Neutral Citation Number: [2016] EWCA Civ 847

Case No: A1/2015/0179

IN THE COURT OF APPEAL (CIVIL DIVISION)
ON APPEAL FROM Queen's Bench Division Technology and Construction Court
Mr Justice Edwards-Stuart
HT11366

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 31/08/2016

Before :

LADY JUSTICE ARDEN
LORD JUSTICE JACKSON
and
SIR ROBERT AKENHEAD

- -

Between :

Howmet Limited	**Appellant**
- and -	
Economy Devices Limited & Ors	**Respondent**

- -
- -

Ben Quiney QC & James Sharpe (instructed by **Reynolds Porter Chamberlain LLP**) for the **Appellant**
Andrew Bartlett QC & Alexander Antelme QC (instructed by **Weightmans LLP**) for the **Respondent**

Hearing dates: Tuesday 12th, Wednesday 13th & Thursday 14th July 2016

- -

Judgment Approved

Lord Justice Jackson :

1. This judgment is in eight parts, namely:

Part 1: Introduction	Paragraphs 2 - 14
Part 2: The Facts	Paragraphs 15 - 32
Part 3: The present proceedings	Paragraphs 33 - 48
Part 4: The appeal to the Court of Appeal	Paragraphs 49 - 52
Part 5: What did Howmet know about the condition of the thermolevel on tank 6 during the week before the fire?	Paragraphs 53 - 74
Part 6: Howmet's claim in negligence against the manufacturer.	Paragraphs 75 - 101
Part 7: Howmet's claim for breach of statutory duty.	Paragraphs 102 – 105
Part 8: Conclusion	Paragraphs 106 - 108

Part 1 – Introduction

2. This is an appeal by the owners of a factory which suffered fire damage against a judgment dismissing their action. The owners are claiming damages against the manufacturers of a device which, they say, should have prevented the fire from occurring. This takes us back to the basic principles of the law of tort and in particular to *Donoghue v Stevenson* [1932] AC 562, which is almost the first case that any law student studies.

3. The principal issues in this appeal are whether, at the date of the fire, the manufacturers owed any continuing duty to the factory owners and whether the manufacturers' breaches of duty caused the loss.

4. The claimant in the litigation and appellant before this court is Howmet Limited, to which I shall refer as "Howmet". The defendant in the litigation

and respondent before this court is Economy Devices Limited, to which I shall refer to as "EDL".

5. Other parties who will feature in the narrative are Electrochemical Supplies Limited ("ECS") and MJD Supplies Limited ("MJD"). At the material time ECS designed, manufactured and supplied industrial plant and equipment. MJD designed and supplied electrical and electronic systems.

6. References in this judgment to "day…, page…" relate to the transcript of the trial. References to "appeal day…, page…" are references to the transcript of the three day hearing in the Court of Appeal.

7. I shall refer to the Law Reform (Contributory Negligence) Act 1945 as "the 1945 Act". I shall refer to the Consumer Protection Act 1987 as "the 1987 Act".

8. Section 11 of the 1987 Act empowers the Secretary of State to make regulations for the purpose of securing that goods put into general circulation are safe. Section 19 of the 1987 Act defines "safe" as follows:

> "19. ……"safe", in relation to any goods, means such that there is no risk, or no risk apart from one reduced to a minimum, that any of the following will (whether immediately or after a definite or indefinite period) cause the death of, or any personal injury to, any person whatsoever, that is to say-
>
> (a) the goods;
>
> (b) the keeping, use or consumption of the goods;
>
> (c) the assembly of any of the goods which are, or are to be, supplied unassembled;
>
> (d) any emission or leakage from the goods or, as a result of the keeping, use or consumption of the goods, from anything else; or
>
> (e) reliance on the accuracy of any measurement, calculation or other reading made by of by means of the goods,
>
> and…"unsafe" shall be construed accordingly."

9. Section 41(1) of the 1987 Act provides:

> "(1) An obligation imposed by safety regulations shall be a duty owed to any person who may be affected by a contravention of the obligation and, subject to any provision to the contrary in the regulations and to the defences and other incidents applying to actions for breach of statutory duty, a contravention of any such obligation shall be actionable accordingly."

10. Pursuant to section 11 of the 1987 Act, the Secretary of State made the Electrical Equipment (Safety) Regulations 1994, to which I shall refer as "the 1994 Regulations".

11. Regulation 3 of the 1984 Regulations provides:

> "3 – (1) In these Regulations –
>
> > "the 1987 Act" means the Consumer Protection Act 1987; …
> >
> > "safe" has the same meaning as in section 19(1) of the 1987 Act, except that, for the purpose of these Regulations, the references in that subsection to "risk" shall be construed as including references to any risk of –
> >
> > (a) death or injury to domestic animals; and
> >
> > (b) damage to property;
> >
> > and as excluding any risk arising from the improper installation or maintenance of the electrical equipment in question or from the use of the equipment in applications for which it is not made."

12. Regulation 5 of the 1994 Regulations provides:

> "5. (1) Electrical equipment shall be –
>
> (a) safe;"

13. Regulation 9 of the 1994 Regulations provides:

> "9. (1) Subject to regulation 12, the manufacturer of electrical equipment or his authorised representative shall affix to all electrical equipment to which these Regulations apply (or to their packaging, instruction sheet or guarantee certificate) in a visible, easily legible and indelible form the CE marking as shown in Schedule 1 by way of confirmation that the electrical equipment conforms with all the requirements of these Regulations which relate to it."

14. After these introductory remarks, I must now turn to the facts.

Part 2 – The Facts

15. Howmet manufacture turbine aerofoils and other precision components for the aerospace industry. One of their factories is at Exeter. I attach as Appendix 1

to this judgment a chart showing Howmet's management structure at the Exeter factory, as it was in the period December 2006 to February 2007.

16. One stage of the manufacturing process is to dip metal castings into a series of tanks in order to expose the grain. The first tank contains ferric acid heated to 80ºC. Subsequent tanks contain various liquids, including hot and cold water. The line of tanks into which the castings are dipped sequentially is called a "grain etch line" or "GEL".

17. In 2005 Howmet decided to replace the GEL at its Exeter factory. Howmet engaged ECS as main contractor to design, supply and install the GEL. ECS engaged MJD as subcontractor to carry out the electrical work. ECS and MJD duly carried out the work during 2005 and 2006. They installed a GEL comprising 8 separate tanks, with a hoist above them to transfer metal castings from one tank to the next.

18. The tanks in the GEL were manufactured from (or coated with) polypropylene, in order to resist the corrosive effects of chemicals within the tanks. Polypropylene is inflammable. Five of the tanks were heated and these constituted a fire risk. This was because the heaters situated within them were coated with PTFE (polypropylene) and could ignite if the liquid levels fell.

19. In order to avert the risk of fires, ECS and MJD installed a device called a thermolevel on each of the five heated tanks. A thermolevel comprises two elements. There is a probe which is dipped into the tank. There is also a control box which is connected to the probe by an electric cable.

20. The thermolevel has two functions. First, it monitors the temperature of the liquid in which it is immersed. Secondly, it contains a level sensor. If the liquid in the tank drops below a specified level, the thermolevel automatically switches off the heater. This second function is important. If the heater remains on when the tank is empty or nearly empty, the polypropylene is likely to catch fire.

21. I attach as Appendix 2 a photograph of a thermolevel manufactured by EDL. The principal controls can be accessed by opening the glass door at the front. There is, however, a separate control which can only be accessed if you unscrew the front plate. This is a deep set blue knob which you can rotate with the aid of a Phillips screwdriver. The blue knob adjusts the potentiometer. The potentiometer tunes the probe into the control unit to enable the device to operate to detect a drop in level at which the level sensor is triggered. If the potentiometer is incorrectly adjusted, the level sensor will not work effectively. Finally, a second cable (which is not shown in the photograph at Appendix 2) runs from the bottom of the control box to the main electricity supply.

22. EDL were a company based in Shrewsbury which designed and manufactured thermolevels. In 2006 MJD purchased thermolevels from EDL and installed them on Howmet's grain etch line.

23. During the installation process MJD made a number of modifications to the thermolevels. One modification was to add an alarm which would sound if the liquid level dropped and the heater was cutting out. Another modification was to extend the cable by which the thermolevel was plugged into the main electricity supply. The connection between the original cable of the thermolevel and the extension cable took the form of a plug and socket. I will refer to these items as "the extension plug and socket".

24. The section of the GEL which is the subject matter of this litigation is tank number 6. This was a hot rinse tank. There was an immersion heater attached to the tank to heat the water. There was a thermolevel attached to the tank, which performed the two functions previously described.

25. ECS completed their work in the autumn of 2006. The new GEL went into production in November 2006.

26. On 12th December 2006 the water level dropped in tank 6, but the level sensor of the thermolevel failed to work. As a result the heater remained switched on and the tank caught fire. Fortunately Howmet personnel extinguished the fire swiftly and no real harm was done.

27. Howmet investigated the cause of the fire on 12th December. They found that the culprit was the extension plug and socket, which had become corroded. Mr Peter Reed, who was a plant engineering technician employed by Howmet, re-soldered the connection. He applied a heat shrink sleeve to protect the connection against further corrosion.

28. On 11th and 12th January 2007 there were problems with the thermolevel attached to another tank in the GEL, namely the hot ferric tank. Howmet's internal documents record that those problems were resolved by the evening of 12th January.

29. The next relevant incident occurred on the 29th January 2007. Mr Chris Palfrey, who was one of the operators of the GEL, by mistake drained tank 6 when the heater was on. The level sensor of the thermolevel failed to operate. The sides of the tank caught fire. Mr Palfrey acted swiftly. He switched off the heater manually and doused the fire with a hose. There is an issue, to which I shall return in Part 6 below, as to how widely known this incident was within the company.

30. Following the 29th January fire, Howmet purchased a float switch for use in tank 6. This was an alternative device to switch off the heater if the water level fell. Unfortunately before that float switch was installed, there was a disastrous fire which destroyed the GEL and much else at the Exeter factory.

31. That fire occurred in the early hours of Monday 12th February 2007. It came about because Mr Mark Woodland, a core removal operator, by mistake switched on the heater of tank 6 when that tank was empty (amended particulars of claim, paragraph 33). The level sensor failed to operate. The polypropylene caught fire. No one was on hand to see the blaze until it was too

late. The fire took hold and caused some £20 million worth of damage (including economic loss).

32. Howmet took the view that EDL, ECS and MJD all bore responsibility for the losses suffered. Accordingly they commenced the present proceedings.

Part 3 – The present proceedings

33. By a claim form issued in the Technology and Construction Court on 15th November 2011, Howmet claimed damages against EDL, ECS and MJD in respect of losses suffered in the fire at the Exeter factory. Howmet resolved their claim with MJD, because that company was dormant and had neither assets nor insurance. The third defendant therefore drops out of the picture.

34. In their particulars of claim Howmet pleaded the duties owed by EDL as follows:

> "53. EDL owed Howmet a duty to exercise reasonable care and skill in the design and manufacture of the Thermolevel Devices so as to prevent damage to Howmet's property.
>
> 54. It also had a statutory duty under Regulation 14(1) of the 1994 Regulations not to supply electrical equipment in respect of which the requirements of Regulations 5(1) and 9(1) of the said Regulations (safety and "CE" marking) had not been satisfied."

35. In paragraph 55 of the particulars of claim Howmet pleaded numerous breaches of EDL's duty to exercise reasonable care and skill in the design and manufacture of thermolevels. Howmet pleaded the following breaches of the 1994 Regulations:

i) Failure to affix CE markings as required by Regulation 9(1),

ii) Failure to ensure compliance with Regulation 5(1).

Howmet asserted that EDL's negligence and breaches of statutory duty had caused the fire.

36. In their defence EDL denied that they owed, or were in breach of, the alleged duty of care. They also denied the alleged breaches of statutory duty and the alleged causation.

37. After exchange of pleadings the parties instructed expert witnesses to advise them and prepare reports. Howmet instructed Mr Jon Boyle and Mr Stephen Braund. Mr Boyle is primarily a forensic fire investigator and Mr Braund is an electrical expert. ECS instructed Mr Keith Benjamin as forensic expert and Mr Peter Jowett as electrical expert. EDL instructed Mr Richard Lipczynski as expert in both disciplines.

38. The experts duly inspected the site and carried out tests on thermolevels. They then prepared their reports. They also met and prepared joint statements, recording the matters upon which they agreed and disagreed.

39. In early 2014 Howmet and ECS achieved a negotiated settlement. ECS therefore dropped out of the action, although the views of their expert witnesses remained as a matter of record in the joint expert statements.

40. The action proceeded to trial between two parties only, namely Howmet and EDL. The trial took place before Mr Justice Edwards-Stuart. It began on 23rd June 2014 and lasted for two weeks. Both parties were somewhat coy about the witnesses whom they called.

41. Howmet called Mr Gill, Mr Farrimond, Mr Gildersleve, Mr Webber, Mr Hughes and Mr Turner, as well as their two experts. The roles of Howmet's factual witnesses can be seen from Appendix 1. There were several other Howmet witnesses available who could have given pertinent evidence, upon whose absence the judge commented adversely (judgment paragraphs 18-19).

42. EDL for their part called no evidence at all, although the views of EDL's expert remained in the experts' joint statement as a matter of record. Likewise the judge commented adversely on EDL's failure to call relevant evidence (judgment paragraphs 6, 22 and 201).

43. Fortunately Mr Jon Boyle, in the course of investigating the cause of the fire, had interviewed a large number of Howmet's employees. Mr Boyle's notes of most of these interviews formed appendices to his report. Although that material was hearsay, it was of assistance to the judge in view of the dearth of live oral evidence.

44. The judge handed down his reserved judgment on 28th November 2014. He found in favour of EDL and dismissed the claim.

45. The judge's judgment was careful, detailed and thorough. It is available under neutral citation number [2014] EWHC 3933 (TCC) and deserves to be read in full by anyone who has a serious interest in this litigation.

46. I would summarise the judge's principal findings and reasons as follows:

    i) The expert evidence established that the thermolevels manufactured by EDL had shortcomings:

        a) The operation of the low level sensor was highly dependent on the setting of the potentiometer. Accurate setting of the potentiometer was very difficult to achieve in practice.

        b) Thermolevels would fail if there was a bad connection in the cables.

        c) Thermolevels suffered from voltage drift.

        d) Thermolevels had no safety approvals or CE markings.

e) By reason of the foregoing thermolevels were unreliable, unpredictable in operation and unacceptable as a critical safety device.

f) The literature provided by EDL to users was unsatisfactory in many respects.

(Paragraphs 161 – 180)

ii) It was not clear whether each of the flaws in the thermolevels were due to (a) defective design or manufacture by EDL or (b) defective components which EDL had bought in (paragraphs 198 – 201).

iii) In the absence of any evidence from EDL, the proper conclusion was that EDL had not implemented any satisfactory test regime (paragraph 201).

iv) The instructions provided by EDL were manifestly unsatisfactory. In particular, there was no satisfactory explanation as to how the potentiometer really operated. Nor was there any warning that the thermolevel might not work as a level sensor, if the potentiometer was incorrectly adjusted (paragraphs 202 – 203).

v) There was no expectation of intermediate examination between the thermolevels leaving EDL's premises and their installation in the Exeter factory. Howmet used the thermolevel in the correct manner. They were not at fault by failing to appreciate the significance of the fact that there was no CE marking. Accordingly, if Howmet reasonably relied upon the thermolevels as protection against fire on 12th February 2007, then the thermolevels' failure to operate properly was within the scope of the duty of care owed by EDL to Howmet (paragraphs 206 – 218).

vi) The fire on 12th December 2006 did not alert Howmet's personnel to the unreliability of the thermolevel in tank 6. They believed that the malfunction was caused by a failure of the connection plug and socket, which had been satisfactorily rectified (paragraph 122).

vii) After the fire on 29th January 2007 Mr Moxey (a GEL operator) realised that the level sensor on tank 6 was not working. Mr Reed (plant engineering technician) and Mr Gill (facilities manager) knew that the level sensor was not or might not be working. Because of that knowledge Mr Reed ordered a float switch on 1st February 2007 (paragraphs 264 – 277).

viii) The knowledge of Mr Reed and Mr Gill is to be attributed to Howmet (paragraphs 270, 271, 277 (vii) and 281 (iii)).

ix) Therefore in the days immediately before 12th February 2007 Howmet were not relying on the thermolevel in tank 6 to work properly and act as a reliable safety device (paragraph 278). Instead they relied upon

operator vigilance and a new procedure to ensure that tank 6 was left drained with the heaters switched off over the weekend (paragraph 281(v)).

x) The float switch arrived on or before Friday 9th February 2007, but no one installed it in tank 6 before the fire occurred (paragraphs 282 – 284).

xi) There were four potential reasons why the thermolevel in tank 6 failed to operate on 12th February 2007. They are set out in paragraph 238 of the judgment as follows:

> "First, the potentiometer or "sensitivity control" in the thermolevel control unit may have been incorrectly set. Second, there may have been a component failure or defect within the thermolevel itself. Third, there may have been a break or bad connection in the core carrying the five-volt DC feed to the probe (which would cause the heater to be permanently energised). Fourth, the thermolevel voltage may have drifted over time so that it was no longer capable of accurate measurement."

xii) The fourth cause can be safely eliminated on the basis of Mr Boyle's findings (paragraph 239). Each of the other three causes was unlikely, although cause one was less unlikely than causes two and three (paragraphs 204, 243 to 251).

xiii) If cause one was the culprit, that was the fault of EDL, but Howmet had not taken the opportunity to readjust the potentiometer during the period before the fire (paragraph 254). If cause two was the culprit, that did not necessarily indicate a lack of care by EDL (paragraph 252). If cause three was the culprit, that was not the fault of EDL (paragraph 253). (If ECS and MJD had purchased a thermolevel with cables of the right length, there would have been no need for an extension lead plus connection plug and socket).

xiv) Applying the approach set out in *Rhesa Shipping v Edmunds* [1985] 1WLR 948 (better known as *Popi M*) and *Milton Keynes Borough Council v Nulty* [2013] EWCA Civ 15; [2013] 1 WLR 1183, it was not possible to say that incorrect setting of the potentiometer was more likely than not to be the reason why the level sensor in the thermolevel failed. Therefore Howmet's claim in negligence against EDL failed for want of proof of causation (paragraphs 257 – 260).

xv) The thermolevel in tank six did not bear a CE marking and was unsafe. Those matters constituted breaches of Regulations 5(1) and 9(1) of the 1994 Regulations (paragraphs 205, 219 – 230). Nevertheless the claim for breach of statutory duty fails because in the days before the 12th February 2007 Howmet was not relying upon the thermolevel in tank six as a reliable safety device (paragraphs 261 – 278).

xvi) (Obiter) Howmet's conduct in the period 2nd to 12th February 2007, although open to criticism, did not amount to recklessness. Therefore if there was an onus on EDL to prove that Howmet's conduct amounted to recklessness such as to break any chain of causation, they had failed to do so (paragraphs 263, 279 to 287).

xvii) If the judge was wrong in his conclusion on liability, he would hold that Howmet were liable for contributory negligence to the extent of 75% (paragraphs 288 – 296).

47. In later parts of this judgment, I shall refer to the individual findings of the judge set out in the above summary as "finding (i)", "finding (ii)" and so forth.

48. Howmet were aggrieved by the judge's decision. Accordingly, they appealed to the Court of Appeal.

Part 4 – The appeal to the Court of Appeal

49. By an appellant's notice filed on 16th January 2015, Howmet appealed to the Court of Appeal on four grounds. These are:

i) The judge erred in his treatment of reliance in relation to negligence.

ii) The judge erred in attributing to Howmet the knowledge of relatively junior employees concerning the malfunction of the thermolevel.

iii) The judge erred in his treatment of reliance in relation to breach of statutory duty.

iv) The judge erred in treating this as a *Popi M* – type case. He ought to have held that the malfunction of the thermolevel on tank 6 was attributable to EDL's various breaches identified in the first part of his judgment.

50. EDL served a respondent's notice on 10th March 2015. By this notice EDL supported the judge's decision on further grounds in addition to the reasons which the judge gave. In particular, EDL argued that the judge should have drawn adverse inferences from Howmet's failure to call important witnesses. EDL maintained that such witnesses, if called, would have admitted to widespread knowledge about the thermolevel malfunction before 12th February 2007.

51. The appeal was heard on 12th to 14th July 2016. Mr Ben Quiney QC and Mr James Sharpe appeared for Howmet. Mr Quiney presented Howmet's case on all four issues. Mr Andrew Bartlett QC and Mr Alexander Antelme QC appeared for EDL. Mr Bartlett presented EDL's case in relation to the first three grounds of appeal and the respondent's notice. Mr Antelme presented EDL's case in relation to the fourth ground of appeal.

52. It is sensible to deal first with the second ground of appeal. Before considering any of the broader issues in this appeal, I must first establish what Howmet

knew about the condition of the thermolevel on tank 6 during the week before the fire.

Part 5 – What did Howmet know about the condition of the thermolevel on tank 6 during the week before the fire?

53. In this part all references to "the thermolevel" are to the thermolevel on tank 6. When I refer to the thermolevel not working properly, I am referring only to the second of its two functions, namely detecting when the liquid level falls below the appropriate depth. No one suggests that the thermolevel failed to perform its first function, which was to monitor the temperature of any liquid in which it was immersed. That temperature monitoring function, however, is not relevant to the issues in this appeal.

54. There is now no dispute that, after the fire on 29th January 2007, Peter Reed knew that the thermolevel was or might not be working properly. That is why Mr Reed ordered a float switch on the 1st February 2007 with a request for delivery on the next day (judgment paragraphs 277(vi) and 282).

55. In opening the appeal Mr Quiney argued that Mr Reed was the only Howmet person who appreciated that the thermolevel was or might be defective. He submitted that the reference to Mr Gill's knowledge in the second sentence of paragraph of 277(vii) should be disregarded, because that sentence comes out of the blue without any supporting analysis or findings (appeal day 1, pages 76-77). Mr Quiney went onto argue that, on the authorities, Mr Reed's knowledge could not be attributed to Howmet.

56. Mr Bartlett argued that, even if Mr Reed was the only person who knew, that knowledge should be attributed to Howmet. That was because Mr Reed was the person to whom Howmet had entrusted the task of attending to the safety devices on the GEL. In fact, said Mr Bartlett, many other Howmet personnel including Mr Gill were well aware of the problems with the thermolevel. In support of that submission Mr Bartlett took the court quite carefully through the judge's findings of fact.

57. In his reply Mr Quiney retreated somewhat from his initial position. He did not pursue the submission that Mr Gill was unaware of the thermolevel problem. Instead he argued that Mr Farrimond was unaware of the problem and only Mr Farrimond's knowledge could be attributed to Howmet (appeal day 3, pages 32-33).

58. I must deal with the factual position and then review the authorities on attribution of knowledge. It is clear from judgment paragraphs 41 to 43 and 243 to 244 that the operators on the GEL knew that the thermolevel was not working properly. They were Mr Palfrey (who caused the fire on the 29th January), Mr Leaman and Mr Moxey.

59. Mr Reed left Howmet's employment in May 2007 and was unwilling to give evidence: see day eight, page 46. (The judge's reference in paragraphs 20 and 255 to Mr Reed being untraceable was a slip). The court did, however, have Mr Boyle's notes of his two interviews with Mr Reed during 2007. The

totality of the evidence led the judge to conclude that Mr Reed "knew, or at least strongly suspected, that the thermolevel was not working properly" (judgment paragraph 269).

60. Since Mr Reed was unwilling to come to court and since Howmet were unwilling to call most of the other witnesses who were available and could assist, we do not know how widely the 29th January fire and the thermolevel problem became known within the company. Clearly Mr Webber and Mr Gildersleve knew about these matters: see paragraph 63 of the judgment. Paragraph 37 of Mr Gill's witness statement gives some assistance. That states:

> "I recall having a conversation with Peter about his concerns with the Therm-o-Level. Peter was concerned that the Therm-o-Level was not operating correctly as it kept failing and he wanted to install float switches in the tanks as a secondary protective measure. The float switch that Peter Reed had ordered as a secondary layer of protection arrived around a day before the Fire. I remember seeing it on his desk."

Mr Gill's reference to "a day before the fire" probably means Friday 9th February 2007.

61. Mr Bartlett points out that during his investigation Mr Boyle interviewed some 30 of Howmet's employees. Not one of them says that Howmet was using the thermolevel as a heater cut out device in the period leading up to the fire. I have read through those interview notes, (some annexed to Mr Boyle's report and some in a separate bundle). What Mr Bartlett says appears to be correct.

62. Perhaps a more significant fact is the new system which Howmet put in place after the fire on 29th January 2007. It was Howmet's normal practice at the end of each week to drain the tanks, wash them out, refill them and leave the tanks with the heaters on. But (after 29th January and until such time that a float switch was installed) Howmet adopted a different practice in relation to tank 6. That tank was left empty with the heater switched off. See Mr Boyle's notes of interviews and paragraph 31 of the particulars of claim.

63. Mr Reed took the view that these precautions were sufficient. According to Mr Boyle's interview note, Mr Reed said:

> "Even after the problems with the heaters in January I considered that there [were] sufficient safeguards for the plant to run. I considered that the procedures, warning signs were adequate safeguards."

64. In paragraph 281(v) of his judgment, the judge describes the new procedure which Howmet adopted after the January fire as follows:

> "In the meantime Howmet must have been relying on operator vigilance, together with a procedure for leaving

> the hot water tank drained over the weekend (which is how it had been left until Mr Woodland switched it on)."

65. Mr Farrimond's state of knowledge was at a higher level. He knew that there had been a problem and that people were dealing with it. The relevant part of his cross-examination is at day 3, page 86-87 and reads as follows:

> "A. Well, that's where we disagree, because at the time I did not believe that there was a risk of fire. Had we believed there was, we wouldn't have released the equipment.
>
> Q. Well, did you not think there was a chance that the operators would not follow their procedures?
>
> A. No.
>
> Q. You thought they would?
>
> A. Yes.
>
> Q. Exactly, yes.
>
> A. Because we had an incident, so they would follow them.
>
> Q. So you believed there wasn't a risk of fire because you believed that the operators would follow their working procedures?
>
> A. And we had an engineer working on the problem, yes.
>
> Q. Well, while the engineer was working on the problem, you didn't have a solution, so on the electrical/mechanical side, that was still under investigation, but I understand that you decided that the operators carrying out the procedures properly was sufficient to guard against fire?
>
> A. Correct.
>
> Q. That remained the position until the major fire?
>
> A. Correct.
>
> Q. Because any solution involving a float switch on the electrical/mechanical side had not been put in place by the time of the major fire. Do you understand that?
>
> A. I do."

66. Against that factual background, the question arises as to what the company Howmet (as opposed to any individual employee) knew about the condition of the thermolevel. Before addressing that question I must first review the authorities.

67. In *Meridian Global Funds Management Asia Limited v Securities Commission* [1995] 2 AC 500 the Securities Commission of New Zealand brought proceedings against Meridian for failing to give notice of certain share purchases as required by section 20 of the Securities Amendment Act 1988. Meridian's defence was that N, its senior portfolio manager, had bought the shares without informing the managing director or the other directors. The New Zealand courts held Meridian liable and the Privy Council upheld that decision.

68. Lord Hoffmann delivered the decision of the Privy Council. In a masterly review of the principles, he began by stating that a company's primary rules of attribution are to be found in its constitution. The general principles of agency supplement those primary rules. In determining the liabilities of a company, the rules of vicarious liability also operate. In exceptional cases, however, a rule of law may exclude attribution on the basis of the general principles of agency or vicarious liability. The well known cases of *Tesco Supermarkets v Natrass* [1972] AC 153 and in *Re Supply of Ready Mixed Concrete (No.2)* [1995] 1 AC 456 are illustrations of the operation of those principles. In the first case, Tesco was not criminally liable for certain acts of local managers. In the second case, the conduct of certain senior employees amounting to contempt of court was attributed to the company.

69. Turning to the facts in *Meridian*, Lord Hoffmann posed the question: "what rule should be implied as to the person whose knowledge for this purpose is to count as the knowledge of the company?". His answer was the person who, with authority of the company, acquired the relevant interest.

70. In *Bilta (UK) Limited (in liquidation) & Ors v Nazir & Ors (No.2)* [2015] UKSC 23; [2016] AC 1, the liquidators of Bilta brought proceedings against the former directors (D1 and D2) and five outsiders (D3 – D7) for fraudulent conduct causing loss to the company. D6 and D7 applied for summary judgment dismissing the claim on a number of grounds including the *ex turpi causa* principle. Sir Andrew Morritt C refused the application. The Court of Appeal and the Supreme Court upheld that decision.

71. One of the central issues in the appeal was whether the knowledge of D1 and D2 should be attributed to Bilta. The judgments contain extensive discussion of the doctrine of attribution. See Lord Neuberger at [7] to [9], Lord Mance at [37] to [49], Lord Sumption at [65] to [105], Lord Toulson and Lord Hodge at [180] to [209]. The length and multiplicity of the different analyses in those passages do not make life easy for practitioners and judges dealing with attribution issues on a day-to-day basis. Fortunately the present case is straightforward and does not require a minute dissection of the various judgments in *Bilta*. The important points emerging from *Bilta* for present purposes are the following:

i) The law treats a company as thinking as well as acting through its agents (paragraph 65).

ii) In determining whether to attribute the action or state of mind of a company director or agent to the company, the court must have regard to both the factual context and the nature of the claim by or against the company (paragraphs 9, 202-207).

iii) A helpful question to pose is: whose act or knowledge or state of mind is *for the purpose of* the relevant rule to count as the act, knowledge or state of mind of the company? (paragraph 41).

72. In the present case the court needs to establish (a) whose knowledge about the malfunctioning of the thermolevel should be attributed to Howmet and (b) whose decisions about the continued operation of the GEL should be attributed to Howmet. The nature of the present litigation is a claim brought by the company against the manufacturers of a defective thermolevel on the *Donoghue v Stevenson* principle.

73. The answer to that question is clear. The relevant employees are those to whom the directors of Howmet had entrusted the task of maintaining and operating the GEL in a safe manner. Mr Gill as facilities manager was a senior member of that team. Beneath him were the plant engineering manager, Mr Gildersleve, and the plant engineering technician, Mr Reed. All these individuals appreciated that the thermolevel was not functioning properly. They set up a system to prevent tank 6 from catching fire. This involved (a) operator vigilance during the week and (b) leaving tank 6 drained down with the heater switched off at weekends. The operators of the GEL, who were required to exercise vigilance during the week, were Messrs Leaman, Palfrey and Moxey. They all knew about the thermolevel malfunction. In my view, the collective knowledge of the individuals identified in this paragraph should be attributed to Howmet.

74. Having dealt with the issue of corporate knowledge, I must turn to Howmet's claim in negligence.

Part 6 – Howmet's claim in negligence against the manufacturer.

75. The issues arising at this stage of the analysis take the court back to first principles. In *Donoghue v Stevenson* [1932] AC 562 the House of Lords held by a majority of 3:2 that the manufacturer of an article, in respect of which there will not be intermediate inspection, owes a duty to the end user to take reasonable care to ensure that the article will not cause personal injury. Later authority established that the manufacturer is under a similar duty to take reasonable care to ensure that the article will not cause damage to property (i.e. damage to property other than the article itself).

76. Once an article has passed through the factory gate, the original manufacturer has no control over who will use it or how they will do so. The law therefore imposes restrictions upon a manufacturer's liability to the end user. Lord

Bridge stated one such restriction in *D & F Estates Ltd v Church Commissioners for England* [1989] 1 AC 177 at 208 as follows:

> "If the hidden defect in the chattel is the cause of personal injury or of damage to property other than the chattel itself, the manufacturer is liable. But if the hidden defect is discovered before any such damage is caused, there is no longer any room for the application of the *Donoghue v Stevenson* [1932] A.C. 562 principle. The chattel is now defective in quality, but is no longer dangerous."

Lord Templeman, Lord Ackner, Lord Oliver and Lord Jauncey agreed with the speech of Lord Bridge.

77. Lord Bridge restated that principle in *Murphy v Brentwood* [1991] 1 AC 398 at 475. EDL relied upon that passage in paragraph 135 of their written closing submissions at trial. Mr Bartlett has asked the Court of Appeal to treat that section of the written closing submissions as part of his case on appeal.

78. The detailed application of the *Donoghue v Stevenson* principle is not always straightforward. Three authorities provide helpful illumination, namely *Taylor v Rover Company Limited & Ors* [1966] 1 WLR 1491, *Lexmead (Basingstoke) Limited & Ors v Lewis & Ors* [1982] AC 225 and *Schering Agrochemicals Ltd v Resibel N.V. S.A. v Electro Industrie Akoustiek* (26th November 1992, transcript).

79. In *Taylor* the plaintiff was using a chisel for one stage in the process of vehicle assembly. A piece of the chisel broke away and struck his face, causing blindness in one eye. The plaintiff claimed against his employers as first defendants and the chisel manufacturers as the second defendants. The same chisel had caused a minor injury to J, the leading charge hand, four weeks earlier. Baker J held that the employers were liable for failing to take the chisel out of circulation. The manufacturers were not liable, because the defect had come to light four weeks before the plaintiff's injury. At 1493 Baker J said this:

> "It seems to me that there was failure by Jones to withdraw the guilty chisel from circulation. He was the leading hand and it was, I think, clearly his duty to have withdrawn that dangerous tool, and for that failure the first defendants are responsible, because it seems to me that Jones's knowledge of the danger was the knowledge of the first defendants. They contend that the knowledge of the leading hand is insufficient. I reject that contention. I do not think that it is possible to point anywhere in the line and say: "Only knowledge by that particular person will saddle us with responsibility." Mr Ashworth argued that it would at least have to be the knowledge of the foreman. Well, why not the knowledge of the managing director? Here was a

> person, Jones, who was in authority. In a complex organisation such as are the first defendants, it is, I think, essential that there should be a system for maintenance and inspection when a danger is brought to light, and it was brought to light by the accident to Jones, the person in immediate authority. A witness called for the first defendants accepted that if a leading hand knew a fragment fled from the top of a chisel his employers should have been on inquiry."

80. Baker J was of course deciding the attribution issue without the benefit of the modern jurisprudence contained in ***Meridian*** and ***Bilta***. Nevertheless he identified an important principle which in my view still holds good. If one person in the corporate hierarchy (in ***Taylor*** it was the leading charge hand) becomes aware of a dangerous situation in the workplace which in breach of duty he fails to report up the line, in subsequent litigation the company cannot rely upon the ignorance of its more senior managers.

81. This may be a matter of constructive knowledge rather than attribution. I do not suggest that the principles of constructive knowledge can always be used to bypass the question of attribution. But those principles are of obvious relevance in a situation where junior management become aware that there is a source of danger within the workplace.

82. In ***Lexmead***, DB manufactured a defective towing hook which Lexmead (as dealers) sold to a farmer for use on his Land Rover. The handle and spindle became detached. The farmer negligently failed to notice or investigate the missing handle during a period of several months. On 10th September 1972 an employee of the farmer was driving the Land Rover and towing a trailer. The trailer broke away and collided with an oncoming car, killing the driver and one passenger, as well as injuring the other two passengers. The judge held that both the farmer and the manufacturers were liable in negligence to the plaintiffs. He apportioned that liability 75% to the manufacturers and 25% to the farmer.

83. The principal question on the subsequent appeals was whether the farmer could recover against Lexmead the 25% of damages which he was required to pay to the plaintiffs. Lexmead were in breach of the implied warranties of merchandisable quality and fitness for purpose arising under section 14 of the Sale of Goods Act 1893. But Lexmead contended that the subsequent negligence of the farmer relieved them of liability. The trial judge accepted that argument. The Court of Appeal rejected it. The House of Lords restored the decision of the trial judge. Lord Diplock gave the leading speech with which Lord Elwyn-Jones, Lord Fraser, Lord Scarman and Lord Bridge agreed. The kernel of Lord Diplock's reasoning is in the following passage at 276G to 277A:

> "After it had become apparent to the farmer that the locking mechanism of the coupling was broken, and consequently that it was no longer in the same state as when it was delivered, the only implied warranty which

> could justify his failure to take the precaution either to get it mended or at least to find out whether it was safe to continue to use it in that condition, would be a warranty that the coupling could continue to be safely used to tow a trailer on a public highway notwithstanding that it was in an obviously damaged state. My Lords, any implication of a warranty in these terms needs only to be stated, to be rejected. So the farmer's claim against the dealers fails in limine. In the state in which the farmer knew the coupling to be at the time of the accident, there was no longer any warranty by the dealers of its continued safety in use on which the farmer was entitled to rely."

84. Although the third party proceedings were brought in contract, not tort, the House of Lords' decision graphically illustrates the legal consequence of inaction by an end user once he has been alerted to the defect. The farmer was not to know whether or not the broken handle rendered the towing mechanism dangerous. Nevertheless his failure "at least to find out whether it was safe to continue to use it" defeated the farmer's third party claim.

85. In *Schering* the plaintiffs were manufacturers of agrochemicals. They used equipment supplied by the defendant for sealing bottles of inflammable liquid. If any bottle stopped under the heat sealer for too long, it was liable to explode and catch fire. The equipment incorporated a safety device which would sound an alarm and switch off the heat sealer if any bottle came to rest under the heat sealer for too long. The safety device was poorly designed and sometimes did not work properly. This malfunction led to an incident on 8th September 1987 when a bottle exploded and there was an orange flash. Fortunately that did not lead to a fire. The problem was resolved and production continued.

86. The plaintiffs were not so lucky on the 30th September 1987. The safety device failed once again. A bottle exploded, the contents caught fire and the fire caused extensive damage to the factory.

87. The plaintiffs originally pleaded their claim in both contract and tort, but subsequently dropped the tortious claim. Both Hobhouse J and the Court of Appeal held that the plaintiffs could not recover damages in respect of the 30th September fire because the earlier fire on 8th September had alerted them to the defective safety device. Purchas and Scott LJJ treated the plaintiffs' failure to take effective action after 8th September as breaking the chain of causation. Nolan LJ preferred to treat that inaction as failure to mitigate.

88. In considering whether the company was fixed with knowledge of the defective safety device, Purchas LJ said this at pages 4 to 5 of the transcript:

> "It was common ground and accepted by Schering that the process of filling bottles with the particular chemical which involved using a heat sealer was a process which had inherent dangers. It would be difficult, if not impossible, to argue that in the ordinary course of

> commercial practice a manufacturer producing and bottling highly inflammable chemicals would not set up and operate a system of supervision to ensure that the process was being carried out efficiently, that the equipment was working properly, and that there were no obviously recognisable dangers being incurred. It is the system of supervision which the vendors are entitled to expect the purchaser to install and operate which is critical to the questions of causation and mitigation of breach. Subject to one matter only, how that system is in fact operated on the occasion in question is of no concern to the vendor. The one matter which must be borne in mind, however, is whether the vendor is entitled to assume that once the system is devised and put into operation there will not from time to time be occasional lapses and negligence on the part of individual operatives which would be the root cause of a dangerous situation. I believe that, if the officious bystander had enquired of the contracting parties whether the vendor or the purchaser was to be liable for such casual acts of inadvertence or negligence, the answer would surely have been not the vendor but the purchaser. I only pose this question as an exercise to examine the position which occurred in this case in the context of section 53(2) of the Sales of Goods Act 1979.
>
> If the evidence establishes that the incident which occurred on the evening of 8th September should have caused the operation to be shut down and the cause effectively investigated, then this is sufficient to break the chain of causation and relieve the vendor of liability. In these circumstances the detailed enquiries into whether, or not Lambert properly reported the incident to Williams, or whether Williams fully appreciated what Lambert was reporting, or whether Williams himself should have taken any further action the next morning or could rely upon the fact that the line was apparently operating perfectly safely and satisfactorily no longer fall to be considered."

89. By the time that ***Schering*** reached the Court of Appeal only the contractual claim was an issue. Nevertheless the quoted passage supports the proposition which I derived from ***Taylor***. If one person in the corporate hierarchy becomes aware of a dangerous situation in the workplace which in breach of duty he fails to report up the line, in subsequent litigation the company cannot rely upon the ignorance of its more senior managers.

90. Both parties rely upon ***Schering*** for different purposes. Mr Bartlett relies on the passages quoted above in support of his argument that any failure by Mr Reed or his superiors to report the defective thermolevel is of no consequence.

Howmet are fixed with his knowledge and therefore cannot pursue a claim against EDL.

91. Mr Quiney on the other hand, relies upon the judgment of Nolan LJ at page 10. In that passage, Nolan LJ said that if the plaintiffs had proceeded in tort (presumably on the basis of supplier negligence) there would have been an apportionment of liability under the 1945 Act. Mr Quiney relies upon that passage as showing that negligent inaction by the end user after being alerted to the defect leads to an apportionment of liability under the 1945 Act. It does not defeat the claim. Mr Bartlett responds that that passage in Nolan LJ's judgment is *obiter* and wrong.

92. I am not going to plunge into the shark-infested waters of the law of tort as it stood in 1992. Suffice it to say that as the law now stands, in 2016, I do not think Nolan LJ's *obiter* discussion on page 10 is correct. Once the end user is alerted to the dangerous condition of a chattel, if he voluntarily continues to use it thereby causing personal injury or damage, he normally does so entirely at his own risk. I say "normally" rather than "always", because (as Arden LJ explains) there are some situations in which the claimant may have no choice but to continue using the chattel as before. *Schering* was not a case in which the plaintiffs had no choice but to go on as before.

93. Let me now return to the present case. Suppose that I am wrong and Mr Quiney is right in his submission that Mr Farrimond is the key figure in relation to attribution of knowledge; suppose that no one below Mr Farrimond counts for the purpose of determining 'what the company knew'.

94. The management structure chart at Appendix 1 (provided by Howmet) shows both Mr Farrimond and Mr Gill as departmental managers. Although both men were in the same layer of management, Mr Farrimond was senior to Mr Gill. It appears from the evidence that Mr Farrimond was aware that there were issues concerning the thermolevel. Self-evidently a malfunctioning thermolevel was a source of danger within the workplace, because such a failure could lead to fire. Indeed it had done so on two separate occasions. If (as Mr Quiney argues) only Mr Farrimond could take effective action to deal with the problem, then it was the duty of Mr Gill and his colleagues to report the full position to Mr Farrimond. Howmet cannot rely upon Mr Farrimond's ignorance.

95. In my view by early February 2007 Howmet knew (alternatively must be taken to have known) that the thermolevel was malfunctioning. Howmet continued to use the GEL without installing any alternative safety mechanism to switch off the heater when the water level fell. They simply relied upon operator vigilance during the week and a special arrangement for tank 6 at the weekends. The effective cause of the fire on the 12th February 2007 was the failure of the system which Howmet had put in place to protect tank 6 following the malfunction of the thermolevel.

96. Applying the principles stated in *Donoghue v Stevenson*, *Taylor v Rover*, *D & F Estates* and *Murphy v Brentwood* (and disregarding the *obiter* section of Nolan LJ's judgment in *Schering*) that state of affairs defeats Howmet's

claims in negligence against the manufacturers. I therefore conclude, in agreement with the judge, that the claim in negligence fails.

97. This may be expressed in one of two ways. It may be said that by 12th February 2007 EDL owed no continuing duty to Howmet in respect of the thermolevel on tank 6. Alternatively, it may be said that any breaches of duty by EDL in respect of that thermolevel were not causative of Howmet's loss.

98. In those circumstances it is not necessary for me to consider the correctness of finding (xiv). Nevertheless, in fairness to Mr Quiney, it is right to say that I see force in his criticism of that conclusion. In view of EDL's failures identified in findings (i), (iii), (iv) and (xv), it is at the very least counter-intuitive to say that there is no causal link between EDL's breaches of duty and the malfunctioning of the thermolevel which commenced on the 29th January 2007.

99. There is a great difference between the present case and ***Popi M*** (where no possible cause of the hull damage presented itself). Mr Quiney submits that the judge inappropriately 'atomised' this issue. The judge ought to have held that one or other aspects of EDL's carelessness as previous identified caused the malfunctioning of the thermolevel from 29th January 2007 onwards.

100. It is not necessary to reach a final conclusion on this issue. Nevertheless I do have reservations about this part of the judgment. I understand that Sir Robert Akenhead does not share those reservations. So I shall I leave this aspect of the case open.

101. I must now turn to the claim for breach of statutory duty.

Part 7 – Howmet's claim for breach of statutory duty

102. The judge has held that EDL were in breach of regulations 5(1) and 9(1) of the 1994 Regulations by producing and putting into circulation thermolevels which were unsafe and which lacked CE markings: see finding (xv). As a result EDL were in breach of the duty which they owed under section 41 of the 1987 Act to any person "affected by" that contravention.

103. I can well understand the argument that on 29th January 2007 Howmet constituted a person "affected by" EDL's contravention. If the malfunction of the thermolevel on that date had caused a major fire, Howmet may well have had a claim against EDL under section 41 of the 1987 Act.

104. That, however, is not what happened. There was no fire damage on 29th January 2007, because the fire was quickly extinguished. After that incident Howmet were relying on alternative means of preventing fire, not the thermolevel.

105. In those circumstances, on the 12th February 2007 Howmet cannot be characterised as a person affected by EDL's breach of the 1994 Regulations. It was, rightly, common ground between counsel that there should be no difference in the principles of causation between a case in negligence and a

case for breach of statutory duty under section 41 of the 1987 Act. Therefore, in agreement with the judge, I would hold that the claim for breach of statutory duty fails.

Part 8 – Conclusion

106. For the reasons set out in parts 5, 6 and 7 above I reject Howmet's first three grounds of appeal.

107. In those circumstances, Howmet's appeal is bound to fail. It is therefore unnecessary to reach any decision on the fourth ground of appeal and I do not do so.

108. If my Lady and my Lord agree, this appeal will be dismissed.

Sir Robert Akenhead:

109. I agree with Lord Justice Jackson in his Conclusion and reasoning but I do not share the reservations expressed at paragraphs 98-100 of his judgment, albeit that this would not alter the result. I consider that on analysis this is a *Popi M* case albeit not on all fours factually. Judges at first instance, presented with compelling but competing strands of evidence in particular in TCC cases and not least in cases where parties do not put before the Court witnesses who might actually assist the Court, can have great difficulties in finding cases proved or disproved. Here the trial judge, having positively eliminated several causes of the 12th February 2007 fire, was left with three causes, two of which would have not been, whilst one cause would have been, the liability of EDL. All three causes he positively held were unlikely. Put another way, he was saying that not one of them had been proved on a balance of probabilities. It is clear that he ranked the viable (albeit unlikely) causes with the incorrect setting of the potentiometer as the "least unlikely" and therefore by inference with the other two, which were not ranked as such, being more unlikely than the incorrect setting of the potentiometer.

110. This is just the type of dichotomy anticipated by Lord Brandon in the *Popi M*. In that case, (*Rhesa Shipping Co v Edmunds* [1985] 1 WLR 948), the House of Lords considered the causes of the sinking of a ship, the Popi M, which sank in calm weather in the Mediterranean in deep water when laden with a cargo of bagged sugar. The issue was in effect what had caused it to sink. Lord Brandon gave the lead judgment. He said at page 951A-G as follows:

> "… the appeal does not raise any question of law, except possibly the question what is meant by proof of a case 'on a balance of probabilities'. Nor do underwriters challenge … any of the primary findings of fact made by Bingham J. The question, and the sole question, which your Lordships have to decide is whether on the basis of those primary findings of fact, Bingham J and the Court of Appeal were justified in drawing the inference that the ship was, on the balance of probabilities, lost by perils of the sea.

> In approaching this question it is important that two matters should be borne constantly in mind. The first matter is that the burden of proving, on a balance of probabilities, that the ship was lost by perils of the sea, is and remains throughout on the shipowners. Although it is open to underwriters to suggest and seek to prove some other cause of loss, against which the ship was not insured, there is no obligation on them to do so. Moreover, if they choose to do so, there is no obligation on them to prove, even on a balance of probabilities, the truth of their alternative case.
>
> The second matter is that it is always open to a court, even after the kind of prolonged enquiry with a mass of expert evidence which took place in this case, to conclude, at the end of the day, that the proximate cause of the ship's loss, even on a balance of probabilities, remains in doubt, with the consequence that the shipowners have failed to discharge the burden of proof which lay upon them.
>
> This second matter appears clearly from certain observations of Scrutton L.J. in *La Compania Martiartu v. Royal Exchange Assurance Corporation* [1923] 1 K.B. 650. That was a case in which the Court of Appeal, reversing the trial judge, found that the ship in respect of which her owners had claimed for a total loss of perils by sea, had in fact been scuttled with the connivance of those owners. Having made that finding, Scrutton LJ went on to say, at p. 657:
>
> > "This view renders it unnecessary finally to discuss the burden of proof, but in my present view, if there are circumstances suggesting that another cause than a peril insured against was the dominant or effective cause of the entry of seawater into the ship … and an examination of all the evidence and probabilities leaves the court doubtful what is the real cause of the loss, the assured has failed to prove his case."
>
> While these observations of Scrutton L.J. were, having regard to his affirmative finding of scuttling, obiter dicta only, I am of opinion that they correctly state the principle of law applicable …"

111. Lord Brandon then went on to consider the approach to the evidence adopted by the first instance judge and referred to the well-known saying of Mr Sherlock Holmes:

> "How often have I said to you that, when you have eliminated the impossible, whatever remains, however improbable, must be the truth?"

Lord Brandon considered that it was inappropriate to apply this dictum and indeed set aside the lower courts' finding. At page 955H to 956F, he continued:

"The first reason [why it is inappropriate to apply Mr. Holmes' dictum] is one which I have already sought to emphasise as being of great importance, namely, that the judge is not bound always to make a finding one way or the other with regard to the facts averred by the parties. He has open to him the third alternative of saying that the party on whom the burden of proof lies in relation to any averment made by him has failed to discharge that burden. No judge likes to decide cases on burden of proof if he can legitimately avoid having to do so. There are cases, however, in which, owing to the unsatisfactory state of the evidence or otherwise, deciding on the burden of proof is the only just course for him to take.

The second reason is that the dictum can only apply when all relevant facts are known, so that all possible explanations, except a single extremely improbable one, can properly be eliminated. That state of affairs does not exist in the present case: to take but one example, the ship sank in such deep water that a diver's examination of the nature of the aperture, which might well have thrown light on its cause, could not be carried out.

The third reason is that the legal concept of proof of a case on the balance of probabilities must be applied with common sense. It requires a judge of first instance, before he finds that a particular event occurred, to be satisfied on the evidence that it is more likely to have occurred than not. If such a judge concludes, on a whole series of cogent grounds, that the occurrence of an event is extremely improbable, a finding by him that it is nevertheless more likely to have occurred than not, does not accord with common sense. This is especially so when it is open to the judge to say simply that the evidence leaves him in doubt whether the event occurred or not, and that the party on whom the burden of proving that the event occurred lies has therefore failed to discharge such burden.

In my opinion Bingham J adopted an erroneous approach to this case by regarding himself as compelled to choose between two theories, both of which he regarded as extremely improbable, or one of which he regarded as extremely improbable and the other of

> which he regarded as virtually impossible. He should have borne in mind, and considered carefully in his judgment, the third alternative which was open to him, namely, that the evidence left him in doubt as to the cause of the aperture in the ship's hull, and that, in these circumstances, the shipowners had failed to discharge the burden of proof which was on them."

112. In my judgment, what the trial judge was saying here was that he remained in doubt, albeit that one of the three unlikely causes was ranked the least unlikely. He was entitled so to do.

113. I agree that the appeal should be dismissed and that this issue of proof on the balance of probabilities does not need to be resolved in view of the other findings.

Lady Justice Arden:

114. I would like to express my admiration for the judge's concise and precise judgment in this case.

115. I am most grateful to Jackson LJ for his masterly judgment, and I adopt his definitions. As explained below, I disagree with him on one important aspect of his analysis of Howmet's case on negligence and breach of statutory duty, but it makes no difference to the outcome of this appeal. The particular aspect on which I differ is the question of the extent to which Howmet's non-reliance on the thermolevel after the fire on 29 January 2007 operated to bar its claims. In respectful disagreement also with Sir Robert Akenhead, I would also have gone further than Jackson LJ on causation. Save as aforesaid, I agree with the order which Jackson LJ proposes for the reasons that he gives.

116. Sadly for it, Howmet was extremely careless about (among other things) the way it acted on discovering that the thermolevel did not work when the heater in tank 6 was switched on and the tank was empty. There was thereafter a very serious fire. Howmet contends that this fire was caused by the respondent's defective product. Howmet brought these proceedings claiming some £6m for property damage caused by the fire, together with some £14m pure economic loss.

117. The judge assessed Howmet's culpability and causal responsibility for the loss and damage to be 75% if contributory negligence were relevant. But the judge concluded that contributory negligence was not relevant. This was not because Howmet's carelessness had broken the chain of causation but because Howmet had not relied on the thermolevel immediately prior to the fire. Rather, Howmet's electrician Mr Reed had discovered that it was not working and he and others had set up a system of "operator vigilance" in its place.

118. In this context, the judge was clearly using the concept of reliance in relation to causation, and not in relation to the duty question. It is accepted that the respondent manufacturer owed a duty of care to the end-user on the basis of

Donoghue v Stevenson, and as Mr Quiney submits, this was broken when the defective thermolevel was fitted by Howmet.

119. Did Howmet's actions following its discovery of the defect in the thermolevel constitute an intervening act which broke the chain of causation? Here, in short, the test is whether the intervening act obliterated the breach of duty (see the judge's judgment at [280]). The judge was not satisfied that this had occurred.

120. I see force in Mr Quiney's submission that there is a degree of tension between the non-reliance finding and the no-intervening event finding. True the test for the latter is very high. But the problem in my judgment is that the judge treated reliance as an absolute bar. In my judgment, the situation is more nuanced than that.

121. Lord Bridge in *D&F Estates Ltd v Church Commissioners for England* [1989] 1 AC 177 at 208 observed that, if a person discovers the hidden defect in a chattel before it causes damage to his property, "there is no longer any room for the application of *Donoghue v Stevenson*…the chattel is now defective in quality, but is no longer dangerous". The full paragraph reads:

> These principles are easy enough to comprehend and probably not difficult to apply when the defect complained of is in a chattel supplied complete by a single manufacturer. If the hidden defect in the chattel is the cause of personal injury or of damage to property other than the chattel itself, the manufacturer is liable. But if the hidden defect is discovered before any such damage is caused, there is no longer any room for the application of the *Donoghue v Stevenson* [1932] AC 562 principle. The chattel is now defective in quality, but is no longer dangerous**.** It may be valueless or it may be capable of economic repair. In either case the economic loss is recoverable in contract by a buyer or hirer of the chattel entitled to the benefit of a relevant warranty of quality, but is not recoverable in tort by a remote buyer or hirer of the chattel.

122. In my judgment, when this paragraph is read as a whole, it is clear that Lord Bridge is referring not to damage to property but to economic loss. That is what this Court held in *Targett v Torfaen Borough Council* [1992] EGLR 275 in relation to the similar point made in the speech of Lord Bridge in *Murphy v Brentwood DC* [1991] 1 AC 398. In *Targett*, Sir Donald Nicholls V-C held:

> … knowledge of the existence of a danger does not always enable a person to avoid the danger. In simple cases it does. In other cases, especially where buildings are concerned, it would be absurdly unrealistic to suggest that a person can always take steps to avoid a danger once he knows of its existence and that if he does not do so he is the author of his own misfortune.

> Here, as elsewhere, the law seeks to be realistic. Hence the established principle, referred to by this court in *Rimmer* (at p 14), that knowledge or opportunity for inspection *per se*, and without regard to any consequences they may have in the circumstances, cannot be conclusive against the plaintiff. Knowledge, or opportunity for inspection, does not by itself always negative the duty of care or break the chain of causation. Whether it does so depends on all the circumstances. It will do so only when it is reasonable to expect the plaintiff to remove or avoid the danger and unreasonable for him to run the risk of being injured by the danger.

123. To treat reliance as a supervening event which without more would remove any liability from the manufacturer of a defective product would be to put the law back to where it was before the 1945 Act. While this point is not critical in this case, it may be very important in other cases, including cases where the claimant seeks damages for personal injury.

124. What applies to knowledge or opportunity for inspection must apply equally to steps that a claimant takes to avoid a danger caused by a defectively manufactured product which he has discovered. Those steps represent his response to that discovery. Now, we have not had submissions on my reading of the passage from Lord Bridge's speech set out above, so all I can do is state my provisional views. On that footing, I consider, in relation to the question whether the fire caused the property damage, that the judge should not have treated non-reliance as an absolute bar. Rather he should have asked himself whether the adoption by Howmet of its (defective) system of operator vigilance was a reasonable step for it to take to remove or avoid the danger caused by the thermolevel, and thus whether it was unreasonable for Howmet to run the risk of further damage. In relation to this question, attribution does not necessarily arise.

125. It follows that I would disagree with the judge's comparison between this case and the effect of non-reliance on a contractual claim. At [275], the judge held:

> Although *Lambert v Lewis* involved a claim in contract between the owner of the Land Rover and the dealers, I can see no reason why the requirement for reliance on the supplier or manufacturer to provide a product that was fit for its purpose should be any less in a situation such as this where I have found that the use of the thermolevel by Howmet was one that was within the contemplation of EDL.

126. It also follows that, in respectful disagreement with my Lords, I consider that Nolan LJ was correct in *Schering Agrochemicals Ltd v Resibel N.V. S.A.* [1992] Lexis Citation 2953 to observe that, if the claim in that case had been decided in tort, it would have been a case for allocation of responsibility under the 1945 Act. The damage in that case was either solely or mainly property damage. The holding of Nolan LJ in question has moreover to be read in the light of the fact that his preferred analysis in that case was not that of a break in the chain of causation but of the plaintiff's failure to mitigate by taking reasonable steps following an earlier incident of malfunction of the defendant's defective system.

127. Even on this approach, however, Howmet's case was bound to fail. Given what happened when Mr Woodlands mistakenly switched on the heater in tank 6, the system of operator vigilance was patently inadequate. Moreover, the judge did not find that the steps which Howmet took to replace the thermolevel with an alternative device (the float switch) were a sufficient response. Howmet delayed in fitting the float switch which would have provided the alarm which the defective thermolevel did not provide. The judge could make no finding as to when it was delivered: see [286] of the judge's judgment. If he had done so, and the date had been shortly before the fire, the question would still have arisen why it was not obtained sooner and fitted in time. The evidence about the steps taken by the staff of Howmet give the impression of ignorance and indifference to the risk of fire and a perilous lack of internal co-ordination. So even on my (provisional) preferred approach in law to non-reliance, Howmet's claim for property damage would not have been established.

128. Had Howmet's case not failed in this way, then section 1 of the 1945 Act would have applied had the judge held that the defective thermolevel was a cause of the fateful fire. I therefore turn to the judge's findings on causation and then to breach of statutory duty.

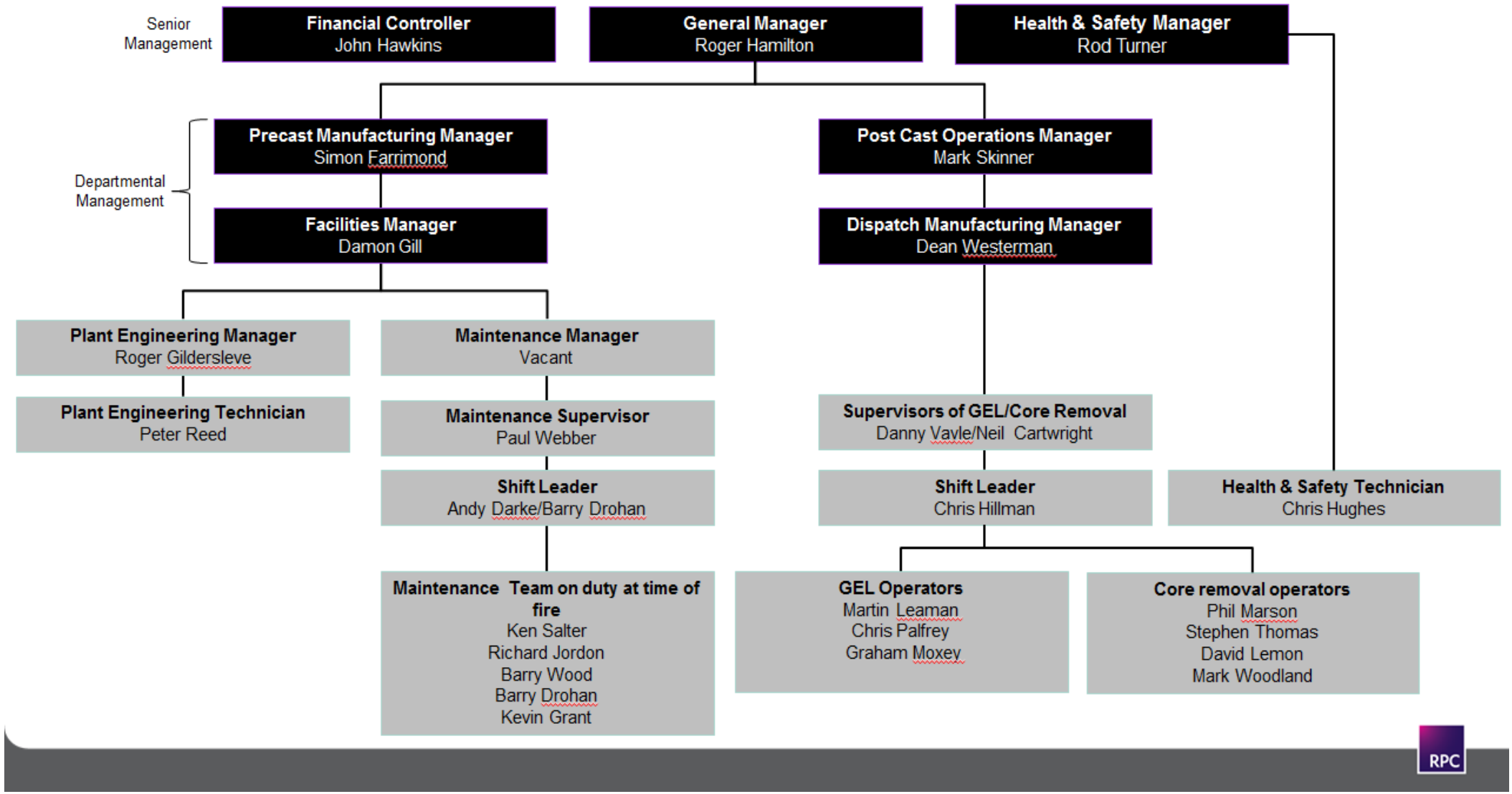
129. The question I must next consider is whether the judge should have found that the fire was caused by the thermolevel. I have read what both my Lords have said on this issue. For my own part I consider that the judge failed to stand back and consider the question of causation in the round in the light of the experts' reports that the fire had been caused by the thermolevel in some way. No other cause had been suggested. The fact that there were the particular four possible causes arguably increased the inherent probability that any one of those causes was the cause of the fire. I do not see that the judge asked himself whether that was so, and therefore there was as I see a shortcoming in his approach. Having regard to my earlier conclusions, I need not go further than this.

130. As to breach of statutory duty, I would have come to like conclusions on this claim, again in respectful disagreement with my Lords.

131. For the reasons given above, I would dismiss this appeal.

APPENDIX 1

Management Structure at Howmet at the time of the Fire



APPENDIX 2