IN THE HIGH COURT OF THE REPUBLIC OF SINGAPORE

[2013] SGHC 286

Suit No 432 of 2011

Between

BNJ suing by her lawful father and litigation representative, B

… *Plaintiff*

And

(1) SMRT Trains Ltd
(2) Land Transport Authority of Singapore

… *Defendants*

JUDGMENT

[Tort]—[negligence]—[breach of duty]
[Tort]—[occupier's liability]—[who is an occupier]
[Tort]—[negligence]—[res ipsa loquitur]
[Tort]—[breach of statutory duty]—[essential factors]
[Contract]—[contractual terms]—[implied terms]

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BNJ (suing by her lawful father and litigation representative, B)
v
SMRT Trains Ltd and another

[2013] SGHC 286

High Court — Suit No 432 of 2011
Vinodh Coomaraswamy JC (as he then was)
29–31 October 2012; 1–2, 5–9, 19–20 November 2012; 11 March 2013

31 December 2013 Judgment reserved

Vinodh Coomaraswamy J:

1 On 3 April 2011, a train coming into the Ang Mo Kio MRT station ("AMK Station") struck the plaintiff, causing her tragic and life-changing injuries. She was then just fourteen years old. In these proceedings, she seeks damages from two defendants for the injuries she suffered on that day. The first defendant is SMRT Trains Ltd ("SMRT"). SMRT is a public transport operator and holds the license to operate the mass rapid transit ("MRT") system along the North-South line. SMRT operates AMK Station and the train which injured the plaintiff. The second defendant is the Land Transport Authority of Singapore ("the LTA"). The LTA is a statutory board charged with regulating, amongst other things, Singapore's MRT system. The LTA is the owner of AMK Station and regulates SMRT's operations.

The plaintiff is injured on 3 April 2011

2 The plaintiff arrived in Singapore on 14 March 2011[1] to study English. Her course was scheduled to end on 8 April 2011. She lived while in Singapore with a host family in Ang Mo Kio. She commuted from Ang Mo Kio to her place of study at Peninsula Plaza each weekday by MRT via the North-South line from AMK Station to City Hall MRT station.

3 3 April 2011 was a Sunday. The plaintiff arranged to meet friends for lunch at a shopping mall close to City Hall station. She left her host family's flat at 10:40 am and arrived at AMK Station at about 11:00 am[2]. Closed-circuit television ("CCTV") footage from AMK Station shows her walking on to the platform at 11:04 am[3] and waiting for a train. Just as the train pulls into the station, the plaintiff falls face forward over the edge of the platform on to the tracks. The train driver applies the emergency brake but cannot stop in time. The oncoming train injures the plaintiff's legs catastrophically. They could not be saved. Both legs had to be amputated below the knee.

The pleadings

4 The plaintiff commenced this action on 16 June 2011. As she is a minor, she sues through her father as her litigation representative. On 31 January 2012, the plaintiff added the LTA as a second defendant and filed her third amended Statement of Claim asserting a cause of action against the LTA.

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1 See Plaintiff's Bundle of Affidavits of Evidence-in-Chief ("PBAEIC") at p 2, para 4

2 See PBAEIC at p 3, para 5

3 See PBAEIC at p 21

5 The plaintiff pleads that her injuries were caused by the following breaches of duty by the defendants:[4]

(a) breach of a duty of care in negligence;

(b) breach of duty as occupiers: the defendants are both occupiers of AMK Station, and the plaintiff was a lawful visitor to AMK Station, having paid a fee to the defendants' ticketing agents for the use of AMK Station[5];

(c) breach of statutory duty: the defendants failed to take adequate measures to prevent people from falling from a height, in breach of paragraph 27 of the fifth schedule of the Building Control Regulations 2003 (Cap 29, S 666/2003) ("the Regulations")[6]; and

(d) breach of an implied term of the contract between the plaintiff and SMRT and/or LTA that AMK Station would be safe for lawful visitors standing on the platform behind the yellow line, even if the platform was crowded[7].

6 The plaintiff also pleads and relies on the doctrine of *res ipsa loquitur*[8].

7 The plaintiff gave the following particulars of the defendants' breaches of duty:

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4 See Plaintiff's Bundle of Pleadings at p 3, para 6

5 See Plaintiff's Bundle of Pleadings at p 3, para 2

6 See Plaintiff's Bundle of Pleadings at p 3, paras 6(b)-(c)

7 See Plaintiff's Bundle of Pleadings at p 3, para 5

8 See Plaintiff's Bundle of Pleadings at p 3, para 6(ee)

(a) failing to erect, design or construct any or sufficient barriers between the platform and the tracks at the time of construction of AMK Station or at the time of the accident[9];

(b) failing to be aware of, or prevent, the reasonable risk of persons falling into the tracks when the platform is overcrowded, including the possibility of persons being pushed[10];

(c) failing to ensure that trains arrived at a proper interval such as to prevent overcrowding at the platform, thereby causing the plaintiff to lose her balance after she was pushed[11];

(d) failing to ensure that the distance between the yellow line and the edge of the platform ("the yellow line distance") was sufficient to prevent people falling onto the tracks when people pushed forward, and misleading the plaintiff into believing that she would be reasonably safe as long as she stood behind the yellow line[12];

(e) failing to take any or any sufficient measures to ensure the plaintiff was safe when the trains were approaching[13];

(f) failing to keep adequate manpower on the platform to ensure proper crowd control especially when the platform was very crowded[14];

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9 See Plaintiff's Bundle of Pleadings at p 3, para 6(a)

10 See Plaintiff's Bundle of Pleadings at p 3, para 6(f)-(j), (s), (v)

11 See Plaintiff's Bundle of Pleadings at p 3, para 6(f)

12 See Plaintiff's Bundle of Pleadings at p 3, para 6(k)-(n)

13 See Plaintiff's Bundle of Pleadings at p 3, para 6(o)-(r)

14 See Plaintiff's Bundle of Pleadings at p 3, para 6(y)-(z)

(g) failing to institute or enforce any or any adequate system of monitoring or crowd control whereby danger could be detected before the plaintiff's accident[15]; and

(h) failing to see the plaintiff in sufficient time or to brake the train in sufficient time to avoid the plaintiff's accident[16].

8 The plaintiff's position evolved considerably over the course of trial. At the conclusion of the trial, counsel for the plaintiff, Mr Gomez, accepted that it was no longer the plaintiff's case that[17] she had been pushed on to the tracks[18]. He also did not pursue the allegation that the defendants negligently permitted the platform to become overcrowded[19], whether by failing to ensure that the trains arrived at proper intervals[20] or otherwise. Mr Gomez also dropped the allegation that there was negligence on the part of the train driver[21] or in the operation of the train's brakes[22]. However, he did argue that the speed of the train when it arrived at AMK Station had been unreasonably fast[23]. In relation to defendants' failure to erect any barriers at the platform edge, it became apparent as the case unfolded that the plaintiff's contention encompassed both the defendants' failure to erect *permanent* platform-edge

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15 See Plaintiff's Bundle of Pleadings at p 3, para 6(aa)

16 See Plaintiff's Bundle of Pleadings at p 3, para 6(bb)-(dd)

17 See Defendants' Closing Submissions at para 46

18 See transcript for 20 November 2012 at p 2, line 13

19 See transcript for 20 November 2012 at p 3 line 30- p 4 line 5

20 See transcript for 20 November 2012 at p 3, lines 25-30

21 See transcript for 20 November 2012 at p 4 lines 6-10

22 See transcript for 20 November 2012 at p 4 lines 11-13

23 See transcript for 20 November 2012 at p 4 at lines 11-28

barriers at the time the plaintiff was injured, as well as its failure to erect *interim* platform-edge barriers while it was installing the permanent platform-edge barriers.

9 SMRT's defence to the claim in negligence is that it took appropriate and sufficient measures to prevent people from falling from the platform on to the tracks at AMK Station. These measures included drawing a yellow safety line on the platform, broadcasting audio warnings and displaying warning signs trackside at AMK Station. SMRT also averred that installing platform-edge barriers was not a matter within its purview[24]. The LTA argues that it was not negligent because it took appropriate and sufficient measures to prevent people falling onto the tracks at AMK Station[25]. In particular, it pleads that platform-edge barriers were not necessary to keep the plaintiff reasonably safe[26].

10 Both defendants aver that safety is a responsibility shared between SMRT, the LTA and passengers. They both also initially averred that the plaintiff's injuries were caused solely by or "wholly" contributed to by the plaintiff's own negligence in failing to keep a proper lookout for the oncoming train, failing to take reasonable care of her own well-being, failing to pay adequate attention to the surroundings, failing to take precautions for her own safety and failing to stand behind the yellow line until the train had stopped[27].

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24 See Plaintiff's Bundle of Pleadings at p 35, para 4a

25 See Plaintiff's Bundle of Pleadings at p 46 para 6biii

26 See Plaintiff's Bundle of Pleadings at p 45, para 6a

27 See Plaintiff's Bundle of Pleadings at p 41 para 6, and p 50, para 7

11 In relation to the claim for breach of statutory duty, both defendants contend that MRT stations are exempt from complying with the Regulations[28].

12 At the conclusion of the evidence, counsel for the defendants, Mr Anparasan, conceded that the LTA and SMRT both owe a duty of care to the plaintiff[29]; and that if they were to be found to be in breach of this duty of care, that the breach caused the plaintiff's injury[30]. The defendants also abandoned their claim of contributory negligence against the plaintiff[31].

The issues before this court

13 The legal issues before me are as follows:

(a) The basis of the defendants' duty of care to the plaintiff;

(b) Whether there was a contract between the plaintiff and SMRT; and if so, whether there was an implied term in that contract; and if so, whether that term was breached;

(c) The standard of care expected of the defendants;

(d) Whether the defendants breached their duty of care to the plaintiff;

(e) Whether the doctrine of *res ipsa loquitur* applies; and

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28 See Plaintiff's Bundle of Pleadings at p 35 para 4b, and p 45 para 6b

29 See transcript for 20 November 2012 at p 10, lines 12-14

30 See transcript for 20 November 2012 at p 6, line 10-29 and Defendants' Closing Submissions at para 47

31 See transcript for 20 November 2012 at pp 8-9; Defendants' Closing Submissions at para 47

(f) Whether there was a breach of statutory duty on the part of the defendants.

14 Before dealing with these issues however, it is necessary for me to make factual findings on two key points:

(a) Why did the plaintiff fall onto the tracks? and

(b) Was the plaintiff standing behind the yellow line when she fell?

Why did the plaintiff fall onto the tracks?

The oral evidence

15 There was some uncertainty as to why the plaintiff fell onto the tracks. The plaintiff initially alleged in her affidavit that the passengers waiting on the platform at AMK Station that morning rushed or surged toward the yellow line, pushing and shoving and coming into close contact with her as the train approached. The plaintiff no longer pursues that allegation. The plaintiff's evidence in chief is that she simply "lost [her] balance"[32]. She is unable to remember tumbling from the platform on to the train tracks because her mind went blank sometime between the time she lost her balance and the time she landed on the tracks[33]. She regained consciousness only when the train was approaching but was unable to react by scrambling to safety as she was in a state of shock. The plaintiff maintained in her testimony that she did not faint[34]. On the last day of trial, Mr Gomez summed up the position as being that the

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32 See PBAEIC at p 3, para 6

33 *ibid*

34 See transcript for 29 October 2012 at p 35, lines 5-6

plaintiff "felt dizzy" and "blanked out just before the train arrived", but stopped short of agreeing with my suggestion that she had fainted[35].

16 The defendants' case is that AMK Station was not crowded on 3 April 2011 because it was not a weekday and because the plaintiff was not travelling at peak hour. They argue that the plaintiff clearly was not pushed or jostled into losing her balance. But they do not allege that the plaintiff jumped from the platform or that her conduct was in some other way deliberate. Their pleaded case is that she fell onto the tracks "on her own accord."[36] That is a curious phrase given that the defendants do not allege that the plaintiff's actions were deliberate. In the context of the defendant's case, I must read that phrase as meaning simply that the plaintiff fell without any external impetus.

17 Mr Anparasan referred me to a medical report from the doctor who attended to the plaintiff when she arrived at the emergency department of Tan Tock Seng Hospital. The report stated that upon arrival, the plaintiff "alleged she was feeling giddy that day and she accidentally fell onto the MRT track at Ang Mo Kio station[37]". Further, a number of newspaper articles were adduced as evidence in court, each reporting that the plaintiff "had a dizzy spell", or "fell into the path of an oncoming train after feeling dizzy". In one particular article, the plaintiff was reported to have told her aunt, one Ms Hong, that she[38]:

> ...remembers very clearly that she was standing behind the yellow line. Then she started blacking out and has no idea how she fell onto the tracks. Ms Hong said that [the plaintiff]

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35 See transcript for 20 November 2012 at p 2 lines 3-32—p 3 lines 1-8

36 See Defendants' Opening Statement dated 19 October 2012 at para 12

37 See Plaintiff's Bundle of Pleadings at p 31

38 See Defendants' Bundle of Documents ("DBOD") Vol 2 at p 351

> remembered fainting before the accident. "She felt giddy and fell forward. When she woke up, she was already beneath the MRT train," said Ms Hong.

18 When cross-examined on the contents of the medical report and the newspaper reports, the plaintiff denied that they accurately described how she fell[39].

The CCTV footage

19 CCTV footage from Ang Mo Kio Station shows the plaintiff waiting uneventfully for her train at the platform. As a train approaches the station, the plaintiff is seen to start falling forward: stiffly, with her arms by her side. She continues falling forward face-first until she lands horizontally on the platform, still with her arms by her side. At this point, all of her body is still on the platform except for her shoulders and head, which are over the platform edge. The momentum of her fall then carries her body forward horizontally along the platform and over its edge. As her waist passes the platform edge, her legs flip over her upper body (which by this time appears to be under the platform) in a somersault-like motion. Her entire body then falls at track level with her head and torso under the platform, off the tracks and face up, but with both her shins lying across the rail closest to the platform. The lower extremities of the plaintiff's legs are now the only part of her body which is still visible in the CCTV footage. The entire process of her falling takes at most 3 seconds. About two seconds after falling on the track, the plaintiff's legs appear to pull back slightly and then remain still. They remain motionless for the six seconds or so which then elapse until the impact of the train.

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[39] See transcript for 29 October 2012 at p 27 line 30- p 28 line 17

20 The CCTV footage was viewed in court in the presence of the plaintiff's expert witness, Dr Natarajan Krishnamurthy ("Dr Krishnamurthy"). Dr Krishnamurthy is a consultant in safety, structures and computer applications, as well as an expert in biomechanics. Dr Krishnamurthy's report detailed the progression of events shown in the recording[40]. Dr Krishnamurthy also took the court through a frame-by-frame review of the CCTV footage during the hearing. A few of his observations stood out to me:

(a) There were three layers of passengers on the platform behind the plaintiff, with nobody crowding the plaintiff[41];

(b) There was no physical contact between the plaintiff and any of the other passengers around her throughout her wait at the platform[42]. There was also no surge of passengers to board the train as the train came into the station;

(c) The plaintiff's arms remained "stiffly at [her] sides" as she fell onto the platform and flipped over the platform edge[43]. She appears to have done nothing to stop herself from falling or to break her fall[44];

(d) A person who had fainted could fall as the plaintiff did, namely stiffly and laterally, rather than buckling at the knees and collapsing in a heap[45]; and

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40 See PBAEIC at pp 21-38

41 See transcript for Day 3 at p 47 lines 1-2, and Dr Krishnamurthy's Report in PBAEIC at p 21, row 9

42 See transcript for Day 3 at p 49 lines 16-19, and p 55 at lines 15 to 27

43 See Dr Krishnamurthy's Report in PBAEIC at p 21, row 11

44 See transcript for Day 3 at p 38, lines 1-9

(e) There was a period of 6 to 8 seconds during which the plaintiff remained motionless on the tracks before the train's impact. Dr Krishnamurthy's view was that the movement of the plaintiff's legs seen about two seconds after she fell on the tracks was probably "an involuntary, physical, biomechanical movement[46]".

21 Aside from the CCTV recordings and the analysis offered by Dr Krishnamurthy, there was also the eyewitness evidence of Mr Mohamed Faizal bin Mohd Yunos ("Mr Mohamed"). He drove the train which struck the plaintiff. His evidence was that the platform of AMK Station was "not crowded"[47] as the train approached it. A short distance before the train reached the tail wall of the platform, he saw "a female commuter . . . suddenly falling onto the tracks".[48] In cross-examination, he expanded on this in describing the events of 3 April 2011:

> A Okay, as per---as per normal, I report to work, 6 o'clock, and drive my train. Then about, er, 10.00 plus as I am taking the train at J4, that means, er, Jurong 4 towards, er, Marina Bay. So as per normal, lah, I would go in, er, auto mode. So, er, as approaching Ang Mo Kio, that means, er, the train moves as per normal, as approaching Ang Mo Kio, when come to it, er, I saw a---someone just like, er, fainted or fell. So the moment I saw the thing tilt I straightaway press the [emergency] brake and, er, was hoping for the train to stop. So, er, eventually the train would stop halfway and, you know, I feel someone, er, hit someone. So at that time I would control, er, contact my control centre.
>
> [Emphasis added.]

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45 See transcript for Day 4 at p 42

46 See transcript of 31 October 2012 at p 44, lines1-15 and p 45, lines 4-18

47 See transcript for 6 November 2012 at p 31, line 18

48 AEIC of Mohamed Faizal bin Mohd Yunos at para 8.

22 I asked him why he used the words "fainted or fell" which are underlined above. He explained that it was because the plaintiff fell "like a leaf dropping[49]":

> Court: --as you came into the station, you saw someone just [“]fainted or fell[”]?
>
> Mr Mohamed: It's, er, it is like, er—from my point of view, it is like, er, fell---fainted, er, moment, you know, its (sic) like a leaf dropping—
>
> …
>
> Court: Can you explain more what you mean by that?
>
> Mr Mohamed: Er, you know, it's—it's like a leaf just drop—
>
> …
>
> Court: I see, and—and I'm sorry to ask this again, I'm not doubting what you are saying, but I'm asking if you can explain it in another way, why you say you saw someone who fainted?
>
> Mr Mohamed: Because, er, the—the—the fall when, er, for me to think logic, when a fall—when you are talking about somebody push, the fall is—
>
> Court: Right.
>
> Mr Mohamed: --er, you surge forward, but this fall is like, er, it just like a blackout, a knockout, just—you just drop---
>
> Court: I see.

23 Based on my own viewing of the CCTV footage and taking into account the factual evidence of Mr Mohamed and the biomechanical expert evidence of Dr Krishnamurthy, it is very clear to me that the plaintiff fell because she suffered a sudden loss of consciousness. I draw this inference

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[49] See transcript for 6 November 2012 at p 32, lines 6-29

because her fall began with no precursor and completely spontaneously. It was caused by no external agent. The CCTV footage shows, and I find as a fact, that she did not fall because she was pushed or jostled. Further, once her fall began, it was completely uncontrolled. Someone who begins to fall because she has lost her balance would ordinarily try immediately to regain her balance by bracing her feet or in some other way. If that proved impossible, she would ordinarily try while falling to break her fall by extending her arms. Finally, she would ordinarily show some signs of trying to get up or to get to safety after falling. The CCTV footage shows the plaintiff did none of these things. It can only be because she was not aware that she was falling or that she had fallen and unable to do so. I therefore find that the plaintiff was unconscious throughout her fall. She regained consciousness a few seconds before the impact. By that time, it was too late for her, in her state of shock, to react.

24 This finding, of course, does not determine whether the plaintiff's action succeeds or fails. It is no longer the defendants' case that the plaintiff was in any way at fault, whether wholly or partly, for having fallen or for the injuries she sustained. Further, on the facts, there was no suggestion that the plaintiff felt ill before she fell onto the tracks or had any warning that she was going to lose consciousness. Indeed, her evidence was that she had never fainted before[50]. This evidence was not seriously challenged.

25 My finding that the plaintiff fell because she suffered a sudden and unpredictable loss of consciousness is in some respect inconsistent with her own evidence. But my finding has no impact on my assessment of the credibility of the plaintiff or of her case. Nobody who was in court when she

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[50] See transcript for 29 October 2012 at p 30 lines 20-10

gave evidence could have failed to have been impressed by the quiet honesty and obvious candour with which she recounted – to the best of her recollection – the harrowing events of 3 April 2011. Given my finding that she lost consciousness suddenly, and the undoubted deep shock and trauma that she has suffered, it is not at all surprising that she is mistaken in some aspects of her recollection of these events.

Was the plaintiff standing behind the yellow line?

26 One of the particulars of contributory negligence alleged by the defendants is that the plaintiff failed to stand behind the yellow line painted on the platform at AMK Station[51]. Although the defendants no longer rely on contributory negligence, I should say something about this allegation.

27 This allegation is unsupported by any evidence. Indeed, it is positively contradicted by the plaintiff's own evidence, by the CCTV footage and by the defendants' own expert's evidence. The plaintiff's evidence is that she clearly remembers standing behind the yellow line at all times[52]. That may be self-serving evidence, but its truth is borne out by the CCTV footage. Its truth is also borne out by the defendant's expert witness, Mr John Peter O'Grady. He is the Head of the Safety and Environment Department of the Toronto Transit Commission. He agreed in his report that based on his viewing of the CCTV footage, "all the passengers, including the plaintiff, were positioned safely on the platform prior to the approach of the train"[53]. Mr O'Grady accepted in

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51 See Plaintiff's Bundle of Pleadings at p 41, para 6e

52 See transcript for 29 October 2012 at p 38, lines 4-9

53 See PBAEIC Vol 3 at p 19, para 52

cross-examination that by "positioned safely", he means that the plaintiff was standing behind the yellow line[54].

28 I therefore find that the plaintiff was indeed standing behind the yellow line at the time she began to fall. In addition, if it is any solace to the plaintiff and her parents, I find that there was nothing more that she could have done to protect herself from harm on 3 April 2011. The defendants' counsel and witnesses repeated the mantra that safety is a shared responsibility. That is no doubt true as a matter of fact. It is also a theme that runs through the law of tort. But it is true at a very high level of generality. When I asked the defendants' representatives what *specifically* that means for a passenger standing on a platform and waiting for a train, they had to concede that it simply means that the passenger should stand behind the yellow line and not "run about" or "do any unsafe act at the platform"[55]. To the extent that it is necessary, and in light of my finding at [24] above, I find that the plaintiff fully discharged her share of the "shared responsibility" for her own safety.

29 Having dealt with these factual findings, I now turn to consider whether the defendants discharged their share of this shared responsibility. I consider first the basis of the defendants' duty of care to the plaintiff.

The duty of care

Occupier's liability subsumed under general negligence

30 The plaintiff asserts a cause of action in general negligence as well as in occupier's liability (see [5(a)]-[5(b)] above). For this purpose, SMRT

54 See transcript for 1 November 2012 at p 42, lines 1-4

55 See transcript for 5 November 2012 at p 33, lines 1-18, p 34 line 10 – p 6 line 26

concedes that it is an occupier of AMK Station, while the LTA maintains that it is not.

31 It is, however, not necessary for me to determine whether the LTA was or was not an occupier of AMK Station. The decision of the Court of Appeal in *See Toh Siew Kee v Ho Ah Lam Ferrocement (Private) Limited & Others* [2013] 3 SLR 284 has swept away all of the archaic and arbitrary distinctions which underpinned the law of occupier's liability as a head of liability in tort separate from general negligence. After *See Toh Siew Kee*, the position in law (at [76]) is simply and elegantly that:

> . . . as a matter of logic, the principles governing occupiers' liability are a proper subset of the general principles of the law of negligence. The law in Singapore on occupiers' liability can and should be subsumed under the tort of negligence.

32 In any event, under the old law of occupier's liability, an occupier owed an invitee a duty only to prevent damage or injury to the invitee arising from any *unusual danger* on the premises which the occupier knew or ought to know of and which the invitee did not know of: *Industrial Commercial Bank v Tan Swa Eng and others and another appeal* [1995] 2 SLR(R) 385 at [18]. The danger of falling off the unfenced platform at AMK Station onto the train tracks and being struck by a train is in no way an unusual danger. Quite the opposite: it is the most obvious danger that any invitee to AMK Station will be alive to. The plaintiff's claim against the defendants in occupier's liability could not have succeeded in any event. It would, even under the old law, therefore have added nothing to her claim in general negligence.

General duty of care in the tort of negligence

33 The question I have to resolve, therefore, is whether SMRT and the LTA have a relationship with the plaintiff which gives rise to a duty of care in the general tort of negligence. Both SMRT and the LTA concede that they do owe the plaintiff a duty of care in respect of her safety when using the MRT stations and trains[56]. This concession is undoubtedly correctly made.

34 The modern test to be applied in Singapore law to determine whether a duty of care arises is set out in *Spandeck Engineering (S) Pte Ltd v Defence Science & Technology Agency* [2007] 4 SLR(R) 100 ("*Spandeck*"). This test comprises a threshold question of factual foreseeability, coupled with a two-stage test comprising (1) proximity and (2) policy considerations. Each aspect of the test is to be applied having regard to decided cases in analogous situations (*Spandeck* at [73]), and therefore developed incrementally rather than radically.

Factual foreseeability

35 The threshold test of factual foreseeability is not a high one. All that is needed is that it is foreseeable that the defendants' negligence might result in persons such as the plaintiff suffering harm. This is a factual inquiry and a matter of common sense. In the present case, the danger of a passenger being struck by a train is obvious and therefore clearly foreseeable. In fact, I can go further than that: the danger was not merely foreseeable, it was actually foreseen. It is not in dispute that there had been several incidents before April

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[56] See Defendants' Closing Submissions at para 47 (ii)

2011 where passengers had suffered death or injury in MRT stations as a result of being struck by trains.

Proximity

36 The concept of proximity under *Spandeck* focuses on the closeness and directness of the defendants' relationship with the plaintiff, and inquires whether it is sufficiently proximate to give rise to a duty of care: *Caparo Industries Plc v Dickman* [1989] QB 653 at 679. This concept was helpfully elaborated upon in the following passage from the decision of the Australian High Court in *Sutherland Shire Council v Heyman* (1985) 60 ALR 1 at 55-56, adopted in *Spandeck* (at [78]):

> The requirement of proximity is directed to the relationship between the parties in so far as it is relevant to the allegedly negligent act or omission of the defendant and the loss or injury sustained by the plaintiff. It involves the notion of nearness or closeness and embraces physical proximity (in the sense of space and time) between the person or property of the plaintiff and the person or property of the defendant, circumstantial proximity such as an overriding relationship of employer and employee or of a professional man and his client and what may (perhaps loosely) be referred to as causal proximity in the sense of the closeness or directness of the causal connection or relationship between the particular act or course of conduct and the loss or injury sustained. It may reflect an assumption by one party of a responsibility to take care to avoid or prevent injury, loss or damage to the person or property of another or reliance by one party upon such care being taken by the other in circumstances where the other party knew or ought to have known of that reliance. Both the identity and the relative importance of the factors which are determinative of an issue of proximity are likely to vary in different categories of case.

37 SMRT owns and operates the mass rapid trains, hires service staff and manages AMK Station on a day-to-day basis. It controls both the day-to-day condition of AMK Station's premises and its activity of running MRT trains

through AMK Station. This clearly gives rise to a relationship of circumstantial and causal proximity between SMRT and passengers who use AMK Station. Passengers rely on SMRT to conduct its activities at AMK Station safely. SMRT was therefore quite right to concede that it stood in a relationship of proximity to the plaintiff.

38 The LTA, too, was quite right to concede that it owed the plaintiff a duty of care[57]. First, the LTA is the owner of AMK Station and is responsible for its design. Second, the LTA continues to have ultimate control over the physical environment and condition of AMK Station, and in particular its physical safety features. SMRT is obliged to obtain clearances and approvals from LTA before implementing any modifications to the MRT network, and to comply with procedures laid down and agreed by SMRT and LTA[58]. In addition, SMRT cannot make any alterations or additions to AMK Station without LTA's prior written consent[59]. SMRT's witnesses confirmed that SMRT has to apply to the LTA and obtain its approval to erect safety features such as platform barriers[60]. Third, in addition to being the owner of AMK Station, LTA is also the approving authority for and has control over the Safety Management System which it is SMRT's obligation to implement under Clause 8 of the Licence and Operating Agreement between SMRT and the LTA[61]. The LTA too was quite right to concede that it stood in a relationship of proximity to the plaintiff.

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57 See Defendants' Closing Submissions at para 101

58 See DBOD Vol 5 at p 835

59 See PBOD Vol 4 at p 859

60 See transcript for 6 November 2012 at p 63 line 32- p 64 line 5

61 See DBOD Vol 4 at pp 821-850; see transcript for 7 November 2012 at p 65-66.

Policy considerations

39 The second question in the *Spandeck* test is whether there are policy considerations which negate this duty of care. This stage of the test is adapted from the second stage of the test propounded by Lord Wilberforce in *Anns v Merton London Borough Council* [1978] 1 AC 728 (at 752). This involves, as stated by Lord Browne-Wilkinson in *Barrett v Enfield London Borough Council* [2001] 2 AC 550 at 558:

> ...weighing in the balance the total detriment to the public interest in all cases from holding such class liable in negligence as against the total loss to all would-be plaintiffs if they are not to have a cause of action in respect of the loss they have individually suffered.

40 The defendants did not make any submissions arguing that policy militated against the imposition of a duty of care on them. I do not see any legitimate policy concerns militating against holding railway operators and regulators to a duty to take reasonable care in running their operations to ensure the safety of their passengers.

Incremental approach

41 I also have regard to analogous cases concerning the duty of care owed by railway operators and authorities, applying the incremental approach to the duty of care question mandated by *Spandeck*. In *Simkin and ors v North Western Railway Company* (1888) 21 QBD 453, the court held that the defendant railway company owed a duty to passengers in operating a railway station to "provide means of access to and egress from their station reasonably safe and suited for the carrying on of the business which their Act of Parliament authorized them to carry on" (at 459). Negligence "would mean the

omission by the defendants to do something which persons conducting a railway with reasonable care and caution should do" (at 456).

42 In *Hare v British Transport Commission* [1956] 1 WLR 250, the defendant Transport Commission was held liable when an unticketed plaintiff who was sending a passenger off was hit by an open carriage door as the train moved off, causing her to throw her baby onto the platform. The court held that it was "established that a duty is owed to persons allowed to be on the platform" (at 253), and that the plaintiff was entitled to assume that the doors of the carriage would be closed.

43 The decision of the Australian High Court in *Public Transport Commission of New South Wales v Perry* (1977) 14 ALR 273 is particularly instructive. The plaintiff passenger was waiting on a railway platform owned and occupied by the defendant transport commission. She suffered an epileptic fit and fell unconscious onto the railway tracks. She was then run over by an oncoming train. The Supreme Court of New South Wales found the train's driver to have been negligent in failing to keep a proper lookout, in failing to notice another commuter running along the tracks and waving his suitcase in warning and in thinking the plaintiff was a large piece of brown paper on the tracks. The plaintiff's action therefore succeeded. The High Court of Australia upheld the decision of the Supreme Court of New South Wales. Gibbs and Stephen JJ, two of the five judges, found that the appellant owed a duty of care to the respondent in general negligence arising from the defendant's proximity to the plaintiff and from the foreseeability of injury to the plaintiff if it did not take reasonable care in conducting its operations. Stephen J opined that the running of trains at high speed, the evidence that people fell onto tracks quite often, and the fact that it was "precisely alongside station platforms that the

Commission's tracks are necessarily situated in close proximity to people congregated above those tracks, tracks which lie at their feet and from which they cannot be fenced off", gave rise to a general duty of care for the passenger's safety (at 300). The majority of the Australian High Court comprised Mason, Jacobs and Barwick JJ. They analysed the case on the principles of occupier's liability. That, of course, is no longer a separate head of liability in tort under Singapore law.

44 I therefore find, quite apart from any concession, that SMRT and the LTA owed the plaintiff a general duty of care in the law of negligence to ensure that she was reasonably safe while was at AMK Station. This duty arose from the foreseeability of harm to persons such as the plaintiff if due care was not taken, the well-established relationship of proximity between passengers and rail transport operators and regulatory authorities, and the lack of any policy considerations negating a duty of care.

The plaintiff's claim in contract

Implied term that AMK Station was reasonably safe

45 The plaintiff asserts an alternative cause of action in contract against SMRT. The plaintiff pleads that it was an implied term of its contract with SMRT that she would be reasonably safe on the premises of AMK Station[62]. This contract was formed when the plaintiff purchased her ticket from SMRT to enter AMK Station. The plaintiff's case is that the implied term that passengers would be reasonably safe in their use of AMK Station is a term implied in fact. The plaintiff does not plead that it is a term implied in law.

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62 See Plaintiff's Opening Statement at para 9

Two alternative tests for implying terms in fact

46 There are two traditional tests for implying a term into a contract. The first was developed by the English Court of Appeal in the *The Moorcock* (1889) 14 PD 64 ("*The Moorcock*"), a case which, as I will explain, bears similarities with the present facts. At 68, Bowen LJ famously stated:

> Now, an implied warranty, or, as it is called, a covenant in law, as distinguished from an express contract or express warranty, really is in all cases founded on the presumed intention of the parties, and upon reason. The implication which the law draws from what must obviously have been the intention of the parties, the law draws with the object of giving efficacy to the transaction and preventing such a failure of consideration as cannot have been within the contemplation of either side; and I believe if one were to take all the cases, and there are many, of implied warranties or covenants in law, it will be found that in all of them the law is raising an implication from the presumed intention of the parties with the object of giving to the transaction such efficacy as both parties must have intended that at all events it should have. In business transactions such as this, what the law desires to effect by the implication is to give such business efficacy to the transaction as must have been intended at all events by both parties who are business men; not to impose on one side all the perils of the transaction, or to emancipate one side from all the chances of failure, but to make each party promise in law as much, at all events, as it must have been in the contemplation of both parties that he should be responsible for in respect of those perils or chances.

47 This is commonly referred to as the "business efficacy test". The second test, known as the "officious bystander test", was formulated by MacKinnon LJ in the English Court of Appeal decision of *Shirlaw v Southern Foundries (1926) Limited* [1939] 2 KB 206 (at 227):

> If I may quote from an essay which I wrote some years ago, I then said: "*Prima facie* that which in any contract is left to be implied and need not be expressed is something so obvious that it goes without saying; so that, if, while the parties were making their bargain, an officious bystander were to suggest

> some express provision for it in their agreement, they would testily suppress him with a common 'Oh, of course!'"

48 Both tests are firmly established in Singapore's case law: see *Forefront Medical Technology (Pte) Ltd v Modern-Pak Pte Ltd* [2006] 1 SLR(R) 927 ("*Forefront*") at [32], *Foo Jong Peng and others v Phua Kiah Mai and another* [2012] 4 SLR 1267 ("*Foo Jong Peng"*) at [27], *Lim Eng Hock Peter v Batshita International (Pte) Ltd* [1996] 2 SLR(R) 292 at [13]-[15] and *Chai Chung Ching Chester v Diversey (Far East) Pte Ltd* [1991] 1 SLR(R) 757 at [34]).

A term as to reasonable safety is implied on either test

49 In the present case, the defendants did not challenge the plaintiff's assertion that she was a ticketed passenger at AMK Station. It is not clear whether the ticket was a standard ticket purchased on the day of travel or a stored value card which could be purchased in advance of travel and used repeatedly until the stored value is depleted. In either case, I accept that the plaintiff gave consideration for her journey and that a contract of carriage therefore arose between the plaintiff and SMRT. The question then is whether a term that AMK Station's platform would be reasonably safe for the plaintiff's use can be implied into the contract of carriage, applying either of the traditional tests for implying contract terms.

50 The defendants argue that the court should be slow to imply a term into the contract where there has been no evidence of the express terms of that contract. I agree that there is no evidence of express terms of the contract of carriage between the plaintiff and SMRT. Plaintiff's counsel adduced a document entitled "Conditions of Issue and Use for Standard Tickets", which he claimed was obtained from SMRT's website and represented the express

terms of the plaintiff's contract with SMRT[63]. This is incorrect. The document is in fact from the website of Transit Link Pte Ltd ("Transit Link"). Transit Link is a third-party contractor whose sole function is to issue tickets which can be used to travel on SMRT's systems. Therefore, the "Conditions of Issue and Use for Standard Tickets" contained the express terms of a contract between the plaintiff and *Transit Link* under which the plaintiff acquired a ticket, as opposed to the express terms of any contract of carriage with *SMRT*. In any case, there was nothing to suggest that the plaintiff was aware of the express terms of a contract with either Transit Link or SMRT.

51 However, I do not accept the defendants' argument that the absence of evidence of express terms, and the plaintiff's ignorance of such terms, prevents a term being implied into the contract of carriage. *The Moorcock* concerned a similar fact situation: there was no written contract between the plaintiff and the defendant, and no clear evidence as to the express oral terms of the contract (see the first instance decision: (1888) 13 PD 157 at 159). It sufficed that the defendant wharfingers had agreed to allow the plaintiff shipowner, for consideration, to discharge his vessel at their jetty. This purpose could be achieved only if the vessel was moored to the jetty and allowed to take the ground. The court found that the business of the jetty could not be carried on except on the basis that the ground was fit for the purpose of grounding moored vessels. Both parties "must have known... that unless the ground was safe the ship would be simply buying an opportunity of danger, and that all consideration would fail unless some care had been taken to see that the ground was safe" (at 69). Further, the defendants were the only ones who, by virtue of their control over the jetty and its grounds, were able to

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63 See Plaintiff's Bundle of Documents at pp 1-3

ascertain the condition of the ground. In the circumstances, it advanced business efficacy to imply a term into the oral contract that the ground of the jetty was fit for the purpose for which the plaintiff had contracted to use it. In the present case, the purpose of the plaintiff's contract of carriage with SMRT was her transportation from point A to point B. There must have been an understanding between the parties that this could be done only if SMRT, having control of its stations and trains, ensured that the premises were reasonably fit for the purpose for which the plaintiff contracted to use them. Therefore, I have no doubt that under both the "business efficacy" and "officious bystander" tests, there was an implied term that the plaintiff be kept reasonably safe from injury while using stations and trains operated by SMRT. Had the officious bystander asked the plaintiff and SMRT whether SMRT had an obligation to make AMK Station reasonably safe for the plaintiff's use, I have no doubt that both would have replied with a common "of course".

52 That said, the term which I find is implied into the contract is simply that the SMRT's premises would be *reasonably* safe for the use of ticketed passengers. I cannot imply into the contract a term to the effect that ticketed passengers would be *absolutely* safe at AMK Station. It is true that liability in contract is strict, rendering absence of fault irrelevant in a claim for breach of contract. But the scope of a contractual term, whether express or implied, may be contractually limited by a duty to take reasonable care. The implied term which the plaintiff argues is one such term. To show why, I return to the alternative tests for implying a term into a contract. Neither business efficacy nor the officious bystander requires the defendants to guarantee the plaintiff's safety and thereby become the plaintiff's insurer for every journey she takes. It therefore follows that the question raised by the plaintiff's claim in contract is the same question raised by her claim in tort: was AMK Station at the material

time reasonably safe for the plaintiff's reasonable use? I address this question at [71]-[91] below in dealing with the plaintiff's claim in negligence.

The standard of care

53 The standard of care in general negligence is the objective standard of a reasonable person using ordinary care and skill. As stated in *Blyth v Birmingham Waterworks* (1856) 11 Ex 781 at 784:

> Negligence is the omission to do something which a reasonable man, guided upon those considerations which ordinarily regulate the conduct of human affairs, would do; or doing something which a prudent and reasonable man would not do.

54 How does this standard of care apply, in particular, to railway operators and their regulatory authorities? The following extracts from key texts are instructive:

> Railway authorities are under a duty to use reasonable care and skill in the provision and maintenance of their premises, including their carriages, the provision and maintenance of railway tracks, the provision of a proper system of signalling, and the carrying on of their activities so as to prevent accidents. The standard of care is that of a reasonably careful and skilful body of persons, carrying on the work of such a transport undertaking
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> [*Charlesworth and Percy on Negligence* (Sweet & Maxwell, 12th Ed, 2010) at para 10-100]

> Those responsible for the operation of the service, the rolling stock, track and signalling, "shall use care and diligence so that no accident shall happen' [*Wright v Midland Ry* (1873) LR 8 Ex 137 at 140]. The standard of care is that of a reasonably careful and skilful person"
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> [*Clerk and Lindsell on Torts* (Sweet & Maxwell, 20th Ed, 2010) at para 8-189]

55 Whether the defendants have breached this standard of care cannot be analysed in a vacuum or at too high a level of generality. It must be analysed in light of the nature of the specific risk that has eventuated. This in turn requires an analysis of the magnitude of the risk, the seriousness of the harm if the risk eventuates, the cost and practicability of steps to eliminate or mitigate that risk. As stated in *Walker v Northumberland County Council* [1995] ICR 702 at 711:

> It is reasonably clear from the authorities that once a duty of care has been established the standard of care required for the performance of that duty must be measured against the yardstick of reasonable conduct on the part of a person in the position of that person who owes the duty. The law does not impose upon him the duty of an insurer against all injury or damage caused by him, however unlikely or unexpected and whatever the practical difficulties of guarding against it. *It calls for no more than a reasonable response, what is reasonable being measured by the nature of the neighbourhood relationship, the magnitude of the risk of injury which was reasonably foreseeable, the seriousness of the consequence for the person to whom the duty is owed of the risk eventuating and the cost and impracticability of preventing the risk.*
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> [emphasis added]

56 The relevant risk in the present case, of course, is the risk of a passenger falling from the platform onto the tracks and being struck by a train.

Magnitude of harm

57 I look first at the magnitude of the harm that may result from that risk eventuating. It is clearly at the extreme end of the scale. Falling onto the tracks will, in itself, cause only slight injury. But falling onto the tracks in the face of an oncoming train will almost certainly lead to death or catastrophic, life-changing personal injury. The harm is of this magnitude because of the

relatively high speed at which MRT trains approach stations. The plaintiff has, of course, dropped its claim that that speed was in itself unreasonable and unsafe. But that speed taken together with other factors undoubtedly poses a danger of catastrophic harm. It remains the case that "those who engage in operations inherently dangerous must take precautions which are not required of persons engaged in the ordinary routine of daily life" (see *Glasgow Corp v Muir* [1943] AC 448 at 456).

Likelihood of harm

58 Risk is an ordinary and unavoidable incident of life. There is risk in every activity we undertake and in every activity that others undertake in our proximity, both literally and metaphorically. It is plainly not reasonable to hold those others to a standard where they are obliged to reduce the risks inherent in those activities to zero. In assessing the likelihood of harm, it is therefore necessary to consider not only the *possibility* of a risk materialising, but its *probability*. As Lord Oaksey said in *Bolton v Stone* [1951] 1 AC 850 (at 863):

> The standard of care in the law of negligence is the standard of an ordinarily careful man, but in my opinion an ordinarily careful man does not take precautions against every foreseeable risk. He can, of course, foresee the possibility of many risks, but life would be almost impossible if he were to attempt to take precautions against every risk which he can foresee. He takes precautions against risks which are reasonably likely to happen. Many foreseeable risks are extremely unlikely to happen and cannot be guarded against except by almost complete isolation.

59 Lord Porter in the same case also opined that (at 858):

> It is not enough that the event should be such as can reasonably be foreseen; the further result that injury is likely to follow must also be such as a reasonable man would

> contemplate, before he can be convicted of actionable negligence. Nor is the remote possibility of injury occurring enough; there must be sufficient probability to lead a reasonable man to anticipate it. The existence of some risk is an ordinary incident of life, even when all due care has been, as it must be, taken.

60 I have already explained why the risk which injured the plaintiff was not just reasonably but obviously foreseeable (at [35] above). But the plaintiff's repeated emphasis on the fact that the defendants knew of this risk because it had eventuated in the past was misplaced[64]. In assessing breach of duty, the *likelihood* of a risk is separate from its *foreseeability*. All risks which are possible can be foreseen. But not all risks which are possible must be guarded against. And not all risks which are guarded against must be eliminated.

61 SMRT's Deputy Director of Station Operations, Mr Teo Wee Kiat ("Mr Teo"), gave evidence of the number of track intrusions – as SMRT calls such incidents – which occurred between 2004 and 2012. Mr Teo was the Head of the Safety Service Department ("SSD") in SMRT from July 2010 to July 2011. The statistics given by Mr Teo were split into two mutually exclusive categories – a track intrusion where a passenger is on the tracks at the same time as an oncoming train ("one-under incidents"), and a track intrusion where a passenger enters the track area without authorisation but with no danger of being struck by a train ("unauthorised track access incidents").[65] The statistics are as follows:

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64 See Plaintiff's Closing Submissions at para 56, and Minutes for 11 March 2013 at p 4

65 See Affidavit of Teo Wee Kiat filed 12 November 2012 at para 11

Year	One-under incidents	Unauthorised track access incidents	Annual passenger trips
2004	4	5	402,265,250
2005	2	13	410,682,062
2006	4	22	428,727,358
2007	6	23	457,418,817
2008	4	19	506,778,055
2009	4	21	524,959,766
2010	6	5	587,731,687
2011	3	3	638,177,883
2012 (to Sept)	0	1	513,416,189

62 I analyse these statistics from 2004 up only to 2011, as that is the year in which the plaintiff was injured. Over those 8 years, SMRT was responsible for almost 4 billion passenger trips: 3,956,740,878 to be precise. Over those 8 years, there were 0.00834 one under incidents per million passenger trips (33/3,956,740). Over those 8 years, the total rate of all track intrusions (including both one-under incidents and unauthorised track access incidents) ranged from a high of 0.0634 per million passenger trips in 2007 to a low of 0.0095 per million passenger trips in 2011. Mr Teo explained that SMRT's overall passenger injury rate was far below the safety standard of 0.4 per million passenger trips[66] set by the LTA. This passenger injury rate includes all passenger injuries sustained in any part of an MRT station operated by

[66] See Affidavit of Teo Wee Kiat filed 12 November 2012 at para 12

SMRT. It therefore includes injuries sustained not only from track intrusions but from other causes. It also includes injuries short of fatalities. It is not part of the plaintiff's case that the LTA has set this injury rate unreasonably high.

63 Of course, in an abstract sense, even one death or catastrophic injury in the pursuit of any activity can be said to be one too many. But we live in the real world. To assess risk objectively rather than emotively, one must assess the number of one-under incidents in the context of the almost 4 billion passenger trips handled by SMRT over those 8 years. The probability of injury arising from a one-under incident, assessed objectively, during those 8 years was minuscule. That is no doubt cold comfort to the plaintiff and her parents. But it is objectively true.

Taking precautions to avert harm

64 The analysis thus far shows that I am assessing the defendants' efforts to attain the requisite standard of care in the context of an obviously foreseeable but infinitesimally low risk of catastrophic harm. The plaintiff does not suggest that the magnitude of the harm made the very small risk of harm so unacceptable that the defendants ought not to have operated or authorised the operation of the MRT system at all. Indeed, that would have been an unreasonable and unarguable proposition. Another factor to be weighed in assessing risk is the social utility of the activity in which that risk arises. It is necessary, therefore, to bear in mind that this infinitesimal risk of catastrophic harm arose in the course of the defendants' operating and regulating a public good – namely, public transport – which carries very high social utility for a broad spectrum of society. An injury rate of 1 per 119.90m passenger trips (the equivalent of 0.00834 injuries per million passenger trips) in a MRT system which carries high social utility will obviously bear a

different significance from the same injury rate in, for example, a roller coaster ride, which carries no social utility at all beyond satisfying thrill-seekers.

65 I therefore consider in this light whether the defendants took reasonable precautions in operating and regulating the MRT system to avert such harm. A legitimate factor to consider in analysing the reasonableness of the defendants' precautions is the cost of those precautions. As Mason J said in *Wyong Shire Council v Shirt* (1980) 146 CLR 40 (at 47-48):

> ... The perception of the reasonable man's response calls for a consideration of the magnitude of the risk and the degree of the probability of its occurrence, along with the expense, difficulty and inconvenience of taking alleviating action and any other conflicting responsibilities which the defendant may have. It is only when these matters are balanced out that the tribunal of fact can confidently assert what is the standard of response to be ascribed to the reasonable man placed in the defendant's position.

66 Potential precautions are infinite. Resources are finite. Looking at the issue slightly more broadly, it is legitimate at this stage of the inquiry to consider the costs of the precautions taken to avert the risk or, as is usually more important, the costs of the precautions not taken to avert the risk. I use the term costs in the sense that economists use it. In that sense, costs is a broader concept than just expense or dollars and cents. Costs are the opportunities that an economic actor forgoes by making a choice. Determining whether a defendant has taken reasonable care requires striking a reasonable balance between the posited precautions and the cost of those precautions.

67 The classic illustration of this balancing exercise is *Overseas Tankship (UK) Ltd v The Miller Steamship Co Pty and Another* [1967] AC 617. The House of Lords there found the defendant shipowners liable for discharging

flammable oil into a harbour, opining that there was a real risk of the oil catching fire, and that "action to eliminate it presented no difficulty, involved no disadvantage, and required no expense" (at 643-644). Lord Reid also stated that a reasonable man may neglect a risk of small magnitude if he had a valid reason, such as that it would "involve considerable expense to eliminate the risk. He would weigh the risk against the difficulty of eliminating it" (at 642, emphasis added).

68 Similar reasoning is seen in *B (A Child) v Camden LBC* [2001] PIQR P9. That case concerned a young child who was trapped between uninsulated central heating pipes in the defendant local authority's premises and suffered burns as a result. The court found that the local authority owed the plaintiff a duty of care under both statute and the common law (at [56]). The court then turned to assessing whether that duty had been breached. The plaintiff argued that the defendant did breach the duty because it failed to insulate or lag the pipes. The court considered the cost to the local authority of eliminating this risk of burns, and "weigh[ed] that evidence in the scales when assessing the extent of [the] duty of care and whether it ha[d] been breached" (at [60]). In the result, the court held that the local authority was not negligent in deciding not to insulate or lag the pipes. One of the factors the court considered was that the risk of the particular danger occurring was extremely slight, and that the local authority could also be taken to assume that the safety of young children was a shared responsibility with parents. As the court said (at [96]):

> This in my judgment, is the key factor in the local authority being able to conclude that the risk is so slight, even though an injury if sustained may be serious, that they need not take the step of protecting the pipework in their properties. In addition, they could properly take into account the fact that the cost of so protecting the pipework would be very substantial indeed compared with their annual budget for heating, even if only the pipework itself as opposed to the

> radiators was to be protected. This is a factor which they can properly weigh in the balance.

69 The court acknowledged that the public tolerance of risk had been reduced over the past 15 years since the occurrence of an identical incident in a case cited by the plaintiff (*Ryan v London Borough of Camden* (1982) 8 HLR 72 ("*Ryan*")). The court then stated (at [88]-[91]):

> What is clear, is that after the case of *Ryan* the local authority *must be taken to know that this particular danger existed.* In spite of the decision in their favour in that case, should they have decided that, now they knew of the danger, they should protect all the pipework in their housing stock, or at least in those properties where the heating was outside the control of the tenants?
>
> *No evidence has been put before me as to what consideration the local authority gave to this matter. This is unsatisfactory, but not determinative of the action. I must consider what the reasonable local authority would have done in such circumstances.*
>
> In making a decision the local authority should have taken into account the magnitude of the risk, the likelihood of injury, the gravity of the consequences and the cost and practicability of overcoming the risks (see *Walker v. Northumberland County Council* above and *Charlesworth and Percy on Negligence* chapter 6, The Standard of Care).
>
> On the evidence before me I am satisfied that a local authority could properly have concluded that the risk, although it had materialised in the case of *Ryan*, was slight. Mr Cairns did not suggest that such accidents were common and the fact that injury is only likely to occur when someone is trapped in itself makes the risk of such accidents occurring slight.
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> [emphasis added]

70 There are two similarities between *B (A Child)* and the present case which I note at this juncture and a third which I will come to shortly (see [80] below). First, the defendants clearly knew of the particular risk which caused the plaintiff's injury because that very risk had materialised in the past. Second, that risk was extremely slight and had to be balanced against the

wide-ranging cost – in the broadest sense – of taking precautions to address it across an entire system for which the defendants were responsible.

Breach of duty

The existing safety features

71 AMK Station had a number of existing safety features[67] which are present in all aboveground MRT stations. These features are in turn requirements stipulated by a document known as the Architectural Design Criteria[68]. The LTA produces the Architectural Design Criteria. It is reviewed and approved by the LTA's top management each year. It contains input from all divisions of the LTA.

72 A number of the existing safety features are structural and have been in place since AMK Station was constructed. Mr Teo explained these features. There is a bold yellow line along the full edge of the platform which is 110 mm thick and set 635 mm from the edge of the platform. This line indicates that passengers should stand at least 745 mm back from the platform edge. There is also a row of tactile warning studs 300 mm wide installed before the yellow line along the entire length of the platform to warn passengers that they are approaching the platform edge. In addition, in 1998, SMRT installed orange nosing onto the platform edge. This serves the dual purpose of being a visible warning to passengers of the location of the platform edge, and reducing the gap between the platform edge and the berthed train from 100 mm to 75 mm[69]. There are also train stop buttons at all platforms and at the

67 See Defendants' Closing Submissions at para 160

68 See DBAEIC Vol 2 at pp 113-116

69 See Affidavit of Teo Wee Kiat filed 12 November 2012 at para 20

passenger service centres to allow passengers to stop the movement of trains in case of emergency, emergency phones located at all platforms, and a CCTV system which enables the station staff to monitor and control crowds. The present CCTV system is an enhancement of the original video surveillance system which existed when the MRT system was commissioned. In July 2006, the LTA installed more CCTV cameras to enable SMRT's station personnel at the Passenger Service Centre to monitor and control crowds better and to deal more quickly with observed emergencies[70].

73 Besides these structural measures, AMK Station also utilises audio and visual warnings[71]. Mr Teo explained that there are trackside signs reminding passengers not to step beyond the yellow line until the train stops. There are signs which state "Danger" in four languages, forbidding persons from going down to the tracks and notifying them of the penalty for doing so. These trackside signs have been modified and enhanced over the years. Signs are posted to deter suicides. They state in four languages: "Value Life. Act Responsibly". A pre-recorded announcement is automatically broadcast in four languages about one minute before a train reaches the MRT station, reminding passengers to stand behind the yellow line.

74 Mr Teo explained that since August 2008, SMRT has deployed extra station personnel at platforms during peak hours on weekdays to control human traffic. SMRT also initiated various customer education programs between 2004 and 2006[72] which are currently ongoing. The programs use

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70 See Affidavit of Teo Wee Kiat filed 12 November 2012 at paras 18-19

71 See DBAEIC Vol 2 at paras 30-34

72 See Affidavit of Teo Wee Kiat at para 22

posters, leaflets and television broadcasts played at MRT stations to remind passengers about safety. Between 2009 and 2011, SMRT introduced various television programmes to deliver safety messages to the viewing public. SMRT also runs safety campaigns every year[73].

75 There was also evidence that the defendants carry out periodic review and evaluation of their safety measures. Mr Teo's evidence was that each time an incident occurs at an MRT station, the station manager prepares a Safety Information System Report ("SIS Report"). The SSD eventually uses the SIS Report to identify the causes of the incident and to review the adequacy of existing safety measures. Mr Teo testified that SMRT conducts monthly monitoring of safety statistics and analysis of the trends, and that these records are subject to periodic review by senior management[74]. He also explained that SMRT carried out research in 2009 to evaluate the distance of the yellow line from the platform edge[75]. However, SMRT proposed no new structural measures because the outcome of the evaluation exercises was always that the existing safety features were adequate to reduce risk to as low a level as was reasonably practicable.

Installation of half-height platform screen doors

76 None of these safety features address the risk which eventuated and injured the plaintiff. The only safety feature which would have addressed – and indeed eliminated – that risk is the installation of platform screen doors

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73 See transcript for 19 November 2012 at p 12, and Affidavit of Teo Wee Kiat at paras 21-25

74 See Affidavit of Teo Wee Kiat dated 12 November 2012 at para 14

75 See transcript for 19 November 2011 at pp 17, 22-23

("PSDs"). PSDs are a physical barrier at the platform edge with embedded sliding doors. These sliding doors remain closed at all times except when a train is stationary at the platform. At that time, they open to allow passengers to board and alight the train.

77 The North-South and East-West MRT lines include a mix of underground and aboveground stations. All underground MRT stations on these lines have been equipped with full-height PSDs from the time they came into operation in 1987. The defendants' evidence is that the primary reason for installing full-height PSDs was not to make the underground stations reasonably safe. They were installed primarily to conserve energy in air-conditioning the platforms in those stations.[76] Aboveground stations do not have air-conditioned platforms and were therefore designed and built without any PSDs.[77]

78 In 2008, the LTA took a decision to retrofit half-height PSDs in all 36 aboveground MRT stations in the North-South and East-West MRT lines. The defendants' evidence was that the motivating factor was not to make the aboveground stations reasonably safe – because they were already reasonably safe without half-height PSDs – but to prevent system-wide delay and service disruption and to reduce the social cost to all commuters caused by track intrusions. The retrofit of half-height PSDs began in 2009 and finished in March 2012. The cost to the LTA of the entire retrofit was $126m. The retrofit included AMK Station. The installation of half-height PSDs at AMK Station

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[76] See Affidavit of Andrew John Mead filed on 5 October 2012 at para 41.

[77] See DBAEIC Vol 2 at p 20, para 41 and transcript for 8 November 2011 at p 8

commenced in July 2011, just 4 months after the plaintiff was injured, and finished in December 2011.[78]

79 PSDs eliminate accidental track intrusions. That is why, once the retrofitting of half-height PSDs was completed in 2012, one-under incidents fell to zero (see [61] above). If the half-height PSDs had been in place in AMK Station on 3 April 2011, they would have – as a certainty – prevented the plaintiff from falling onto the tracks and from suffering the injuries that she did.

80 I was told that the LTA undertook a cost-benefit analysis[79] before eventually taking the decision in 2008 to install the half-height PSDs. I was further told that this cost-benefit analysis was contained in a document known as the LTA master plan[80]. As in *Re B (A Child)* (see [68] above), the LTA did not give discovery of or offer inspection of this document, or of the relevant parts of it. Equally, plaintiff's counsel did not ask for discovery of this document when he learned during trial of its existence. The master plan is therefore not in evidence before me. Again, as in *B (A Child)*, this is unsatisfactory but is not determinative of the action: I must consider what a reasonable MRT operator and regulator ought to have done and not what these defendants actually did.

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78 See Affidavit of Andrew John Mead filed on 5 October 2012 at para 51.

79 See transcript of 8 November 2012 at p 20-22, p 50 lines 6-13, p 54 lines 8-29, and 19 November 2012 at p 95, line 16-17 and Affidavit of Samuel Chan at para 12, and transcript of 8 November 2012 at p 84 lines 25 to 30

80 See transcript of 8 November 2012 at p 55, line 1-2

Evidence of the safety engineers

81 Structural safety features such as PSDs are not ultimately within SMRT's control. Under the two contracts between SMRT and the LTA, namely the Licence and Operating Agreement ("LOA") and the Lease Maintenance Agreement ("LMA"), SMRT has no power independently to implement structural modifications to AMK Station. SMRT's witnesses also testified that SMRT cannot erect fixed barriers at platform edge[81] such as PSDs without the LTA's permission. In relation to passenger safety, SMRT's role is to "develop, document and implement a Safety Management System for *operating and maintaining the Working Network* and for ensuring passenger and employee safety, *subject to LTA's prior written approval* and having regard to established industry standards and practices on safety and other guidelines and directives on safety as may be prescribed by the LTA from time to time..." (see clause 8(1) of the LOA[82], emphasis added). So if the omission of PSDs is a culpable omission, it can only be the LTA which is culpable, not SMRT.

82 The LTA's Principal Design Manager, Mr Andrew John Mead ("Mr Mead"), gave evidence. Before working for the LTA, he worked as the architecture design manager for two new lines of the Toronto MRT system, as an architect for the London Docklands Light Railway, and as the chief architect for the Dubai Metro[83]. His role in the LTA includes the planning, design, management and construction of the LTA's stations and supporting infrastructure. His evidence was that the existing safety features were

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81 See transcript for 6 November 2011 at pp 63-65

82 See DBD Vol 4 at p 831, and Affidavit of Teo Wee Kiat at para 4

83 See transcript of 8 November 2012 at p 3

consistent with safety measures applied globally on 3 April 2011 and even now. He pointed out, in particular, that Bangkok's MRT system uses similar passive safety features as were in place in AMK Station.[84] He explained that the risk of a passenger descending to track level and being struck by a train is an "undesirable risk but one that is considered tolerable under the ALARP principle by management and passengers throughout the transit industry"[85]. ALARP is an acronym meaning "as low as reasonably practicable". Safety engineers worldwide use the ALARP principle in reducing risk. It is analogous to the legal concept of a standard of care which takes into consideration the likelihood of harm, the magnitude of the harm and the cost of precautions. The effect of Mr Mead's evidence in engineering terms is that it is consistent with the ALARP principle to have a platform without PSDs. The effect of Mr Mead's evidence in legal terms is that a platform which does not have PSDs installed is not, for that reason alone, a platform which is not reasonably safe. My task is to determine whether this proposition is correct.

Marginal cost and utility

83 The reasonableness of the defendant's choice of safety features – and in particular the reasonableness of the LTA's decision to omit PSDs in aboveground stations at the time the plaintiff was injured – must be considered in light of the marginal cost and utility. It has already been seen in *B (A Child)* that when the risk of even serious injury, though foreseeable, is slight compared to the cost of eliminating or mitigating that risk, it can be reasonable for a defendant deliberately not to take steps to reduce or eliminate that risk. In the context of rail operators, my attention was drawn to the case of *State Rail*

84 See Affidavit of Andrew John Mead filed on 5 October 2012 at para 27.

85 See DBAEIC Vol 3 at p 22

Authority v Mayle [1999] NSWCA 388. There, the plaintiff was injured when a stone thrown from outside the train broke through the window of a carriage in which she was a passenger. She sued the defendant rail authority for negligence in failing to take reasonable steps to protect passengers from injury caused by projectiles launched at trains. The plaintiff's claim failed. It was common for stones to be thrown at trains: there was evidence that within a three-year period there had been four previous incidents of stones having gone through train windows, one of which resulted in passenger injury. But the court found that "on the statistics for total passenger journeys the risk could fairly be regarded as infinitesimal" (at [18]). The respondent also failed to show that her suggestion of fitting protective mesh screens onto the train windows was a relatively simple solution with little inconvenience or expense. At [21] the court observed that "the infinitesimal risk made questions of inconvenience and expense critical".

84 The Australian case of *Cekan v Haines* (1990) 21 NSWLR 296 ("*Cekan*") analysed particular concerns with regard to the cost-benefit analysis undertaken by public authorities. The case concerned a prisoner who suffered quadriplegia after becoming severely intoxicated while in a prison cell managed by the defendant public authority. The plaintiff argued that he belonged to a well-identified and highly vulnerable group of depressed and intoxicated persons, and that the authority owed him a duty of care while he was under their custody to keep him under constant surveillance, or ensure that the cells were fit for the purpose of his supervision. The Supreme Court of New South Wales held that the authority did owe a duty of reasonable care to persons held in custody, but that duty did not require the authority to alter the physical arrangements of the prison or to re-arrange the disposition of police personnel so as to allow continuous or approximately intermittent surveillance

of the prisoners. The prison in that case was a nineteenth century building and the court noted that although the costs of modifying the building were not precisely quantified, "commonsense suggests that they would have been extremely high, at least when looked at on a State-wide basis. Against such unspecified but substantial costs must be measured the duty of the State to people known to be vulnerable such as the appellant" (at 307).

85 The judgments in this case make useful observations on countervailing considerations of cost and marginal utility when considering the extent of the duty of a public authority, such as the LTA, to allocate public resources to avert a known danger. Kirby J noted (at 306-307):

> So far as the economic costs involved in the appellant's case are concerned, it is appropriate to take these into account when determining what reasonable conduct on the part of State authorities required in the custody of the appellant. Obviously, the greater the cost of the modification of institutions and procedures inherited from earlier times, the less likely that the common law would impose the obligation that the modifications should be introduced, at least rapidly. This is but the corollary of the principle that the greater and more obvious the risk of injury, the heavier is the obligation to attend to it without delay...
>
> There is no simple formula for the economics of providing reasonable care. Courts take economic costs into account in determining what natural justice requires of public authorities. Similarly, they must consider the costs of modifications said to have been necessary to attain to standards of reasonable care to avoid liability in negligence: cf *Johns v Release on Licence Board* (1987) 9 NSWLR 103 at 115.
>
> There will need to be further detailed attention in the future to the economic theory which supports arguments about what reasonable care requires: cf *United States v Carroll Towing Co, Inc* 159 F 2d (1947); R Posner, *Economic Analysis of Law,* 2nd ed (1977) at 122f. *Although the resources of a State are much greater than those of any individual or corporation in it, they are nonetheless limited. Choices must be made in the expenditure of public funds.* Constitutional, legislative and other machinery is provided for the making of such choices.

> *Plainly, the expenditure on one activity (such as the modification of cells receiving intoxicated members of the public) diminishes the possibility of expenditure on others which may have equal urgency and greater public appeal.* Attention to considerations of cost is required by principles stated in general terms: see, eg, *Wyong Shire Council v Shirt* (1980) 146 CLR 40 at 47f.
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> [emphasis added]

86 On the question of marginal utility, Kirby J noted that there was no precise evidence of the number of previous incidents comparable to the plaintiff's accident and stated (at 307-308):

> In the absence of such evidence, it was open to Newman J to come quite comfortably to the conclusion that what had happened to the appellant was, if not unique, then extremely rare. But if it was rare, then the imposition on the State, for whom the respondent is liable, of a duty to provide continuous surveillance to respond to the risk of such events occurring is not required by the standard of reasonable care.
>
> Even if precautions which the appellant urged had been adopted, it is by no means certain they would have prevented the kind of injury which the appellant suffered. It is here that the marginal utility of introducing a procedure for constant surveillance must be weighed against the marginal cost of doing so. *In a perfect world... there would be limitless funds to spend upon the modification of old prison configurations and the provision of an additional roster of police outside cell number 8 in three shifts, twenty-four hours a day and seven days a week. But as I have pointed out, to do this necessarily diminishes the funds available to the State to perform other beneficial functions for the community which may have a greater perceived utility. In recognition of this fact, the common law does not impose in these circumstances, an absolute duty to safeguard the prisoner. It simply requires the State to do that which is reasonable in the circumstances.* Having regard to the high costs of the modifications and personnel arrangements necessarily urged by the appellant and the infrequency (if not uniqueness) of the injuries which he suffered, it would not have been reasonable (at least by the standards of 1978) for Newman J to have concluded that the modifications urged by the appellant were required by law.
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> [emphasis added]

87 These observations apply to the present case. It is obviously *not* the case that the LTA had insufficient resources to retrofit half-height PSDs at aboveground stations, including AMK Station. The decision to commit resources for that purpose was made in 2008 and $126m was actually expended on that purpose between 2009 and 2012. But there was evidence that competition for the allocation of public resources was clearly a consideration for the LTA in deciding whether and when to retrofit the half-height PSDs[86].

88 The standard of care imposed by the law is an objective one. Therefore, a defendant will be adjudged negligent even if that defendant lacks the financial resources to exercise the care deemed reasonable by the applicable standard. But equally, a defendant who exercises the care which the applicable standard deems reasonable will not be adjudged negligent simply because he has access to *additional* resources and is therefore able to take *additional* precautions. To take an example, certain cars incorporate safety features designed to minimise injury to pedestrians. Typically, those safety features make those cars more expensive. A motorist who knocks down a pedestrian will have attained the standard of care dictated by the law so long as the configuration of his car keeps a pedestrian reasonably safe in a collision. That is so even if that motorist has the resources required to purchase a more expensive car with improved safety features which would have kept the pedestrian even safer.

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[86] See transcript for 8 November 2012 at pp 52-54

Analogous cases

89 I find it relevant to consider a number of analogous cases involving railway accidents. In *Chan Chung Kuen and MTR Corporation Ltd* DCPI 764/2009 ("*Chan Chung Kuen*"), the plaintiff sustained serious injuries when his leg sank into the gap between the train and the platform while he was attempting to board the train. He claimed damages from the defendant, arguing that the platform gap was too wide to be safe, and that there was inadequate warning and supervision to passengers on the platform. The court found that the defendant had not breached any duty to the plaintiff. It found that the curvature of the railway line made the gap inevitable, and that the gap was within international safety limits and had been passed as safe for public use by the Railway Inspector[87]. An argument that PSDs should have been installed was rejected because the plaintiff failed to adduce any evidence to substantiate that the installation of such platform screen doors was reasonably practicable[88]. The court went on (at [31]-[37]) to consider the various precautions taken by the defendant. These precautions are largely similar to the existing safety features at AMK Station. They include the deployment of crowd control staff at the platforms at peak hours, flashing lights at all curved platform edges to draw attention to the platform gaps, warning signs in various parts of the station, and an audio warning reminding passengers to stand behind the yellow line. With regards to the complaint of lack of crowd control staff at the material time, the court considered CCTV footage revealing that the platform had not been crowded and therefore that the absence of crowd control staff at that time had nothing to do with the occurrence of the accident

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87 At [23]

88 At [27]

(at [40]-[42]). The court also referred to an English case, *Stracstone v London Transport Board*, The Times, 21 January 1966 in the *Current Law Year Book* (at para 8317). That case concerned a similar situation where the plaintiff had fallen through the platform gap. There was no evidence that the platform was unusually crowded at the time of the accident. It was found that the existing safety precautions, namely white lines on the platform with the words "mind the gap", an extension of the platform at a lower level, signs which lit up when the train came in, and members of the staff shouting "mind the gap", were sufficient to bring the platform gap to the plaintiff's attention.

90 There are, of course, differences between the present case and *Chan Chung Kuen* and *Stracstone v London Transport Board*. It is not the plaintiff's case that the warnings at AMK Station were inadequate to bring the potential danger of falling into the tracks to the plaintiff's attention. In any event, I have found that the plaintiff was injured because she suffered a sudden and unpredictable loss of consciousness, and not because she was inadequately warned about the risk of falling onto the tracks. However, these cases show that commonly-adopted safety measures which are entirely passive, such as trackside visual markers and audio and visual warnings, are meaningful and effective measures for a railway operator to take in discharge of its duty to ensure that a station is reasonably safe. One cannot argue that these measures are useless and that a MRT train station is not reasonably safe simply because it lacks a physical barrier to prevent an infinitesimally small risk.

91 I find that on an objective evaluation, the safety features at AMK Station on 3 April 2011 were sufficient to keep passengers reasonably safe and to keep the risk of passengers falling into the train tracks at a level that was as low as was reasonably practicable. The incidence of one-unders remained at a

constant of between two and six per year, despite the steady increase of annual passenger trips from 402,265,250 in 2004, to 587,731,687 in 2012. The plaintiff's argument was that even one one-under incident meant that the measures taken by the defendants fell short of what was required to make AMK Station reasonably safe. I cannot accept this argument. The standard of care does not require the defendants to eliminate all risks by taking all precautions. The standard of care requires the defendants only to reduce risk to a reasonable level by taking reasonable precautions. Objectively speaking, the existing safety features were sufficient to render an accidental one-under a minuscule risk. I find that the numbers of injuries per year either in their absolute number or as a proportion of the total passenger trips was not at such a level as to invite any inference of inherent defects in design or operation of the MRT stations. The defendants acted reasonably in making no substantial changes to the design and operation of the stations as at the date of the plaintiff's injury. In particular, I find that AMK Station was reasonably safe for the plaintiff's use on 3 April 2011 even without half-height PSDs installed.

92 More can always be done when it comes to safety. That is particularly so when safety is analysed with the perfect vision of hindsight. However the law does not require the defendant to take every step and to expend every conceivable resource to eliminate every risk in the name of safety. Indeed it might be a gross misallocation of resources to channel all one has to completely eliminate a risk with a very low likelihood of eventuating at the expense of addressing other risks.

Common practice

93 My view is fortified by evidence that platform edge safety of the Singapore MRT system, even with only the existing safety features and

without PSDs, was comparable with and even exceeded international standards and common practice. Conformity with common practice cannot, of course, be a complete answer to an allegation of breach of duty. However, conformity with common practice is *prima facie* evidence that the standard of care has been met. *Charlesworth and Percy on Negligence* states at para 7-38 that:

> A court's assessment of the standard of care appropriate in given circumstances will inevitably reflect the evidence received in the case. Where the evidence suggests that for a significant period of time a practice has been followed without untoward result, it will be regarded as a strong indication that to follow that practice is consistent with the exercise of reasonable care. It will not be conclusive, but, generally, "a defendant charged with negligence can clear [himself] if he shows that he has acted in accord with general and approved practice" (*Vancouver General Hospital v McDaniel* (1934) 152 LT 56 at 57).

94 In *B (A Child)*, the court was alive to the fact that the public perception of the need for safety in premises had increased over the 15 years since the occurrence of an identical accident and given the seriousness of the resulting injury (at [85], see [69] above). Against that however, the court weighed the consideration that the insulation or lagging of central heating was not industry practice (at [97]):

> In addition it is proper to take into account the fact that no British Standard or Code of Practice requires that pipes be protected, nor does any British Standard or Code of Practice make that recommendation where the pipework forms part of the useful heating surface in the room. The evidence before me establishes that consideration, since the case of *Ryan* was decided, to safety aspects as well as to the efficiency of heating systems, has been given and yet no change been made. Again, this is not a decisive factor as there may well be negligence even where no British Standard or Code of Practice has been breached, but it remains a factor to be taken into account in the circumstances.

> Having considered the matter as a whole I conclude that the defendants have acted reasonably in not lagging or protecting the pipework. I find that they are not in breach of their duty of care to the claimant in the circumstances of this case.

95 In the present case, the evidence is that the Singapore MRT system has consistently been rated amongst the safest in the world[89]. Mr O'Grady stated in his report that the warning systems at AMK Station met or exceeded international norms for safety in most transport systems worldwide, and that it is only the newest mass transit stations being constructed worldwide which are now incorporating variations on the same safety features that MRT stations in Singapore have had for many years[90]. The design of AMK Station, and in particular the treatment of the platform edge flooring, conforms to various international standards such as the American National Standards Institute ("ANSI") and the "Train and Station Services for Disabled Passengers: A Code of Practice" ("UK Code of Practice") from the Office of Railway Regulations adopted in Europe[91]. In this regard, it is clear to me that AMK Station as at April 2011 was not only reasonably safe in itself, it was also reasonably safe when measured against the standards of safety practised in the vast majority of global MRT systems.

96 The plaintiff however argued that the defendants were negligent in not implementing certain safety measures which have been adopted in some other jurisdictions, or which would conceivably have averted the plaintiff's injuries even if there has been low uptake in other jurisdictions. These measures are listed as follows:

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89 See Affidavit of Teo Wee Kiat dated 12 November 2012 at p 4

90 See DBAEIC Vol 3 at p 19, para 38

91 See Defendants' Closing Submissions at para 137

(a) Installation of half-height PSDs;

(b) erection of interim barriers pending completion of the installation of the half-height PSDs;

(c) a larger distance between the yellow line and the platform edge;

(d) slower speed of trains arriving at AMK Station; and

(e) more service staff to conduct crowd control at the platform.

97 I now proceed to evaluate each of these measures.

The installation of half-height PSDs

98 The evidence is that as at September 2011, only 44 out of the world's 184 rail transit systems had PSDs installed in some portion of their network[92]. (September 2011 was the closest date to April 2011 for which information was available. If anything, the number of systems with PSDs would conceivably have been lower in April 2011 than in September 2011.) PSDs include both full-height PSDs and half-height PSDs. Many of the stations with PSDs are underground stations. Singapore was in effect the first MRT system to install PSDs in its inaugural stations in 1987. These were the full-height PSDs installed in underground stations to which I have already referred.

99 Further, the evidence showed that the vast majority of the 44 systems which have incorporated PSDs installed them in newly constructed lines and extension stations, rather than installing them as a retrofit to existing stations. This is the case in Tokyo, London, São Paolo and New York. For instance,

[92] See DBAEIC Vol 3 at p 15, para 28, and DBAEIC Vol 4 at p 424-428

London built PSDs into the extension stations of the Jubilee Line which were constructed in 1999. New York is also installing PSDs on its new line on 2nd Avenue, but has no plans to retrofit existing stations. Mr O'Grady explained that there is a difference in technology between constructing PSDs in new stations and retrofitting them onto existing stations. Retrofitting PSDs was believed to be impossible until the mid-1990s, due to structural limitations in existing stations such as the weight-bearing capacity of existing platforms[93]. The evidence is that there are only about eight rail systems[94] worldwide which have installed PSDs as a retrofit. This includes Hong Kong, Guangzhou, Paris, Seoul, and Singapore[95]. Hong Kong was the first transit agency to undertake a retrofit of PSDs in 1995. It did this for both air-conditioning and safety reasons. Guangzhou undertook a retrofit in 2005. In response to my question, Mr O'Grady told me that the "tipping point" – where PSDs come to be seen as an *essential* safety feature rather than an *enhanced* safety feature – has not been reached[96]. This view is clearly influenced by the fact that the vast majority of systems in the world, including those of major cities, still do not have PSDs. It is highly unlikely that all of those systems are failing to attain either the ALARP standard required by safety engineers or the standard of being reasonably safe required by the law.

100 Having said that, I accept that whether the standard of care requires the adoption of a given safety feature cannot simply be a matter of counting the number of persons subject to the same duty of care who have adopted that

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93 See transcript for 2 November 2012 at p 25

94 See transcript for 1 November 2012 at p 99, and 2 November 2012 at p 25

95 See DBAEIC Vol 3 at p 15, para 18

96 See transcript for 2 November 2012 at pp 27-28

feature. There must always be an objective evaluation of the likelihood and magnitude of the harm sought to be averted against the cost of the feature. However, the fact that even today, such measures are not adopted in the majority of comparable rail systems worldwide is very strong evidence that the balance struck by the defendants as at 3 April 2011 is a reasonable one.

101 I am guided by the case of *Thompson v Smiths Shiprepairers (North Shields) Ltd* [1984] QB 405 ("*Thomson"*). There, the defendant employers were found negligent for not providing ear-protection equipment to its employees from the time social awareness of the dangers of deafness had arisen and protective equipment become available. Lord Mustill's guidance is useful (at 415-416):

> Between the two extremes is a type of risk which is regarded at any given time (although not necessarily later) as an inescapable feature of the industry. The employer is not liable for the consequences of such risks, although subsequent changes in social awareness, or improvements in knowledge and technology, may transfer the risk into the category of those against which the employer can and should take care. It is unnecessary, and perhaps impossible, to give a comprehensive formula for identifying the line between the acceptable and the unacceptable. Nevertheless, the line does exist, and was clearly recognised in Morris v. West Hartlepool Steam Navigation Co. Ltd. [1956] A.C. 552. The speeches in that case show, *not that one employer is exonerated simply by proving that other employers are just as negligent, but that the standard of what is negligent is influenced, although not decisively, by the practice in the industry as a whole. In my judgment, this principle applies not only where the breach of duty is said to consist of a failure to take precautions known to be available as a means of combating a known danger, but also where the omission involves an absence of initiative in seeking out knowledge of facts which are not in themselves obvious. The employer must keep up to date, but the court must be slow to blame him for not ploughing a lone furrow.*
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> [emphasis added]

102 The court identified the key question in the following terms (at 423):

> From what date would a reasonable employer, with proper but not extraordinary solicitude for the welfare of his workers, have identified the problem of excessive noise in his yard, recognised that it was capable of solution, found a possible solution, weighed up the potential advantages and disadvantages of that solution, decided to adopt it, acquired a supply of the protectors, set in train the programme of education necessary to persuade the men and their representatives that the system was useful and not potentially deleterious, experimented with the system, and finally put it into full effect?

103 In order to determine this key date, the court reviewed in detail the history of advancements in ear-protection (at 418-419), the defendant's contentions as to why protection was not implemented earlier (including lack of interest in parliament and amongst workers and employers (at 419-422)), as well as the evidence of *when* the defendants might have become aware of solutions to reduce the harm. The court concluded that the year 1963 marked the dividing line between the reasonable and unreasonable, that being the date when the defendant received a government publication on "Noise and the Worker". After that date, the court opined that there was "no excuse for ignorance".

104 I find this a workable and logical approach to assessing when the so-called tipping point for the uptake of certain new safety measures is reached, such that it becomes negligent for a defendant to continue to expose those to whom it owes a duty of care to the risks which arise from not adopting the measure. In the present case, there is no doubt that physical barriers such as PSDs are the only completely effective way of reducing the incidence of track intrusions and the only way of eliminating accidental track intrusions. There is also no doubt that installation of half-height PSDs as a retrofit poses huge technical and financial challenges.

105 We have not reached that tipping point, whether one considers the relevant date to be April 2011 or now. Mr O'Grady accepted that having half-height PSDs as a standard safety feature is the direction that the world's transit systems are heading towards[97]. But his evidence, which I accept, is that they were not yet standard in 2011 or even when he gave evidence. It therefore does not follow that the failure to install half-height PSDs at all train stations, regardless of timing, common practice and cost, equates to a breach of the standard of reasonable care.

106 I therefore find that at the time AMK Station was built, it was reasonably safe notwithstanding the absence of PSDs. No other rail system in the world had installed them then, undoubtedly due to technological limitations of the day, and cost. To that extent, the Singapore MRT system's underground stations were then safer than reasonably necessary because they were built with full-height PSDs. That does not, however, mean that the aboveground stations were then less than reasonably safe. The level of track intrusions was then low. Even in 2008, the risk of one-under incidents remained infinitesimal. But technology had advanced greatly and it was now possible to retrofit half-height PSDs onto existing stations. That was done in phases and completed in 2012. Seven or eight rail systems in the world also did so. However, the vast majority of rail systems in the world continue to function without them, and choose instead to rely on other safety precautions to mitigate the incidence of track intrusion. There were, and still are, no international standards or guidelines recommending the installation of PSDs[98]. This combination of factors leads me to conclude that the state of social

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97 See transcript for 1 November 2012 at pp 99

98 See DBAEIC Vol 3 at para 12

awareness, tolerance for risk, technological advancement and common practice has not changed so much since AMK Station was built as to move the decision not to install half-height PSDs from the category of reasonable conduct to unreasonable conduct on the part of a MRT operator or a regulator. Therefore, the defendants did not breach their duty of care by virtue of the fact that there were no half-height PSDs installed at AMK Station in April 2011.

107 An argument that surfaced in the course of the hearing was that the fact that the defendants took the decision in 2008 to install half-height PSDs showed that the defendants knew that AMK Station was not reasonably safe with only the existing safety features in place. As I have found that AMK Station was reasonably safe from the time it was built all the way up to April 2011 based on the extremely low incidence of accidental one-under incidents and the effectiveness of the existing safety features, I do not think that the defendants' subjective view of the safety of AMK Station is determinative of the outcome of the case. In any case, that was not the defendants' subjective view. The defendants' evidence – which I accept – is that half-height PSDs were installed in aboveground MRT stations not to make those stations reasonably safe or even more than reasonably safe. Evidence was given by Mr Samuel Chan Wai, the Deputy Director of the Systems Assurance and Integration Division of the LTA. He testified that the existing safety features – without PSDs – were considered reasonable because they were effective in keeping SMRT's safety record far below the LTA's standard of 0.4 passenger injuries per million passenger trips[99], and were in keeping with prevailing international practices[100]. The decision to install half-height PSDs was taken

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99 See transcript for 19 November 2012 at pp 88, 97

100 See Affidavit of Samuel Chan at para 18

in 2008 primarily to improve operational efficiency by reducing train downtime caused by track intrusions of all kinds, and to improve the attractiveness of public transport as an alternative to private transport[101]. Similarly, the evidence of Mr Mead was that the decision to install the half-height PSDs was the result of the benefits of installing half-height PSDs eventually outweighing the costs, both financial and otherwise, such as to make half-height PSDs an efficient allocation of available resources. The capital cost of retrofitting the entire MRT system with half-height PSDs was estimated at $256m[102]. The maturing of technology had led to reduced implementation costs of the project and that was an important consideration[103]. This financial cost was then balanced against the various costs of not installing the half-height PSDs. Mr Mead explained that what was considered primarily was the social cost to the public of service disruptions[104] and not the very small risk of one-unders. Ultimately, the decision to install the half-height PSDs was the result of a "confluence of factors"[105]. This came through during Mr Mead's cross examination[106]:

> Q: Do you have any personal knowledge why LTA decided in 207[sic] to decide to put---install these half-height doors? Do you have any personal knowledge, the reasons?
>
> A: Erm, I've read the, er, internal management reports. Erm, as---as---er, as far as I'm aware, there---there was a confluence of the technology maturing and coming down in cost to say, erm, this technology didn't exist in 1987 when the first designers built the railway. So, yah, there's no question

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101 See Affidavit of Samuel Chan at para 13

102 See transcript for 8 November 2012 at p 53

103 See DBAEIC Vol 2 at pp 12-13, para 48

104 See transcript for 8 November 2012 at p 52

105 See transcript for 8 November 2012 at p 54

106 *Ibid*

> that it could have been put in at that point. And early installations of this---of these half-height screen doors, erm, very expensive and what was also happening is ridership is going up, erm, and we're having more intensive use. So the cost of these delays, as I mentioned, you know, whereas before it might have been 50,000 people affected, now it's 100,000 people affected simply because the railway is becoming more and more intensely used. So---so there's a---this confluence of factors that bring us to a tipping point whereby the---the doors become effective, erm, the---the---the cost---the capital cost, the operational cost versus the---er, the safety benefits and the cost of the disruptions make it worthwhile to do.

108 Therefore, the defendants insist that the eventual decision to install half-height PSDs was not a concession that the system was not reasonably safe without the half-height PSDs. I accept that. I have already found that AMK Station was reasonably safe with only the safety features existing on April 2011. I find further the additional layer of safety brought about by the subsequent installation of the half-height PSDs was an undoubted but incidental benefit of a decision made primarily for other reasons. The installation of half-height PSDs took AMK Station from a station which was reasonably safe to one which was more than reasonably safe.

The failure to erect interim barriers

109 A further argument advanced by the plaintiff was that once the decision had been taken to install half-height PSDs, it was negligent of the defendants not to install interim barriers pending the retrofit of half-height PSDs, so as to provide immediate mitigation of the risk which the half-height PSDs would avert. In his report, Dr Krishnamurthy suggested that the defendants should have installed metal stand-alone temporary barriers the base projections of which could be bolted to the platform[107]. He suggested that gaps

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[107] See PBAEIC at p 26, para 6.2-6.5

between the barriers could be left such that they corresponded with the carriage doors, and that these gaps could be barricaded by a hooked chain which could be unhooked by station staff for passengers to pass through when the train arrived. Dr Krishnamurthy suggested that such measures, though unable to totally eliminate risk, would reduce the risk. They would at least have prevented the plaintiff's particular accident from occurring.

110 The evidence was that the defendants did not consider the implementation of interim measures[108]. The reason given was that AMK Station was already reasonably safe without permanent barriers like half-height PSDs[109]. That meant that it was reasonably safe also without *interim* barriers. I accept this argument. The decision to install the half-height PSDs was taken in 2008. The likelihood of an accidental one-under incident was infinitesimal immediately before and immediately after the decision was taken. The magnitude of the harm was also identically catastrophic immediately before and immediately after the decision. The cost of the precautions was also the same immediately before and immediately after the decision. In other words, the risk profile of AMK Station did not change overnight simply because a decision was taken to install half-height PSDs. A station which was reasonably safe before the decision to retrofit the half-height PSDs did not cease suddenly to be reasonably safe[110] because of that decision. Given that, there could not have been any need, by virtue of that decision alone, to install interim barriers. I also note that it is not the plaintiff's case that the LTA was negligent in the speed at which the

[108] See transcript for 8 November 2012 at pp 22-23, and 7 November 2012 at p 49 lines 1-26

[109] See transcript for 19 November 2012 at p 88

[110] See transcript for 8 November 2012 at pp 17-19

retrofitting works took place between 2009 and 2012. All of this suffices to dispose of this alternative argument advanced by the plaintiff.

111 However, even if I were to accept that some unspecified element of AMK Station's risk profile changed in 2008 which made it necessary to at least consider installing interim platform edge barriers, I find that it was not reasonably practicable to install those barriers. I bear in mind the following considerations.

112 First, installing interim barriers requires expending non-trivial financial resources. Mr O'Grady's evidence was that those resources would be most effectively used in speeding up the installation of the half-height PSDs themselves. I accept that. But as I have said, it was no part of the plaintiff's case that the defendants had been unreasonably slow in conducting the retrofit. Further, interim barriers have a finite lifespan in that their value is entirely lost once the half-height PSDs are completed. Mr O'Grady termed this a "wasting asset"[111]. This goes to the question of whether such barriers would be an efficient application of the defendants' resources at the expense of other more lasting goals. It is also the case that the marginal utility of these barriers is limited as they cannot truly eliminate accidental track intrusions in the way that permanent half-height PSDs can, as Dr Krishnamurthy himself conceded.

113 Second, there was no evidence of any practicable way of installing interim barriers. Dr Krishnamurthy proposed installing them by drilling temporary guard-rails onto the station platforms. When cross-examined on this, Mr Mead explained that drilling was not feasible because it would

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[111] See transcript for 2 November 2012 at pp 14-15

damage a protective electrical membrane under the platform[112]. Further, the presence of the guard-rails themselves would hinder the installation of the permanent half-height PSDs[113].

114 Finally, interim barriers have the potential to create new and potentially worse risks[114]. Mr O'Grady's evidence was that station platforms are particularly critical and high risk areas. Any changes to the configuration of a platform could introduce uncertainty and greater danger, particularly when one considers the vast diversity of persons who transit through the station and who might react differently to new elements[115]. He noted that the types of temporary guard-rails proposed by Dr Krishnamurthy presented a host of potential dangers, such as the risk of someone dislodging the guardrails and causing them to fall into the tracks, of children using the rails as a "jungle gym" to swing or climb on, of someone tripping over the base of the guardrails, or of the electrical integrity of the station being compromised by fastening a metal structure to the platform[116]. This particular point was also noted during a Parliamentary Debate in September 2009, where the issue of accidents at MRT stations was considered. The then Minister for Transport, Mrs Lim Hwee Hua, addressed a suggestion that half-height railings be erected at station platforms. She stated that the LTA's preliminary risk assessment showed that barriers would not bring down the risk of accidents at platforms substantially. She then noted that[117]:

112 See transcript for 8 November 2012 at p 25, lines 22-30

113 See transcript for 8 November 2012 at p 24, lines 10-18

114 See transcript for 8 November 2012 at p 9

115 See transcript for 1 November 2012 at p 90-91

116 See transcript for 1 November 2012 at pp 90-93

117 See DBAEIC Vol 2 at p 228

> There are also many other safety considerations that would have to be addressed with the use of these half-height railings. For example, the barriers will need to be designed such that commuters will not sit on them and risk falling onto the tracks. Secondly, they will also have to be some distance away from the edge of the platforms to minimise the potential hazard of straying arms, inadvertently infringing onto the paths of oncoming trains. Thirdly, the space between the edge and the barriers can also become another potential hazard, if unwary passengers become trapped within the small space when the trains start to move, and this can happen to alighting passengers at crowded platforms or to passengers rushing to board a packed train.

115 With the foregoing considerations in mind, I am unable to say that the plaintiff offered evidence of any interim measure which was at all practicable and realistic. In fact, the plaintiff's proposal for the installation of interim barriers appears to introduce elements of new risk in a system which had operated predictably and effectively in reducing the danger to the vast majority of users to infinitesimal levels. The defendants cannot be faulted for not introducing a change simply as a short term solution when that change which might expose commuters to greater danger and thereby increase rather than mitigate risk.

116 For these reasons, I find it was not negligent for the defendants not to have erected interim barriers pending the full installation of permanent half-height PSDs.

The distance between the yellow line and the platform edge

117 Yet another argument of the plaintiff's was that the defendants had drawn the yellow line too close to the platform edge, in a manner which was unsafe in the circumstances. The contention was that the defendants had negligently led the plaintiff to believe that she would be reasonably safe if she

stood behind the yellow line, when she did so and was not safe, as events proved[118].

118 Both plaintiff's and defendants' experts adduced photographic evidence of platforms in other MRT systems. Both used methods of estimation to deduce the yellow line distances in these metro systems. Dr Krishnamurthy's method was to take 60 photographs of random metro stations from the internet and count the pixels between the platform edge and the yellow line[119]. He then divided the number of pixels by the number of pixels making up the height of a person standing in the same photograph. This ratio was then multiplied by what Dr Krishnamurthy said was the "average" height of persons in that continent. The resulting number was Dr Krishnamurthy's calculation of the yellow line distance of those stations[120]. I have a number of difficulties with Dr Krishnamurthy's method of calculation. First, his assumption as to the average heights of Asians and Westerners, upon which his calculation of the yellow line distance was based, was unsubstantiated. He also had no basis to assume that the reference individual which he chose in each of the photographs was in fact of average height. Second, Dr Krishnamurthy accepted that some of the photographs showed inner-city stations and not metro stations. Inner-city stations are not suitable comparators for Singapore's rail network, which is classified as an urban metro network[121]. Third, there were errors in Dr Krishnamurthy's use of the photographs—one of the photographs was wrongly labelled, certain photographs which he

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118 See Plaintiff's Closing Submissions at p 8, paras 4(m)-4(n)

119 See Plaintiff's Bundle of Affidavits of Evidence-in-Chief ("PBAEIC") at Tab 2 pp 5, 9-18

120 See PBAEIC at p 25, paras 5.8-5.9

121 See transcript for 30 October 2012 at p 10

claimed depicted different stations were actually identical, and the yellow line distance at New York's Grand Central Station was measured to be nearly 800 mm, which is very different from the 610mm consistently applied in the United States[122].

119 For his part, Mr O'Grady tendered photographs[123] obtained from the International Railway Gazette for 2011-2012. These photographs had the advantage of originating from a recognised industry source and being clearer and larger than Dr Krishnamurthy's. Mr O'Grady's evidence was that the yellow line distances at platforms in Delhi, Changsha, Xi'an, Wuhan, Xiamen, Madrid, Austria, Dublin, Sao Paulo and London are all between 450 mm and 600 mm, consistent with the distance in Singapore. But he based this evidence purely on visual estimation from these photos. I am therefore unable to attach significant weight to his evidence.

120 Mr Mead tendered photographs[124] of the Toronto metro station, a London Docklands Light Railway station and tube station and a Bangkok BTS station. He gave evidence that the coloured tactile tiles used to line the platform edge of the Toronto and London stations are 600 mm deep[125]. It is unclear whether he gave this evidence from his personal knowledge, but it is the case that he worked on the Toronto metro system and Docklands Light Railway before joining the LTA.

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122 See transcript for 30 October 2012 at pp 21, 32-33

123 See Supplementary AEIC of John Peter O'Grady at pp 8-38

124 See DBAEIC Vol 2 at pp 103-109

125 See DBAEIC Vol 2 at pp 6-7, paras 23-27, transcript for 8 November 2012 at p 17 line 27 – p 18 line 4

121 I find it difficult to give any weight to both experts' estimations of the yellow line distances derived from the photographs they tendered. I cannot say with any certainty exactly which photos depicted stations with larger yellow line distances than that of AMK Station, and whether those stations represent the worldwide consensus. These photographs do show that Dr Krishnamurthy's recommended yellow line distance of 1.8m[126] is wholly impractical. Beyond that, all that I can glean from the photographs is that there is no uniform practice for yellow line distances across all or a majority of jurisdictions. The situation appears to me different from the situation with the half-height PSDs, where there was clear and consistent evidence that the overwhelming majority of stations worldwide did not include them as a safety feature as at April 2011.

122 Mr O'Grady tendered in evidence responses by email from the Los Angeles County Mass Transit Authority, the New York City Transit and the Chicago Transit Authority stating that the yellow line distances in their respective metro systems are 635 mm, 610 mm and 610 mm respectively[127]. This is unfortunately hearsay evidence to which I cannot have regard.

123 I am therefore left with certain published standards of best practice which are in evidence. I was referred to the United Kingdom Office of Rail Regulation's "Railway Safety Principles & Guidance[128]" ("ORR"). The ORR states that platform edges should be clearly defined with a strip of a lighter colour, and an additional line at least 1000 mm from the platform edge should

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126 See PBAEIC at p 27, para 7.8

127 See Supplementary AEIC of John Peter O'Grady at pp 28-40

128 See DBAEIC Vol 2 at p 27, and referred to in Mr O'Grady's Report at DBAEIC Vol 3 p 12

be provided where trains pass through the station at speeds greater than 165 km/h[129]. Trains in Singapore MRT stations pass through the stations at speeds of 55 km/h, exactly one-third of 165 km/h. I would therefore expect a yellow line distance for AMK Station of significantly less than 1000mm, though perhaps not proportionately less, to be consistent with this guidance. A tactile surface is recommended to indicate the edge to the visually impaired. The contrasting yellow safety line and the tactile strip at AMK Station conform to this guideline.

124 I was also referred to the UK Code of Practice[130]. The 2011 version incorporates both British and European standards. The relevant European Standards are as follows:

> 9. The danger area of a platform commences at the rail side edge of the platform and is defined as the area where passengers may be subject to dangerous forces due to the slipstream effect of moving trains dependent upon their speed...
>
> 11. The boundary of the danger area, furthest from the rail side edge of the platform, shall be marked with visual and tactile warnings.
>
> 12. The visual warning shall be a colour-contrasting, slip-resistant warning line with a minimum width of 100 mm.
>
> 13. The colour material at the railside edge of the platform must contrast with the darkness of the gap, and the material must be slip-resistant.

125 The non-binding guidance section of the UK Code of Practice states:

> h. The tactile surface should be 400 mm deep, extend the full length of the operational platform, and be laid parallel to, and

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129 See DBAEIC Vol 3 at p 12, para 14

130 See DBAEIC Vol 4 at p 295

> immediately behind, the platform edge coper, where this is 760 mm from the platform edge.
>
> k. It is recommended that the warning surface should not be less than 500 mm from the platform edge, because it may not allow enough time for people to stop after detecting the surface.
>
> m. Where the permissible or enhanced permissible speed on the adjacent line is greater than 100 mph, a yellow line should be provided on the platform, together with warning signs. The yellow line should be positioned so that people standing immediately behind the line are at least 1500 mm away from the platform edge.

126 Finally, the ANSI provides that platforms edges should be lined with a tactile strip 24 inches or 610 mm wide. The tactile strip is meant to indicate to both the blind and the sighted that the area less than 610 mm from the platform edge is not a safe place to stand[131].

127 Pertinently, the guidelines given in the ORR and UK Code of Practice also show that besides yellow line distance, another important aspect of platform edge safety is platform circulation. Both guides in fact address this consideration in far more detail than they do the yellow line distance, indicating that platform circulation is at least as important as the yellow line distance in maintaining platform edge safety. The UK Code of Practice specifies the minimum platform width for island platforms such as AMK Station, to be 3300 mm, and the minimum distance from the edge of the platform to the nearest obstacle to be 1600 mm[132]. There are separate and detailed guidelines for the minimum distances between particular types of obstacles such as walls, seating places, travelators and stairs, depending on the sizes of each. Likewise, the ORR specifies that island platforms should not be

131 See DBAEIC Vol 3 at p 175

132 See DBAEIC Vol 4 at pp 332-333

less than 4000 mm wide where trains pass at a speed not greater than 165 km/h, and that all obstructions should be at least 2000 mm clear of the platform edge[133]. The LTA's Architectural Design Criteria conforms to these guidelines[134]. It states that for island platforms without PSDs, the minimum clearance between the platform edge nosing and the finished surface of any wall or obstruction on an island platform should be 3000 mm.

128 It is obvious that the longer the yellow line distance, the more effective the yellow line will be in keeping passengers safe. This is simply because the yellow line will keep passengers further from the platform edge. But the further the yellow line is from the platform edge, the less of the platform area remains available for platform circulation. The position of the yellow line must therefore be balanced against enabling reasonable platform circulation. Increasing the yellow line distance would not, of course, prevent intentional track intrusions, which contributed to about 87% of all track intrusions in Singapore from 1998-2008[135].

129 In the result, I find that the yellow line distance at AMK Station was sufficient to keep passengers reasonably safe. The evidence available on common practice and international guidelines showed clearly that the yellow line distance at the AMK Station conformed to the international standards adhered to by most metro operators worldwide. In fact Dr Krishnamurthy conceded during cross-examination that the yellow line distance conformed to and exceeded United Kingdom and United States standards[136].The yellow line

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133 See DBAEIC Vol 2 at p 26

134 See DBAEIC Vol 2 at pp 113-114

135 See DBAEIC Vol 2 at p 142

136 See transcript for 30 October 2012 at p 36 and transcript for 31 October 2012 at pp

distance forms part of the design of AMK Station which I have found to be adequate in keeping the level of passenger injuries from one-under incidents at a level that was as low as is reasonably practicable.

The speed of oncoming trains

130 I deal now with a further contention which the plaintiff argued but briefly. This is the allegation that the speed of the train was unreasonably fast when it arrived at AMK Station. MRT trains generally arrive at stations at a speed between 55-60 km/h. The train which struck the plaintiff arrived at AMK Station at a speed of 55km/h[137]. The plaintiff argued that this is not a safe speed as it does not give the driver sufficient time to brake when he notices a track intrusion.

131 I cannot accept this argument. Trains can travel at any speed between just above 0 km/h up to their maximum speed. The slower they go, the lower the risk of injury to passengers who fall unintentionally onto the tracks. That does not mean that a railway operator should run its trains at the lowest possible speed. I adopt the views of Asquith J in the case of *Daborn v Bath Tramways Motor Co Ltd* [1946] 2 All ER 333 at 336, when he said that:

> In determining whether a party is negligent, the standard of reasonable care is that which is reasonably to be demanded in the circumstances. A relevant circumstance to take into account may be the importance of the end to be served by behaving in this way or in that. As has often been pointed out, if all the trains in this country were restricted to a speed of 5 miles an hour, there would be fewer accidents, but our national life would be intolerably slowed down. The purpose to

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26 and 27

137 See transcript for 5 November 2012 at p 71, lines 27-30, and 6 November 2012 at p 86 lines 3-6

> be served, if sufficiently important, justifies the assumption of abnormal risk.

132 This opinion was adopted in the Malaysian case of *Hamzah D 494 & Ors v Wan Hanafi bin Wan Ali* [1975] 1 MLJ 203 ("*Hamzah D*"), where Wan Suleiman FJ, after citing Asquith J, opined that "a balance... has to be struck between the very purpose of providing this means of transport, and the negligible risk of injury which failure to take the more elaborate and costly precautions might entail".

133 Once again, I note that it is easy to say that more can be done to improve safety. This is undoubtedly true. But a balance must be struck between carrying out an activity – especially one with high social utility – with reasonable efficiency and the risks which are an unavoidable part of that activity. In my view, the speed of 55 km/h at which this particular MRT train entered the station was a reasonable speed considering the improbability of track intrusions balanced against having a mass rapid system capable of transporting the public efficiently.

Crowd control at AMK Station

134 A similar answer applies to the plaintiff's contention that the defendants failed to provide adequate manpower to ensure proper crowd control at AMK Station at the time of the accident. Once again, the cost of precautions must be balanced against their utility and the likelihood of harm. This very issue was discussed in *Hamzah D*. A claim in negligence was brought against the Malaysian Railway Administration for failing to take reasonable steps to prevent passengers on a moving train from standing near the steps of the train, when they were aware that it was common practice for passengers to alight from the train while it was still in motion, and that

passengers regularly ignored the written warnings not to do so. The claimant was injured when he attempted to alight from the train before it came to a stop. The court found that the Malaysian Railway Administration was not negligent in not taking further measures such as placing a railway official at each door throughout the train to ensure passengers remained inside the train until it came to a complete stop. This conclusion was reached by balancing the cost of such a measure against the negligible risk of injury. The court noted:

> In the present case the railways provide a cheap and quick means of transport for residents of that part of the East Coast. The railway rules require that a clear passageway be kept from one end of the train to the other.
>
> As learned counsel for the appellants submitted at the trial, the only way to ensure that no passenger stood on the gangway was to place a railway official at each door throughout the train and to manhandle and herd passengers into their coaches so as to ensure that they would remain inside between stations. In order to restrain passengers such as the respondent from dashing out of coaches for the steps while the train is moving into a station, the doors would have to remain shut until the train comes to a halt. Such additional precautions though feasible would be extravagant in both time and expense, and would defeat the purpose of providing cheap and efficient public transportation.

135 In the present case, I have already found that based on the CCTV recordings, AMK Station was not in any way congested at the time of the plaintiff's accident. The accident occurred on a Sunday morning which is not a peak hour for travel. Reasonableness does not require the defendants to provide ever increasing manpower to patrol AMK Station at all times in a bid to avert the improbable occurrence of someone falling unintentionally onto the tracks, especially if the fall was not brought about by congestion.

Res ipsa loquitur

136 An argument was briefly made that the doctrine of *res ipsa loquitur* applies in favour of the plaintiff. The plaintiff contended that AMK Station was under the management of the defendants, and that her accident was one that would not happen in the ordinary course of things. Therefore, it was said, the burden shifted to the defendants to prove that they were not negligent.

137 The doctrine of *res ipsa loquitur* applies where three conditions are satisfied, as stated in *Scott v The London and St Katherine Docks Company* (1865) 3 H & C 596:

> (1) the occurrence is such that it would not have happened without negligence and (2) the thing that inflicted the damage was under the sole management and control of the defendant, or of someone for whom he is responsible or whom he has a right to control. If these two conditions are satisfied it follows, on a balance of probability, that the defendant, or the person for whom he is responsible, must have been negligent. There is, however, a further negative condition: (3) there must be no evidence as to why or how the occurrence took place. If there is, then appeal to *res ipsa loquitur* is inappropriate for the question of the defendant's negligence must be determined on that evidence.

138 It must be borne in mind that the doctrine of *res ipsa loquitur* is a rule of evidence. It operates to aid the plaintiff in establishing *prima facie* negligence where it is not possible for him to prove precisely what was the act or omission leading to his injury. In such circumstance, the court may take the accident itself as evidence of the defendant's failure to take reasonable care on the balance of probabilities. As stated by the Court of Appeal in *Teng Ah Kow & Anor v Ho Sek Chiu & Ors* [1993] 3 SLR(R) 43 (at [22]):

> It seems to us settled law that the principle of *res ipsa loquitur* is no more than a rule of evidence of which the essence is, as Lord Radcliffe pointed out in *Barkway v South Wales*

> *Transport Co Ltd* [1950] 1 All ER 392, that an event which in the ordinary course of things is more likely than not to have been caused by negligence is by itself evidence of negligence. It would then be for the defendant to rebut the *prima facie* case.

139 Therefore, the doctrine operates to fill an evidential gap. It follows that where there is no evidential gap to speak of, the doctrine has no relevance, even if it can be shown that the defendant was in control of the thing which inflicted the damage.

140 In the present case, the circumstances leading up to the accident are clear. The plaintiff stood behind the yellow line. The platform was not crowded. The plaintiff suffered a sudden and unpredictable loss of consciousness and fell onto the train tracks, where she was struck by a train. The court does not have to rely on inference to ascertain how the accident occurred, because this is all patent from the CCTV recordings and the evidence of the witnesses. It remains only for the court to decide whether, on these known facts, the defendants could be considered to have fallen below the applicable standard of care. The foregoing analysis (at [71]-[135] above) has addressed that question. There is no evidential gap on these facts. The evidential doctrine of *res ipsa loquitur* does not assist in this inquiry.

Conclusion on negligence

141 Based on the foregoing analysis, I come to the conclusion that AMK Station was reasonably safe on 3 April 2011. The defendants have not fallen below the applicable standard of care and were not negligent. This finding is also sufficient to dispose of the plaintiff's claim based on an implied contractual term.

Breach of statutory duty

142 The plaintiff alleged that the defendants were in breach of para 27 of the fifth schedule of the Building Control Regulations 2003 (Cap 29, S 666/2003) ("the Regulations"). The Regulations are enacted under s 49(1) of the Building Control Act (Cap 29, 1999 Rev Ed) ("the Act"). The relevant paragraphs of the Regulations are paragraphs 26, 27 and 28:

> **H. Safety from falling**
>
> **Objective**
>
> 26. The objective of paragraph 27 is to protect people from injury caused by falling.
>
> **Performance requirement**
>
> 27. Where there is a vertical drop in level of 1000 mm or more, appropriate measures shall be taken to prevent people from falling from a height.
>
> 28. The requirement in paragraph 27 shall not apply to —
>
> (*a*) roofs or other areas generally not intended for human occupation; and
>
> (*b*) special service or usage areas such as loading or unloading bays, stages for performance or entertainment.

143 The plaintiff argued that the drop from the platform to the tracks is more than 1000 mm, as indicated by plans submitted by the defendants[138], and that the defendants failed to take any or any appropriate measure to protect people from injury caused by falling. The basis for the alleged failure is the lack of half-height PSDs at AMK Station at the material time[139]. It was further contended that AMK Station platform is not excluded from the requirement in

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138 See Plaintiff's Closing Submissions at para 134

139 See Plaintiff's Closing Submissions at para 132

paragraph 27 of the fifth schedule of the Regulations because it does not fall under the exceptions provided by paragraph 28(a) and (b) of the fifth schedule of the Regulations.

144 I can deal quickly with this argument by referring to paragraph 3 of the Regulations, which states as follows:

> **Application**
>
> 3. These Regulations shall apply only to building works where an application to the Commissioner of Building Control for approval of the plans of those building works under section 5(1) of the Act is made on or after 1st January 2004.

145 The design and construction of the MRT network, including AMK Station, was approved by the government in May 1982. Construction commenced in 1983. The plaintiff has at no point argued that the construction of the MRT network was done without the necessary clearances. It is therefore clear that the Regulations do not apply to the MRT network, including AMK Station, which plans received the necessary Building Control approval before 2004. The Building and Construction Authority in fact confirmed as much in its written reply to the LTA's written enquiry of 19 August 2011. It stated that at the time of construction, the LTA's predecessor, the Mass Rapid Transit Corporation, was expressly exempted from the provisions of Part II of the Building Control Act 1973 (Act 59 of 1973) ("the 1973 Act") by virtue of the Building Control (Exemption) Order 1983, and therefore that the present Regulations do not apply to AMK Station. The Building Control (Exemption) Order 1983 states as follows:

> ...
>
> 2. The Mass Rapid Transit Corporation established under the Mass Rapid Transit Corporation Act 1983 is hereby exempted from the provisions of Part II of the Building Control Act,

> 1973, in respect of the following building works undertaken by the Authority:
>
> > a. All building works below ground level; and
> >
> > b. All stations, workshops, marshalling yards, depot, stabling yards, elevated line structures, electrical substations, control centres, administration buildings and related building works on or above ground level.

146 As the Regulations do not apply to AMK Station, it is not necessary for me to consider whether the above-ground platforms at AMK Station fall under the exempted areas listed under paragraph 28(a) and (b) of the Regulations.

Conclusion

147 The plaintiff's injuries are undoubtedly tragic, especially for one so young. But the law of negligence awards compensation based on a defendant's culpability, not simply because a plaintiff has suffered harm. The concept of the standard of care is a tool adopted by the law to determine whether conduct is culpable. A defendant who meets the standard of care set by the law of negligence is not at fault for a plaintiff's misfortune, however undoubtedly tragic that misfortune is.

148 I have found that AMK Station was reasonably safe at the time the plaintiff sustained her injuries. As a result, the defendants are not liable in negligence for those injuries. Neither is SMRT liable in contract for breach of the implied term which I have found in its contract of carriage with the plaintiff. The defendants are also not in breach of the Regulations as these Regulations do not cover MRT stations.

149 The plaintiff's case amounted to arguing that the defendants were negligent because they failed to make a system which was reasonably safe even more safe. Unfortunately for the plaintiff, that is not the law.

150 I therefore dismiss the plaintiff's action with costs.

Vinodh Coomaraswamy
Judge

Mr Cosmas Stephen Gomez and Mr Subbiah Pillai
(Cosmas LLP) for the plaintiff;
Mr Anparasan s/o Kamachi, Ms Grace Tan and Mr Tan Wei Ming
(KhattarWong LLP) for the defendants.