60 kilometres per hour is a most unconvincing one. For the sake of uniformity there should not be any distinction drawn between heavy vehicles that may be fully laden and which would need to descend the freeway at or below 40 kilometres per hour, and those that are unladen and could safely do so at a higher speed.

10.11. There is a strong argument in favour of reducing the speed limit for all heavy vehicles, laden or unladen, to 40 kilometres per hour. Fully laden semi-trailers and B-Doubles are usually driven in a gear that limits their speeds, without use of the primary brake, to figures even less 40 kilometres per hour. A speed limit of 40 kilometres per hour would tend to dispel any false belief, particularly in the minds of inexperienced drivers, that a laden heavy vehicle such as a semi-trailer or B-Double can safely negotiate the descent at a speed of 60 kilometres per hour when the reality may well be that the gear that would be required to maintain a vehicle at that speed would be too high such that the primary brake would need to be used. It makes perfect sense that a reduced speed limit would mitigate the risk of poor gear selection and the consequent excessive use of the primary brake leading to brake failure.

10.12. The proposal has very broad industry support. Mr Shearer supports it as does Mr Charles Mountain who is the Senior Manager Road Safety at the Royal Automobile Association. The measure is also supported by SAPOL. The statement of Superintendent Robert Fauser[125] refers to the broad industry support for the proposal and he also refers to a view held in SAPOL that it would contribute to the South-Eastern Freeway being safer for all road users. On behalf of SAPOL he expresses the belief that limiting the speed to 40 kilometres per hour for heavy vehicles is likely to effectively mitigate the risk of heavy vehicle crashes along the entire descent.

[125] Exhibit C46

10.13. Mr Excell, on behalf of DPTI, told the Court that any further reduction of the speed limit for heavy vehicles along the freeway would probably involve a necessary reduction of the speed limit for light vehicles to 80 kilometres per hour from the current limit of 90 kilometres per hour. In this context Mr Excell referred to the possibility that at busy times a reduction of the speed limits for heavy vehicles as well as for light vehicles might involve undue bunching and congestion. Moreover, the reduction of the speed limit for light vehicles from 90 kilometres per hour to 80 kilometres per hour might not find favour with the general public. He believes that there is a need for community engagement regarding the issue as well as for computer modelling to identify the effects on congestion. However, it will be observed that lowering the speed limit from 90 kilometres per hour to 80 kilometres per hour over an 8 kilometre journey would add only 42 seconds to that journey. Therefore, objections to the lowering of the general speed limit based purely upon inconvenience grounds would have to be regarded as irrational. As to the question of possible congestion at busy times, and effect on traffic flow generally, matters that are said to require investigation by computer modelling, it is difficult to determine what the objection could be to imposing a 40 kilometres per hour / 80 kilometres per hour regime on a trial basis.

10.14. I turn now to the question of a third safety ramp. I understand from Mr Excell that at this time the Government has not decided what it will ultimately do in terms of a third safety ramp. The idea has not found universal favour, based upon two broad considerations. Firstly, there is an issue as to whether or not the placement of the third safety ramp in the vicinity of the intersection, or in the vicinity of the toll gate, is feasible. Secondly, as illustrated in the statement of Superintendent Fauser on behalf of SAPOL, at busy times there would be difficulties generated by the build-up of traffic on the approach. This would be particularly so in the morning. It will be remembered that Mr Posnakidis was killed at the then bus stop near the toll gate when the semi-trailer that killed him was steered off the road to avoid the build-up of morning traffic in its path.

10.15. Mr Shearer told the Court that his organisation was very strongly in favour of the creation of a third safety ramp closer to the intersection. His organisation's proposal is that a third safety ramp be situated at the foot of the freeway at a point close to the intersection and that it be placed between the outside lane for traffic heading towards

the intersection and the inside lane for traffic heading towards the intersection. This idea is to be distinguished from the placement of a third safety ramp within the wide medium strip in the vicinity of the toll gate. I am not certain how Superintendent Fauser's concerns about the build-up of traffic already would be addressed in either of these scenarios. It is not difficult to imagine traffic congestion preventing an out of control heavy vehicle from accessing the entrance to a third safety ramp situated near the intersection. It occurs to the Court that a safety ramp could only feasibly be placed near the intersection if, situated some considerable distance prior to its entrance, there was a lane leading to the safety ramp that was wholly dedicated to the use of uncontrolled heavy vehicles and from which the passage of other vehicles was at all times excluded. It also occurs to the Court that the entrance to such a dedicated lane might well have to be situated within the vicinity of the existing second safety ramp in any event. Another question needs to be posed and it is, why would a driver whose vehicle is out of control at the time he passes the available second safety ramp choose to bypass that safety ramp and elect to use the third ramp? There is possibly one other observation that needs to be made in regards to a third safety ramp situated near the intersection. It would be unfortunate if the driver of an out of control heavy vehicle elected not to use the existing second safety ramp, perhaps believing that he can still bring the vehicle under control or believing that he should and can use the safety ramp of last resort, only to find that the entrance to that safety ramp of last resort was blocked by a build-up of traffic.

10.16. A third safety ramp would be of obvious benefit if the second safety ramp was already occupied. It would also be of benefit to the driver who loses control of the vehicle at a time after he or she has already passed the second safety ramp. These are all matters that would obviously have to be taken into consideration in respect of the implementation of the third safety ramp.

10.17. Mr Ielassi suggested that if there was to be a third safety ramp it could be situated at a location between the exit of the tunnel and the existing second safety ramp. There is an area not far from the exit of the tunnel which would accommodate a second safety ramp. The question as to whether or not the down slope at that point would make a safety ramp unduly long would need to be considered.

10.18. In his statement Superintendent Fauser discusses re-engineering a section of the freeway to create a sharp turn with a safety ramp at the apex of the curve so that the

driver of an out of control heavy vehicle would have no choice but to enter the safety ramp. In this context Superintendent Fauser refers to the stress under which a driver would be operating in such an emergency whereby the driver's vision might be reduced to a very narrow and short field such that he does not see the entrance to the safety ramp or its relevant signage. As I understand Superintendent Fauser's idea, it is that the momentum of the heavy vehicle would inevitably cause it to enter the safety ramp without conscious input by the driver. The alternative scenario, which would be highly undesirable, would be the driver not appreciating that there is an entrance to a safety ramp and endeavouring to negotiate the sharp turn, doing so catastrophically. At the moment, the second safety ramp that is already in existence has an entrance that is, at least during the day, now well identified in terms of location, is not difficult to negotiate and does not involve any extraordinary manoeuvre on the part of a driver. In fact a driver is able to drive straight into the entrance of the safety ramp.

10.19. In the absence of a third safety ramp, one matter that would need to be clearly understood by heavy vehicle drivers negotiating the South-Eastern Freeway is that a failure to use the existing second safety ramp will mean that there is no further opportunity to bring the speed of the vehicle under control. There is a need to debunk any idea that having passed the second safety ramp there will be further means to stop the vehicle other than the catastrophic. If drivers were to understand this in advance, it may serve to refocus their efforts not so much on steering the course of an out of control vehicle all the way down the hill, but on identifying the location of and then using the second safety ramp. Again, this is a matter of education and experience. Finally in relation to the use of safety ramps, I observe that from the DPTI document promulgated after the industry stakeholder workshop, namely 'Option 4: Promote arrester bed use and bust myths'[126], that the myths that would require busting would include the notion that safety ramps present undue danger to the driver of a heavy vehicle (this is a matter that Mr Shearer spoke strongly about) and the notion that a heavy vehicle will inevitably be irreparably or expensively damaged. In this regard, drivers would need to be reminded that the alternative to not using a safety ramp is far less attractive than the use of one.

[126] Exhibit C38a

10.20. There have been other proposals that involve the mandatory stopping of a heavy vehicle before the descent is encountered. Mr Shearer gave evidence that he believed that this proposal has an intrinsic difficulty in that once the journey is recommenced and the descent is encountered, the same errors in gear selection and overuse of the primary brake would still arise in some cases. He does not believe that stopping the vehicle at the top of the hill before the descent would change driver behaviour. The other possible objection to this proposal is the lack of an existing area where this could take place and the inevitable congestion caused by heavy vehicles stopping in the one location. During the course of the Inquest I observed a different proposal that was put to a number of the witnesses who gave evidence. It involves the mandatory stopping of all heavy vehicles at a location between the exit of the Heysen Tunnel and the second safety ramp whereby if a vehicle is incapable of stopping at that location, the driver would then as a matter of law be obliged to use the second safety ramp. Naturally such a regime would have to be properly communicated to and be understood by the industry. There appears to be some merit in this proposal. In both the Posnakidis and Venning matters it is clear that when both semi-trailers exited the Heysen Tunnel their speeds could not be controlled by their drivers. Thus, neither driver would have been able to stop at a mandatory stopping point between the exit of the tunnel and the second safety ramp. This inability would have been all too apparent to the drivers. If the driver on the other hand knew that he was obliged to use the second safety ramp, and the second safety ramp was available, it would seem to be more likely than not that the second safety ramp would be so used. The objection to such a measure would be based upon the need to identify a suitable location for a mandatory stopping point and what some have said would be the inevitable build-up of a heavy vehicle presence at that location. In any event, it seems to be an idea that is worth considering.

10.21. Finally, and perhaps most importantly, there is the question of heavy vehicle maintenance. Mr Shearer told the Court that his organisation has identified this issue as one that requires immediate addressing. He said '*it can't happen soon enough for us*'[127]. He believes that the bringing of the issue of maintenance and roadworthiness within the chain of responsibility provisions of the heavy vehicle legislation is a matter that is strongly supported by the Minister for Transport and Infrastructure, Mr Stephen Mullighan. It is to be hoped that this is correct. When asked as to what

[127] Transcript, page 1321

possible objection there could be to bringing the question of heavy vehicle maintenance and roadworthiness within the chain of responsibility regime, Mr Shearer identified a hesitancy in some quarters to do anything until certain Australian design rules have been rewritten. As well, he told the Court that at one point the issue was not seen by Governments as a significant one and cited as an example a belief on the part of police that roadworthiness issues contributed only marginally to the cause of heavy vehicle accidents. On the other hand, it will be remembered that Mr Hall stated, and I have so found, that the brakes fitted to the semi-trailer driven by Mr Venning would have failed more rapidly than properly adjusted and well-maintained brakes being operated under similar circumstances and that a well-braked semi-trailer would have reached the intersection with Cross Road at a lower speed than that driven by Mr Venning. So trailer maintenance and roadworthiness is quite clearly a relevant issue that needs to be addressed at least insofar as safety on the South-Eastern Freeway is concerned. As to any assertion that police have exhibited a lukewarm attitude to the issue, I refer to the statement of Superintendent Fauser who states on behalf of SAPOL that inclusion of heavy vehicle maintenance within the chain of responsibility regime in the Heavy Vehicle National Law (South Australia) Act 2013 should be strongly supported and that it is clear from the consultation process that this also has broad support by the heavy vehicle industry itself[128].

10.22. There does not appear to be a sensible objection to this proposal. The currently existing voluntary regime under the National Law has an inconsequential deterrent effect against poor maintenance. The Court does not know of any inspection regime or other type of auditing that existed in relation to Mr Venning's trailer, nor of that driven by the driver in the Posnakidis matter. Mr Venning's trailer was simply left in a shed for long periods of time and ultimately deteriorated to a point where the brake linings on most of the brakes became thin and in need of replacement. It appears that Mitolo for whatever reason, be it lack of use or otherwise, elected not to bring the Pinnaroo trailers within the National Heavy Vehicle Accreditation Scheme. Furthermore, the trailer in question does not appear to have been examined by any outside entity such as an independent mechanic. This is to be contrasted with what some might say is industry best practice exhibited by Mr Ielassi's firm whereby any brake lining replacement or brake adjustment is conducted by an outside qualified entity, and in respect of which proper records are maintained.

[128] Exhibit C46, paragraph 22

10.23. Closely associated with the question of heavy vehicle maintenance and roadworthiness is the need for annual heavy vehicle inspection as part of registration requirements. This practice might only be enforceable in respect of South Australian registered vehicles, but if a requirement was imposed in respect of vehicles registered in other States to the effect that before they are driven on the South-Eastern Freeway they must identify compliance with the most recent inspection and registration regime in the State of registration, then the jurisdictional difficulty might be obviated. Clearly, in any event, annual vehicle inspection is better than no inspection. Annual inspections could also be augmented by the random inspections that take place at the hands of police from time to time.

10.24. Other measures were discussed in the evidence taken at the Inquest. They included a proposal that an alternative route be sought for heavy vehicles. Such a proposal would need to take into consideration that according to the evidence of Mr Shearer much of the heavy vehicle traffic on the freeway is local traffic that would be inappropriately diverted to another more remote and unsuitable route.

10.25. I refer to the preliminary recommendations that the Court has made in respect of the Posnakidis matter. I repeat below those recommendations here with the modifications that I have made within the Posnakidis finding.

10.26. The Court makes the following <u>recommendations</u> that are directed to the Minister for Transport and Infrastructure, the Minister for Road Safety and the Attorney-General.

1) That the penalties for contraventions of Rule 108 of the Australian Road Rules, as they apply to South Australia, be increased to include possible imprisonment for such contraventions. I add that in the Court's opinion contraventions of Rule 108, at least insofar as they are committed and detected in respect of the descent on the South-Eastern Freeway, should not be the subject of expiation pursuant to the Expiation of Offences Act 1996. In addition, a period of driver's licence disqualification in respect of such contraventions should be the norm, as distinct from simply involving the attraction of three demerit points;

2) That the necessary legislation be introduced to the effect that a driver of a heavy vehicle that exceeds a speed limit of 60 kilometres per hour between the commencement of that zone and the down stretch of the freeway to the traffic lights at the intersection of Mount Barker Road/Cross Road/Glen Osmond

Road/Portrush Road, and beyond, shall be deemed conclusively, as a matter of law, to have been driving in a manner dangerous to the public, for the purposes of a charge of driving in a manner dangerous to the public, causing death by such driving or causing serious bodily injury by such driving, regardless of the reason for that manner of driving. The conclusive deeming provision that the Court envisages might appropriately arise in cases where the driver in question has had, but has failed to utilise, an opportunity to stop an uncontrolled heavy vehicle by use of a safety ramp;

3) That initiatives be undertaken to enable the compulsory third party bodily injury insurer of a heavy vehicle to recover the amount of compensation paid in respect of death or bodily injury as a result of negligent driving on the section of the South-Eastern Freeway to which these findings relate, from the driver of the heavy vehicle involved; the registered owner of such vehicle, be it a corporation or real person; the actual owner of such vehicle, the operator of the business to which the vehicle relates; or other person in the chain of responsibility in respect of the use of that vehicle, such persons to be jointly and severally liable in respect of that recovery. Such recovery should be enabled in circumstances where the death or personal injury could have been prevented by the use of either arrester bed along the South-Eastern Freeway. It is to be acknowledged that there may be difficulty in enforcing such a measure in relation to heavy vehicles that are not registered or insured for third party bodily injury in South Australia. However, it will be observed that the South Australian legislature has an ability to impose whatever conditions it might think fit in relation to the use of heavy vehicles on the South-Eastern Freeway, regardless of the state of origin of those vehicles;

4) That in relation to the necessary training in respect of the acquisition of heavy vehicle licences, that it be a compulsory part of that training for trainee drivers to undergo tuition in respect of the required manner of driving on downhill gradients, including the use of safety ramps;

5) That in relation to the necessary training and assessment in respect of the acquisition of heavy vehicle licences, that it be a mandatory part of training for trainee drivers to undergo specific tuition in relation to the required manner of driving on the descent of the South-Eastern Freeway specifically and to

demonstrate competence in the same. Such competence should include a thorough understanding of and demonstrated ability to comply with the requirements of Rule 108 of the Australian Road Rules. It should also include tuition in respect of the purpose of, locations of and the consequences of not using safety ramps.

6) I recommend that it should no longer be permissible for a driver of a heavy vehicle to negotiate the descent on the South-Eastern Freeway for the first time while not accompanied and supervised by a trained and experienced driver actually in the vehicle. This prohibition should apply in respect of drivers regardless of State of origin or of the jurisdiction in which their heavy vehicle licence is issued. The accompanying driver should be a driver who has demonstrated experience and competence in negotiating that descent. The accompanying driver should have knowledge of the location of safety ramps and should draw the attention of the driver to the location of and the purpose of the same.

7) I recommend that no heavy vehicle licence of any kind should be issued to any person unless that person has demonstrated competence in the safe negotiation of the descent on the South-Eastern Freeway and has done so in the presence of, under the supervision of and to the satisfaction of a trained instructor who also has experience and demonstrated competence in relation to the safe negotiation of the freeway. These requirements should apply not only to licensing regimes in South Australia, but should be a requirement that is also imposed on interstate drivers. An interstate driver should be required to possess a certificate of demonstrated competence in respect of the ability to perform a safe descent of the South-Eastern Freeway including the ability to comply with Rule 108 of the Australian Road Rules. Drivers should be obliged to maintain a log in respect of all descents performed in relation to the South-Eastern Freeway. The log should at all times be located in the vehicle driven by the driver.

8) I recommend the implementation of the measures described as Option 1) through to Option 10) as identified in the documentation raised for the purposes of discussion at the community information session of 25 October 2014, those options being the 10 prioritised at the industry stakeholder workshop on 10 October 2014. I acknowledge that some of those measures have already been

implemented including aspects of an education campaign directed towards compliance with Rule 108 of the Australian Road Rules, improved signage, the indication that Government will cover the cost of removing a heavy vehicle from a safety ramp and the implementation of the CASR investigation. In respect of 'Option 9: Third arrester bed', I recommend that further consideration be given to the feasibility and desirability of a third safety ramp taking into account the matters that I have identified above;

9) I recommend in respect of 'Option 1: Education Campaign', that specific attention should be drawn to what in the Court's view should be the norm in respect of any contravention of Rule 108 of the Australian Road Rules, namely prosecution and disqualification from holding or obtaining a driver's licence;

10) I recommend in respect of the implementation of 'Option 2: Speed limit reduction' that the speed limit for heavy vehicles be reduced to 40 kilometres per hour on the descent of the South-Eastern Freeway and that the speed limit for light vehicles be reduced to 80 kilometres per hour for that section of road and that this be introduced immediately on a trial basis;

11) I recommend in relation to 'Option 3: Improved signage' that the words 'heavy penalties apply' be added to signage that trucks and buses must use low gear;

12) I recommend in respect of 'Option 4: Promote arrester bed use and bust myths' that drivers of heavy vehicles be advised that if the second safety ramp is not utilised there is no chance of recovery of the control of a vehicle, that the use of a safety ramp does not involve undue risk of injury to the driver but that in any event the alternative to not using the safety ramp when it needs to be used will involve much more dire consequences. It should be made clear to drivers of heavy vehicles that the incentives to using a safety ramp overwhelmingly outweigh the disincentives;

13) I recommend that roadworthiness and maintenance be brought within the chain of responsibility regime within the Heavy Vehicle National Law (South Australia) Act 2013 and that this be undertaken on a national basis as a matter of priority.

14) I recommend that all heavy vehicles be the subject of a periodic and frequent inspection regime. Such an inspection should include but not be limited to inspection as a prerequisite for registration.

15) I recommend that further consideration be given to the implementation of those options for discussion as identified in the document South-Eastern Freeway Industry Stakeholder Workshop, 10 October 2014 that were not prioritised 1) to 10).

16) I recommend that an investigation be undertaken as to the feasibility of installing technology that was capable of detecting the speed of a heavy vehicle and which would incorporate signage warning the driver that his or her speed is excessive and that directs the driver to utilise a safety ramp.

17) I recommend that consideration be given to the creation of an area situated between the Heysen Tunnels and the second arrester bed to be used for the mandatory stopping of all heavy vehicles with a further requirement that if the vehicle is incapable of stopping at that area, the driver must use the second safety ramp.

Key Words: Heavy Vehicle; Arrester Beds (Safety Ramps)

In witness whereof the said Coroner has hereunto set and subscribed his hand and Seal the 12th day of January, 2015.

Deputy State Coroner

ANNEXURE A

South Eastern Freeway

Industry Stakeholder Workshop

Short Term Options

OPTION	SHORT TERM OPTIONS	OBJECTIVES OF OPTION	NEXT STEPS & TIMEFRAME
Education and Consultation			
1.	Education campaign on using low gear and not primary brake.	***Education Campaign:*** Provide greater awareness of ARR 108 which states that when this rule applies the driver must drive the truck or bus in a gear that is low enough to limit the speed of the truck or bus without the use of a primary brake.	Industry Stakeholder Workshop (10 October 2014) – test campaign ideas. Advertising Campaign commence in November 2014. Include the Brochure and Sticker in all registration renewal notices for heavy vehicles. Community Engagement (early November 2014).
2.	Promote and communicate use of arrester beds throughout industry, and improve visibility (including an educational video).	***'Using Arrester Beds' Education Campaign:*** Dispel the myths of the costs of the arrester beds use and provide information on how to use them. Improve the visibility of the arrester beds by improving pavement markings at the entrances to promote easy access if required to be used.	Video being developed on how to travel down the freeway and how to use the arrester beds. Seek advice from Industry Stakeholder workshop on best way to communicate this message. Could be implemented in 2 months and should be in conjunction with change in signage and change in safety ramp name.
3.	Improved incident response protocol with industry.	Establish an improved incident response protocol that ensures effective communication and co-operation between the industry and government.	Liaise with industry.

OPTION	SHORT TERM OPTIONS	OBJECTIVES OF OPTION	NEXT STEPS & TIMEFRAME
Infrastructure			
4.	DPTI cover costs of removal from the arrester bed.	This may reduce perceived barriers to using the arrester beds. Option includes the department funding the recovery of heavy vehicles from an arrester bed, and if required, towing to the department's vehicle inspection centre.	Require change in legal delegations.
5.	Change the name of 'Arrester Bed'	Amend existing signs to use an alternative term (such as 'Safety Ramp') rather than arrester bed. There is anecdotal evidence that some road users do not appreciate the purpose of 'Arrester Beds'. 'Arrester Bed' terminology is used in other places in Australia.	Could be implemented in 2 months and should be in conjunction with safety ramp education campaign and change in signage.
6.	Improve signage along South East Freeway and Dukes Highway.	To complement the ***'The Right Gear'*** Education Campaign. Signs for 'Trucks and Buses must use low gear' were improved on 8 October 2014. The steep grade warning between the Union Quarry (arrester bed) and Glen Osmond has been reinforced by new signs.	Could be implemented quickly and should be in conjunction with change in education campaign and change in safety ramp name.
7.	40 km/h for trucks and buses for entire descent to get them into the right gear and left lane for some or all of the descent (& review the speed of light vehicles).	Reduce the current 60 km/h speed limit for trucks and buses to 40 km/h. All trucks and buses must use left lane at least to Measdays (as exists), or for the full descent. Would cause trucks and buses to slow to more appropriate speed and gear prior to decent. An alternative to mandatory stopping lanes prior to the decent.	The potential risks of higher speed differences between cars and trucks needs careful consideration. Need to consider issues with preventing a 40 km/h truck from overtaking a 20 km/h truck (both in their 'right gears').

South Eastern Freeway

Industry Stakeholder Workshop

Medium Term Options

OPTION	MEDIUM TERM OPTIONS	OBJECTIVES OF OPTION	NEXT STEPS & TIMEFRAME
Education and Consultation			
8.	Undertake and then report the findings from the Centre for Automotive Safety Research (CASR) in-depth analysis with HV drivers using the SE Freeway.	To be conducted by CASR to gain insight into why HV drivers are involved on crashes in the SE Freeway.	To commence in October 2014 and findings to be completed within 6-12 months.
Driver Licensing, Education and Training			
9.	Remove the option to obtain a HV licence via Vehicle On Road Test (VORT) method and only use the Competency Based Training (CBT) method.	This will meet the recommendation outlined in the preliminary Coroner's report regarding competency assessment of Australian Road Rule 108.	Further consultation is required with industry. Hills driving is currently a stand alone competency and it is not part of the final assessment for the CBT method; but this could be introduced.
Infrastructure			
10.	Point to point average speed cameras along the SE Freeway descent for trucks and buses.	Upgrade the current two fixed speed camera sites at Crafers and Mount Osmond to Point to Point speed cameras to detect average speed offences for trucks and buses.	These cameras will operate in a similar manner to those on the Dukes Highway. Further scoping and investigations is required.
11.	CB radio break-in message.	Continuously broadcast a message at Crafers on CB radio Channel 40 to remind truck and bus drivers to select a gear low enough so service brakes do not need to be used for the descent.	Consultation with industry required to determine effectiveness of proposal

Options for the purpose of discussion at the SE Freeway Industry Stakeholder Workshop, 10 October 2014.

Government of South Australia
Department of Planning, Transport and Infrastructure

OPTION	MEDIUM TERM OPTIONS	OBJECTIVES OF OPTION	NEXT STEPS & TIMEFRAME
Infrastructure (cont'd)			
12.	All trucks and buses must exit at Crafers, negotiate the roundabout and re-enter the Freeway	Force all trucks and buses to exit at Crafers and slow for the roundabout. The idea is to slow trucks and buses and allow better choice of the right gear for the descent.	Initial modelling shows that the roundabout would need to be enhanced, hence this is a medium term option.
Heavy Vehicle Operation			
13.	Introduce formal "Maintenance/Road worthiness" components of HV Chain of Responsibility (NHVR).	Implementation of roadworthiness into the CoR legislation will make owners, managers and customers provide evidence that reasonable steps to ensure roadworthiness of HVs are being taken. This concept is shown to dramatically improve compliance and it enables enforcement authorities to take tough action in the case of non-compliance.	Roadworthiness is not yet covered under the tough and effective Chain of Responsibility (CoR) laws, unlike fatigue, speed and mass management. The implementation of CoR for roadworthiness is a current significant project of the NTC and NHVR (known as the National Heavy Vehicle Roadworthiness Program). SA will now be represented on the steering committee by Trent Rusby, and on the Technical Working Group by Barry Ioanni. The program intention is to have a full RIS available for consultation from January 2015, and final recommendations and implementation plan by mid 2015.
14.	Introduce a system whereby a heavy vehicle driver must hold a permit to drive down the freeway, if feasible.	Concept is no permit = not able to drive down the SE Freeway descent. This will also meet the recommendation outlined in the preliminary Coroner's report regarding competency assessment of Australian Road Rule 108. To obtain a permit a driver will need to undertake specific training. Permit will be valid for a pre-determined period.	Further scoping and investigations are required. Could link to CoR and WHS legislation whereby the employer is responsible to ensure that the driver is trained, inducted and has a current permit.

OPTION	MEDIUM TERM OPTIONS	OBJECTIVES OF OPTION	NEXT STEPS & TIMEFRAME
15.	Resource continuous operation of Monteith station to provide inspections of all vehicles before the descent into Adelaide.	Be a visual deterrent and enforce vehicle compliance requirements.	Need to establish additional teams and resources.
16.	OnRoad presence of inspections of HVs (in partnership with SAPOL and increased operation of Monteith Station.	Provide a more visible enforcement presence to create a deterrent to non-compliant behaviour. Conduct roadside roadworthiness and compliance checks plus vehicle checking at the Monteith weigh station. To involve SAPOL, specialised vehicle inspectors and on-road transport safety compliance officers.	Find the most effective balance between enforcement and industry self regulation/compliance. Can be targeted or random. *Could be undertaken as a short term measure until other options identified have been implemented.*
17.	Implement annual heavy vehicle inspections as part of annual registration.	Require owners, managers and customers maintain heavy vehicles to ensure roadworthiness. Enables enforcement authorities to take tough action in the case of non-compliance.	The implementation of annual roadworthiness Inspections for heavy vehicles is a current significant project of the NTC and NHVR (known as the National Heavy Vehicle Roadworthiness Program). SA will now be represented on the steering committee by Trent Rusby, and on the Technical Working Group by Barry Ioanni. The program intention is to have a full RIS available for consultation from January 2015, and final recommendations and implementation plan by mid 2015.

South Eastern Freeway

Industry Stakeholder Workshop

Long Term Options

OPTION	LONG TERM OPTIONS	OBJECTIVES OF OPTION	NEXT STEPS & TIMEFRAME
Infrastructure			
18.	Implement a Safety Stopping Station before the descent into Adelaide.	Construct a dedicated area at Crafers that trucks and buses must enter and stop at a signal / boom gate, before proceeding down the descent in the right gear. This option would be very costly (many millions), involving major infrastructure works and possibly one or two new bridges. The geometry of this option is challenging and may not be feasible on the freeway.	Initial traffic modelling completed. Using the third lane under the Crafers Bridge is unlikely to be feasible, as initial modelling is showing that trucks and buses would queue past the start of the lane and possibly past the Crafers exit, presenting a new safety problem. Detailed scoping, design and costing will be undertaken by the end of March 2015.
19.	Intersection upgrade at Cross Road / Portrush Road and Glen Osmond Road.	Options such as: – lane reallocation and widening; or – construction of a bridge over or under Portrush and Cross Roads to remove the traffic signals from the end of the freeway. All options incorporating an arrester bed or other safety treatment.	Identified in the draft Integrated Transport and Land Use Plan (ITLUP). Further scoping and investigations are required.

Options for the purpose of discussion at the SE Freeway Industry Stakeholder Workshop, 10 October 2014.

Government of South Australia
Department of Planning, Transport and Infrastructure

OPTION	LONG TERM OPTIONS	OBJECTIVES OF OPTION	NEXT STEPS & TIMEFRAME
Infrastructure (cont'd)			
20.	Weigh-in-motion (WIM) to allocated speeds for particular vehicles.	This option would weigh trucks and buses without stopping them, and display an allocated speed for the vehicle, (not exceeding the signed truck / bus speed limit). This option could work in conjunction with the Safety Stopping Station. The allocated speed may be enforceable or advisory. Allocated speeds would assume roadworthy vehicles. Feasibility needs to be assessed.	Further scoping and investigations are required.
21.	Intelligent Information System that can detect out of control trucks and manage through on-road information and links to the Traffic Management Centre.	Inputs into the system could include - Speed, mass, number of axles, brake temperatures, tyre and other temperatures, vehicle stability, retardation capacity, in-vehicle fleet management systems, vehicle to vehicle and vehicle to infrastructure communications.	Further scoping and investigations are required.
22.	Construction of a third arrester bed.	Assess feasibility of whether a third arrester bed can be implemented within the geometric constraints with sufficient length, and whether it would be operationally feasible with typical traffic patterns, queuing, retrieval, etc.	Assess land impacts and costs by the end of December 2014.