

**IN THE DISTRICT COURT
AT BLENHEIM**

**CRI-2015-006-001195
[2017] NZDC 24635**

NEW ZEALAND POLICE
Prosecutor

v

JONATHAN BUTT
Defendant

Hearing: 11 and 12 October 2017
Appearances: Sergeant M Harris for the Prosecutor
R A Harrison for the Defendant
Judgment: 10 November 2017

RESERVED JUDGMENT OF JUDGE A A ZOHRAB

Introduction

[1] At 2.50 pm on Thursday, 9 July 2015, Mr Butt was driving his Mazda utility vehicle with his daughter, Sarah, on State Highway 1 in a northerly direction just north of Clarence. He was towing a trailer with a generator permanently mounted to it.

[2] The weather was cold, wet, windy and miserable. As Mr Butt entered a long sweeping bend, the trailer he was towing rolled on to its right-hand side, and into the opposing lane.

[3] Travelling in the opposite direction were Mr and Mrs McCallum. The trailer slid into the front of the McCallums' vehicle, and tragically Mr McCallum was killed. Mrs McCallum was seriously injured.

[4] Mr Butt now faces the following charges:

(a) Operated a vehicle on a road, namely State Highway 1, carelessly and thereby caused the death of William Gordon McCallum - s 38 Land Transport Act 1998; and

(b) Operated a vehicle on a road, namely State Highway 1, carelessly and thereby caused injury to Elaine Fanny McCallum - s 38 Land Transport Act 1998.

[5] There is no dispute that Mr Butt was the driver of the motor vehicle, or that Mr McCallum was killed as a result of the accident, and that Mrs McCallum was injured.

[6] The Prosecution allege Mr Butt was careless and that his carelessness caused the accident because he was driving too fast for the weather and road conditions when towing the trailer. The defence say Mr Butt was not careless and was not driving at an excessive speed, and that factors other than speed caused the accident, and those factors were unknown to Mr Butt and beyond his control.

The law

[7] Although the offending is alleged against the Land Transport Act 1998, it carries with it the criminal burden and standard. That means that before Mr Butt can be found guilty of either of the charges, the prosecution must prove his guilt to that high standard of proof beyond reasonable doubt. What that basically means is that before I can find him guilty of either of the charges, I must be sure of his guilt. It is not enough that he is very likely guilty or probably guilty, I must be sure he is guilty.

[8] Careless driving means driving that falls below the standard of care and attention that a reasonable and prudent driver would exercise in the circumstances.¹ The standard is an objective one, and personal and universal, fixed in relation to the safety of other users of the road, and governed by the essential needs of the public on the road.² Generally speaking, errors of judgement amount to careless use.³ To succeed in establishing causation, the prosecution has to prove that Mr Butt's driving was a sufficiently proximate and material cause of the accident to link it directly with the ensuing death and injuries. It need not have been the only or even principal cause.⁴

[9] Where the facts appear to be so strong that the only reasonably available inference is that there has been careless driving, then it will be necessary for a defendant to show that a foundation has been laid in the evidence to support the reasonable possibility of an accident occurring without carelessness.⁵

[10] It is not for the Court to conjure up fanciful or improbable explanations in favour of a defendant who offers no explanation, but it is for the Court to consider reasonable possibilities. Where a defendant provides an explanation, then if an inference for or against a defendant is equally open, he is entitled to the benefit of the doubt.⁶

[11] In the end, the question is whether the prosecution has proved beyond reasonable doubt that Mr Butt failed to exercise that degree of care and skill that one expects from a reasonable and prudent driver.

[12] This is a case in which Mr Butt gave evidence, and also called not only his daughter, Ms Sarah Butt, but also expert evidence from Mr Paul Bass, Mr McGregor, and Mr Ouwejan.

¹ *Williams v Police* HC Christchurch AP89/95, 3 August 1995

² *Police v Chappell* [1974] 1 NZLR 225

³ *Taylor v Rogers* [1960] 124 JP 217

⁴ *Hurst v Police* 5 CRNZ 506

⁵ *R v Colgan* CA 214/87, 2 December 1987

⁶ *R v Colgan* CA 214/87, 2 December 1987 and *Police v Chappell* [1974] 1 NZLR 225

[13] There are typically three situations a Court can find itself in when a defendant gives or calls evidence. If I accept the defence evidence, then typically I should find Mr Butt not guilty of the charge. Here, Mr Butt says that his driving did not fall below the standard of a reasonable and prudent driver, and expert evidence has been called that suggests there were other material causes of the accident, and that Mr Butt's driving was not a material cause of the accident.

[14] If, however, having heard Mr Butt's evidence I do not accept it entirely, but cannot reject it out of hand, then by definition I am left with a reasonable doubt, and he is entitled to the benefit of the doubt, and I should dismiss the charge.

[15] If, however, I reject the defence evidence, for whatever reason, I should not automatically leap to a conclusion of guilt. I should look at the evidence that I find to be credible and reliable, and then ask myself, "Have the prosecution proven guilt to that high standard of proof beyond reasonable doubt?"

[16] The key thing to remember is that in electing to give or call evidence, Mr Butt is not assuming any onus to prove his innocence. The question for me remains the same, whether the prosecution has proven his guilt to that high standard of proof beyond reasonable doubt.

[17] In this case, the prosecution called Senior Constable G J Taylor from the Tasman Crash Investigation Unit to give expert evidence. The defence called Mr Paul Bass, a licensed private investigator and specialist investigator in the area of motor vehicle accident reconstruction to recalculate the roll-over speed and give evidence about rates of deceleration and stopping distances. The defence also called Mr McGregor, a mechanical and forensic engineer, to give evidence about the impact of fuel sloshing in the fuel tank, and then also the wind on the vehicle. The defence also called Mr Ouwejan, an engineer, to give evidence about the brackets on the trailer.

[18] I remind myself that the evidence given by the experts is an exception to the rule that witnesses must speak only as to observed facts, and are not permitted to express their opinions or beliefs. The expertise of the witnesses was unchallenged. I

remind myself that their opinions, to be of any probative value, must be based on a properly established evidential foundation. I also remind myself that notwithstanding the experts' evidence, it is for me to be satisfied about the essential ingredients of the offence, and I am not bound to accept the opinion even of the most highly qualified expert. Accordingly, it is for me to decide how much weight or importance I give to their respective opinions, or indeed whether or not I accept it at all in the context of the evidence that I have heard.

The issues

[19] The prosecution essentially alleges that Mr Butt's driving fell below the standard of a reasonable and prudent driver because his speed was excessive. Although his speed did not exceed the posted speed limit, it was excessive when one considered a combination of the weather, including the wind, and the fact that he was towing a generator, and was travelling at a speed which exceeded the speed advisory sign.

[20] The defence submit, whilst there is no onus on the defence to prove Mr Butt's innocence, that the net effect of all of the evidence, for both the prosecution and defence, is that speed can be discounted as a material factor, and the submission was that there were other factors "in play" which led to the trailer becoming unstable.

[21] I will deal firstly with the evidence for the informant, because it is the informant that bears the burden of proving guilt to that high standard of proof beyond reasonable doubt. I will then deal with the evidence for Mr Butt. I will make some observations about the evidence, and then I will give the reasons for my decision.

Mr Mason

[22] Mr Mason is a truck driver, and estimated that he had been following Mr Butt's vehicle for approximately 15 minutes before the accident.

[23] Mr Mason had not previously driven the road, and was driving a 2005 BMW X5. He was towing a furniture trailer, which he had hired. He had driven from Nelson to Kaikoura, and was heading home. He recalls the conditions being miserable, it was wet, about 2 degrees, and the wind was pretty gusty, and he guessed up to about 60 kph.

[24] Mr Mason recalled the corner where the accident happened as a very wide sweeping corner. Mr Mason thought his speed when he was approaching the corner would have been roughly about 90 to 95 kph, and that the vehicle in front of him that was towing a trailer would have been doing the same.

[25] His recollection was that the distance between his vehicle and the vehicle in front had pretty much stayed the same as he was following it.

[26] Mr Mason recalls that as he first approached the corner, he observed the left-hand side wheel of the trailer being towed by the car in front of him leave the ground by about 2-3 inches, and then coming back down and landing back on the road. Mr Mason marked the spot where the wheel left the ground with the letter A on exhibit 9.

[27] Mr Mason said he had not noted any alteration of speed of the utility at this point, but he had slowed down a little bit after he saw the wheel come up and then drop back down again, and he remembers saying to his passenger, "That trailer's going to flip". He did not brake as such, he just took his foot off the accelerator a little bit.

[28] Mr Mason said he did not know whether or not there was a change in the distance between his vehicle and the vehicle in front.

[29] Mr Mason thought that it was a couple of seconds later that the wheel came off the ground, it just kept on going, and the trailer flipped. He marked a spot with the letter B on exhibit 9, as the estimated position of the trailer when it began rolling over.

[30] Mr Mason estimated that the vehicle in front of him would have been still travelling at roughly the same speed of between 90 and 95 kph at the time that the trailer began rolling over. He thought that at the point when the trailer started rolling over, that it was "blowing pretty hard there", given that the hillside came out to a bit of a point. When he got out of the car it was miserable, wet, cold, and blowing quite severely.

[31] Mr Mason recalled that when he was heading to Kaikoura with his empty trailer, the trailer was moving around a little bit, but that when it was loaded the wind had no effect.

[32] It was suggested to Mr Mason in cross-examination that he must have slowed down going into the corner, as Mr Butt had taken off his cruise control before coming to the corner. Mr Mason was clear that he took the corner at about 90 kph, and he "knew how fast he was going", and he "knew the distance between him and the car in front" did not change a lot.

[33] Mr Butt was prepared to concede that possibly he was going a little less than 90 kph, given that he had taken his foot off the accelerator, and that there was an incline up towards the corner.

[34] Mr Mason said that he braked as soon as he saw the trailer tipping over, and that he ended up stopping probably about 5 metres past the white van.

[35] It was suggested to Mr Mason that because he was taking his foot off the accelerator and because of the uphill incline, that by the time the vehicle in front of him had got to point A, and based on the testing of the defence experts, that the speed of Mr Butt's vehicle, and his vehicle, must have got down to about 70 kph. Mr Mason disagreed with that suggestion, and said he could say for certain that he was doing 90 kph.

[36] Mr Mason thought that he would have travelled about 30-40 metres after braking at 90 kph. Mr Harrison challenged him about that, noting that on the basis of expert calculations, the usual stopping distance for a vehicle travelling at 90 kph

on a wet surface is 103 metres. Accordingly, it was suggested to Mr Mason that he must have been doing less than 90 kph. Mr Mason was prepared to acknowledge he may have been travelling slightly less than 90 kph, but not by very much, and not 70 kph.

Ms Cooper

[37] Ms Cooper was a passenger in Mr Mason's vehicle. She recalls the day being bitterly cold, quite gusty with strong winds, and it felt like "ice rain". Ms Cooper has lived the majority of her life in that area, and although she was not driving, was familiar with the road because she drives it all the time, and she thought that their vehicle was travelling between 90 and 95 kph.

[38] Ms Cooper recalls the left-hand side of the trailer lifting, and it going down again, and then thinking that he was going to get around, but then it lifted and then "all hell broke loose".

[39] Ms Cooper thought that they always kept a constant distance between themselves and the car in front.

[40] Ms Cooper believed that the car in front was going too fast around the corner, and that it was doing about 95 kph, she "guessed".

[41] Ms Cooper agreed that she had told the police at the time that she did not believe the car was speeding, and that her opinion was that the wind had picked up the trailer.

Senior Constable Taylor

[42] Senior Constable Taylor is a crash analyst with the Tasman District Crash Investigation Unit. Senior Constable Taylor has been a member of the New Zealand Police for 28 years. He was assigned to full-time traffic law enforcement in 1997. Since 2004 he has been working full-time with the Tasman District Crash Investigation Unit as a crash analyst.

[43] During the last 23 years, Senior Constable Taylor has attended numerous vehicle crashes, completed in-depth analyses and prepared reports for both District and Coroners Courts.

[44] Senior Constable Taylor's expertise in relation to crash investigations was unchallenged.

[45] Senior Constable Taylor presented a detailed crash investigation report, and summarised his conclusions in part 10 of his report. Those conclusions are as follows:

- 10.1 There is no evidence to suggest that the road layout or signage was a causative factor in this crash.
- 10.2 From the descriptions of the observations of the following witnesses there is no suggestion that the Mazda driver was speeding or driving erratically prior to the crash.
- 10.3 The motorist who had been following the Mazda for some time was also towing a trailer and did not report any issues that he experienced himself prior to the crash.
- 10.4 The trailer the following motorist was towing was a tandem axle trailer with a wheel track was wider than that of the single axle trailer being towed by the Mazda.
- 10.5 The driver of the Mazda reports that as he approached the bend he flicked off his cruise control and slowed for the bend.
- 10.6 The motorist immediately behind the Mazda and trailer did not recall whether or not the brake lights on the trailer or the utility had come on as it neared and entered the bend.
- 10.7 He reports that both he and the Mazda were travelling at about 90 km/h when the wheel first lifted off the road in the bend.
- 10.8 While this actual speed cannot be confirmed it aligns with the estimated rollover threshold for the trailer.
- 10.9 While it appears that the Mazda driver was slowing down he was travelling in excess of the advisory speed for the corner.
- 10.10 Given the weather conditions, the trailer and the road controlling authorities advisory speed limit for the corner it would appear that the Mazda driver was travelling too fast for the conditions present at the time of the crash.

- 10.11 This trailer is unlikely to have rolled over had the Mazda been negotiating the curve at the advisory speed of 65 km/h.
- 10.12 While the actual timing of the damage to the tow bar and trailer has not been able to be established it has been reported that the tow bar tongue fractures were confirmed as being due to a single event overload failure.
- 10.13 That the box section had been subjected to a bending load in the horizontal plane in excess of the materials tensile strength (and the maximum vertical loading of 140 kgs for the tongue) resulting in a tensile overload failure.
- 10.14 No manufacturing or inherent material features were found which could have been associated with the failure.
- 10.15 Given this it appears that the most likely point in the crash sequence to produce sufficient force to cause such a failure would be at or impact and it would not have been a causative factor in this crash.
- 10.16 It is also not known when the damage to the drawbar was done however there was no evidence located on the road or the trailer to suggest that this happened during the early stages of the crash sequence and it seems more likely to have occurred post-crash when the trailer was removed from the road and also not a causative factor in this crash.
- 10.17 The gusty winds and the trailer design could have contributed to the trailer rollover but could not be seen as causative factors.
- 10.18 The surging or sloshing of fuel in the tank could have contributed to any instability of the trailer in these conditions however the sloshing would have been due to the initial lifting of the wheel and for that reason it could not be seen as a causative factor.

[46] Senior Constable Taylor summarised his conclusions as to causation in part 11 of his report. Those conclusions were as follows:

11. Causation:

11.1 As a result of this investigation the following factors were identified.

11.2 Roads and roadsides:

11.2.1 There were no issues found in relation to the road construction or layout that could have been considered to have been a causative factor in this crash.

11.3 **Environmental:**

- 11.3.1 At the time of the crash the weather was reported as being wet and raining with intermittent wind gusts of varying strengths.
- 11.3.2 These conditions could have contributed to the instability of the trailer and to the eventual rollover of the trailer but could not be considered as causative factors.

11.4 **Vehicles:**

- 11.4.1 There were no contributing factors found with the Mazda itself however the tow bar tongue has failed at some point during the crash sequence.
- 11.4.2 Expert examination of the tow bar tongue found that the failure was due to a single event overload failure that exceeded the tensile strength of the tongue in the horizontal plane.
- 11.4.3 There were no manufacturing or inherent material features found which could have been associated with the failure.
- 11.4.4 Given the forces required, and the direction of those forces it seems most likely that this failure occurred at or after impact.
- 11.4.5 This failure occurred before the tow ball and the trailer coupling separated.
- 11.4.3 The timing of the damage to the trailer drawbar is also unknown however this appears that it may have been post impact as there was no evidence on the trailer or the road surface to support it having happened earlier.
- 11.4.4 There were no contributing factors found in relation to the condition of the Toyota van.

11.5 **Speed:**

- 11.5.1 The speed limit for vehicles towing trailers is 90 km/h.
- 11.5.2 There is an advisory speed for this bend of 65 km/h for vehicles approaching from either end.
- 11.5.3 A motorist following the Mazda reported that at the time the wheel of the trailer first lifted both he and the Mazda were travelling at about 90 km/h.
- 11.5.4 It was calculated that the estimated rollover threshold for the trailer in this bend was also about 90 km/h.

11.5.5 This speed has been a contributing factor in the cause of the left hand (the inside wheel in the bend) wheel of the trailer lifting off the ground initially and this action has set up the trailer for the eventual rollover.

11.6 Users:

11.6.1 The driver of the Mazda is an experienced driver with plenty of experience towing trailers and is familiar with the area and this particular bend.

11.6.2 The driver has entered the bend at a speed that he was comfortable with.

11.6.3 This speed has ultimately been too fast for all the circumstances present at the time and it has caused the trailer to lift the inside wheel off the ground momentarily.

11.6.4 This has resulted in the trailer rolling further around the bend.

11.6.5 There were no contributing factors found on the part of the Toyota driver that led to the cause of this crash.

1.7 Preventative recommendations:

11.7.1 There are no preventative recommendations.

[47] Following discussions with the defence experts prior to trial, Senior Constable Taylor accepted that the estimated rollover threshold for the trailer which he deals with in paragraphs 10.7 and 10.8 of his conclusion needs to be reconsidered in light of Mr Bass's calculation that the rollover speed would be around 103 to 104 kph.

[48] However, having accepted that, Senior Constable Taylor did point out that he was not sure that the formula was "100 percent appropriate" for Mr Butt's vehicle, because the estimated rollover threshold is a calculation normally used for heavy motor vehicle rollovers.

[49] The reason why Senior Constable Taylor used it in the first place was to "try and gain a ballpark figure". Senior Constable Taylor understood that Mr Bass had come up with a slightly different speed, and was able to do further testing and actually work out exactly some of the data was that needed to go into the calculation, whereas Senior Constable Taylor had made an estimate as to that data.

[50] Senior Constable Taylor acknowledged that, when preparing his report, he worked on the basis that the fuel tank in the trailer was a 60 litre tank, or thereabouts, and that it was approximately half full. That was the information that he had been provided with. He now accepts that in fact the defence experts have been able to ascertain that the correct position is that the fuel tank was 230 litres when full.

[51] Senior Constable Taylor had an opportunity to consider the defence expert's reports. He acknowledged Mr McGregor's comments about the influence of the wind, and he acknowledged that it was a possibility, but he observed that there was no guarantee that that is what happened.

[52] After considering his own investigation, and reviewing the defence expert reports, and following discussion with them, his view is that the crash was caused by a combination of weather conditions, the trailer itself, the speed in which the bend was being negotiated, and the possibility of fuel sloshing in the tank as well.

[53] Under cross-examination, the senior constable accepted that it was possible that what had occurred was that as Mr Butt's vehicle has come down the straight, it has been buffeted by the wind, this caused a sloshing effect of the fuel which, aided by the springs of the suspension of the trailer, created a resonance prior to the wheel lifting off the ground.

[54] However, whilst accepting that proposition, Senior Constable Taylor observed that there was no evidence to say that the trailer did start getting buffeted around prior to that. He acknowledged though that he could not exclude that possibility.

[55] The senior constable conceded in cross-examination that given the rollover speed that he had calculated was significantly higher, that for Mr Butt's trailer wheel to start lifting at the point that it did, that there must have been other factors "coming into play" prior to the wheel lifting, however said that you "could not discount the speed" of Mr Butt's vehicle being the reason for the wheel lifting in the first place.

[56] Senior Constable Taylor would not accept that simply because the estimated threshold for the trailer was higher than what he had calculated, that speed was not a factor in the wheel lifting. There were a number of cornering forces which contributed to the vehicle rolling, and as well as speed, there was wind and potential fuel slosh.

[57] The senior constable accepted that he could not discount the possibility that prior to the wheel lifting off the road, a resonance had occurred in the trailer due to the trailer being buffeted by wind coming down the straight. However, the senior constable would not accept that when the wheel eventually lifted off, that it could be entirely due to factors other than the cornering speed.

[58] Senior Constable Taylor accepted that if a resonance were to start due to the sloshing of the fuel, and the action of the wind, that the trailer would become unstable and that it might be better for a driver to accelerate, and that one of the worst things would be for a driver to slow down.

[59] Senior Constable Taylor accepted that if someone was able to stop in 40 metres, as was suggested by Mr Mason in his evidence, then Mr Mason's speed before braking would have been around 78 kph.

[60] Senior Constable Taylor accepted, when referred Mr Ouwejan's report that there was no examination undertaken by the senior constable of the brackets holding the generator unit onto the trailer.

[61] Senior Constable Taylor accepted that he was aware of scenarios where heavy trucks have gone at a slow speed around a roundabout, for example, and have tipped over because of a "resonating scenario", and he accepted it is not an unknown phenomenon. Such situations can be caused by backwards and forwards movement that starts fuel sloshing, or a hanging load, for example, it all depends on what the truck is carrying. He accepted that it is not an uncommon occurrence in terms of vehicles tipping over, and that sometimes it could almost be like a "random event".

[62] With respect to Mr McGregor's comments about what might be described as a "geographical scenario" which creates a wind tunnel leading into that corner, Senior Constable Taylor did not disagree with his analysis, but said you cannot say for a fact that this is what happened. Having said that, he accepts that it was conceded by all of the witnesses that the wind was gusting at the time.

[63] Senior Constable Taylor agreed that he could not exclude the possibility that as Mr Butt has come down the straight, that the resonance factor has started, and that by the time he has got into the corner, the instability of the trailer was already "well in play".

[64] It was suggested to Senior Constable Taylor that whilst the speed of going around the corner may have contributed to the incident, that ultimately the main causative factor in the scenario would have been the resonance factor occurring on the trailer as he came down the straight. Senior Constable Taylor would not concede the use of the words "the main causative factor", but he conceded it could have been a causative factor and that, "yes, that it was potentially a stronger factor than initially suggested in his traffic investigation report".

[65] It was suggested to Senior Constable Taylor that the resonance factor cannot be excluded for the initial lift-off of the trailer when he came into the corner, and the speed Mr Butt was travelling at was not the causative factor. Senior Constable Taylor was of the view that it was not a causative factor, but it was still a factor, regardless of what the speed was.

[66] Senior Constable Taylor said it was beyond his expertise to be able to comment on the suggestion whether or not this would have happened if Mr Butt's vehicle had been travelling at 25 kph, 35 kph, 45 kph, or 55 kph, with the wind factor. He accepted that if there was an accurate measurement of the wind speed, and the wind direction, then the experts might be in a position to clarify that further.

Detective Sergeant Tilbury

[67] Detective Sergeant Tilbury attended the scene of the fatal crash, and spoke with Mr Butt. Mr Butt told him that he had been travelling north with his daughter prior to the crash. He had stopped on the Hundalees because he felt movement in the back of his trailer. He stopped, got out and had a look, and everything appeared okay. As he was rounding the corner at the Clarence, just prior to the crash, he felt the trailer wobbling significantly, and directly after this the crash occurred.

[68] Detective Sergeant Tilbury dealt with a number of other matters relevant to the case. More particularly, he arranged for the towage of the vehicles, and arranged for vehicle inspector, Patrick Clay, to inspect the two vehicles and trailer involved.

[69] Mr Clay provided a report in relation to the vehicle which the McCallums were in, exhibit 1.

[70] Mr Clay inspected and provided a report in relation to the trailer, exhibit 2.

[71] Mr Clay then inspected and provided a report in relation to the Mazda vehicle being driven by Mr Butt, exhibit 3.

[72] Detective Sergeant Tilbury subsequently seized the tow bar assembly of Mr Butt's vehicle, and sent that to Quest Integrity, Wellington, for analysis.

Mr John Butt

[73] Mr Butt is an engineer, owning a company called Butt Drilling. Mr Butt travelled with his daughter from the workshop in the Blenheim area at 7.00 am, travelling in a Mazda 4-wheel drive, towing a genset on a purpose-built trailer, which was fully registered and warranted. The trailer had only travelled about 500 or 600 km in total.

[74] Mr Butt commented that the job that they were on was well past Kaikoura, and it was a "real horrible and blowy day" all the way back basically. After completing the job and heading back towards the Blenheim area, they stopped on the

Hunderlees because, as they were climbing up the hill, Mr Butt heard a "squawky noise, or a swayey noise", and the vehicle just did not feel right so, given that they were travelling very very slow with some very tight corners on the hill, he pulled over when he got to the top of the hill. He went around everything and did a standard sort of check, checking the wheels, tow couplings, doors, and had a little look on the side of the trailer, and everything seemed pretty good.

[75] After checking the vehicle, he started driving down to Kaikoura, and they stopped in Kaikoura for lunch. They then started heading further north, and when there were straight stretches, he would have the vehicle on cruise control. As they came up and got on to the Clarence straight, everything seemed to be okay, and he was trying to think whether it was actually in the bend, or just before the bend, but it certainly was not the tight part of the bend, then, all of a sudden, things started swaying. The whole truck started swaying.

[76] Mr Butt said before it started swaying he was coming down the Clarence straight, he had his cruise control on, and he thought that in the area which is marked "Penny Lane", which is about 100 to 150 metres before the corner, he took off his cruise control. He did not have his foot on the accelerator, and so the vehicle started slowing down. He let the speed run down. He said he had been around that corner a lot of times growing up in Ward, which is halfway between Blenheim and Clarence, so he just let it cruise down to an acceptable speed.

[77] As Mr Butt was doing that he said that he felt a swaying action. He thought he felt that either when he was still in the straight, or just into the corner, but if it was just into the corner, it was only just. So, looking at the photograph booklet, the first photograph he thought it would have been where the three groups of trees are between the first two red markings on the road, that the smaller stand of trees to the right of the three, was where he felt it swaying.

[78] Mr Butt says that he recalls thinking to himself that it was the trailer tow ball that had come apart, and was being dragged on the chain, and he remembers thinking that he had to get around the corner, and that if he slowed down he was going to get into trouble. He had "sort of thought about speeding up", but thought that he should

hold it at exactly the same speed he was travelling at, and get around the corner, and then "worry about what happens next".

[79] Mr Butt said that the swaying probably got "fiercer", but it did slow down a "wee bit". He said he never actually saw the crash, or the car coming the other way, he was simply concentrating on keeping his vehicle on his side of the road. He did not believe he ever crossed the centreline, but obviously, the trailer did and it spun and hit the van.

[80] After the accident, they went "racing over" to see what was happening, that is he and his daughter, and they grabbed blankets and "bits and pieces". Someone turned up who knew first aid.

[81] Mr Butt recalls being asked by Detective Sergeant Tilbury about the speed that he was travelling at. He believes it was sort of between 65 and 70 kph, and he thinks he said 70 kph, but he certainly was not going any faster than that.

[82] Under cross-examination, Mr Butt confirmed that the weather was horrible the whole time on the way down, and the whole time on the way back. It was very windy, and there is no doubt about that, it was windy.

[83] Mr Butt could not comment about the wind being particularly strong around the base of the corner of the point, but did say that the wind had buffeted them the whole trip.

[84] Mr Butt was not aware of the baffles in the fuel tank of the generator, and he said that he actually owned seven of these generators, and this was the first time he had ever heard of baffles.

[85] Sergeant Harris referred to Mr Mason's estimate that Mr Butt was travelling at 90 to 95 kph, and suggested that he was indeed travelling significantly over 65 kph. Mr Butt suggested he was going over 65 kph, but would not have thought he was going any more than 70 kph. He based that on his "flicking" the cruise control off. He does not actually remember physically braking, but he thought that there was

plenty of time to just let the vehicle slow down by itself, so he did not think he put his foot on the brake.

[86] Mr Butt was asked by the sergeant whether or not he had any thought of pulling to the left and trying to get off the road when he noticed the swaying, and he responded that he was more trying to keep the thing on his side of the road, but it was throwing the back of the truck around, and one moment it was on the outside, and the next minute on the inside, and "the front was the only thing that was sort of keeping anything in the right direction". He thought that if he had got it into the gravel, it could easily have made it a "whole lot worse".

[87] Mr Butt commented that it was not a high-speed corner, and to drive around it at 90 kph, you would want to be "pretty loopy".

Ms Sarah Butt

[88] Ms Butt recalled that as they were coming through the Hundalees she heard a small "grindy noise", which she thought almost sounded like the tyre of the truck hitting the mud flap.

[89] She confirmed that she would travel with her father quite often during holidays and weekends to do jobs, and they go out on day trips. Her recollection of what happened was that she was turning around to look for sunglasses in the back seat, and that they were still on the straight road, and she recalls the cruise control being flicked off, and the car decreasing in speed, and then the truck jolting from side to side, with her father then saying something like, "What the bloody hell is going on".

[90] Ms Butt recalled that the cruise control had only been turned off for a few seconds before the crash.

Mr Paul Bass

[91] Mr Bass is a licensed private investigator and director of Paul Bass Investigations and Consultancy Limited. He has had a private investigator's licence

since 1997, and since that time has provided specialist investigative services in the area of serious crime investigations/analysis and motor vehicle accident reconstruction. Prior to being a licensed private investigator, he was a member of the New Zealand Police for some ten years.

[92] Mr Bass's expertise in motor vehicle accident reconstruction is accepted. He provided a report dated 7 September 2017, produced as exhibit A for the defence.

[93] Mr Bass confirmed that he had the benefit of more accurate information than Senior Constable Taylor, and was able to calculate the rollover speed of the trailer as being 103-104 kph. His view was that this calculated speed supported the premise that there had been an additional and, as yet, unaccounted for event which had induced the rollover.

[94] As well as doing a scene drive-through when he first attended the scene on 1 June 2016, he did another scene drive-through on 10 October 2017. During the most recent drive-through, it involved him taking a 2017 BT 50 Mazda diesel utility, which is a similar model to that which was driven by Mr Butt, and also towed a genset behind the vehicle which was not an exact replica of the one involved in the case, and may have been 250-400 kilograms lighter.

[95] What he did was some deceleration runs, turning his cruise control off at Penny Lane, and letting the vehicle coast and determine the coast down speed over various distances.

[96] Mr Bass noted that turning off the cruise control at Penny Lane, that you actually come down to 70 kph before you actually enter into the corner.

[97] Mr Bass's opinion was that, given that the calculated speed required to roll the trailer was 103-104 kph, that there must have been another event that caused the trailer to roll.

[98] Under cross-examination Mr Bass accepted that his experience in the testing was that the vehicle slowed down more rapidly when it had a trailer, and that was an unbraked trailer.

[99] Mr Bass would not accept that his rollover figures were a “ballpark estimate”, because they were based on spring compression, roll centres, centre of gravity height, load shift, so there was a dynamic roll threshold going on, and they had calculated the best they could from a trailer doing the measurements.

Mr Andrew McGregor

[100] Mr McGregor is a forensic mechanical engineer. He is the director of Prosolve Limited, which specialises in providing investigative engineering services in relation to a wide variety of engineering failures and accidents in New Zealand and the South Pacific.

[101] Mr McGregor is trained in air crash investigation, and although he does not consider himself experienced in motor vehicle crash calculations, his ability to offer his expert opinion is based on his experience as an air crash investigator and forensic engineer.

[102] Mr McGregor’s expertise was not challenged. Mr McGregor produced his report dated 13 September 2017 as exhibit B, and presented a slide presentation (exhibit D) to clarify some of the matters in his report.

[103] Mr McGregor was able to determine the centre of gravity of the “trailer/generator combo”, and provide that information to Mr Bass to enable him to recalculate the rollover threshold of the “trailer/generator combo”.

[104] Mr McGregor highlighted the topographical features that impact on the wind speed. If one examines the aerial photograph from the air, you can see the hill coming out from left to right, and at the base of the hill you have the road coming around. The meteorological office confirms that it was a south-westerly wind at the time. Mr McGregor had visited the site two days before the hearing, and noted that

the leftmost clump of trees, and more particularly he was referring to the leftmost clump of trees that can be seen to the left of the word "Clarence" in slide 2 of the slide presentation. He estimated those trees would be 20-30 metres in height, and they would comprise a tall obstacle, so with the wind coming in the south-westerly direction, from anywhere above the road or below the road, to the right of the trees, is an open area, and the wind would "howl or funnel through there", and his opinion was that the speed of the wind would probably be greatest at the base of the hill as it goes around, so it would be gusty and unpredictable at that point.

[105] The other interesting thing he noted about wind is its force increases with the square of the speed, so if the wind speed doubles, its force quadruples.

[106] Given that the witnesses' accounts indicate it was very gusty in that area, the gustiness is unpredictable and strong, and there are what he describes as "some pretty severe topographical features as well".

[107] Mr McGregor notes in his report that there was no evidence as to the wind speed at the time of the accident. He notes also that there are many paragraphs in Senior Constable Taylor's report about the contribution of the wind.

[108] Mr McGregor also calculated what the possible wind forces could have been on the trailer at wind speeds of 30 knots, 50 knots, and 60 knots, and calculated side forces of anything from 30 kg to 117 kg.

[109] Whilst Mr McGregor accepts the evidence is not sufficient to assert any definitive values from wind force calculations, he considers the exercise to be suitable for a "magnitude of order" estimate which, in his view, is significant if one considers the combination with the possible effect of fuel sloshing.

[110] Mr McGregor agreed with Sergeant Harris that the New Zealand Transport Agency ("the Transport Agency") paper which deals with Dynamic Behaviour of Heavy Vehicles notes that there are many factors that influence a vehicle's tendency to rollover. He accepted also that the most critical factor listed by the Transport Agency was the vehicle's speed. He agreed that other factors noted are the height

and centre of gravity, type and condition of suspension, and the type and condition of tyres.

[111] Mr McGregor noted that whilst speed is seen by the Transport Agency as a significant factor, in fact travelling faster could be better than travelling at a lower speed, as if you travel faster, the frequency at which a load alternates, could be different to the natural frequency of the truck suspension.

[112] Mr McGregor accepted that not only does the higher wind speed increase the force by a factor of four, similarly the speed of a vehicle increases the centrifugal force by four. For example, Mr McGregor accepted that the Transport Agency paper states that if a truck enters a corner at 60 kph, there will be four times more overturning side force than if it entered at 30 kph. However, Mr McGregor also accepted that the suspension on a commercial truck would generally be superior to that on a trailer like the one Mr Butt was towing.

[113] Mr McGregor accepted that with a smaller trailer, with less springs, the factors of cornering and wind "could be much more accentuated", and lead to less stability.

[114] Mr McGregor emphasised that it was important to realise that each of the factors on their own would not be sufficient to cause a "destructive situation", and if one were to alter one of the factors slightly, for example, such as the amount of fuel, or the wind forces, then it would not lead to a "destructive situation".

[115] It was suggested to Mr McGregor that given the case before the Court involves a speed advisory sign of 65 kph, and given that vehicles towing trailers are obliged to travel 10 km below the 100 kph speed, that someone towing a trailer should be travelling 10 kph lower than the advisory limit. Mr McGregor believed that the evidence did not demonstrate that. He thought that the evidence demonstrated that the resonance occurred before the curve began and, therefore, that the speed at which the vehicle entered the corner is not relevant to this roll resonance problem, which he thinks actually caused the accident.

[116] Sergeant Harris suggested to Mr McGregor that the Transport Agency paper dealing with Dynamic Behaviour of Heavy Vehicles records that it's a driver's responsibility to understand how the dynamics of a vehicle affects the way the vehicle handles on the road, and that drivers need to acquire basic understanding of vehicle dynamics, and apply the correct driving techniques to manage the numerous forces at work to ensure that their vehicle speed reflects the driving conditions, and consider the effects of loads and ever-changing road conditions, and familiarise themselves with the effects of speed, weight and cornering.

[117] Mr McGregor said that he could appreciate that that is probably what it says, and that it is common sense, but his point was that engineers would have difficulty understanding the sudden and unpredictable nature of wind. Furthermore, an engineer would also have difficulty understanding that the fuel slosh, even a half full tank of 96 litres, would have been a problem even in windy conditions. He stated that this action "would catch him out as a professional engineer, even for someone who knows something about wind, and knows about dynamics".

[118] It was suggested to Mr McGregor that knowing the factors of the vehicle, and the factors of the weather, including the wind, that if the vehicle speed were reduced, that would reduce the instability as well.

[119] Mr McGregor's response was that the evidence that he has presented shows that the roll resonance began before the curve. Furthermore, he was of the opinion that if the vehicle was travelling significantly slower, the roll resonance might still have occurred. He accepts that if the vehicle had been travelling at a slower speed, and had gone around the corner, the centrifugal force would have been less, and it may not have rolled, but at the speed as he approached the corner, he was driving without any problems, and that the roll resonance began to happen before the curve started, and as he hit the curve, as the centrifugal force due to speed started to "kick in", and as the corner started to "bite", he was then trapped because he would not have been able to discern whether he should have accelerated or braked, because either could have worsened the position. The reason for that is because in this particular case, we are talking about frequency, not the size of the force. However, having said that, if the vehicle was stationary, it would not have rolled over.

[120] Accordingly, his opinion was that the speed of the vehicle coming down that straight would not have had an effect on stability of the trailer in terms of the factors that he had demonstrated.

[121] Mr McGregor was of the view that he thinks that what was happening was that if he puts everything together, including some of the evidence he had heard from Mr Butt and his daughter Sarah, then it seems to him that "those matters do line up". Mr Butt's vehicle was travelling down the straight on cruise control at 90 kph, and 100-150 metres before the corner, the cruise control came off, and it began to slow. At that time, Mr Butt's vehicle was approaching the open area at the foot of the hill between the tall stand of pine trees where the wind would have really been whistling, really funnelling, through there. The gusts would have been increasing in speed, but that would not have been evidence to the driver because he was inside the vehicle.

[122] The trailer would produce a square shape to the wind, so there would have been a lot of drag with some buffeting, and that would have set up a fuel sloshing effect. As 96 kg of fuel is quite a significant amount of fuel to be sloshing around in a small trailer, that would have begun to resonate with the natural frequency of the trailer suspension. This would all of been happening before the start of the curve as the vehicle was decelerating slowly as the cruise control was taken off.

[123] Based on the witness statements, it seems that there was then a situation whereby the swaying became quite violent before the start, or at the start of the curve, and then it became violent as it started to go around the corner, and even though the centrifugal force was due to the speed which was helping to pull it over, it might have felt to the driver that it was difficult to know what was best to do, whether it was best to brake, or speed up.

[124] It would be difficult, given how quickly it was all happening, for the driver to decide what to do, and that is typical of a "divergent oscillatory dynamic situation". As he went around the curve, the centrifugal force due to speed increased slightly, and all of those factors combined together meant that the trailer rolled over.

[125] Mr McGregor said that the significant point that he has tried to make is that this roll resonance, this divergent oscillatory behaviour, happened before the curve started, where the wind was really starting to buffet the trailer and the vehicle.

[126] In response to a question from the Court, Mr McGregor accepted that he did not assess the dynamic effects of the fuel sloshing from side to side. What that means is that he did not carry out any numerical analysis, and that he did not sum up all the force factors together in a computer to be able to assess the way that that might resonate together with the suspension of the trailer.

[127] In answer to a question from the Court as to how he knew that there was potentially fuel sloshing occurring, Mr McGregor said that would be a reasonable deduction to make, given that the fuel tank was half full, and that 96 kg of fuel is a significant amount, given the trailer has no shock absorbers, it has just ordinary leaf springs, and then you combine that with the effect of the wind.

[128] Mr McGregor said someone might think that it is a "bit of a stretch" to think that all this can happen, but he said that when these things resonate and coincide they can be quite "whacky", and quite difficult to appreciate and understand, and if you have all the frequencies "lining up", they can "cause something big to happen".

[129] Mr McGregor said that he believed that the evidence demonstrates that when the wheel initially lifted off, as observed by Mr Mason, that this did not occur because the trailer had reached rollover speed, but rather that the wheel lifted off because of roll resonance, and which had happened a significant distance before the start of the curve, so this "rollover speed" was not relevant to the beginning of the roll resonance.

[130] Mr McGregor noted that the term "roll resonance" is a term that the Transport Agency use in documents which explain the hazard in relation to an ordinary lorry. For example, as a lorry drives around a roundabout, the steering has to alternate to navigate the centre and straighten up again. If it goes, it can cause vehicle sway deflections which, combined with vehicle suspension characteristics, can result in the rollover of the truck.

[131] This type of incident is mentioned in the context of trucks which have shock absorbers as well as springs, and despite the dampening effect of shock absorbers, it still occurs. However, the trailer involved in the accident before the Court, like most trailers of its size, only has simple leaf springs without shock absorbers.

[132] Accordingly, whilst this trailer did not have alternating steering changes, what it did have was fuel sloshing inside the tank which had anti-slosh baffles configured only to prevent forward and backwards fuel slosh, but not sideways fuel slosh.

[133] So, he observed that it is a situation where you have fuel sloshing sideways and wind gusts, and both of these have what are described as alternating force profiles, and this is a case where there is a simple leaf suspension system without the dampening facilities of shock absorbers.

[134] Mr McGregor notes that on the Transport Agency website it says:

In relation to the lower example referring to roll resonance, this can occur at a surprisingly low speed which may be safe for another type of truck, even when fully laden.

[135] Mr McGregor then talked about how engineers analyse force, first looking at them one at a time, and then looking at them together.

[136] He gave a graphic example of the trailer with the generator, and observed that the centrifugal force is the force that tends to roll the trailer over as it goes around the bend, and he characterised that as a steady force, even though the vehicle is turning. There is fuel in the fuel tank, which is in the base of the generator. The left-hand side spring, as the trailer is going around the bend, is slightly more compressed than the right spring, and that acts as the centre of gravity. You then add into that the wind force.

[137] From the literature that Mr McGregor has seen, the damaging wind force on vehicles happens at a frequency often in the order of between half a Hertz and 2 Hertz, and for an unsteady force frequency is as important, if not more important, than the magnitude of the force. One Hertz is one cycle per second, so half a Hertz

is half a cycle per second, or one cycle every two seconds, and two Hertz is two cycles per second.

[138] Mr McGregor observed that the interesting thing about these unsteady forces is that they all have similar frequencies. If one looks at the fuel slosh, one can intuitively appreciate that the rate at which the fuel might slosh backwards and forwards would also be somewhere between one cycle every two cycles, or two cycles per one second.

[139] The fuel tank capacity is 230 litres, with half a tank capacity being 115 litres, so the approximate weight of the fuel was 96 kilograms, so that is, in his view, significant in terms of fuel slosh. His view was that the frequency is probably similar to that of the wind gust frequency. One then has to consider the roll effect due to the response of the springs, the suspension of the trailer, to these alternating forces, the alternating forces being the wind and the fuel slosh.

[140] Given that the trailer, like most trailers of that size, only has leaf springs and no shock absorbers, the force was from right to left, and it caused the left-hand spring to compress, and it could undercompensate while the right spring overcompensates, and that would then tend to set up a see-sawing motion, and that see-sawing or backwards and forwards motion of the spring is called the natural frequency of the springs.

[141] Mr McGregor says that the literature that he has read indicates that it would be, in the rough order of its natural frequency, similar to the gust frequency of 0.5 Hertz to two Hertz, or half a cycle per second to two cycles per second.

[142] Mr McGregor was of the opinion that if one were to join all of these together, there is a steady straight centrifugal force acting through the centre of gravity from right to left, the trailer is coming towards us with the fuel sloshing in the same direction, probably in half a Hertz or two Hertz, and wind happening also at half a Hertz to two Hertz, and the natural response of the springs probably is in the similar order of frequencies. So, if you have all of these things happening at a similar frequency, and what is important in a resonance situation is the similarity of

frequency, indeed it is probably more important than the magnitude of forces, then each of these forces will be smaller than the centrifugal force but, all combined together, they could be a significant, if not more significant than the rollover force.

[143] Mr McGregor was of the opinion that even though the combination of the unsteady force factors could be smaller than the steady centrifugal force governed by speed, the combined dynamic effect of the unsteady force factors with the springs could be more significant, and counterintuitively so.

[144] His opinion was that it would not be possible for a driver to weigh up or correctively perceive all of those factors, steady or unsteady, and how they could be resonating with a trailer suspension to cause rollover. One also needs to consider the fact that the wind force increased disproportionately with the square of the speed, and can increase unexpectedly as the vehicle approached the bend, due to topographical effects.

[145] Mr McGregor spoke about the divergent nature of the resonance oscillations, and drew a sketch on the whiteboard, a reduced version of which has been produced as defence exhibit C. The vertical axis in terms of Newton shows the normal driving load the wheel would see as the oscillations built up.

[146] Mr McGregor then sought to refer to the diagram he has prepared of the crash site and relate that back to defence exhibit C. Based on the scene diagram, there is a big distance between where the wheel is first seen to lift off, and where the fatal rollover occurred, and it appears to be a distance of some 88 metres. Mr McGregor's evidence was that a reasonable engineer would think that if it was taking 88 metres to wind itself up from wheel lift-off to fatal rollover, that it would take at least that distance from the start of the roll resonance to where the wheel lifted off. Accordingly, if you went back 88 metres from the wheel lift-off, you get to the start of the roll resonance which happens before the start of the bend, and in his opinion that is significant because centrifugal force, or the force which is generated by the speed of the vehicle, could really only have started to contribute at the point of the curve, and then only gradually so.

[147] Accordingly, his opinion was that that puts the start of the roll resonance, that means that when it started to resonate, when the wind forces and the fuel slosh forces started to resonate with the suspension of the trailer, all that happened without vehicle speed being a factor, and the advisory speed of 65 kph would have had no effect. That is very important in his opinion, and very significant.

[148] His opinion was that the trailer beginning to experience roll resonance would have started off slowly and, in his opinion, you are talking only about a couple of seconds before the start of the roll resonance and the start of the curvature. It started off slowly, and then it would have wound itself up, and as it started going around the corner, speed might have contributed to the rollover, but then the trailer would have started to sway violently as described by Mr Butt and his daughter, Sarah Butt, and it would have been difficult to know what to do, whether to slow down suddenly, or gradually, or accelerate, because either of those could have made it worse.

[149] Accordingly, his evidence is that the start of the roll resonance is likely to have occurred before the start of the curvature of the bend, and therefore the speed of entry into the corner could not have been a significant factor, and indeed what was more significant was the alternating effects of the wind and the fuel slosh, and how they resonated with the natural response frequency of the trailer suspension.

[150] Accordingly, his conclusion was that he accepts that although the police calculations refer to fuel slosh and wind gusts as contributing factors, he disagrees with their conclusion that the rollover causative factor was speed. His concern was that unsteady forces due to wind, fuel slosh and suspension, and roll resonance, have not been evaluated in the police calculations, and have not been evaluated concurrently and coincidentally in a dynamic manner, and that they have not been quantified. The speed of the vehicle was not enough on its own to lift the vehicle to begin the sloshing effect and therefore other factors were necessary.

[151] Mr McGregor was of the opinion that unsteady forces, due to wind and fuel slosh could have acted at a frequency that was similar to the roll resonant frequency as explained previously, and that cannot be dismissed. His view was that they could well have caused the rollover, and divergent oscillations take time to build up.

[152] His opinion was that the distance between where the wheel lift-off is observed to have first occurred and trailer rollover suggests that it began before the start of the corner curve, and therefore this suggests that roll resonance started without speed being an important or critical factor to the rollover.

[153] Finally, he noted that excerpts from Mr Butt's statement as to what was going on with the vehicle and trailer immediately prior to the accident cannot necessarily be reconciled with the Police hypothesis that excessive speed caused the rollover. Mr McGregor was of the view that the combined dynamic effect of fuel slosh and wind gusts was a real and credible possibility of initiating rollover of the trailer, and that if the frequency of wind and fuel slosh were coincident, the magnitude of the wind and slosh forces needed to cause rollover may have been less than intuitively expected by a reasonable and prudent driver.

Mr Ouwejan

[154] Mr Ouwejan's evidence was admitted by consent, and his report of 6 September 2017 was produced as exhibit E. Mr Ouwejan is an engineer and works for Metlab Limited, and was requested in September 2016 to inspect the tow bar on Mr Butt's Mazda BT50 ute. Mr Ouwejan also inspected the trailer.

[155] Mr Ouwejan was, however, unable to inspect the majority of the generator itself because it had been scrapped. He did, however, have a close look at photographs taken from the accident scene afterwards, and had some comments regarding the generator mounting brackets.

[156] He noted that the mounting brackets which fasten the generator to the trailer showed varying amounts of corrosion on the surface. The impression he gained from the photographs was that the different amounts of corrosion could indicate that the generator mounting brackets were cracked or fractured while the generator was on the trailer during normal operation. He noted that two of the mounting brackets were facing in different directions. It was unclear to him if this had occurred during the accident, or if one had fractured prior to the accident.

[157] He noted that as the brackets had all been scrapped, this prevented him from subjecting them to a more detailed examination, and it was therefore possible that there was a failure of one or more of the generator mounting brackets, which allowed the generator to move and subsequently cause an unstable load inside the trailer. If this had occurred, that might explain the feeling of instability that Mr Butt had explained during his inspection of the trailer. However, it is not possible to offer an opinion on that as there was no evidence of inspection of the brackets at the time of the accident.

Discussion and decision

[158] Senior Constable Taylor noted in his executive summary of his report that:

- (a) The wet weather and intermittent gusts of wind could have contributed to the instability of the trailer, and to the eventual trailer rollover, but they could not be considered causative factors.
- (b) That the speed Mr Butt entered the bend at ultimately was too fast for all of the circumstances present at the time, and it has caused the trailer to lift the inside wheel off the ground momentarily, and this has resulted in the trailer rolling further around the bend.

[159] In his analysis in his report he notes:

- (a) The steel cover on the trailer offers a large flat area that can act like a sail in windy conditions and, given the reported wind conditions, the wind must be considered to be a possible contributing factor in the cause of the trailer rolling over.
- (b) The possibility that fuel in the fuel tank could have been sloshing in the tank, and if the timing was right it could have contributed in part to any sideways forces acting on the trailer to roll it. The initial action of the trailer wheel lifting and returning to the road surface could well have started a surging action from side to side in the fuel tank, and

that could have contributed to the inside wheel lifting a second time, and the trailer rolling a further 87 metres further down the road.

- (c) The fuel sloshing could also have been impacted upon by the wind, and at the point of trailer rollover, the trailer would have been more side-on to the wind than at any other point in the journey.

[160] The senior constable concludes in his report that:

- (a) Although it is difficult to gauge Mr Butt's speed with certainty, given Mr Mason's observations, Mr Butt was travelling too fast for the conditions, more particularly given that he was towing a trailer, it was wet and windy, and he was travelling in excess of the advisory sign speed sign.
- (b) The gusty winds and trailer design could have contributed to the trailer rollover but could not be seen as causative factors.
- (c) The surging or sloshing in the fuel tank could have contributed to any instability of the trailer in the conditions, however, the sloshing would have been due to the initial lifting of the wheel, and for that reason it could not be seen as a causative factor.

[161] Since preparing his report the senior constable has had the opportunity to consider the evidence of both Mr Bass and Mr McGregor. The senior constable accepts that he had been inadvertently provided with incorrect information as to the size of the fuel tank. He accepts that his estimate in his report of the rollover speed of the trailer as being 90 kph was incorrect, and that the correct rollover speed would be 103 to 104 kph.

[162] However, the senior constable emphasised that the rollover speed calculation was a "ball park figure", and that he was not sure it was an entirely appropriate figure to use, given that the calculation was used for heavy motor vehicles. That however "begs the question" as to why in fact the calculation was used in his report

in the first place. The calculation naturally assumes some significance because the report records that based on Mr Mason's observation, Mr Butt was doing 90 kph, and given that 90 kph aligns with the trailer rollover speed as originally calculated, the clear inference to be drawn is that Mr Butt's speed must have been a material cause of the accident, albeit that other factors had a lesser role.

[163] Senior Constable Taylor accepted that given the increased rollover speed calculation, that speed must be considered less of a factor in the accident, but maintained that Mr Butt's speed of 90 kph, or just under, in the conditions, and towing a trailer, was still the material cause of the accident. Mr Bass says that if for example Mr Butt was doing 94 kph the trailer should not be rolling at all "from speed and dynamic roll threshold".

[164] Given the senior constable's expert opinion, my view is that it is critical to determine as best I can the speed Mr Butt was travelling at because the prosecution allege that a reasonable and prudent driver would not have in all the circumstances been travelling at the speed Mr Butt was driving at. Before I do that, I simply want to note that all of the witnesses impressed me as honest people, trying to recall as best they could what happened over two years ago.

[165] The weather was miserable it being wet and cold, the incident happened very quickly, with tragic consequences, and it would have been incredibly stressful for all involved. This inevitably means that everyone's recall of events will be different. So, in trying to determine the facts I need to look to see whether a witness' evidence is consistent with the evidence of other witnesses I have accepted, whether their evidence is inherently plausible, whether the witness has been consistent in his/her account over time and if not, why not. Furthermore, I also need to look at a witness's evidence in the context of all of the evidence in the case. I also need to consider the evidence of witnesses against objective evidence such as accepted vehicle braking distances, and the distance in metres per second (mps) covered by vehicles at certain speeds.

[166] Mr Mason was adamant he was travelling at 90 to 95 kph immediately prior to entering the bend and that Mr Butt must have been travelling at a comparable

speed, given Mr Mason had been following him for 15 minutes and he had maintained a constant following distance as between the two vehicles.

[167] Mr Mason was prepared to concede that given he was approaching a bend, given he had seen the wheel lifting, given he was towing a trailer, given there was a slight incline in the road, he may have been travelling under 90 kph, but not by much. He would not accept he was travelling at 70 kph.

[168] Mr Mason's passenger thought they were travelling at a similar speed to Mr Mason's estimate, albeit she told the police at the time that she did not think Mr Butt was speeding. Her statements are not necessarily irreconcilable, given it was an open road and that she was not the driver.

[169] Mr Mason was able to point out the location of where he first saw the trailer wheel lift, where the trailer started to roll and which was where he started to brake. He was also clear that he was able to come to a stop without any issue some five metres past the McCallum's vehicle. He estimated that it took 30 to 40 metres to come to a stop.

[170] The undisputed expert evidence was that for a car travelling at 90 kph, to brake on a wet road would require a stopping distance of 103 metres. Here Mr Mason was driving a 4-wheel drive vehicle with a double axle trailer, laden with furniture, on a wet road. The expert evidence from Mr Bass was that if Mr Mason was able to brake in 40 metres he would have been travelling at 78 kph, and that calculation does not take into account driver reaction time. If one were to factor in a driver reaction time of .7 of a second, then if he stopped in 40 metres he would have been travelling at 61 kph.

[171] According to the scale on exhibit 9:

- (a) The distance from the estimated position of the trailer when Mason first saw the wheel lift, to the resting position of the McCallum's van is approximately 120 metres.

- (b) The distance from Mr Mason's estimated position of trailer when it began rolling over to the resting place of the McCallum's van was approximately 30 metres.
- (c) If Mr Mason stopped 5 metres past the McCallum's van, as marked, then he travelled say 40 metres after braking when he saw the trailer beginning to rollover.

[172] If Mr Mason was travelling at around 90 kph, as he maintains, then as a matter of simple mathematical calculation, his vehicle would have been travelling at 25 mps. Furthermore, the accepted braking distance for a vehicle on a wet road at 90 kph is 103 metres. Given the foregoing, the seemingly inescapable conclusion is that Mr Mason must have been travelling at an appreciably slower speed than 90 kph when he braked.

[173] It seems logical that given he was driving a 4-wheel drive, albeit a modern BMW, and was towing a laden trailer on a wet road on a bend, albeit there was a slight incline, it would possibly have been challenging for him to stop safely five metres beyond the McCallum's vehicle, if he had braked at the position he estimated the trailer to be when he first saw the trailer wheel lift.

[174] However, if he had been travelling at 90 kph it would have been impossible for him to stop, as he said he did, in the distance between when he estimated he first saw the trailer rolling over, and a position 5m past the McCallum's van. If he had been travelling at 90 kph he would have travelled on a conservative estimate over 60 metres past the McCallum's vehicle. I have wondered whether perhaps Mr Mason may have made a mistake as to how far he ended up past the van, and that this may have skewed the calculations, but he was clear on the distance, and the short time it took for his vehicle to stop beyond the McCallum's vehicle. Furthermore, the accepted vehicle braking distance calculations are for a normal vehicle, without factoring in a laden trailer, and which leaves open the very real possibility that if he had been travelling at 90 kph his stopping distance would have been greater than 103 metres.

[175] As I emphasised in my decision earlier, I am not saying Mr Mason or Ms Cooper are being untruthful, rather that the physical calculations indicate that whilst they may well have been travelling at 90 to 95 kph earlier, they must have been mistaken as to the speed they were travelling at the critical time.

[176] This of course assumes some significance because it allows for the very real possibility that, given the distance between the vehicles stayed constant, Mr Butt must have been travelling appreciably slower than 90 kph, and which was Mr Butt's stated position both to the Police and in court. The lower Mr Butt's speed is, the more distant Mr Butt's speed is from the vehicle rollover threshold, and also the closer his vehicle's speed is to the advisory speed of 65kph.

[177] Mr Butt's evidence was that he had his cruise control on as he was approaching the bend and that he turned it off in the vicinity of Penny Lane and as best he can remember he did not brake, but rather he allowed the vehicle to decelerate as he approached and entered into the bend.

[178] Mr Butt was familiar with the road and observed it was not a high-speed corner and that you would have to be "loopy" to go around it at 90 kph. He thought he would have been going over 60 kph, but not over 70 kph. He was experienced at towing the particular trailer, albeit for shorter distances, and always uses the cruise control when towing trailers. His daughter described him as cautious when driving, saying it was not unusual for him to stop and check if everything was ok, just as he did on the Hundalees prior to the accident.

[179] I have considered whether I should factor into my assessment that Mr Butt had earlier noticed an issue with the trailer when he stopped in the Hundalees and that perhaps a reasonable and prudent driver would have decided against continuing on. However, this occurred in some tight and windy terrain, at low speed, and Mr Butt thought he heard a noise of some type so he stopped to investigate. His daughter remembers that and thought she heard a noise like the truck hitting a mud flap. They travelled some distance after that without incident. In the circumstances, I see no reason to doubt their evidence on this point, and I do not see it as assisting the prosecution case.

[180] Mr Bass did some test drives, using a similar vehicle and trailer, to see what sort of speed Mr Butt vehicle would have been travelling at shortly before entering the bend if he simply turned off the cruise control at Penny Lane, and allowed his vehicle to decelerate. Mr Bass's evidence was that Mr Butt's vehicle could have come down to 70 kph before getting to the first chevron marked on exhibit 9.

[181] Given the conflicting evidence of the witnesses as to the speed at which Mr Butt was travelling at when he entered the bend, given the physical evidence at the scene, and the expert evidence re stopping distances and distance travelled at certain speeds, I conclude that Mr Butt's speed was more consistent with the speed he says he must have been travelling at, and which was appreciably less than 90 kph, and that it would have been in the range of 70 to 75 kph or thereabouts. In my view, to find his speed was below 70 kph would be too far removed from Mr Mason's evidence as to speed.

[182] Given that Mr Butt was travelling 15 to 20 kph below the speed limit of 90 kph, but 5 to 10 kph over the advisory speed sign, was he driving too fast for the conditions, such that his driving fell below the standard of a reasonable and prudent driver?

[183] Mr Bass suggests that given that Mr Butt's speed was significantly less than that required to achieve vehicle rollover, factors other than speed must have been at play in causing the trailer to rollover. He, and more particularly Mr McGregor, point to a combination of interdependent factors:

- (a) The topography of the area and the funnelling of the wind gusts that were indisputably occurring as Mr Butt enters the bend.
- (b) The presence of longitudinal baffles only in the half full generator gas tank, meaning that the fuel was able to slosh around from side to side, and which would have been affected by the wind gusts and which would have created its own resonance.

- (c) A high sided trailer with a narrow wheel base which would have been exposed to the wind gusts and which would have accentuated the fuel slosh.
- (d) The leaf springs on the trailer, as opposed to shock absorbers, which would have created its own resonance.

[184] In summary, the defence argue that rather than speed causing the trailer rollover, it was vehicle roll resonance which is a recognised phenomenon, and which can occur in trucks in ordinary circumstances. Indeed, they suggest, based on Mr Butt's account of how the trailer was behaving immediately before the accident, the resonance was very likely occurring before Mr Butt entered into the bend.

[185] They suggest that what happened is that the wind was being funnelled through the trees, and was buffeting the trailer which presented as a square shape to the wind. The buffeting would set up the fuel slosh in the small trailer. That would then begin to resonate with the natural frequency of the trailer suspension. So, what happened is that there was a divergent oscillatory action in play before he even entered the bend. When these things resonate and coincide they can be difficult to appreciate. Indeed, sometimes travelling faster might be better than travelling slower as the frequency at which a load alternates could be different to the natural frequency of the trailer suspension.

[186] The prosecution acknowledges the matters raised by the defence, and which touch upon the phenomenon of rollover resonance, but point out that in the Land Transport Safety paper on Dynamic Behaviour of Vehicles that there are many factors that influence a heavy vehicles tendency to rollover, but that the most critical factor listed is the vehicle's speed. Accordingly, they maintain that Mr Butt's speed in amongst all of the circumstances was the critical causative factor. Whilst the senior constable acknowledges in his report the contribution of the gusty wind and trailer design, and the surging or sloshing fuel, he does not see them as being causative factors.

[187] In my view, the defence have laid an evidential foundation to support the reasonable possibility of this accident occurring without the carelessness of Mr Butt. Not only do I have the evidence of Mr Butt and his daughter regarding the speed of Mr Butt's vehicle, I also have measurements from the scene. Mr Butt's speed is far less than the vehicle rollover speed as calculated by Mr Bass. Whilst his speed is greater than that recommended by the speed advisory sign, it is well under the legal limit, and not so extreme so as to on its own amount to driving falling below the standard of a reasonable and prudent driver. As to whether in all the circumstances his driving fell below the standard of a reasonable and prudent driver, I am also content to conclude that the matters identified by the defence as to roll resonance are not fanciful or improbable explanations, but rather are reasonable possibilities based on both the facts, and accepted science. The senior constable acknowledges those matters in his report, and acknowledged them in cross-examination, albeit he disagreed with the weight to be attached to them in all of the circumstances.

[188] I am entitled to draw reasonable inferences from proven facts, and given that inferences in favour of Mr Butt are available on the facts, namely that the trailer rollover occurred as a result of matters beyond his reasonable control and contemplation, Mr Butt is entitled to the benefit of the doubt. Put another way, I am not sure that Mr Butt failed to exercise the degree of care and skill that one expects from a reasonable and prudent driver. Accordingly, I find Mr Butt not guilty on the two charges he faces.

[189] Finally, I wish to acknowledge the hurt and suffering that has befallen the McCallum family as a consequence of this terrible accident.


A.A. Zohrab
District Court Judge