

THE HIGH COURT

Record No. 2013/2104 P

BETWEEN

THOMAS NEVILLE

PLAINTIFF

AND

C.O.D. PLANT AND CIVIL ENGINEERING LIMITED

AND

CONOR HUGHES

DEFENDANTS

JUDGMENT of Mr. Justice Barr delivered on the 9th day of July 2015.

1. This action arises out of a road traffic accident which occurred on 26th April 2012 at 17.50 hours. The plaintiff's Ford Fiesta car was stopped in a line of traffic on the Belgard Road, waiting to turn right onto the N7 Naas Road, when it was struck by a number of pallets, which were being carried in the bucket of a JCB owned by the first named defendant and driven by the second named defendant. The pallets came into contact with the rear windscreen of the plaintiff's car. The window shattered as a result of the impact.
2. This is an unusual case in that while the defendants admit that they are liable for causation of the accident, they state that the impact between the pallets and the rear windscreen on the plaintiff's car was not sufficient to cause the plaintiff to suffer any serious injury. In particular, they assert that the forces applied to the plaintiff's vehicle ceased once the window broke. They argue that in these circumstances, no significant forces were applied to the plaintiff's vehicle sufficient to cause the plaintiff to suffer any injury.
3. The plaintiff gave the following account of the accident: on the day in question he was bringing his brother-in-law to catch a bus. The road surface was wet as it had rained earlier that day. The plaintiff overtook the JCB driven by the second named defendant and pulled into the right turning lane. The traffic lights were red and there were seven or eight cars stopped in front of the plaintiff. His brother-in-law got out of the car. The plaintiff was stopped in the line of traffic. The traffic lights turned green. When the car in front of him moved off, the plaintiff released the handbrake. He then heard a loud shattering sound. He was shunted forwards. He looked in the rear view mirror and saw nothing but darkness behind him and a piece of a pallet coming into the rear of the car through the broken window. He reapplied the handbrake, but this had no effect. He tried to apply his brakes with his right foot, but got no response.
4. The plaintiff said that he panicked at this stage. He decided that he would have to get out of the car, as he was afraid the JCB would push him into the jeep in front of him. He turned to his right and put his left foot down forcefully on the brake. He looked in the wing mirror. He could see the driver of the JCB and it was clear to him that he had not seen the plaintiff.
5. The plaintiff recalled hearing other cars beeping to let the driver of the JCB know what was happening. When he opened the car door, the JCB came to a halt. The plaintiff then alighted from his car.
6. The second named defendant's version of the accident was in similar terms. He had a number of pallets in the front bucket of the JCB. He told his engineer that he was carrying four pallets. He was in the line of traffic behind the plaintiff's vehicle. When the traffic lights turned green, he could see the cars in front of him begin to move off. He moved forward slowly. He estimated that he was travelling at 2/3 km per hour. He said that he saw the pallets lift and he knew that he had hit something. He thought that he had travelled approximately one metre at this stage. He stopped immediately. He got out of the JCB and apologised to the plaintiff.
7. In cross examination the second named defendant stated that he could not see the rear portion of the plaintiff's car due to the pallets obstructing his vision. He could see the roof of the plaintiff's car. He stated that he could not recall the distance between his vehicle and the plaintiff's car as he could not see the rear portion of the car. He could not say what exact speed he was going at, but he stated that he was going no faster than walking speed.
8. The second named defendant said that as soon as the pallet struck the windscreen, he stopped his vehicle. He then changed this to say that he did not know that he had hit the windscreen as he could not see it, but he knew that he had hit something. He then said that he felt the pallet hit the windscreen; he said that when he saw the pallets lifting a little bit, he knew that he had hit something. He stated that he worded it wrong, when he said that he had felt something at the time of the impact. He said that he saw the pallets going up and then down. He applied the brakes and the JCB stopped. He accepted that the JCB did not stop on the moment of impact. He was not sure if he was travelling at 1-2 km/h, which was the speed he had indicated to his engineer.
9. A series of photographs had been taken after the collision. The plaintiff said that after the incident, the JCB reversed. The photos were taken at that stage. This accounts for the distance between the vehicles as shown in the photographs.
10. In the Defence filed on behalf of the defendants, it was pleaded that the breakage of the rear windscreen occurred in the following manner:

"3 (b) Without prejudice to the generality of the foregoing, it is expressly pleaded that the only damage that was caused in the course of the accident was the shattering of the plaintiff's vehicle's rear windscreen when impacted by a falling pallet, which impact was insufficient to cause the plaintiff's vehicle to be shunted in the manner alleged."
11. The second named defendant denied that any of the pallets had fallen at any time. He could not explain this averment in the defence. He accepted that he had sworn an affidavit of verification in respect of the matters pleaded in the defence. He stated that he had sworn the affidavit without reading the defence properly. He did not know how the allegation came to be made in the defence. He stated that he never said to anyone that a pallet had fallen.
12. In replies to a notice for particulars, the defendants corrected the assertion in relation to the fallen pallet in the following terms:

"(b) the pallets were at all times in the bucket of the first named defendant's JCB vehicle, one of which struck the rear windscreen of the plaintiff's vehicle when, once the traffic lights turned green, the first named defendant's vehicle moved forward while the plaintiff's vehicle remained stationary. No force was applied by the first named defendant's vehicle to the plaintiff's car and no damage was caused to any other part of the plaintiff's car apart from the rear windscreen which was shattered. In this regard, attached are laser copies of the photographs taken at the time by Oliver Pinfield of the first named defendant.

The plaintiff confirmed that he was not hurt and a satisfactory arrangement was entered into for the immediate discharge to him of the cost, €130, of the damage to his windscreen to have same replaced at his home that evening by ASAP Windscreens. In addition, he was given €20 for the inconvenience caused to him."

13. Curiously, the plaintiff had given evidence that the pallets were standing upright in the bucket of the JCB when he overtook it. However, the photographs taken immediately after the accident show the pallets to be lying horizontally in the bucket of the JCB. While there may be some confusion in relation to the averment in the defence to the effect that the pallet had fallen onto the plaintiff's rear windscreen, it would appear that this was simply an error in drafting. The court is satisfied that at no stage did the pallet fall onto the plaintiff's rear windscreen.

14. The central issue in this case is whether the impact between the vehicles could have caused any injury to the plaintiff. Mr. Anthony Tennyson, consulting engineer, gave evidence on behalf of the defendant. He stated that in this case it was relevant that the pallet struck the plaintiff's rear windscreen, but there was no other damage to the car. The windscreen was made of toughened glass, the outer layers of which were in compression and the inner layers were in tension. Toughened glass has good compression strength, but low tensile strength. If there is a small point loading on the glass, it will break. It was for this reason that on Luas and Dart trains, there was a small pointed hammer for the purpose of breaking glass windows in case of emergency.

15. Mr. Tennyson was of opinion that the bearer planks on the pallets had sharp points, which would have broken the glass instantly. There would be no forces transferred to the occupant of the vehicle because: (i) the glass shattered on impact; and (ii) the glass was not directly attached to the car – it was held in place by a rubber seal. The glass was slightly smaller than the opening for it, it sat into the rubber seal and in this way connected with the body of the car. Mr. Tennyson was of opinion that whatever forces may have been applied to the windscreen would have been absorbed by the seal and not transferred into the body of the car, or to the occupant of the car.

16. In his report under the heading Personal Injury Threshold, Mr. Tennyson had described the classical mechanism of a whiplash injury in the following terms: in a typical low speed rear end collision, the bullet car strikes the rear of a stationary or slower moving target car. The occupants of the target car are usually belted and forward facing. The force of the impact accelerates the target car forward. The occupants are initially stationary with respect to the target car seats. The seat back is initially compressed against the torso of the occupant. The seat back extends and accelerates the torso of the occupant forward. The head lags behind and extends. If the headrest is not correctly fitted, the head can extend over the back seat in hyper extension. The torso continues to move forward with the head following. The seatbelt arrests the forward movement of the torso and the head continues forward in flexion or even hyper flexion.

17. Mr. Tennyson stated that the plaintiff in his account of the accident did not describe any movement of the head and body sufficient to cause him to suffer a whiplash injury. The pallet broke the glass, the glass did not transmit any force to the car and it did not transmit any force to the occupant. Once the glass had shattered, there was no force applied to the car, given that there was no evidence of any other car damage.

18. The engineer had carried out a review of the literature which was designed to establish a personal injury threshold below which injury is a very low probability. Acceleration was calculated by the formula expressed as the change in velocity divided by time; this is expressed in the formula $\Delta v/\text{time}$. The generally accepted threshold is Δv of 8 km/h, which is roughly equivalent to double normal walking speed. Some authors had accepted a Δv of 5 km per hour as being sufficient to cause a whiplash injury.

19. Mr. Tennyson stated that the time of a rear end collision is reasonably constant at about 100 milliseconds so that the variable becomes Δv . The effect of reducing the time below 100 ms would be to increase the acceleration. He would take issue if the time was reduced to 10 ms if the JCB was travelling at 0.5 km/h. He said that that would be misleading. He said that the pallet struck the glass, which then broke. The connection between the glass and the car was the rubber seal. It was not disturbed except for the bottom right corner. The rubber seal would act as a delay similar to a bumper. For that reason he had calculated collision time as the same as that for a bumper-to-bumper impact. In his opinion, if there was any reduction in collision time it was slight.

20. He stated that to cause a whiplash injury, there must be movement of the plaintiff's body. The plaintiff did not describe any such movement. Mr. Tennyson stated that in starting from a stationary position, the JCB would be very slow and sluggish. However, he accepted that in first gear, the JCB could go up to 6.62 km/h.

21. In cross examination, Mr. Tennyson stated that he based his opinion on the description of the accident as given by the driver of the JCB and the photographs taken at the scene. The driver had told him that he had been travelling at a very slow walking speed less, than 1-2 km/h. Mr. Tennyson accepted that normal walking speed was circa 4 km/h. He also accepted that the driver in his evidence had said that he did not know what speed he was travelling at. However, he said that he paid more attention to the method of forced transmission between the pallet and the window and the car, and onto the plaintiff. The glass and the rubber were incapable of transmitting any significant force as the impact was light, given the lack of damage to the rear of the plaintiff's vehicle and the defendant driver's description of travelling at a slow speed. Mr. Tennyson accepted that it was difficult to estimate what was meant by "low speed" for his report. He had accepted the driver's self-assessment of his speed as being "slow".

22. The driver of the JCB had told him that he had travelled 1 m before the impact. He accepted that in his evidence the driver had conceded that he did not know what distance he had travelled before the impact. He could see the roof of the plaintiff's car but not the body or the back of the car.

23. Mr. Tennyson stated that he believed that the pallet struck the glass, which shattered, and that there was no forward movement because the edges of the glass did not move and the seal was left in place.

24. It was put to the witness that the driver said that he saw the pallets move up and that this was what prompted him to apply the brakes. Mr. Tennyson accepted that one second is the normal reaction time. When the brakes were applied there is a reaction time for the braking system to operate.

25. Mr. Tennyson stated that it was his theory that the car did not move at all. The point of contact between the JCB and the car was the pallet, which made contact with the glass. The car may have moved slightly. It was possible that the car may have moved, but there was no evidence of contact between the pallets and the car. The only contact was with the glass. He accepted that the pallets could have pushed the car forwards before the glass shattered. The plaintiff could be correct in stating that his vehicle moved forward and that he applied the brakes. The plaintiff was trying to evacuate the vehicle. It was travelling very slowly, so it was easy to get out of it. The absence of other car damage was consistent with an impact at very slow speed.

26. Mr. Tennyson stated that the plaintiff said that the car was "shunted", rather than that he was shunted, meaning that the vehicle moved in relation to the ground, not that he was shunted in relation to the vehicle. He got no impression of movement of the driver relative to the seat.

27. Mr. Tennyson stated that if the plaintiff's vehicle had been moved while the brakes were engaged, there would have been "dry tracking" at the scene. He explained that this was caused where the brakes on the target car were applied and it was pushed forward on a wet surface. The tyres would leave a tracking mark on the road which would be dry. Mr. Tennyson stated that he had never seen this, as he would in the ordinary course of events carry out his inspection of the locus many months after the accident. He stated that he had seen reference to dry tracking in garda abstract reports.

28. Garda Paul Guy gave evidence of arriving at the scene of the accident some short time after it had taken place. He stated that there were no skid marks visible on the road. He stated that there had been heavy rain just prior to the time of the accident. He stated that he had never heard of or seen "dry tracking" as referred to by Mr. Tennyson.

29. The engineer stated that the windscreen had been made of toughened glass that had been heat treated, so that the outer surface contracts at a different rate to the inner layers. Such glass is tougher than ordinary glass. Until it breaks, it will transmit forces. The seal holds the glass and is attached to the body of the car. In the photographs taken after the impact, there is a suggestion of forward movement in the seal at the lower right corner. The forces will be distributed between the pallet, the glass, the rubber and the steel of the car. Mr. Tennyson accepted that some forces could be transferred to the car itself.

30. Mr. Tennyson stated that in a rear ending collision the time was constant at 100 milliseconds. The variable was the velocity of Δv . If the time was not constant, the velocity was not the only variable. Time was the period during which the collision took place. Δv was the velocity that was applied to the object. The higher the Δv , the more force will be applied to the occupant. The threshold only applies if time is constant. The time used of 100 ms was for a bumper-to-bumper collision. There was no literature for the time for a collision with glass. Mr. Tennyson did not believe that there would be significant difference in duration of collision time where glass was involved. When one takes all the components being pallets, glass, rubber and steel, it was not different to a bumper-to-bumper collision. The accident time in the literature was given a wide range; 100 ms was the common figure used. The bumper must protect the vehicle up to certain speeds. Bumpers were made of plastic; they will deform and reform. He accepted that it was different to the collision between a pallet and glass. Unsecured pallets would move on impact. He believed that the time of impact was similar to that in a bumper-to-bumper collision.

31. In summary therefore, Mr. Tennyson was of the view that this was a very light impact to the tailgate glass, which was incapable of transmitting any force to the frame of the vehicle. Consequently, the target occupant did not experience sufficient change in velocity and in the circumstances there was no risk of whiplash injury to the plaintiff.

32. Mr. Colin Glynn, consulting engineer in the firm of Denis Wood Associates, gave evidence on behalf of the plaintiff. He stated that in a normal rear end impact one can use the amount of car damage to estimate the speed of the offending vehicle. This would be appropriate where there was a normal bumper-to-bumper collision. However, in this case, it was an atypical collision. The collision impact was somewhat minor, but the manner in which the vehicle may have been shunted forward was unrelated to the impact damage. One can gently push a vehicle and once it reaches the speed of the pushing vehicle, no further damage will be caused. The collision mechanism, being the manner in which the target vehicle is propelled forward, is separate to the initial impact. After the first contact, the two objects remain in contact, one pushing the other forward without any further vehicle damage.

33. The engineer noted that Δv was the change of speed of the target vehicle. The defendant's engineer had stated that a Δv of 5 km/h was necessary in order to cause personal injury. It was generally accepted as the threshold for the onset of personal injury. However, this calculation arises where the bumper of the bullet vehicle engages with the bumper of the target vehicle. That was different to what happened in this case. Mr. Tennyson stated that in a typical rear end collision the variable in the assessment of acceleration, which is Δv divided by time, was the Δv component, because the time of the collision was a constant at 100 ms. The collision duration was the time during which the vehicles were in contact. In a typical rear end collision this was constant at 100 ms. It was the Δv element which was the variable.

34. Mr. Glynn stated that once the time element changes, one has a different accident. Δv cannot be used as the sole indicator of risk of injury. While assessing other types of collisions, one cannot use the assumption that the time of impact was 100 ms. Bumpers are designed to engage with each other; they are designed to crumple. When they deform, that elongates the collision duration, reducing acceleration forces to the occupants of the vehicle. The bumper will absorb some of the collision energy. Bumpers are designed to deform over time. The rear bumper will deform forwards and the front bumper will deform backwards.

35. By contrast, in a collision involving rigid structures, which are not designed to deform, the forces travel forward and the collision energy is less. It is transferred into the vehicle and into the occupants. The acceleration levels will be different.

36. Mr. Glynn stated that a pallet to glass collision has a different collision time to a bumper-to-bumper collision. Glass does not deform. When one changes the collision time, this has a significant effect on the degree of acceleration experienced by the occupants, which produces the injury. Acceleration is Δv divided by time. If the time is reduced, a smaller Δv will produce significant acceleration.

37. Mr. Glynn noted that Mr. Tennyson had used the time relevant to a bumper-to-bumper collision in his analysis. Mr. Glynn disagreed with this assessment. He could not say what acceleration time was involved in this case. The glass acted as a rigid material until it broke. The time for this to occur would be significantly less than for a bumper-to-bumper collision. This meant that the time component would be lower, with the result that the degree of acceleration would be more at a lower speed.

38. Mr. Glynn also disagreed with the assertion made by Mr. Tennyson that glass was not capable of taking and transmitting a load. The glass can bear a load and transmit it to the surrounding frame. Glass in a car windscreen is a tempered glass that is heat-treated. It is cooled quickly to enable it to retain loads. It is five to eight times stronger than ordinary glass. It needs a greater force to break it. He agreed with Mr. Tennyson that glass is brittle. Once it shatters it cannot transmit a load. However it is capable of

transmitting a load up to the point when it breaks. He stated that glass could absorb energy that goes into the vehicle and the occupants.

39. The rear windscreen is convex. It has low relative tensile strength but tempered glass has a high compressive strength. Due to the convex shape of the rear windscreen, if a load is applied to it, it will act in compression. The convex shape of the glass causes the glass to be loaded with compressive force; it can absorb and transfer significant loads.

40. Mr. Glynn stated that he had purchased a rear tailgate and rear windscreen from a 1998 model Ford Fiesta. When he hit the windscreen with a rubber headed mallet, he could not break the glass. He then put the tailgate lying on the ground and placed a wooden board on top of it. Onto this he loaded ¼ tonne of rocks. The glass did not break. While these were static tests, they demonstrated the load bearing capacity of the rear windscreen.

41. In terms of the speed of the defendant's vehicle, Mr. Glynn thought that it was travelling at more than 1-2 km/h, which the defendant's driver had indicated to Mr. Tennyson. It was always difficult to accurately estimate very low speeds. When accelerating, the defendant driver would have accelerated in a normal fashion. This would be at the rate of 0.1 g, in one metre it would reach 5 km/h at normal acceleration. 0.1 g is an acceleration rate where speed increases by 1m per second, and a vehicle would reach 1 km/h in just over one inch. It would reach 2 km/h in 18 inches. These are very low speeds. At 1 km/h it would take over seven seconds to travel 1 m.

42. Mr. Glynn pointed out that drivers of vehicles do not react immediately. It takes time for them to react. It takes time and distance to bring the vehicle to a halt.

43. As the road was wet, the engineer would not expect to find skid marks left by the plaintiff's vehicle.

44. In cross examination, Mr. Glynn accepted that the pallets had come into contact with the glass. There was minor contact between the pallets and the tailgate. A repair estimate had indicated that there was some damage to the tailgate. He referred to photograph number one, which suggested that the rubber strip around the frame had been pulled slightly forwards in the bottom right hand corner. He was not suggesting that there was any other movement other than a pallet coming into contact with the window.

45. Mr. Glynn stated that prior to the window breaking, the glass had the capacity to transmit the load and move the car forward. He accepted that on Luas and Dart trains, there was a small hammer to be used in case of emergency. This was a hammer with a metal point which would apply a very concentrated load to the glass window. He did not think that there were similar points of impact between the pallets and the rear windscreen. His experiments showed that the glass had capacity to bear and transmit loads prior to breaking. He did not think that the glass broke instantly when hit by the pallets.

46. In relation to the Personal Injury Threshold, Mr. Tennyson had given a description of the classical whiplash mechanism. However Mr. Glynn stated that the exact mechanism of the whiplash injury was not clearly understood. When hit from the rear, the torso is forced forward and the head lags behind and may even move backwards. Then the head follows and moves forward beyond the torso. The cause of injury is the movement of the cervical vertebrae being forced into an s-shape, due to the forces generated in the collision. He accepted that not every blow to the rear of a car would result in a whiplash injury. In this case the plaintiff had described a "shunt" movement, which Mr. Glynn thought would have the potential to cause a whiplash injury.

47. In relation to the literature which had been referred to by Mr. Tennyson, Mr. Glynn noted that they all referred to a typical bumper-to-bumper collision. He did not think that the literature reviewed was relevant to this case. In a bumper-to-bumper collision time was a constant at 100 ms. Also the bumper was designed to absorb energy by crumpling. For bumper-to-bumper collisions there was a threshold above which injury was likely. In collisions involving other parts of a vehicle, it was not known what speed was the likely threshold for receiving injury. In bumper-to-bumper collisions, the threshold was normally 8 km/h. However Hoyes et al had suggested a lower threshold of 5 km/h.

48. Mr. Glynn believed that in the area of 5-8 km/h was a grey area where injury could occur. Above 8 km/h injury was very likely. This was applicable to bumper-to-bumper collisions.

49. In this case the speed of the JCB was not known. The speed of the JCB was a relevant factor. If it had been travelling at normal walking pace this would give a speed of 1.5 m/second circa 5 km/h. He thought that this was the likely speed of the JCB in this case. He did accept that the JCB was a slow moving vehicle.

50. If the time of the impact was reduced, this could lead to a higher rate of acceleration. He did not think that there would be skid marks left by the car due to the fact that the road surface was wet. With the handbrake on, this only affected the rear wheels. Due to the fact that the road was wet, the friction between the tyre and the road would be much reduced and the water on the road surface would act as a coolant, so there would not be skid marks left by the tyres of the car. Tyre marks are the result of heat between the tyres and the road surface. In the photographs, it was shown that the road was wet and there were puddles of water visible.

51. In relation to the conflict between Mr. Tennyson and Mr. Glynn in relation to whether it was possible for there to be sufficient forces generated such as to cause a whiplash injury to the plaintiff, I prefer the evidence of Mr. Glynn on this issue. It seems to me that the hypothesis put forward by Mr. Tennyson was based on an analysis of literature which dealt with bumper-to-bumper collisions, where the time element of the collision was constant at 100 ms. This time applies to bumpers which are designed to absorb energy and to deform on impact. For such collisions, the degree of velocity required to produce personal injury has been determined at between 5-8 km/h.

52. I think that Mr. Glynn is correct when he states that that threshold cannot be used when the points of collision involve other parts of the vehicle. In this case the points of contact were the pallets coming into contact with the rear windscreen of the car. The glass was toughened glass. It was designed to withstand significant blows as demonstrated by Mr. Glynn's experiments with the rubber headed mallet and the load of rocks. I accept his evidence that prior to shattering, the rear windscreen could withstand and transmit significant loads.

53. I am satisfied that the forces applied by the pallets on the windscreen were transmitted from the glass into the body of the car. I do not accept that the rubber seal around the window would have had much effect in reducing the forces transmitted to the rear of the car and to the occupant thereof.

54. I also accept Mr. Glynn's point that the time involved in the collision cannot be assessed to be the same as that for a bumper-to-

bumper collision. Bumpers are specifically designed to absorb significant loads and to crumple on impact. The pallets and the glass do not have these characteristics. It is possible that a lower impact time would produce a higher degree of acceleration.

55. The second named defendant told his engineer that the JCB was travelling at 1-2 km/h and that he had travelled approximately 1m at the time of the impact between the vehicles. However, in cross examination he conceded that he did not know the speed of the JCB, or how far it had travelled prior to the impact. He said that he was going no faster than walking speed.

56. I accept the evidence of Mr. Glynn that it is difficult for drivers to estimate the speed of vehicles when travelling very slowly. In these circumstances, having regard to the fact that the pallets actually broke the windscreen, I find that it was likely that the defendant was travelling at or about walking speed of circa 5 km/h.

57. The defendant's engineer referred to the issue of "dry tracking". He said that he had seen it referred to in garda abstract reports. Garda Guy stated that he had never seen or heard of dry tracking. I am satisfied that, having regard to the wet condition of the road at the locus, nothing can be read into the fact that there were no skid marks or dry tracking at the time of the impact.

58. I am satisfied that there was a significant collision between the vehicles. In these circumstances it was possible for the plaintiff to suffer a whiplash injury as a result of the impact. It should be noted that a whiplash injury was only one of the injuries complained of by the plaintiff. His main complaint was of an injury to his left knee.

59. Turning to the injuries suffered by the plaintiff, he stated that he had been very shocked by the accident, because his stepdaughter usually sat in the back seat. Had she done so, she would have suffered very serious injuries. In the hours following the accident, the plaintiff developed severe pain in his neck. He couldn't move his neck. After a couple of days he went to his GP. He was sent to hospital for x-rays, which did not reveal any fractures of the bones in his neck. His GP prescribed tablets for the pain. The plaintiff stated that after three to four months, his neck complaints cleared up.

60. The plaintiff also complained of lower back pain and discomfort. He had had back pain prior to the time of the accident. It does not appear that he required any specific treatment for his back complaints.

61. The plaintiff's major complaint was in relation to his left knee. In the days after the accident it became swollen and painful. The plaintiff's GP drained fluid from the knee on a number of occasions. His knee was very sore at that time. He could not walk due to knee pain. On occasion the knee locked and on one such occasion when the knee locked, he fell down a flight of stairs.

62. X-rays taken in June 2012 showed an essentially normal knee. The plaintiff's GP recommended physiotherapy treatment and the plaintiff had a number of sessions; he felt this helped his symptoms.

63. When the plaintiff's knee complaints did not settle, he was referred by his GP to Mr. Tom McCarthy, orthopaedic surgeon. He was seen by Mr. McCarthy on 18th June 2013. At that time he was complaining of pain in his left knee and also in his lower back. Examination revealed swelling in the knee joint. Mr. McCarthy stated that this could have been caused by an acute injury or by degenerative changes in the knee. In the absence of any prior complaints in the knee, it was likely to have been caused by an acute injury. Examination revealed full movement of the knee and some tenderness in the lower back. Mr. McCarthy stated that some of the findings in the lower back could have been age related. If there were no neurological signs, physiotherapy was the appropriate treatment. The plaintiff had had some lower back symptoms prior to the time of the accident. Mr. McCarthy felt that the RTA could have exacerbated these symptoms. He stated that while the plaintiff did have complaints in June 2013, he did not feel that there was anything of great significance there. If he had thought there was anything significant, he would have referred the plaintiff on for assessment by specialists who dealt with back complaints.

64. The plaintiff had an MRI scan performed of his lumbar spine. This confirmed degenerative disc disease in his lumbar spine. There was no neural canal compromise. Having regard to this and his clinical picture, Mr. McCarthy did not advocate any surgical intervention for this complaint.

65. The plaintiff's principal concern in June 2013 was with his left knee. The plaintiff also had an MRI scan of his left knee. This confirmed a knee joint effusion and there was also signal change within the medial meniscus. Mr. McCarthy stated that this could indicate wear and tear on the meniscus. It would be a common finding in people in their fourth and fifth decades.

66. The plaintiff had said that he slammed the brake forcefully with his left leg. This was consistent with his patella femoral symptoms. The plaintiff was noted to have significant mechanical symptoms, in particular his complaint of "locking" of the knee joint. As the plaintiff was having significant mechanical symptoms, Mr. McCarthy recommended that he have an arthroscopy performed on his left knee.

67. The arthroscopy was carried out in May 2014. It showed that the knee was stable. There was evidence of grade four change in the patellofemoral compartment and a small focal area of grade four change in the medial femoral condyle, with grade three change in the medial tibial plateau.

68. Mr. McCarthy stated that there was significant degeneration in the patellofemoral compartment. This was surprising as the x-ray in June 2012 showed no evidence of significant degeneration at that time, or at the time of the MRI scan. There had been a lot of degenerative change in a short period of time. In the medial compartment there was degeneration in the meniscus and in the medial femoral condyle. Mr. McCarthy stated that this usually happened in pre-existing degenerative change in the knee joint. The plaintiff had had no complaints in relation to his knee pre-accident. Usually these changes would develop over years. He could not explain why such degeneration had happened in a short space of time. On examination on 31st March, 2015, he had a small effusion in the knee. He had a good range of motion and the knee was stable. The swelling in the knee was indicative of underlying degeneration. There was degenerative change in the patellofemoral compartment.

69. Mr. McCarthy was of opinion that the plaintiff would require a total knee replacement in possibly eight to ten years' time. It was difficult to determine the effect of the RTA on the degenerative changes. X-rays were normal but on arthroscopy significant degenerative changes had been found in the patellofemoral compartment. He could not explain the extent of the degenerative changes in such a short period of time. He was of opinion that the plaintiff had asymptomatic degenerative changes in his knee, which were rendered symptomatic in the RTA. If the knee was flexed at the time of the impact, this would be significant to the mechanism of injury.

70. In cross examination, Mr. McCarthy stated that there were degenerative changes in the knee and he suspected that these were pre-existing degenerative changes. He felt that the underlying degenerative changes were exacerbated by the RTA. An injury to the

patellofemoral compartment would require an impact on the knee, or it could be an impact with the foot hitting the floor and the force would be transferred up to the knee. If force was applied while the knee was in a flexed position, this would cause more force to go through the patellofemoral compartment. He was of opinion that the knee replacement operation is a probability due to the degenerative changes in the knee, some of which were due to the RTA.

71. I accept the evidence of Mr. McCarthy that the plaintiff had pre-existing degenerative changes in his knee, which were asymptomatic prior to the time of the accident. They were rendered symptomatic by the injury sustained in the accident. They have had a serious adverse effect on the plaintiff's life. The knee is painful and is prone to locking. It is very sore in cold weather. It can also give way beneath him. He cannot walk his dogs as he had done before the accident.

72. Of more concern is the prognosis for the future. Mr. McCarthy is of the view that a total knee replacement is a probability in the next 8/10 years. This will be due to the progression of degenerative changes in the left knee, some of which are due to the accident.

73. In the circumstances, I award the plaintiff general damages to date €75,000, general damages for the future €95,000 and agreed special damages €1,633, giving an overall award of €171,633.00.