Lum Hon Ying *v* Buildmart Industries Pte Ltd and another and another suit [2014] SGHC 136

Case Number : Suit Nos 440 and 629 of 2010

Decision Date : 10 July 2014

Tribunal/Court : High Court

Coram : Tay Yong Kwang J

Counsel Name(s) : N Srinivasan and Jogesh Doshi (Hoh Law Corporation) for the plaintiff in Suit No 440 of 2010; Ramasamy s/o Karuppan Chettiar (Acies Law Corporation) for the plaintiffs in Suit No 629 of 2010; Boo Moh Cheh (Kurup & Boo) for the first defendant in Suit No 440 of 2010 and the second defendant in Suit No 440 of 2010; Michael Eu Hai Meng (United Legal Alliance LLC) for the second defendant in Suit No 440 of 2010 and the first defendant in Suit No 629 of 2010. Ong Kok Seng (David Ong & Co) for the third defendant in Suit No 629 of 2010; Philip Ling (Wong Tan & Molly Lim LLC) for the third party in Suit No 629 of 2010.

Parties : Lum Hon Ying — Buildmart Industries Pte Ltd and another

Tort – Negligence

Tort – Breach of Statutory Duty

10 July 2014

Tay Yong Kwang J:

Introduction

1 These two actions were tried together as they involved the same accident at a construction site located at 9 to 37 Balmoral Crescent on which a condominium (the Sui Generis), comprising three blocks of different heights, was then being built. The accident occurred on 29 September 2009 at about 11.30am. A large section of a passenger hoist mast ("the load") was being lifted by a luffing tower crane across a section of the worksite when the tower crane's wire rope suddenly broke causing the load to fall and plummet into a metal container which was being used as a site office ("the site office").

The parties

2 The plaintiff ("Lum") in Suit No 440 of 2010 ("S 440/2010") was a Quality Control Manager in Kajima Overseas Asia. The plaintiffs in Suit No 629 of 2010 ("S 629/2010") are the administratrix and co-administrator of the estate of Lim Boon Tiong ("Lim") who was a structural engineer employed by Meinhardt (Singapore) Pte Ltd. On 29 September 2009, both Lum and Lim were attending a meeting in the site office when the accident happened. Lum was badly injured while Lim unfortunately died as a result of his injuries. These actions were therefore brought on the grounds of negligence and breach of statutory duty.

3 Chiu Teng Enterprises Pte Ltd ("Chiu Teng"), a construction company, was the main contractor for the condominium project. It engaged Buildmart Industries Pte Ltd ("Buildmart") to provide and maintain the two tower cranes used on the construction site. However, Chiu Teng would engage its own tower crane operators and other workmen needed for the operation of the tower cranes. The

tower crane involved in the accident was designated "tower crane 2".

4 The plaintiffs in S 629/2010 originally also sued Spectrum Offshore Pte Ltd ("Spectrum") which supplied the wire rope to Buildmart. Spectrum in turn brought in KTL Offshore Pte Ltd ("KTL"), which sold the wire rope to Spectrum, as the third party in that action. In the course of the trial, the plaintiffs in S 629/2010 withdrew their claim against Spectrum which then discontinued the third party proceedings against KTL. Therefore, Spectrum and KTL do not feature any more in these proceedings except for the issue of costs (see [66] below).

The trial and the criminal proceedings against Buildmart

5 The trial was limited to the issue of liability. Chiu Teng and Buildmart (collectively, "the defendants") agreed that the plaintiffs were not at fault. However, they disagreed about who should bear the responsibility for the accident. They admitted the evidence of all the plaintiffs without cross-examination as their evidence did not shed any light on how the accident occurred.

6 The trial had to be adjourned midway as the defendants wanted to look at a report about the accident ("the Matcor Report", elaborated on at [23]) commissioned by the Ministry of Manpower ("MOM") but MOM did not wish to release the report at that time as it was still considering criminal proceedings. MOM had agreed to provide only one page of the Matcor Report containing the conclusions of the investigations. That was considered by the defendants to be inadequate for their purpose. The relevant components of the tower crane involved in the accident had been taken away by MOM and there was therefore no way for the defendants to have tested the components on their own to try to uncover the cause of the accident.

7 By November 2012, the criminal proceedings against Buildmart had been concluded with Buildmart pleading guilty and being fined $8,000. The charge was that Buildmart, being the owner of the tower crane in question, failed to ensure that its wire rope was properly maintained thereby contravening reg 134(1)(c) of the Workplace Safety and Health (Construction) Regulations 2007 (S 663/2007) and punishable under reg 141 of the same.

8 In the statement of facts admitted by Buildmart, it was stated that the tower crane was hired to Chiu Teng since February 2009. Buildmart was in charge of the maintenance of the tower crane. It carried out monthly servicing and maintenance of the tower crane, with the last date of such maintenance being 16 September 2009, 13 days before the accident took place. Buildmart did not maintain any lubrication record and it was not part of its maintenance checklist. It performed lubrication on the wire rope three times. The first time was during the installation of the tower crane and the other two times were done on site. The frequency of lubrication was about once every three months. Lubrication would be done only if the wire rope was observed to be dry during the monthly maintenance and not at regular intervals. This was contrary to the operating manual for the tower crane which required the wire rope to be lubricated at regular intervals. After the initial lubrication, subsequent lubrication was recommended at least once for every 200 hours of operation or even shorter intervals, depending on the usage of the tower crane. From 18 February 2009 to 29 September 2009, the estimated number of hours of operation of the tower crane was 2,000. However, as mentioned earlier, Buildmart lubricated the wire rope only three times during that period. Lubrication helps to protect the wire rope from corrosion and reduces friction. Accordingly, Buildmart had failed to maintain the wire rope properly as the frequency of lubrication and the maintenance record was inadequate.

9 The Matcor Report was provided by MOM to the parties in these two actions sometime in October 2012. After studying the Matcor Report, the parties decided to try to settle the claims

amicably. The discussions proceeded to an advanced stage but were suddenly disrupted when the insurers of Buildmart decided to disclaim liability. Further attempts to settle were made by all counsel but unfortunately, an agreement could not be reached. The trial resumed thereafter on the issue of who should be liable to the plaintiffs for the accident and, if both the defendants are liable, on the issue of apportionment of liability between them.

The plaintiffs' case

10 The plaintiffs in both actions premised their claims on negligence against the defendants. They placed reliance on the doctrine of *res ipsa loquitur*. They also alleged breach of statutory duty by Buildmart, in particular, s 16 of the Workplace Safety and Health Act (Cap 354A, 2009 Rev Ed) ("the Act") and the regulations made under the Act. The Act and the regulations require, among other things, tower cranes to be safe, be of good mechanical construction, sound material and adequate strength and to be properly maintained so as to prevent the fall of the load. In respect of Chiu Teng, it was alleged that it was in breach of its statutory duty imposed by s 11 of the Act. It was averred that as an "occupier" of the workplace, Chiu Teng failed to ensure that the machinery was safe for everyone within the premises. Chiu Teng was also accused of breaching its duties under the regulations for failing, among other things, to ensure that the tower crane was not loaded beyond its capacity and that it was operated by a person trained and competent to do so.

11 The cause of the accident was considered under the following four categories:

(a) the failure to ensure a safe system of work by having a site office located within the operating zone of the tower crane;

(b) the improper usage of the tower crane in the lifting operation;

(c) the failure to adopt the proper practice of handling the wire rope; and

(d) the failure to properly maintain the wire rope and the use of an unsuitable wire rope as it was an old one.

12 The plaintiffs submitted that the defendants failed to ensure a safe system of work in breach of reg 137(1) of the Workplace Safety and Health (Construction) Regulations 2007. This regulation provides:

> It shall be the duty of the operator of any crane or material handling machinery used in a worksite to take, so far as is reasonably practicable, such measures as are necessary to ensure that a suspended load is not moved over any person in the worksite.

13 Chiu Teng's evidence was that the site office was already in place in February 2009 when Buildmart's authorised examiner commissioned the tower crane and that the operating zone was therefore limited to 1m away from the site office. Photographs of the construction site taken from a height in early February were produced to prove that the tower crane in issue was not on site when the container was already in place. The employee of Buildmart, Koh Leong Khoon ("Koh"), a supervisor, agreed with this. He added that it was because of the presence of the site office that instructions were given to delimit the operating arc of the tower crane's jib so that it would not move over the site office.

14 However, Buildmart's authorised examiner, Teh Tee Tee ("Teh"), a professional engineer, disputed this and believed that Koh was mistaken. He claimed that there was no container site office

during the erection of the tower crane, particularly on 12 and 18 February 2009 when he was present on the worksite. If there was a toilet or a site office there, he would have instructed that the tower crane's zone control be set in such a way that the jib and the hook block would not slew over those structures. He had referred to the site drawing and the area eventually occupied by the site office was demarcated as a landscape area. He did not ask where the site office or any particular temporary building would be located within the worksite because it was not uncommon in congested worksites to locate such structures outside the worksite. The project manager should be looking into such safety issues on site and inform him rather than for him to be asking the project manager about such things. Upon questioning by the court, Teh agreed that he should have asked about the site office and other utility areas at the least.

15 The plaintiffs argued that if the site office was not already on the worksite when the tower crane was erected, then Chiu Teng as the main contractor should be held liable for failing to adopt the proper procedure of amending and resubmitting the site drawing so that the arc of operation of the tower crane could be reconfigured. The evidence also showed that no one checked whether anyone was in the site office that day during the lifting operation.

16 The plaintiffs also contended that Chiu Teng had failed to provide competent staff to carry out the lifting operation safely. The tower crane operator was unable to see part of the moving process as there was a building under construction between him and the load. That building was Block 3, where the formwork had already reached level 9. He had to depend on communication by walkie-talkie from the lifting team on the ground. Teh postulated that the load could have collided with a column so that the hook block became inclined. Alternatively, if there was insufficient height between the roof top and the load, which was several metres long, the load could have been dragged along. He opined that Chiu Teng should have placed a signalman on top of the building under construction so that there would have been clear vision to avoid any impact to the hook block which could have resulted in the wire rope being cut by the pulley sheave and the wire rope guide. There was, however, no evidence of any impact between the load and any structures while the load was being moved.

17 The plaintiffs relied on the Matcor Report's conclusions (which will be discussed later) and the admission of the matters set out in the statement of facts in the criminal proceedings against Buildmart. They also relied on Buildmart's evidence that it was unsure whether the wire rope in question was a new one as there were occasions that Buildmart used wire ropes of up to two years old. There was also evidence that the wire rope had been in storage for slightly more than three years before it was put to use in the tower crane. There could therefore have been corrosion that contributed to the failure of the wire rope. In the result, the plaintiffs submitted that both Buildmart and Chiu Teng were jointly and severally liable to them.

Chiu Teng's case

18 Chiu Teng's Plant and Machinery Manager, Henry Lim, who was in charge of all equipment on the worksite, testified that the failed wire rope of the tower crane was taken away by MOM on 2 October 2009 for testing. The wire rope was supplied and installed by Buildmart. There was no evidence of tampering or overloading of the wire rope.

19 Chiu Teng's lifting supervisor, Wong Teng Weng ("Wong"), testified that in the morning of 29 September 2009, he met and briefed his lifting team comprising the tower crane operator, the rigger and the signalman. After the briefing, the operator climbed up the tower crane to check the items on the daily checklist. If there was any problem discovered during such checking, Wong would not permit the tower crane to be operated. However, there was no problem that morning. Wong added that the

operator checked only what he could see. He did not check the wire rope at the end of the jib but nevertheless ticked the column in the checklist indicating that he did check. The tower crane was maintained by Buildmart monthly with the last maintenance works occurring on 16 September 2009, 13 days before the accident. The mast height of the tower crane was 36m while the length of its jib was 40m.

20 The lifting team waited for the load to arrive. It comprised four pieces weighing about 250kg each. The pieces were assembled into two sections consisting of two pieces each. Each section measured about 6m in height. Wong then instructed the signalman to proceed to the location where the load was to be hoisted to. The rigger was told to add a tag line to the load which comprised one section weighing about 500kg. The tag line was to help stabilise the load and to prevent it from swinging. This was well within the permitted load weight for the tower crane in question. Once that was lifted up, the rigger walked towards the load's destination following the load. Wong did not follow the load which moved out of his sight when it passed the building under construction.

21 Suddenly, there was a loud noise. Wong looked up and saw the tower crane swinging back and forth. He ran towards the destination of the load and saw that the load had fallen at an angle onto the top of the site office. Photographs of the accident were taken.

22 Chiu Teng did not call the tower crane operator or any of the other lifting team members to testify. It did, however, call a witness, Ms Goh Zhu Di ("Goh"), from the team that prepared the Matcor Report.

23 The Matcor Report dated 20 December 2009 was titled "Laboratory Failure Analysis of a Parted 18mm-Diameter Wire Rope". It was prepared by Matcor Technology & Services Pte Ltd ("Matcor"). Matcor received the parted 18mm-diameter wire rope on 28 October 2009. Another 6.5m length of a representative satisfactory section was removed from an unfailed wire rope section for testing. The objective was to establish the primary cause pertaining to the premature parting of the wire rope during the lifting operation at the worksite in question.

24 The Matcor Report noted that the tower crane was a Kroll K-125L crane manufactured in 1997. The latest certificate of inspection was dated 19 February 2009. The construction of the wire rope was a non-rotating right hand ordinary lay with 19 wire strands (seven wires per strand). The tensile grade for the wire rope was 1960 N/mm^2 with a minimum breaking load of 20.60 tons. The failure analysis was based on background information and laboratory analysis of the failed wire rope section and the 6.5m length of the satisfactory section. The scope of work included visual and macroscopic examination and various tests.

25 The Matcor Report concluded with the following:

> **3.0 DISCUSSION**
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> The failure of the wire rope was generally consistent with fracture resulting from overloading. This was evidenced from the localised nature of the fracture, consisting essentially of shear and tensile overload fracture features in the broken wires, accompanied with certain extent of wear damage.
>
> The percentage of fractured wires exhibiting oblique and cup and cone features, inclusive of a combination of wear feature, was over 80 percent. The fractured wires had also severely crushed or dented areas.

No significant evidence of material defects was found in the wire rope, apart from an absence of seizure found at the wire rope end. The lack of proper seizure would result in uneven tensioning within the wire rope configuration at the end portion, which was consistent with presence of displaced wire strands and bird caging.

The failed wire rope was also found to be relatively dry with formation of white martensitic structure on the wire surfaces, which was consistent with wear damage caused by frictional rubbing without lubrication.

Traces of red paint coating found at the parted fractured ends and along the wire rope showed that the wire rope might be rubbing on the sheave assembly in the hook block.

4.0 CONCLUSION

The laboratory failure analysis was based on available background information and received wire rope samples.

The failure was primarily due to an improper seizure of the wire rope end during installation. The improper installation resulted in uneven tensioning within the wire rope configuration. Hence the wire rope was subject to uneven loading during operation. As a result, progressive and premature overload failure of the wire rope occurred during operation.

The progressive and premature overload failure was further exacerbated in service by a singular or combination of the following factors.

(i) Lack of applied lubrication

(ii) Unreported localised impact accident

It is recommended that the results of the laboratory failure analysis be read together with the site investigation findings and interviews conducted by the Ministry of Manpower (MOM).

However, Goh testified that the Matcor team did not examine or study the tower crane in question.

26 Chiu Teng argued that based on the Matcor Report together with the criminal proceedings against Buildmart and the absence of any enforcement action by MOM against Chiu Teng, the proximate cause of the accident was Buildmart's negligence in not doing proper seizure of the wire rope at the time of installation of the wire rope on 14 February 2009 and its failure to maintain the wire rope properly. Chiu Teng submitted that the evidence of Teh (the professional engineer and expert witness called by Buildmart) was highly questionable and should be disregarded or given little weight for the reasons that follow.

27 Teh had disagreed entirely with the conclusions of the Matcor Report on improper seizure of the wire rope. He said that seizure was not a big deal as it was done merely to make the wire rope look good or professional. It would not affect the condition of the wire rope. This was said despite MOM's Code of Practice 35 having warned that carelessly or inadequately seized wire ropes may lead to uneven distribution of loads to the strands during operation and thereby significantly shortening the life of the rope. Chiu Teng argued that Teh did not produce any literature or authority to support his contention.

28 Buildmart had adduced evidence through the tower crane's manufacturer stating that the Kroll

K125L model of tower crane had a solid clamp about 30mm in length, which was installed about 100mm from the extreme end of the wire rope. This solid clamp prevents the outer strands inside the clamp and also the outer strands away from the extreme end from unwinding. Teh relied on this in his assertion that improper seizure of the wire rope was not the cause of the accident. Chiu Teng argued that Teh did not have any literature or authority on how the clamp system could have alleviated the damage sustained by the wire rope during the cutting process. Moreover, four screws had to be used to secure the clamp but the photographs taken of the relevant part of the tower crane showed only two screws. Teh had agreed that if only two screws were used, then Buildmart was negligent. No evidence was led by Buildmart about the number of screws used for the clamp.

29 Chiu Teng also criticised Teh's evidence that the site office was not there when he went to the worksite for inspection. This was contradicted by Buildmart's own evidence. As far as the tower crane operator and other workmen involved in the lifting operation that day were concerned, Chiu Teng contended that calling them as witnesses in court would have added nothing to the evidence. There was no evidence of damage to the buildings under construction and therefore no reason to suspect any impact damage to the tower crane. The rigging was done at the bottom of the wire rope but the failure occurred at the top. Accordingly, there could be no adverse inference drawn from the absence of these workmen from the trial.

Buildmart's case

30 Buildmart argued that the plaintiffs in S 629/2010 failed to prove their case against Buildmart because they had wrongly described the load as "the mast of the lifting crane" in paras 3 and 6 of their statement of claim. Where S 440/2010 was concerned, Buildmart stated that the pleadings wrongly averred that the tower crane operator was supplied by Buildmart. It was not disputed during the trial that the operator was actually employed by Chiu Teng. Buildmart was therefore not operating the tower crane on the day of the accident.

31 Buildmart also submitted that all the plaintiffs failed to prove any causal link between the accident and Buildmart's alleged breaches in not doing proper seizure of the wire rope end during installation and in not lubricating the wire rope regularly. The statement of facts in the criminal proceedings mentioned that Buildmart failed to perform proper lubrication but it did not allege that the wire rope failed because of Buildmart's failure.

32 Teh's evidence was that the lack of lubrication would cause faster wear on the surface of the wire rope but the wire rope would not break unless it had been operated for many years without lubrication. Even then, the damage would be to the surface wire. Lack of lubrication would shorten the life of the wire rope but would not lead to catastrophic failure that led to breakage.

33 Teh also disagreed with the conclusions reached in the Matcor Report about improper seizure of the wire rope. He felt that the importance of seizing was overstated. Seizing would prevent the outer strands from separating from the inner strands at the extreme end of the wire rope and thereby giving a neat appearance. In any event, the seizing function of the tower crane here was performed by the solid clamp which used a wedge and socket mechanism. This was a fact totally omitted or overlooked in the Matcor Report. Although there was no seizing of the wire rope, the clamp served as a superior method of seizing. The stronger the pull on the wire rope, the more the wedge would move into the tapered socket so much so that the outer strands of the wire rope would be compressed evenly against the inner strands and there would be no chance for the outer strands to move relative to the inner strands. It was therefore wrong or misleading for the Matcor Report to conclude that the primary cause of the accident was the lack of proper seizure of the extreme end of the wire rope.

34 Buildmart's expert witness, Teh, was a highly qualified and experienced professional engineer having worked as such for more than 30 years. Matcor's Goh, was very young and did not have sufficient practical experience in tower cranes, in particular, the type of tower crane here. She graduated in 2009 with a degree in Engineering (Materials Science and Engineering) from the National University of Singapore and is not a professional engineer. When she was born in 1986, Teh had already been a professional engineer for five years.

35 Further, the Matcor Report should be rejected as there was non-compliance with O 40A r 3(2) of the Rules of Court (Cap 322, R 5, 2014 Rev Ed). The Court of Appeal in *Pacific Recreation Pte Ltd v S Y Technology Inc and another appeal* [2008] 2 SLR(R) 491 has said that the requirements in this rule apply to all manner of experts and are mandatory unless the court otherwise directs. O 40A r 3(2), which sets out the requirements of expert evidence, provides that an expert's report must state the expert's qualifications, the literature or other material relied on, the issues he was asked to consider, the name and qualifications of the person who carried out any test or experiment, summarise the range of opinion and give reasons for the opinion, a summary of the conclusions reached, a statement of belief of correctness of the opinion and that the expert understands that in giving the report, his duty is to the court and that he complies with that duty.

36 It was not entirely clear what the alleged non-compliance with O 40A r 3(2) was. Buildmart submitted that Matcor did not interview the tower crane operator or any of the witnesses. Matcor also did not inspect the tower crane in question. The wire rope came to Matcor only one month after the accident. The purpose of the report was for MOM's investigations and not for the purpose of any claim to be made in court.

37 Buildmart relied on Teh's professional opinion that the hook block was not perpendicular to the pulley wheel during the lifting operation. If the hoisting wire rope was not vertical to the hook block, the wire rope could be caught between the wire rope guide flange and the rotating pulley wheel. If it were so, the wire rope would be severed almost instantly. However, Buildmart also acknowledged that there was no evidence of the load or the hook block hitting any structure during the lifting operation that day.

38 Buildmart also relied on *Jurong Primewide Pte Ltd v Moh Seng Cranes Pte Ltd and others* [2014] 2 SLR 360 ("*Jurong Primewide*") where the Court of Appeal emphasised the heavy responsibility of an "occupier" and main contractor under the Act to ensure that potential dangers on construction sites were located and dealt with properly and also that of persons involved in lifting operations by tower cranes. Buildmart submitted that there could be no dispute that Chiu Teng was the "occupier" of the worksite and that all the workers involved in the lifting operation were employees of Chiu Teng.

39 Buildmart also argued that the wire rope in question was a brand new one. This was confirmed by Teh. It was checked by Buildmart during the monthly maintenance on 16 September 2009 and found to be in good working condition. It was also checked by the tower crane operator at about 8.10am on 29 September 2009. It followed that the tower crane operator must have caused the damage to the wire rope sometime after 8.10am that day since the broken wire rope had traces of red paint, indicating abrasion with other metallic components painted red.

40 The evidence showed that the accident was caused by the failure of the wire rope during the lifting operation. However, the cause of the failure was still a mystery. The plaintiffs in both actions have therefore failed to show any causal link between Buildmart's purported negligence and the damage suffered by them.

41 On the other hand, Buildmart submitted that the *res ipsa loquitur* principle applied to shift the

evidential burden from the plaintiffs to Chiu Teng and it was for Chiu Teng to show that it was not negligent. Chiu Teng did not explain why it did not adduce evidence through its workmen involved in the lifting operation that day. The court should therefore draw an adverse inference against Chiu Teng pursuant to s 116(g) of the Evidence Act (Cap 97, 1997 Rev Ed). As Chiu Teng could not explain why it was not at fault, the plaintiffs ought to succeed fully in their claim against Chiu Teng.

42 Buildmart also contended that the tower crane operator employed by Chiu Teng breached reg 16(i) of the Workplace Safety and Health (Operation of Cranes) Regulations (S 515/2011) which states that it is the duty of a crane operator not to manoeuvre or hold any suspended load over any public road or public area unless that road or area has been cordoned off. The site office was a public area where a meeting was in progress. In addition, the operator also breached reg 137(1) of the Workplace Safety and Health (Construction) Regulations 2007 (reproduced at [12] above) which makes it his duty to ensure that a suspended load is not moved over any person in the worksite. Further, the lifting supervisor of Chiu Teng failed to check the site office and evacuate the people inside before commencing the lifting operation.

43 Buildmart therefore submitted that it should be absolved from any liability and that Chiu Teng should bear 100% liability for the damages suffered by the plaintiffs in both actions.

The decision of the court

44 There is no common law tort of careless performance of a statutory duty and the mere presence of a statutory duty does not automatically give rise to a concomitant common law duty of care. The presence of statutory rules would fall within the rubric of the existing analysis for negligence (*Jurong Primewide*; *Tan Juay Pah v Kimly Construction Pte Ltd and others* [2012] 2 SLR 549 ("*Tan Juay Pah*")).

45 In *Tan Juay Pah* at [68], the Court of Appeal said that the objective of the Act is to protect workers and members of the public present at a workplace from injury by deterring risk-taking behaviour through the imposition of liability for such behaviour on the part of persons who create and have control over safety risks at workplaces. To achieve this objective, a "more direct liability regime" was put in place in Pt IV of the Act to hold various groups of persons accountable for workers' safety and health according to their different capacities. While an authorised examiner does not fall under any of the categories of persons enumerated in Pt IV of the Act, a main contractor and a subcontractor may fall under one or more of those categories (for example, as an employer or as a manufacturer and supplier of machinery). Further at [89], the Court of Appeal opined that the Act is intended to protect persons present at workplaces from safety lapses by contractors and subcontractors.

46 On the facts here, it is clear that Chiu Teng as main contractor and employer of the lifting team and Buildmart as the supplier and provider of maintenance service for the tower crane owed a duty of care to Lum and to Lim who were lawfully at the worksite on 29 September 2009 although they were not employees of Chiu Teng or of Buildmart.

47 Buildmart employed Teh for the installation and commissioning of the tower crane in question. Even if the site office was not there yet when he went to inspect the worksite, he should have asked Chiu Teng whether the site office and other utility structures (which are common features in any construction site) would be located on the worksite and if so, where. Studying the First Storey Plan given to him would not help him in this task since the said plan obviously related to the condominium site upon completion of construction. This could be seen from the drawings of the buildings, the lap pool, the children's playground and the landscape area to the left of the plan (where the site office

was located). The plan was not representative of the worksite at the material time and it would therefore not be enough to say that he saw no site office drawn on the plan.

48 However, there was evidence from Koh (see [13] above) that the operating arc of the jib was delimited because of the presence of the site office although Teh did not say he gave such instructions. In any case, the fact that the load could fall onto the site office showed that there was no proper delimiting or perhaps none at all.

49 The Matcor Report has alleged improper seizure of the wire rope. This would fall within the responsibility of Buildmart which challenged the importance placed on seizure of the wire rope. In any case, Buildmart relied on the evidence provided by the manufacturer of the tower crane that there was a clamping mechanism for this brand of tower crane which, in Teh's opinion, was far superior to normal seizure. However, the evidence did not show that the clamping mechanism had been properly applied. The photographs produced of it after the accident showed only two screws instead of the requisite four. If only two screws were applied, Teh accepted that the clamp would not serve its function. I accepted the Matcor Report's conclusion that improper seizure was one of the reasons why the wire rope failed. Matcor had the backing of MOM's Code of Practice 35 and the various tests that it conducted during the investigation into the failure. Buildmart was therefore negligent in this aspect.

50 The failure by Buildmart to properly maintain the tower crane's wire rope could not be disputed in the light of its admissions in the criminal proceedings. The maintenance carried out by Buildmart fell dismally short of the recommendations in the tower crane manufacturer's operating manual, which recommended the wire rope to be lubricated at least once for every 200 hours of operation or even shorter intervals, depending on the usage of the tower crane. Lubrication helps to protect the wire rope from corrosion and reduces friction. From 18 February 2009 to 29 September 2009, the estimated number of hours of operation of the tower crane was 2,000. The tower crane was heavily used as 2,000 operating hours divided by the number of days between 18 February and 29 September 2009 would give an average operating period of nine hours per day. This is assuming work was carried out on Sundays and public holidays which should not be the case and the number of hours per day would therefore be higher than nine. However, Buildmart lubricated the wire rope only three times during that period. That meant that Buildmart applied lubrication about once for every 660 hours of operation instead of the recommended 200 hours. This was more than three times beyond the manufacturer's recommended figure.

51 The Matcor Report included lack of lubrication as a contributing factor to the failure of the wire rope. Buildmart was therefore negligent on this ground too.

52 I agreed with Buildmart's submissions at [51] above concerning Chiu Teng's negligence. The tower crane operator employed by Chiu Teng breached reg 16(i) of the Workplace Safety and Health (Operation of Cranes) Regulations 2011 which states that it is the duty of a crane operator not to manoeuvre or hold any suspended load over any public road or public area unless that road or area has been cordoned off. The site office was a public area where a meeting involving Lum and Lim was in progress that morning. Chiu Teng's tower crane operator also breached reg 137(1) of the Workplace Safety and Health (Construction) Regulations 2007 which makes it his duty to ensure that a suspended load is not moved over any person in the worksite. The lifting supervisor of Chiu Teng also failed to ensure that no one was inside the site office, which was obviously within the arc of danger, before commencing the lifting operation.

53 Even if there was some delimiting of the reach of the tower crane's jib, it was clear from the accident that the jib was moving very close to the site office. Although there was no indication of

overloading, the load that morning was a large metal structure measuring some 6m long and weighing about 500kg. Moreover, it was hovering at a dangerous height. Common sense would warn that if it fell, it would be a deadly projectile and could also easily topple sideways and have a long reach. It would therefore be extremely dangerous for anyone to be in the vicinity of its operating arc as the tragic accident amply demonstrated.

54 The danger was exacerbated by the fact that the tower crane operator could not see the load after it passed the tall uncompleted Block 3. Although this factor did not lead to the failure of the wire rope as there was no evidence of any collision with the building structure, all the circumstances showed that the operation that morning was a highly hazardous one and much more care and thought ought to have gone into it. Certainly, no one should have been allowed to be inside or even near the site office during the lifting operation.

55 In respect of the pleadings point raised by Buildmart, clearly no one at the trial was confused about what the load was even if there was some wrong description or confusion in the statement of claim. The wrong averment that Buildmart was the one which supplied the tower crane operator was caused by Chiu Teng's pleadings. In any event, the fact that Chiu Teng was the employer of the operator was made clear from the beginning of the trial and there was no contention about this. Where the objection relating to O 40 r 3(2) was concerned, Buildmart did not specify what aspects of the rule were not complied with. In any event, I was satisfied that Matcor was impartial in its report. It was engaged by MOM and not by any of the parties here.

Conclusion

56 Looking at the overall circumstances, both Chiu Teng and Buildmart played equally important roles in the causation of the accident. Buildmart failed in its duty to properly install and maintain the tower crane's wire rope while Chiu Teng was negligent in the lifting operation as set out above. It would therefore be fair to hold both of them jointly and severally liable for the accident.

57 I therefore gave judgment for the plaintiffs in both actions against Chiu Teng and Buildmart, with both defendants bearing joint and several liability. As between the defendants, each of them will bear 50% in liability. Damages are to be assessed by the Registrar. The costs of the trial on liability are to be paid by the defendants to the plaintiffs. The costs of the assessment of damages are reserved for the Registrar conducting the assessment. The costs of Spectrum and of KTL are to be borne by Chiu Teng and Buildmart.