

November 2013

HIGHER RIGHTS OF AUDIENCE ASSESSMENT

IN RESPECT OF CIVIL PROCEEDINGS

THE PRACTICAL ASSESSMENT

(Interim application and mini-trial)

THE TRIAL BUNDLE

1. Pleadings
2. Witness statements
3. Documentary exhibits

BETWEEN

MEADOWBANK BATHROOMS LIMITED
and

Plaintiff

COMHEAT LIMITED

Defendant

STATEMENT OF CLAIM

The Parties

1. In this case:

- (a) the plaintiff is a company which manufactures, supplies and installs fitted bathrooms and bathroom accessories; and,
- (b) the defendant is a company which, amongst other things, manufactures, supplies and installs central heating boilers and systems for commercial premises.

The Contract

2. By an oral contract made on 21 January 2012 [“the Contract”] in a conversation between David Poon on behalf of the defendant and Jane Cheung on behalf of the plaintiff, which took place at the plaintiff’s factory at Lot 60, Aberdeen Industrial Estate, Hong Kong [“the Factory”] –

- (a) the defendant agreed to sell and install at the Factory, and the plaintiff agreed to purchase, an oil fired central heating boiler with an integrated water pump described as a Comheat Powerheat Unit Model 412 K at a price of \$2 million [“the Unit”]; and,
- (b) the defendant further agreed to inspect and test the plaintiff’s existing central heating system [“the System”] at the Factory for an additional sum of \$200,000 and to report on the state of the System to the plaintiff.

Terms

3. The defendant sold and installed the Unit in the course of its business and accordingly the following were implied conditions of the Contract;
 - (a) that the Unit would be of satisfactory quality under section 16(2) of the Sale of Goods Ordinance Cap. 26 (“SOGO”);
 - (b) that the Unit should be reasonably fit for the purpose set out in paragraph 5 (d) below under section 16(3) of SOGO; and
 - (c) that the Unit would be installed by the defendant using reasonable skill and care under section 5 of the Supply of Services (Implied Terms) Ordinance Cap. 457.
4. Further, it was an implied condition of the Contract under section 5 of the Supply of Services (Implied Terms) Ordinance Cap. 457, that the defendant would use reasonable skill and care in inspecting and testing the System.

Knowledge

5. At the time of the Contract Jane Cheung informed David Poon that:
 - (a) the plaintiff had a contract with Grand Casino Hotels Limited to supply and install bathrooms at the Superstar Hotel, Macau;
 - (b) the completion date for the contract was 1 April 2012;
 - (c) by clause 7 of the contract the plaintiff was required to pay \$100,000 each day in liquidated damages for each day late after the completion date; and,
 - (d) the plaintiff needed the Unit to operate the heating system in the Factory which was required to be in continuous use for 7 days each week [“the Purpose”].

Purported Performance

6. The defendant delivered the Unit to the Factory on 28 January 2012 and it was installed by its agent or employee, Tiger Wong together with his team of workers on 29 January 2012.

Breaches

7. In breach of the Contract the Unit was not of satisfactory quality nor fit for the plaintiff’s Purpose in that:

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Particulars of breaches

- (a) The integrated water pump ["the Pump"] in the Unit failed to operate adequately or at all ;
 - (b) the Pump was designed and/or assembled incorrectly in that the impeller retaining nut on the spindle around which the impeller rotated was insufficiently secure because the nut thread was metric which was incompatible with the Hong Kong Standard Pipe thread of the spindle.
8. Further, in breach of the Contract, the defendant's employee or agent, Tiger Wong, did not use reasonable skill and care when installing the Unit in that he knew or ought reasonably to have known that the Unit was defective as described above but nonetheless installed it.
9. Further, in breach of the Contract the defendant, its employees or agents, did not test and inspect the System at all or failed to use reasonable skill and care when carrying out any such test and inspection.

Particulars of breaches

The defendant, its agents or employees, failed adequately or at all

- (a) to notice the presence of corrosion in the System
- (b) to notice the amount of silt in the System
- (c) to flush and refill the System with fresh water containing anti rusting agent
- (d) to advise the plaintiff of the presence of (a) and (b) and of the necessity of (c) before the installation of the Unit

Consequences of breaches

10. As a result of the matters complained of, the impeller in the Pump jammed intermittently failing to pump water adequately through the Unit. This led to a substantial rise in the temperature of the Unit. On the impeller freeing itself, the sudden rush of cold water into the Unit caused it to explode and rupture and the pipe connections to distort after only 10 days' use on 10 February 2012.

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11. The explosion of the Unit (“the Explosion”) caused the Factory to be flooded with a mixture of oil, silt and water and the Factory had to be closed from 10 February 2012 to 1 March 2012 inclusive whilst the flooding was cleared up and a replacement heating system fitted. The workforce of 15 people was laid off for this period.
12. The closure of the Factory for the period stated above caused the plaintiff to be 10 days late in completing the contract with Grand Casino Hotels Limited to manufacture and install bathrooms in its newly refurbished Superstar Hotel. The contract was completed on 11 April 2012 but should have been completed on 1 April 2012. Under clause 7 of that contract the plaintiff has paid liquidated damages of \$100,000 for each day late.

Loss and damage

13. As a result of the matters set out above the plaintiff has sustained loss and damage.

Particulars of loss and damage

Cost of replacement heating system	\$2,000,000
Cost of pumping out Factory	\$300,000
Cost of repairing boiler room and electrical damage	\$120,000
Staff laid off	\$175,000
Liquidated Damages	\$1,000,000
TOTAL	\$3,595,000

14. The plaintiff is entitled to and claims interest under section 48 of the High Court Ordinance Cap. 4 Laws of Hong Kong on the amount found to be due to the plaintiff at such rate and for such period as the Court thinks fit.

AND accordingly the plaintiff claims

- (1) Damages pursuant to paragraph 13 above;;
- (2) Interest pursuant to section 48 of the High Court Ordinance pursuant to paragraph 14 above;

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- (3) Costs; and
- (4) Further or other relief as this Court thinks fit

Dated 10 May 2012

Smith and Ho

I believe that the facts stated in these Particulars of Claim are true. I am duly authorised by the plaintiff to sign this statement.

Signed by Jane Cheung

Name JANE CHEUNG

Position/authority in plaintiff company: Managing Director

The plaintiff's solicitors are Smith and Ho of 21/F Lippo Centre, Tower One, Queensway.

where they will accept service of proceedings on behalf of the plaintiff

To the defendant

To the Court Manager

IN THE HIGH COURT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION,
COURT OF FIRST INSTANCE

HCA 21/2013

BETWEEN

Meadowbank Bathrooms Limited

Plaintiff

and

Comheat Limited

Defendant

Defence and Counterclaim

Defence

DEFINITIONS

- 1 In this Defence and Counterclaim:
 - a) all references to paragraphs by numbers are to paragraphs of the Particulars of Claim unless otherwise indicated; and
 - b) where terms that are defined in the Particulars of Claim are used they bear the same meaning as in the Particulars of Claim.

THE PARTIES

2. Paragraph 1 is admitted.

THE CONTRACT AND TERMS

3. Paragraph 2 is admitted except for the following points:
 - a) The contract was not purely oral as alleged. It was made partly orally and partly in writing upon the defendant's standard terms and conditions ("the STCs") signed by Jane Cheung on 21 January 2012. A copy of the signed STCs is attached to this Defence [*not provided for the assessment*];
 - b) Clause 15 of the STCs provides that:

"This contract is made on the assumption that any existing system is in good working order; any condition or warranty expressed or implied is restricted to the boiler, pipework, electrical equipment and fittings ancillary thereto supplied by the [Defendant] under this contract. No responsibility is accepted for the efficient or effective working of the existing system." and,
 - c) The words "and install at the Factory" in paragraph 2(a) and the whole of Paragraph 2(b) are denied. David Poon, on behalf of the defendant, agreed to

install the Unit for the additional sum of \$100,000. There was no agreement to test and inspect the System as alleged: Clause 15 of the STCs applied.

The defendant will refer to the STCs at trial for their full terms and true effect.

4. Paragraph 3 is admitted.
5. Paragraph 4 is denied for the reasons set out in paragraph 3(c) above.

KNOWLEDGE

6. Paragraphs 5(a), (b), and (c) are denied. Jane Cheung informed David Poon that the plaintiff “had a big order on” but made no mention of the matters referred to. Paragraph 5(d) is admitted.

PERFORMANCE

7. Paragraph 6 is admitted, save that the defendant asserts that the delivery and installation of the boiler was in full performance of the contract.

BREACHES

8. It is denied that the defendant is in breach of Contract whether as alleged in Paragraph 7 or at all. As for the Particulars of Breaches, and without restricting the scope of this denial, it is admitted that the nut thread was metric which was incompatible with the Hong Kong Standard Pipe thread of the spindle but the incompatible threading of the nut and spindle did not lead to the impeller jamming. Irrespective of the difference in threads the nut kept the impeller secure on the spindle because of the self-tightening effects of centrifugal force. The impeller jammed because of the presence of large quantities of silt in the System and pump chamber.
9. Further or alternatively, the Explosion was caused or contributed to by the negligence of the plaintiff.

Particulars of Negligence

The plaintiff, its employees or agents were negligent in that they:

- (a) failed to keep the System maintained adequately or at all so as to reduce or prevent the build up of large quantities of silt within it;
 - (b) failed, adequately or at all, to drain the System and to refill it with fresh water containing anti rusting agent so as to reduce or prevent the build up of silt;
 - (c) allowed the defendant to attach the Unit to the System knowing that the System had not been maintained for at least 2 years prior to installation of the Unit;
 - (d) falsely represented to the defendant that the System had been maintained and serviced in August 2011; and,
 - (e) failed to shut down the boiler immediately prior to the explosion or to train a member of staff to shut down the boiler.
10. Paragraph 8 is denied. The integrated water pump is self-contained and was not, and would not, ordinarily have been opened by any reasonably competent plumber/fitter upon installation of the Unit.
11. Paragraph 9 is denied. Paragraph 3(c) above is repeated.

CONSEQUENCES OF ALLEGED BREACHES

12. Except for the words “as a result of the matters complained of” Paragraph 10 is admitted. The matters stated in paragraph 10 were caused solely by the plaintiff in the manner described in paragraphs 8 and 9 above.
13. Except that it is denied, for the reasons set out in Paragraph 15 (c) below, that the Factory had to be closed for 10 days as alleged, Paragraph 11 is neither admitted nor denied and the plaintiff is required to prove the matters set out in it.
14. As to paragraph 12:
- a) it is denied that the defendant was informed whether as alleged or at all of the existence of Clause 7 referred to in paragraph 12. Paragraph 6 above is repeated;
 - b) further or alternatively the alleged payment of liquidated damages, which the plaintiff is required to prove, was not reasonably foreseeable and/or was not reasonably within the parties’ contemplation at the time of the Contract and is too remote for the plaintiff to recover damages in respect of it; and
 - c) the defendant is unable to admit or deny the other matters set out in paragraph 12 and the plaintiff is required to prove them.

LOSS AND DAMAGE

15. As to paragraph 13;
 - a) it is denied that the defendant caused the loss and damage whether as alleged or at all for the reasons set out above;
 - b) the defendant is unable to admit or deny either that such losses and expenses have been incurred or their respective amounts and require the plaintiff to prove these matters; and,
 - c) if, which is not admitted, the plaintiff incurred losses as a result of the matters complained of, it failed to take reasonable steps to mitigate such loss in that:
 - (i) it should have closed the Factory for no more than 4 days following the Explosion. In particular, but not exclusively, the alleged cost of staff laid off would have been reduced and the plaintiff would have completed the contract with Grand Casino Hotels Limited on time thereby avoiding the payment of any liquidated damages;
 - (ii) it should have sub contracted the remainder of its obligations under the contract with Grand Casino Hotels Limited to another supplier so as to ensure completion by the due date; and/or
 - (ii) it should not have paid the liquidated damages but should have challenged the requirement to pay as an unenforceable penalty.
16. It is denied that the plaintiff is entitled to damages for the reasons set out above and therefore it is not entitled to the interest claimed in paragraph 14.
17. In the circumstances, it is denied that the plaintiff is entitled to the relief claimed or to any relief for the reasons alleged or at all.
18. Further or alternatively, if contrary to this Defence the defendant is held liable to the plaintiff, it will seek to reduce the plaintiff's claim by setting off the sum counterclaimed below.

COUNTERCLAIM

19. Paragraphs 1 to 18 above are repeated.
 20. On 26 January 2012 the defendant by invoice demanded from the plaintiff the sum of \$2 million under the Contract and \$100,000 for installation. Despite frequent requests for payment, oral and written, the plaintiff has not paid this sum or any part of it.
 21. The Defendant is entitled to claim and claims interest pursuant to section 48 of the
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High Court Ordinance Cap. 4 Laws of Hong Kong on the said sum at a rate and for such period of time as the court deems fit.

AND the defendant Counterclaims:

- (a) Damages;
- (b) Interest;
- (c) Costs; and
- (d) Further or other relief

Dated 30 May 2012

Black, Li and Wong

I believe that the facts stated in this Defence and Counterclaim are true. I am duly authorised by the defendant to sign this statement.

Signed by Susan Wong

Name SUSAN WONG

Solicitor

The defendant's solicitors are Black, Li and Wong of 180 Nathan Road, Tsim Sha Tsui, Kowloon, where they will accept service of the proceedings on behalf of the defendant

To the plaintiff

To the Court Manager

IN THE HIGH COURT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION,
COURT OF FIRST INSTANCE

HCA 21/2013

BETWEEN

Meadowbank Bathrooms Limited

Plaintiff

and

Comheat Limited

Defendant

Reply and Defence to Counterclaim

REPLY

1. As to paragraph 3 of the Defence;
 - a) The plaintiff admits that Jane Cheung signed the STCs but contends that Clause 15 was orally varied so as to be excluded in consideration of the sum of \$200,000 as set out in paragraph 2(b) of the Particulars of Claim;
 - b) If, which is denied, Clause 15 was not excluded, the plaintiff says that it is of no effect in that it does not satisfy the test that it was fair and reasonable under the provisions of Section 11 of the Control of Exemption Clauses Ordinance Cap. 71.

2. As to paragraphs 8 and 9 of the Defence, if, which is denied, the Explosion was caused by a build up of silt as alleged, then the plaintiff contends that the defendant is nonetheless in breach of the terms and conditions set out in paragraphs 3 and 4 of the Particulars of Claim in that:

PARTICULARS OF BREACHES

The defendant, its employees or agents failed to:

- (a) notice the level of silt in the System when installing the Unit;

- (b) delay the installation of the Unit until the level of silt was suitably reduced or removed;
 - (c) warn the plaintiff adequately or at all of the dangers of attaching the Unit to the System;
 - (d) flush the silt from the System and to refill it with fresh water containing an anti-rusting agent; and
 - (e) install a filter in the System so as to prevent or reduce the passage of silt into the Unit.
3. The plaintiff denies that it was negligent as alleged in Paragraph 9 of the Defence or at all or that the Explosion was caused by the negligence of the plaintiff. Without in any way restricting the scope of such denial Jane Cheung on behalf of the plaintiff informed David Poon, an employee or agent of the defendant, on 21 January 2012 that the System had not been maintained or serviced since July 2010 and that a test and inspection of the System was therefore required. Paragraph 2 (b) of the Particulars of Claim is repeated.
4. As to paragraph 14 of the Defence, even if, which is denied, the defendant did not have actual notice of the liquidated damages clause, the plaintiff contends that such loss is not too remote. The plaintiff will rely on the following facts and matters:
- (a) the defendant knew the nature of the plaintiff 's business;
 - (b) the defendant through David Poon, was aware that the Factory would be closed for one day only for the installation of the Unit because the plaintiff "had a big order on"; and
 - (c) the defendant knew or ought to have known that liquidated damages clauses were and are common in commercial contracts.
5. As to paragraph 15(c) of the Defence, the plaintiff contends that it was not reasonably possible to mitigate in the manner suggested because:

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- a) the Factory could not be safely operated until 2 March 2012;
 - b) no other supplier was able or prepared to take on the remainder of the works under the contract with Grand Casino Hotels Limited at such short notice; and
 - c) the plaintiff took written legal advice before paying the sum of \$1,000,000.
6. Except as stated above, and except where it contains admissions, the plaintiff requires the defendant to prove the matters set out in the Defence.

DEFENCE TO COUNTERCLAIM

7. The Particulars of Claim and the Reply to Defence are repeated.
8. In the circumstances, it is denied that the defendant is entitled to the relief claimed or any relief for the reasons alleged or at all.

Dated 16 June 2012

Smith and Ho

I believe that the facts stated in this Reply and Defence to Counterclaim are true. I am duly authorised by the plaintiff to sign this statement.

Signed by Jane Cheung

Name JANE CHEUNG

Position/authority in plaintiff company: Managing Director

The plaintiff's solicitors are Smith and Ho of 21/F Lippo Centre, Tower One, Queensway where they will accept service of proceedings on behalf of the plaintiff.

To the defendant

To the Court Manager

Plaintiff's Witnesses

[Please assume that the headings and formalities for each statement comply with the relevant Practice Direction]

WITNESS STATEMENT OF JANE CHEUNG

I, Jane Cheung of 4A Botanic Gardens, 500 Robinson Road, WILL SAY as follows:

1. I am the Chairman and Managing Director of Meadowbank Bathrooms Ltd a private limited Company engaged in the design, manufacture and supply of luxury fitted bathrooms. We started off with equipping small housing developments but have now developed a niche in hotel refurbishment. The Company's works and registered office are at Lot 60, Aberdeen Industrial Estate where we have traded for some 25 years. My husband and brother-in-law are the only other directors and shareholders. We employ a production workforce of 15 who work on the factory floor. In addition we have a small office and sales force. When we have a large order requiring extra staff we sub-contract. Our business involves buying in the basic units (baths, sinks, toilets, shelving etc) so that we can apply our own special glazes and lacquers, we "finish off" the units, creating our special signature designs. We have always used a central heating system to ensure that the "finished" items are correctly dried.
2. As a result of the cold weather in December 2012, it became apparent that the existing oil-fired boiler used to provide heating at our factory was not up to the job and that we needed a larger and more efficient one.
3. On 5th January 2012, I telephoned Comheat Limited, a firm who manufacture and supply commercial heating boilers, and spoke to their sales manager, Mr David Poon, who called at our premises on 21st January 2012. He looked round and inspected the system before recommending their Powerheat Model 412K comprising an oil-fired boiler and integrated water pump. After some discussion it was agreed that we would buy one for \$2 million, the boiler to be delivered by them and fitted by their own plumbers. When he had finished going round the premises Mr Poon indicated at first that the boiler would be fitted and supplied "on their usual terms", which he explained meant that they took no responsibility for the state of the remainder of the central heating system. He enquired whether we had our own firm of heating maintenance engineers and I said we had but had dispensed with them because they were not very effective. I told Mr Poon when the system had last been serviced. I cannot remember what words I used but I am almost certain I said it was "18 months ago" (i.e. 18 months prior to our meeting). I asked him if they undertook inspections for an additional fee and he confirmed that their "Team" under "Tiger Wong" would test run the boiler after it had been installed to ensure that all the systems were working properly. I said I would like rather more than that. Accordingly a fee of \$200,000 was then agreed for a fitting and inspection charge. I very clearly understood at the end of this meeting that Comheat were going to test the whole system for defects.

Although there was a written contract which I signed, the variation we agreed was confirmed in correspondence (**Documents 1, 2 and 3 in agreed bundle**). I intended the word “system” in my letter of 22nd January to mean our existing pipes and radiators and I am sure that Mr. Poon must have understood it in this way as well.

4. During the course of our conversation I also made it very plain that we could not afford to shut the system down for more than 1 day because we were completing a large contract for Grand Casino Hotels Limited to supply and fit luxury bathrooms for their refurbished Superstar Hotel in Macau and were “on” a liquidated damages clause of \$100,000 per day if we failed to complete by 1st April 2012. I particularly remember him whistling through his teeth and saying something like, “That’ll keep you on your toes.” He also said it would be no problem but it might mean shutting down production for that day. We were on target to complete by the due date and our schedule was very tight.
5. The boiler was delivered on 28th January 2012 and installed on the following days. My works manager Michael Chu signed a delivery and completion note but we did not receive a copy. I have since seen a copy of this (**Document 6**) and cannot understand why there is no reference to an inspection. I think what happened is that Mr. Poon forgot to pass on what had been agreed to his Customer Services Department, which in turn, omitted to pass on the requirement to inspect to the plumber on the day.
6. An employee of defendant, Tiger Wong, came with his team to install the new boiler on 29th January 2012. I was not present but Michael Chu, my works manager, has told me that the job involved shutting off the water in the system, disconnecting the old boiler from the water, oil and electricity supplies, removing it and fitting and connecting the new one, and making some alterations to the pipe work to do so. The water system was put back on and the new boiler was lit in the presence of Michael Chu, who with Tiger Wong then checked that the radiators were heating up satisfactorily.
7. All went well until early in the morning of 10th February 2012, when I was called to the works where there had been an explosion. I found that the boiler had obviously blown up; it was split open and distorted. There was serious flooding with water and oil as a result and damage to the walls of the boiler house requiring extensive rebuilding. Fortunately the only person in the factory was the caretaker Henry Au at the time. He had called the Fire Service at about 7.00am. They had entered the premises, turned off the water and electricity and made everything safe.

8. The explosion has had serious consequences for our business. We were forced to close down until 1st March 2012 because of the fact that if we had gone on working we would have been in breach of Health and Safety Regulations. Due to the cold weather and the difficulty in heating the factory premises which were old and draughty it was not practicable to hire in panel electric fires. The flooding took a week to clear up. The floors were damp and slippery up until this point and hence it would have been most dangerous to allow access. Even then, however, it was too cold for the workforce to return. Panel heaters would have been costly, dangerous [because of their number] and would not have kept the ambient temperature sufficiently high. The extent of the damage was such that in my view a whole new central heating system had to be installed. This meant that production would simply not have been possible whilst this was being carried out. The installation was completed by 1st March 2012. Although we made up some time this meant that we were ten days late in completing our contract with Grand Casino Hotels Limited, and incurred a penalty of \$1,000,000. Acting on written legal advice, I paid this.
9. I should perhaps explain that “the Superstar” is being refurbished at an enormous cost and the damages clauses were that high for all the sub-contractors because Grand Casino were desperate to be open by 1st April 2012. The contract was worth over \$15,000,000 to us so it seemed to be well worth the risk. Even so, it was by far the biggest contract we had ever taken on. I considered trying to get another firm to complete the contract by the due date but after a few exploratory telephone calls it was soon obvious that nobody was prepared, or able, to step into the breach at such short notice.
10. I do recall that Mr Poon handed me a brochure about the boiler on the day of his factory visit and that operating instructions were supplied with the new boiler. My works manager would have attended to the distribution of the operating instructions to the appropriate staff. In my view it would have been unreasonable to expect Henry Au to shut down the boiler on the day in question; he was obviously fearful for his own safety.

I believe that the facts stated in this witness statement are true.

SIGNED *Jane Cheung*

DATED *2nd September 2012*

WITNESS STATEMENT OF HENRY AU

I, Henry Au of 20/F Unit B 150 Yue Lai Lane, Mongkok, will say as follows:

1. I am the night caretaker at Meadowbank Bathrooms Ltd and have been so for 35 years. My office is next to the plant room where the boiler is. I am not required to go into the boiler room to look at the boiler as such but I do keep some of my work materials there such as waste paper sacks that are used to hold the rubbish in the offices and works areas. On 10th February 2012 at approximately 06.55 I went in to the boiler room to get some toilet rolls since one of my duties is to ensure that all the toilet facilities are adequately stocked.
2. I rapidly became aware of the fact that the boiler-room seemed unusually hot. Suddenly I heard what I can only describe as a whirring sound. It was rather like a high-pitched screech which seemed to come and go. It frightened me.
3. I turned round and I happened to glance at the boiler temperature gauge. There is a control panel with a large number of dials and buttons including one marked "Boiler Shutdown" and I suppose that with hindsight I should have pressed it and shut the boiler down. However, I am not trained to operate the boiler so I thought I had better go and find someone to tell. Unfortunately although staff do start clocking in from around this time I discovered that on this occasion I was still the only person in the building. Obviously if there is overtime people do start and finish early and late but they didn't on this occasion.
4. I returned to the boiler-room. The noise had by now increased and the boiler seemed to be shaking violently. I also noted that the heat was becoming unbearable. I was afraid that I might be injured so I rushed to telephone the Fire Brigade and inform the works manager Michael Chu. Before the Fire Brigade could arrive the boiler exploded. There was a great rush of water and oil which flooded out into the factory floor, and all the lights went out, I stayed well out of the way until the Fire Brigade arrived.
5. The heating in the factory had always been unreliable before the new boiler was installed and I remember Mrs Cheung having a blazing row with the maintenance engineers about it.

I believe that the facts stated in this witness statement are true.

SIGNED *Henry Au*

DATED *13th September 2012*

WITNESS STATEMENT OF MICHAEL CHU

I Michael Chu of 41, Horizon Street, Mid-Levels, say as follows:

1. I have been employed as the works manager at Meadowbank Bathrooms Ltd since 1996. My duties include:-
 - a) Ensuring compliance with health and safety regulations.
 - b) Supervising and co-ordinating shop-floor production.
 - c) Dealing with building and maintenance contractors.It was in all of the above capacities that I came to be involved with the events surrounding the incident on 10th February 2012.
2. I had been aware for some time that our central heating system was not adequate to provide the heating needed to dry the glazes and lacquers that are applied to our bathroom fittings. To obtain the required effects and hardness they must be dried in a moderate heat only. It is not possible to reserve a small dedicated area for drying. We may sometimes have 20 or more especially glazed, baths drying at the same time. That is why for over 20 years we have used central heating. Our central heating system was installed in the mid-1990s and was not of premium quality. I reported to Jane Cheung that we must replace the old boiler with my oil fired central heating boiler and integrated water pump. I was particularly concerned because I knew that we were - for a company of our size - about to take on a huge contract from Grand Casino Hotels: more than 250 bathrooms and to be fitted. Our system was last serviced in August 2010 by Warmer Bros. Ltd, our then heating engineers. Our records show this. *[Note: confirmed by records in the agreed bundle - not provided for the assessment].* Mrs Cheung terminated their maintenance contract shortly thereafter because she thought that they were trying to make more work for themselves when it was not necessary.
3. As a result I believe that the company put out for a number of tenders and finally decided upon the defendants, Comheat Ltd, as their preferred supplier. I was informed of the impending delivery in or about the end of January 2012 since it would entail closing down production for a whole day. I remember receiving the internal email (**Document 5**) from Jane Cheung. I personally took delivery of the boiler on January 28th 2012 and was there on the following day when the defendant's representative Tiger Wong came to fit it. He had two fitters with him and a couple of workers since the boiler was extremely heavy and had to be moved into place with the aid of a trolley. I left them to it until Tiger Wong came to tell me that he had completed the fitting and all was now ready to give it a test run. I was present in the boiler-house when the machine was switched on. Tiger Wong gave me instructions as to its operation and provided me with a copy of a brochure setting out the specification of the boiler along with an instruction manual. I left this by the boiler and a couple of days after the installation

I told the night and day caretakers to familiarise themselves with the operating manual.

4. After the boiler was switched on by Tiger Wong we then went round the factory inspecting the radiators to see whether or not they were heating up. They heated up very rapidly and Tiger Wong expressed satisfaction that the system was in full working order. I asked him whether he needed to carry out tests on the system and he said, "I've given it a look over to see if everything was working OK. It all seems to be fine." So far as I can recall the only problem was that three of the radiators did not seem to be heating up. Wong said they probably just needed "bleeding" because air often got into the system when the water supply was cut off. I made a note to ask the daytime caretaker to "bleed" the radiators with a key. So far as I am aware he did this since I received no complaints from any of the shop floor workers that heaters were not functioning adequately. I have seen a copy of the delivery and completion note (**Document 6**). That is my signature on it but I was in a hurry and did not appreciate its significance at the time.
5. On the morning of the 10th February 2012, I arrived at work at approximately 0800 hours in response to a call from Henry Au, the night watchman. When I arrived I observed that the boiler had cracked open, that the whole of the boiler-house was flooded with water and oil to a depth of several inches and that this had spread onto the factory floor. The building was dark and icy cold and there was no electricity. Further work like that was not possible. I accordingly took steps to send our workforce home until further notice. I also contacted Comheat to inform them what had happened. I was put through to David Poon their sales manager who expressed great surprise at what had happened. He said, "I am amazed. I can't remember the last time anything like this happened; were our people supposed to check the system because it sounds like there must have been a blockage somewhere?" I said that my understanding of the matter was they were supposed to be doing a check and he said "I am dumb-founded". I explained to him the problem we had with production schedules and he replied, "Well, you have my sympathy. I'll see what I can do about organising some emergency heating". He promised that he would ring me back but I heard nothing further from him.
6. I have been asked to explain why it was necessary to shut down the premises for some three weeks. It must be remembered that without a working drying system the glazes and lacquers do not dry properly and the fittings – baths etc – are not fit for purpose. The whole working area of the factory is a drying area. I did contact a number of electrical heating specialists but they could only supply panel heaters that were inadequate. I tried to obtain gas powered space heaters but they proved to be uneven in their heat. We experimented with one glazed bath but the result was very poor. I reported this to the Managing Director who, so far as I am aware, took the decision to forge ahead with a replacement of the entire system since she took the

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view that in the end we stood a better chance of completing the contract on time than if we went into "Stop-Go" mode which the introduction of temporary electrical heating would have entailed. I accordingly organised for another company to rip out our old central heating system, and the boiler, and install a completely new system. This cost \$2 million. I did this on the authority of one of the other directors, Mr. Charles Cheung.

I believe that the facts stated in this witness statement are true.

SIGNED *Michael Chu*

DATED *14th September 2012*

D.S. CHOW B.Sc. M.I.H.V.E.

Consulting Heating Engineer

Tel: 2873 6727

210 Admiralty
20th October 2012

**FINAL REPORT FOR THE HIGH COURT ON BOILER
AT FACTORY PREMISES OF MEADOWBANK BATHROOMS LIMITED
LOT 60, ABERDEEN INDUSTRIAL ESTATE**

EXPERIENCE

I am a self employed commercial boiler fitter and repairer and have been for 10 years. Before that I was a secondary school teacher for some 12 years. I advise professionally on commercial central heating systems and boilers as well as fitting and repairing such items. I am a sole trader. I have a particular knowledge of atmospheric pressure boilers of which the present one is typical. I hold the following ACS [Accredited Certification Scheme] Certificates of competence which I have gained over the last 10 years:

Core Commercial Gas Safety

Testing and Purging pipework up to and over 6 inches

Installation of pipework over 35mm

Overhead radiator tube heaters

Direct and indirect fired commercial boilers

Installation of first six appliances

Commission/service/repair of boosters/compressors

SUBSTANCE OF INSTRUCTIONS

As instructed by Meadowbank I attended at the above property on Wednesday 17th February 2012 and carried out an inspection of the boiler, pump and piping system in order to determine the cause(s) of the explosion on 10th February 2012.

HISTORY:

The boiler in question is a Comheat Powerheat Unit Model 412K. This is a commercial boiler oil fired and electrically powered. The boiler is connected to a standard industrial heating system, namely a radiator based system with water fed to and from the boiler by means of 4" cast-iron pipes. The boiler is certified as suitable for connection to such systems. The system

itself is approximately 23 years old, but is perfectly sound and effective for heating the space volume contained in the factory. It is important to note that it is not a particularly efficient system and in terms of efficiency does not comply with modern recommended practice.

I should point out that in a system of this age silt and rust particles are bound to build up if it is not properly maintained. Provided it is serviced properly and flushed out at least annually, silt would not cause problems. Even if the silt had built up to dangerous levels this fact would not necessarily be obvious on installation of a new boiler; a full and detailed inspection of the existing pipework and radiators would be required. In my view Mrs Cheung probably did agree such an inspection with Mr. Poon having regard to the lapse of time since the last inspection.

The boiler was located in the boiler room to which is fed by the 4" pipes previously mentioned and an adequately protected electrical supply. The fuel oil is supplied from a storage tank by means of a pump connected to a 22mm copper pipe. This pump operates separately from and is not part of the boiler itself.

There was damage to the pipes in the boiler room but not to the pipes and radiators throughout the rest of the factory. In my view, however, it was a reasonable decision to replace the entire system following the explosion because it was so old and inefficient. I seriously doubt that panel electrical heaters would have kept the ambient temperature to the requisite level for the workforce and, in any event, they would have been dangerous all over the shopfloor.

EXAMINATION:-

The boiler, pump and pipe system were examined by me in situ at Meadowbank's factory premises on 17th February 2012, as a result of which I make the comments set out below:-

1. The inner casing of the boiler was fractured. There is a crack about ½" wide in 2 of the boiler segments. (See attached photograph numbered 1.) *(Not supplied)*
2. There was silt in the pump chamber and in the pipes adjacent thereto in addition to silt on the floor of the boiler room. (See attached photographs numbered 2 and 3.) *(Not supplied)*

The impeller nut on the water pump was loose and on further examination the impeller screw thread was found to be broken. The impeller is the part of the pump which actually propels the water through the system. It is secured to bearings, made of phosphor bronze to avoid corrosion onto a spindle which is secured with a single brass nut. The pump assembly is a box of height and width 1 foot and depth 18". The nut is washered. There is no locking nut to

secure it, because the nut tightens in the same direction as the rotation of the impeller and thus there is effectively a self-tightening and therefore self-securing of the nut by virtue of the effects of centrifugal force. I observed however that whilst the spindle thread is a HKSP thread, the nut has a metric thread. This has two effects. The first is that the nut will not tighten properly, irrespective of the centrifugal force effect binding it onto the spindle. The second is that unless additional washers are used, the impeller will remain loose in its mounting: it will vibrate and be prone to sticking and jamming. The vibration caused by the looseness would have been quite noticeable when the vibration was taking place, although there would have been times when the impeller ran smoothly.

[Unfortunately, my camera battery ran out and I was not able to take a photograph of the impeller spindle or nut but I left them in situ following my examination].

I could only examine the boiler, pump and open ends of the pipes immediately adjacent to these items [ie not all of the pipes and radiators throughout the factory]. The amount of silt which was visible, namely to a depth of some 1.25cm, would have been insufficient to impede the rotation and proper working of the impeller. In my view it would require a depth of some 5cm to jam the impeller blades on the spindle.

CONCLUSIONS:

The incorrect assembly of the impeller system within the water pump caused the water pump to operate intermittently. The failure to pump water adequately through the boiler lead to a disruption of the water supply and the consequent substantial and significant rise in the temperature of the boiler. On the impeller freeing itself by vibration or other unknown cause the sudden ingress of cold water into the boiler caused the fracture and consequential damage to the boiler.

I understand my duty to the Court and have complied with and will continue to comply with it. I have acted in accordance with the Code of Practice for Experts. I have read the Code of Conduct set out in Appendix D of the Rules of the High Court (Cap. 4A) O. 38 and agree to be bound by it.

I confirm that I have made clear which facts and matters referred to in this report are within my own knowledge and which are not. Those that are within my own knowledge I confirm to be true. The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer.

D.S. Chow

BSc. M.I.H.V.E.

Defendant's Witnesses

[Please assume that the headings and formalities for each statement comply with the relevant Practice Direction]

WITNESS STATEMENT OF DAVID POON

I, David Poon of 15, Sunny Mansions, Chan UK, Sai Kung, say as follows:-

1. I have been employed as the Sales Manager of Comheat Ltd since April 2002. In that capacity I received a telephone enquiry from Jane Cheung the plaintiff's Managing Director in early January 2012 [I cannot recall precisely when] as to the possibility of our supplying a central heating boiler to replace the old one at their factory premises. I visited the premises on the 21st January 2012 and was met and shown round by Mrs Cheung. No one else accompanied us on our visit.
2. She explained to me that due to the age and capacity, of the existing central heating system, they were having problems drying their bathroom fittings. She said they were thinking of stripping out the whole central heating system but wondered whether it would be possible to get by with simply changing the boiler. I told Mrs Cheung that with a building and system of that age it would really make more sense to change the whole system. She informed me that it had been put in about 25 years ago. I replied to the effect that simply replacing the boiler was never an ideal situation but that provided the system had been regularly checked and maintained, the installation of a new boiler would give the system at least another 10 years of life. Having examined the building I recommended our Powerheat Unit, Model 412K at a price of \$2 million which I felt confident would be more than adequate to maintain heat levels required for defendant's purposes. I receive a basic salary and commission on each boiler sold.
3. Mrs Cheung seemed very pleased with this. I got the impression that she was relieved at having come out of it so cheaply. She enquired whether we would install the boiler. I said that this would involve an extra charge. I quoted her a price of \$100,000 and she seemed perfectly content with this. I asked her whether the system had been regularly serviced and she said that it had been fully serviced in August 2011 but that they were in the process of hiring a new firm of contractors to service the system for the future. I needed to know this because this might affect whether we were happy for the boiler to be connected to the old system. I was perfectly happy when she said it had been serviced the previous August. I made it plain that we would not undertake to inspect the system since our usual terms were that this was the responsibility of the customer because it is not cost-effective for us to carry out an operation of this kind since there are plenty of maintenance contractors who take this kind of work on. We have the expertise to carry out such inspections but would really only do so for repeat and high value customers. If there was such an agreement I would have mentioned it to our customer services department and they have since told me that I did not. We shook hands on the deal there and then. At no time was there

any agreement that we would carry out an inspection of their whole heating system. I should add that silting and blockages are always likely to be a problem with systems of this age. She signed a copy of our standard terms and conditions before I left (**Document 1**).

4. There was a subsequent exchange of correspondence (**Documents 2 and 3**). I interpreted the reference to “system” in her letter to me as a reference to the system which we were installing, not as a reference to her existing pipes and radiators. I then submitted an invoice (**Document 4**) since our terms require payment in advance. I understand that due to a mix up in our Customer Services department which meant that payment was not received in advance, the boiler was still delivered and installed by one of our teams. I believe it was by Tiger Wong and a fitter on the 29th January 2012.
5. The next that I heard about the matter was when I received a very agitated telephone call from a gentleman called Michael Chu who rang me at about 09:30 am on the morning of the 10th February 2012 to inform me that the boiler had “exploded”. I expressed astonishment at this eventuality. Our boilers are manufactured to the highest standards. In my view our boiler was not at fault, rather it was the fault of the plaintiffs. I think that they allowed the system to silt up over time which blocked the impeller blades.
6. I tried to calm Mr Chu down since he seemed very agitated and said that the whole thing was a complete mystery to me and may have said something like, “I was sure that it must have been installed properly”. I may have offered my sympathy but I certainly did not and would not have undertaken to find any replacement heating.
7. I have also been asked to comment on the allegation that I was made aware of the existence of a contract between the plaintiffs’ and Grand Casino Hotels Limited and more particularly the existence of a penalty clause for late completion. I can certainly remember Mrs Cheung asking how long she would need to shut down for because she had got a “big order” on but I was never provided with any specific details above that. The general tenor of the conversation on the 21st January was simply to the effect that she was rushed off her feet with a big order and did not want to shut down longer than necessary. We eventually agreed that it would be safest to close the factory down for the day of installation but that that was the only stoppage that would be necessary.
8. I recall that on my visit to the plaintiff’s factory on the 21st January 2012 several of the radiators did not appear to be working. I also noticed that two of the radiator valves appeared to be leaking a brownish fluid. There was considerable staining on the floorboard next to one which suggested that it had been leaking for some time. The

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colour of the fluid suggested that the system was corroded but because Mrs Cheung had assured me about the service within the previous twelve months I was not unduly concerned.

9. My visit lasted no more than 45 minutes and it is not my practise to make notes. However, I recall that the factory shop-floor was not especially large (approximately 100 metres by 60 metres subdivided into a number of sections with pre-fabricated dividing walls about 8 feet high). Prior to my employment as part of the Comheat sales force I had worked in the heating business in a number of capacities throughout my working life (approximately 28 years). From my experience it would have been perfectly feasible to have provided back-up heating in an emergency e.g. by hiring in electric panel heaters. There are plenty of firms who supply these and, although they tend to be expensive, it is better than having to shut the whole factory down. They could have cleared up the flooding in two or three days and it would only have taken one day to install a new boiler; there was no need to rip out the whole of the existing pipes and radiators. The factory could have been operational within 4 days of the explosion. Moreover, I seriously doubt that the explosion could have damaged much of the existing system all over the factory so there is no reason why we should pay for a complete new set of pipes and radiators.
10. I also think that it was perfectly possible to sub contract their work in respect of their big order; there are always firms willing to take on work at short notice if the price is right.

I believe that the facts stated in this witness statement are true.

SIGNED *David Poon*

DATED *23rd September 2012*

WITNESS STATEMENT OF QUEENIE LAM

I, Queenie Lam of Tower 2, 21/F, Room 3, Shandon Estate, Kowloon, say as follows:-

1. I was employed as an office cleaner and to make coffees and teas for the office staff of Meadowbank Bathrooms Limited from January 2012 to May 2012. I left because I could not get along with Mrs Cheung who was very difficult to work for. She lost her temper easily and would shout at me for making mistakes with the petty cash which I used to buy tea and coffee. She seemed to be under a lot of stress and had difficulty coping and concentrating. She was very mean and was always trying to cut costs. I had to buy and serve the cheapest tea and coffee and was told not to buy any more biscuits. I received the minimum wage. I am currently bringing a claim against Meadowbank for wrongful dismissal.
2. I would clean the offices and would also take refreshments into management and directors' meetings as well as into the individual offices of the senior staff. On several occasions I recall hearing Mrs Cheung and Mr.Chu express concern as to whether they would be able to fulfil the completion date for the big hotel contract. They used phrases such as "it's going to be tight"; "we'll be lucky to do this by the skin of our teeth"; and, "it's touch and go whether the target date will be achieved". I remember in particular that Mrs Cheung was always getting complaints from the hotel people about the quality of the work.
3. During the period that I worked at Meadowbank Bathrooms and prior to the installation of the new boiler in January 2012 the heating system was noted for its unreliability. On numerous occasions a substantial proportion of the radiators did not work.
4. I recall one day in January 2012 being told by a fellow employee that the drying system for all the glazes was useless. I don't remember who that was but he was carrying a plastic bag of toulet rolls. He told me about an incident in August 2010 when he overheard Mrs Cheung having a blazing row with a representative from a maintenance engineer from Warmer Bros. Ltd. He told me that the engineer had told her that the whole system was useless, that it was so corroded that it was impossible to adequately flush it out and that the whole thing needed ripping out and replacing. He said that Mrs Cheung subsequently wrote to Warmer Bros. head office and terminated the contract.
5. I remember the weeks after the boiler explosion on 10th February 2012. During that period Mrs Cheung seemed to undergo an almost total mental collapse. I know for a fact that she had been getting very worried about whether they would be able to

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complete the contract with Grand Casino Hotels Limited in time well before the boiler exploded. I think this was the last straw. She was off work for several days at a time over the next month and seemed quite paralysed into inaction. It was only because her brother-in-law, who was one of her fellow directors, took the matter by the scruff of the neck that the contract with Grand Casino Hotels got completed at all. During the period both before and after the explosion they were constantly telephoning either Mrs Cheung or Michael Chu complaining about delays and poor workmanship.

I believe that the facts stated in this witness statement are true.

SIGNED *Queenie Lam*

DATED *23rd September 2012*

WITNESS STATEMENT OF TIGER WONG

I, Tiger Wong of 16, 26, Patten House, Shatin Estate, will say as follows:-

1. I have been employed as a plumber/fitter of central heating boilers for Comheat Ltd since 1989. The normal procedure is that the boiler will be delivered independently and I will then receive instructions at the beginning of each working day from Customer Services to attend at individual sites. The instructions that I received would give details of the site, the model of boiler and any other tasks that I am to perform.
2. It is the policy of the company that we do not carry out detailed tests on existing central heating systems when fitting new boilers. We simply deliver and install the boiler and then test run it by switching it on to ensure that all the radiators are working properly. We also check the boiler pressure and temperature and ensure that the thermostat is working correctly.
3. Details of each job are handed to me on a written work schedule in the form of a copy of the delivery and completion note (**Document 6**) which I then complete and give to the customer to sign and return to the customer services department. I see from the work sheet for Meadowbank Bathrooms Limited that I attended there on 29th January 2012 to install and fit a Powerheat 412 K Unit.
4. I note from that document that there are no unusual instructions. I am simply asked to install and test the system. If I had been asked to carry out a full test on the system it would have been on my work-sheet and I am sure that I would have remembered it.
5. I can recall attending the factory and installing the boiler without any apparent incident. The gentleman that showed me round, who I believe was a Mr Michael Chu, left me and my team to get on with the job on our own. A big boiler like the 412K is extremely heavy and comes partially dis-assembled. We put it together on site. However the pump unit is a self-contained unit; we don't open it but just connect it up to the other components. I do remember that when the central heating system was switched on several of the radiators did not seem to be heating up as quickly as they should. I suggested to him that this might well be due to the fact that air had got into the system. This is a common problem when systems are shut down and all someone needed to do was to "bleed" the radiators.

I believe that the facts stated in this witness statement are true.

SIGNED Tiger Wong

DATED 23rd September 2012

25 October 2012

FINAL REPORT TO THE HIGH COURT ON BOILER
EXPLOSION AT LOT 60, ABERDEEN INDUSTRIAL ESTATE

Date of inspection - 12 October 2012

EXPERIENCE

I have worked in the heating industry for 40 years, latterly as a lecturer. I am fully conversant with all types of boilers. I worked as a commercial boiler fitter and repairer for Hong Kong Gas for the first 22 years of my career. For the last 18 years I have been employed full time by Comtec Training Limited as a trainer and assessor of both domestic and commercial gas boiler fitters and repairers. I run ASC accredited courses and the company has over 25 different models of boilers which are all fully functional for hands on experience [unlike some training centres which only have dead or dummy boilers].

SUBSTANCE OF INSTRUCTIONS

I was asked to examine the boiler in this case to determine the cause(s) of the “explosion” which occurred on 10th February 2012.

HISTORY:-

The boiler that exploded was a Powerheat Unit Model 412K manufactured by Comheat Limited and comprising an integrated central heating boiler and water pump. It was delivered by Comheat to Meadowbank Bathrooms Ltd on 28th January 2012. It was installed by a plumber in the employment of Comheat, and became operational on 29th January 2012. It was linked to the existing piping system in the factory premises which consisted entirely of 40 year old 4” diameter cast-iron piping. I am informed that it was on 10th February 2012 at about 0700 hours that the boiler “exploded”.

EXAMINATION

The boiler is an oil fired cast iron unit rated to produce 412000.00 Hong Kong thermal units. It is similar to domestic boilers but larger. It is powered by furnace oil. In order for the boiler to work properly and safely it must have:-

1. A dedicated mains electrical supply at 240 volts ac single phase to the pump, the thermostat and control systems.

2. A supply of furnace oil of the correct grade;
3. Permanent connection to a central heating system permanently filled with water.

LOCATION OF THE BOILER

The boiler was located in a boiler house although the electrical supply is closer to the boiler itself than modern practice would permit. The boiler was directly connected to a central heating system, the main elements of which are 4" cast iron pipes which convey the hot water to the radiators in the various parts of the factory and returns the same for reheating and re-circulation. There are water circulation isolating stop cocks at the commencement of the flow and return pipes but no filtration system. The integral pump on the side of the boiler is connected to the return pipe and that propels water through the boiler in accordance with modern practice.

A filter is not essential to the safe working of the boiler but good practice would dictate that a cast iron system should be flushed out at yearly intervals and refilled with fresh water containing the appropriate ratio of anti-rusting agent. This is essential to prevent the build up of rust particles and silts in the system. If this precaution is not carried out there will be an ever ascending spiral of corrosion within the system. Excessive silt can block or slow down the water passage rate in the water chest of the boiler and also jam valves and any other moving components, particularly water pumps. A water pump cannot be manufactured to avoid this jamming so it is essential that the system is maintained and operated in such a way so as to ensure that materials capable of jamming a pump are never present within it.

EXAMINATION:-

The boiler was examined in its partly dismantled and still ruptured state, where it had been dumped in the factory car park, together with several lengths of 4" cast-iron piping. Two of the cast iron segments had a crack varying between ¼" and ½" wide. The remaining cast-iron segments of the boiler had distorted and could not be refitted. The value other than as scrap iron is nil.

The water temperature gauge was found jammed. The thermostat and thermostat core had become distorted as result of the incident and subsequent removal.

There were considerable quantities of silt and corroded cast-iron particles in the boiler. These would have been visible on the boiler-room floor where the water had emerged through the rupture and drained away through the floor.

There was a build up of silt to an average depth of 1.25cm in the chamber adjacent to the pump impeller unit. There was probably more silt at this location prior to the explosion but it would have dissipated immediately after the explosion.

The 4" cast piping used to convey the water around the factory was found consistently to contain substantial quantities of silt in every length it was possible to examine; in some places depths of up to 5 cm were apparent. I accept that the pipes had been open to the elements in the car park for some time but this would not account for all of the silt present. I also accept that I was not able to inspect every length of pipe and radiator because only some 35% of the system was left; the rest had already been disposed of.

I was unable to examine the thread of the pump spindle as in dismantling the boiler, presumably to remove it, a considerable degree of force had been applied. The thread had been stripped bare. The self-locking nut was not present and I was unable to locate its whereabouts. It is unfortunate that there is no photograph of these items in their immediate post explosion state. However, even if the thread of the nut and spindle around which the impeller rotated had been incompatibly threaded as described in the plaintiff's Particulars of Claim this would not have led to the impeller jamming. Irrespective of the slight difference in thread the nut would have kept the impeller secure on the spindle because of the self tightening effects of centrifugal force.

In my view such a heavily corroded system was beyond repair and was rightly replaced.

CONCLUSION:-

I am satisfied that the boiler exploded resulting in a fracture allowing the water in the boiler to emerge and drain down substantial quantities of the water in the central heating system. The cause of the fracture was the failure of the water pump to operate correctly.

The reason in turn for the water pump failing to operate properly was the presence of large quantities of silt in the system in general and the pump chamber in particular.

The intermittent working of the pump resulted in excessive heat build-up in the boiler. As a result, the boiler continued to heat the water in the water vessel but when the impeller unit unjammed itself and resumed the pumping of the cold water into the overheated boiler, the result was an explosion.

I understand my duty to the Court and have complied with and will continue to comply with it. I have acted in accordance with the Code of Practice for Experts. I have read the Code of Conduct set out in Appendix D of the Rules of the High Court (Cap. 4A) O. 38 and agree to be

bound by it.

I confirm that I have made clear which facts and matters referred to in this report are within my own knowledge and which are not. Those that are within my own knowledge I confirm to be true. The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer.

S Sage

M.Sc.,F.I.H.V.E.

Documents extracted from the core trial bundle

Document 1: EXTRACTS FROM COMHEAT LTD's STANDARD TERMS AND CONDITIONS

4. All orders providing for installation are subject to acceptance by the Company's Installations Department. The company reserves the right to cancel at any time.
8. The customer shall pay a deposit of 25% of the net sale price on ordering and the balance within 14 days of delivery, save where the supply is within 14 days of ordering, in which case the total price is due on ordering.
13. The Company will endeavour to complete the work on and by the time stated, but cannot be held liable for any delay during installation encountered as a result of the condition of any existing system of the customer.
15. This contract is made on the assumption that any existing system is in good working order; any condition or warranty expressed or implied is restricted to the boiler, pipework, electrical equipment and fittings ancillary thereto supplied by the Company under this contract. No responsibility is accepted for the efficient or effective working of the existing system.

[Note – the Contract is silent on the question of how additions or modifications to existing terms shall be catered for, and it does not contain an 'entire agreement' clause]

Document 2: LETTER MEADOWBANK BATHROOMS TO COMHEAT: 22/01/2012

22 January 2012

Dear Mr Poon

Further to our meeting on the 21st January 2012, I confirm our purchase of your Model 412K Powerheat Unit for the sum of \$2 million. In addition we confirm your agreement to install the boiler for us and test and inspect the system for an additional sum of \$200,000.

We shall be grateful if you can treat this as a matter of urgency. Please contact Mr Chu to arrange for delivery and fitting.

Yours faithfully

Jane Cheung

MEADOWBANK BATHROOM LTD

Document 3: LETTER COMHEAT TO MEADOWBANK: 26/01/2012

26 January 2012

Dear Mrs Cheung

Thank you for letter of 22nd January 2012. We confirm that delivery should be possible on or before Thursday, 28th January 2012.

We also enclose invoice for payment in advance on our usual terms.

Yours sincerely

PPDavid Poon

COMHEAT LIMITED

Document 4: INVOICE

TO: Meadowbank Bathrooms Limited

DATE: 26 January 2012

	PRICE
One Powerheat 412K Unit	\$2,000,000
Installation and test run charge	\$100,000
Total	\$2,100,000

Document 5: E MAIL JANE CHEUNG TO MICHAEL CHU

TO: Michael Chu
FROM: Jane Cheung
DATE: 26th January 2012
RE: Delivery of new boiler

Please be available to supervise delivery of the new boiler on the 28th January 2012 the date you agreed with Comheat. Installation is due to take place on the following day. Please supervise testing and inspection of our existing system as agreed with Comheat.

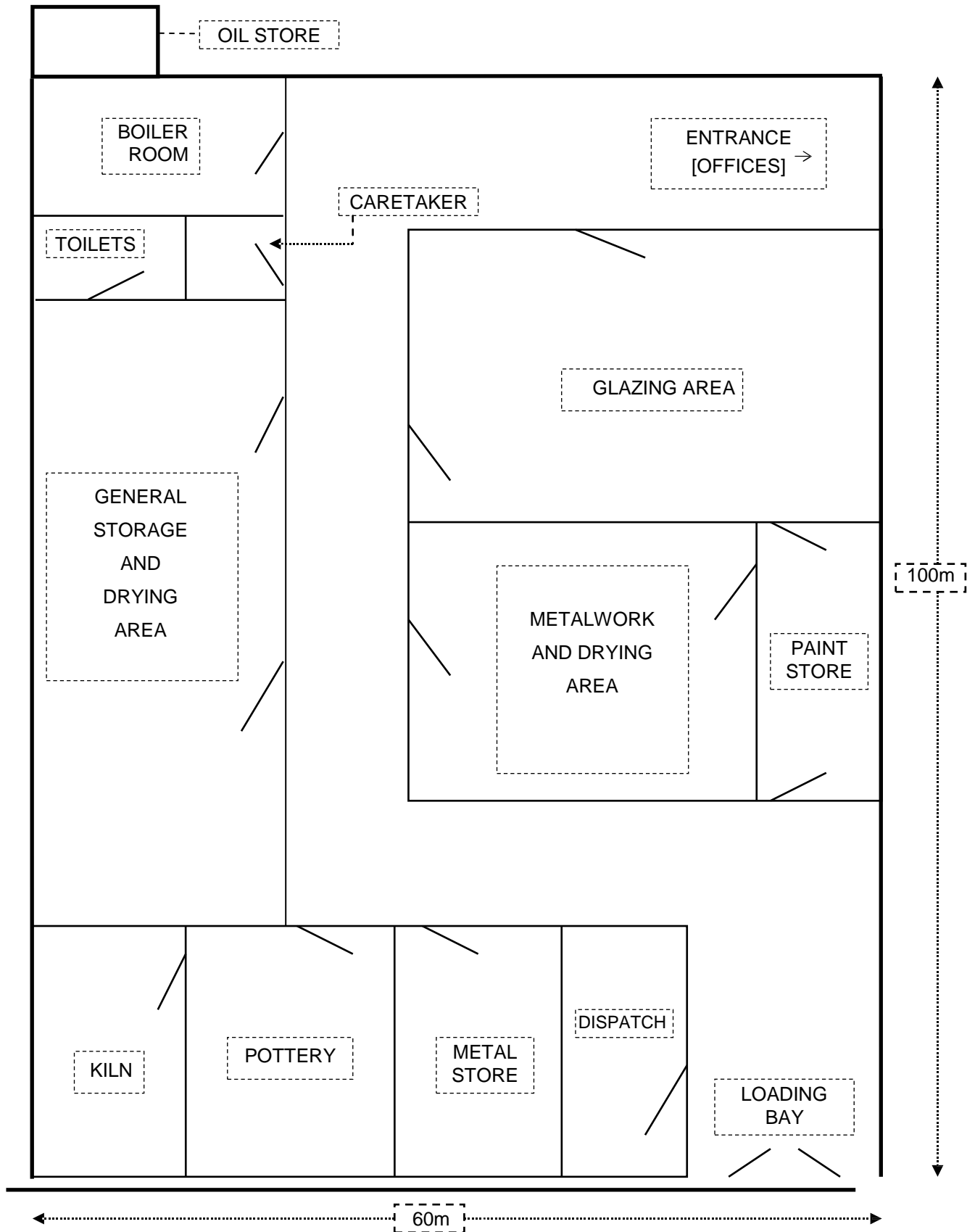
Jane

Document 6: DELIVERY NOTE AND COMPLETION NOTE.

DATE	GOODS SUPPLIED
<i>28/1/2012</i>	<i>Deliver and install 1 Powerheat 412K at Lot 60, Aberdeen Industrial Estate (- the above in the handwriting of Tiger Wong)</i> <i>Confirmed 29/1/2012 Michael Chu (- the above in the handwriting of Michael Chu)</i>

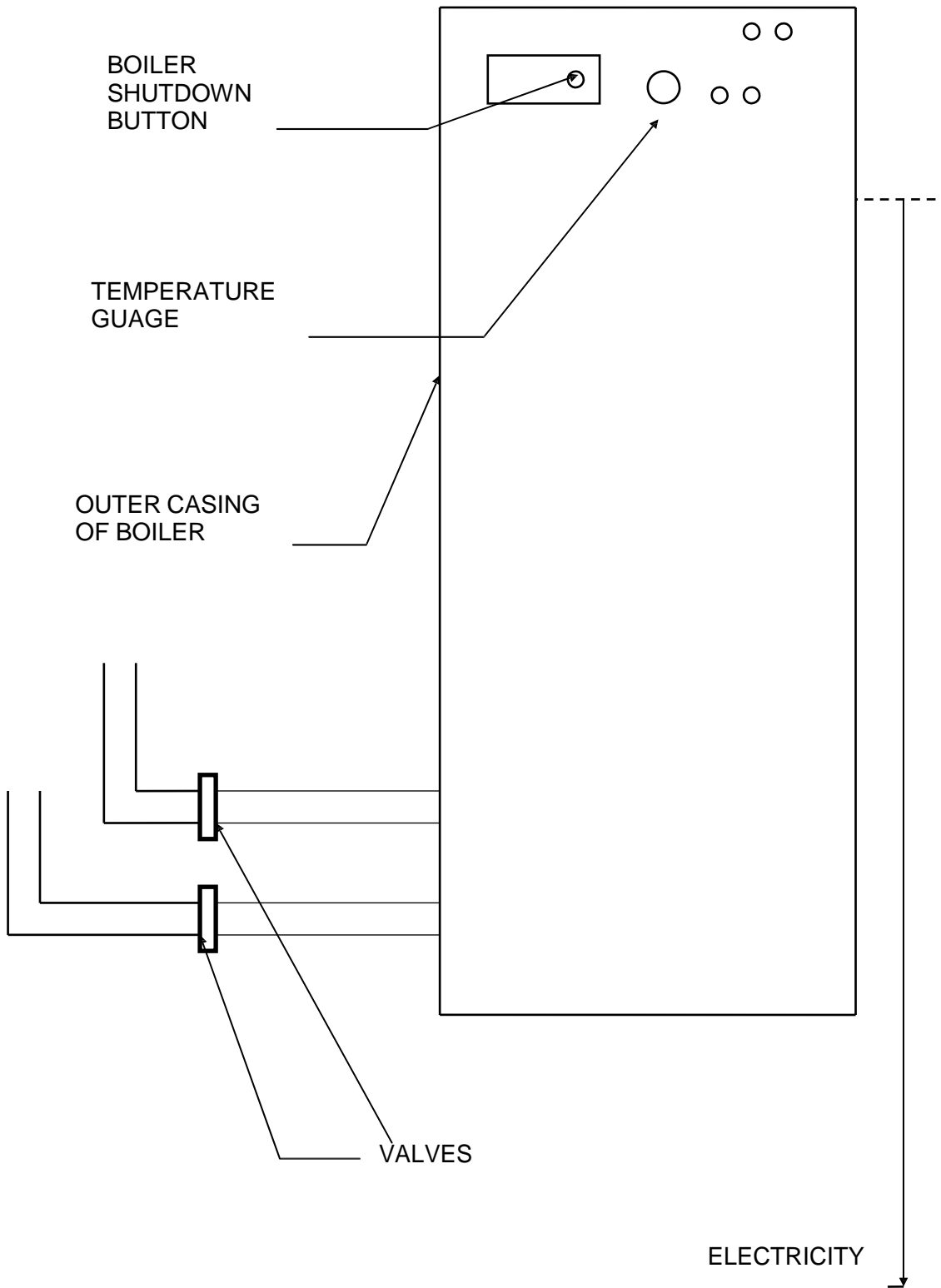
Plans, Diagrams
& Glossary of
Terms

MEADOWBANK BATHROOMS - FLOOR PLAN OF FACTORY



POWERHEAT 412K BOILER

External View



POWERHEAT 412K BOILER

Casing Removed

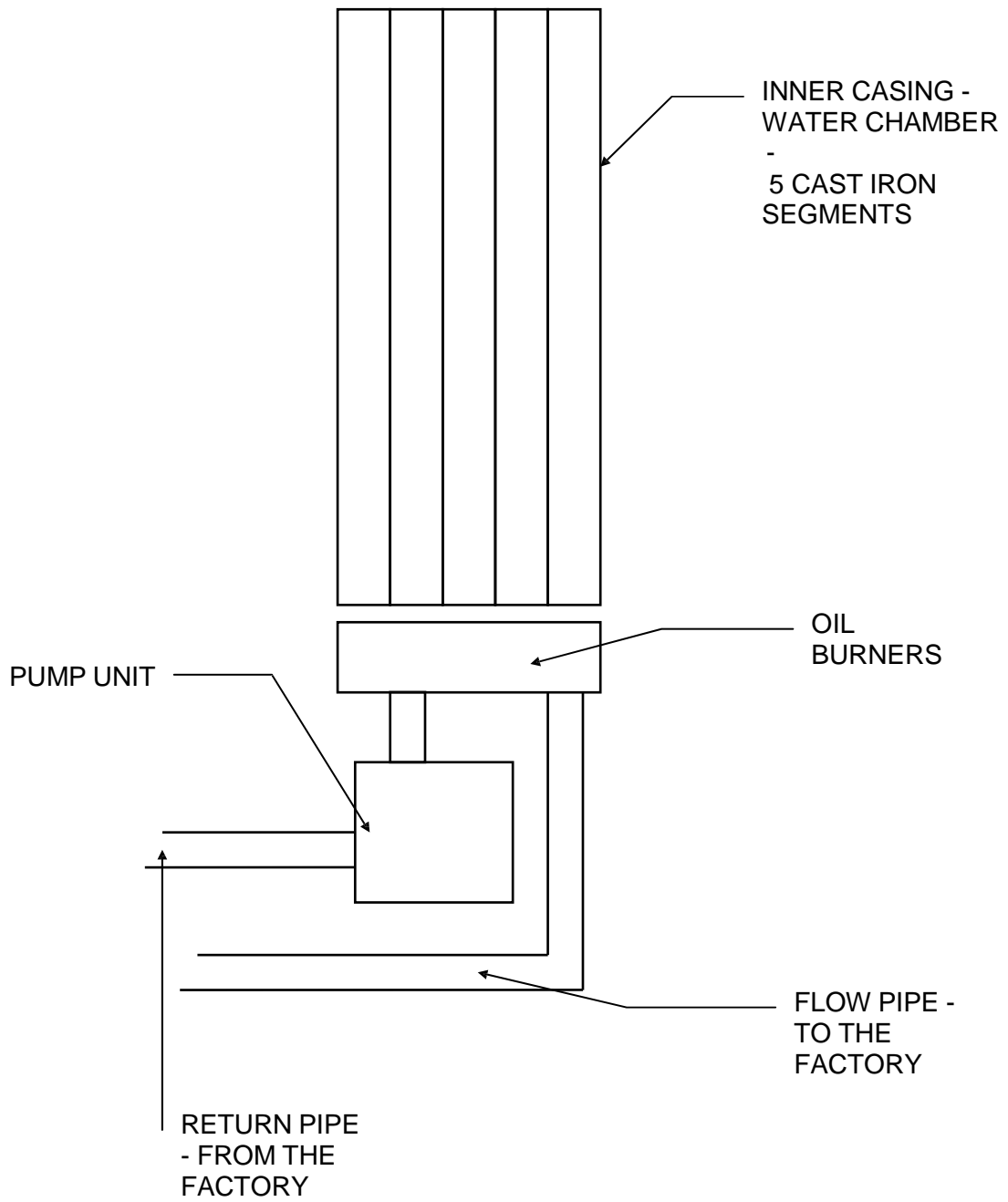
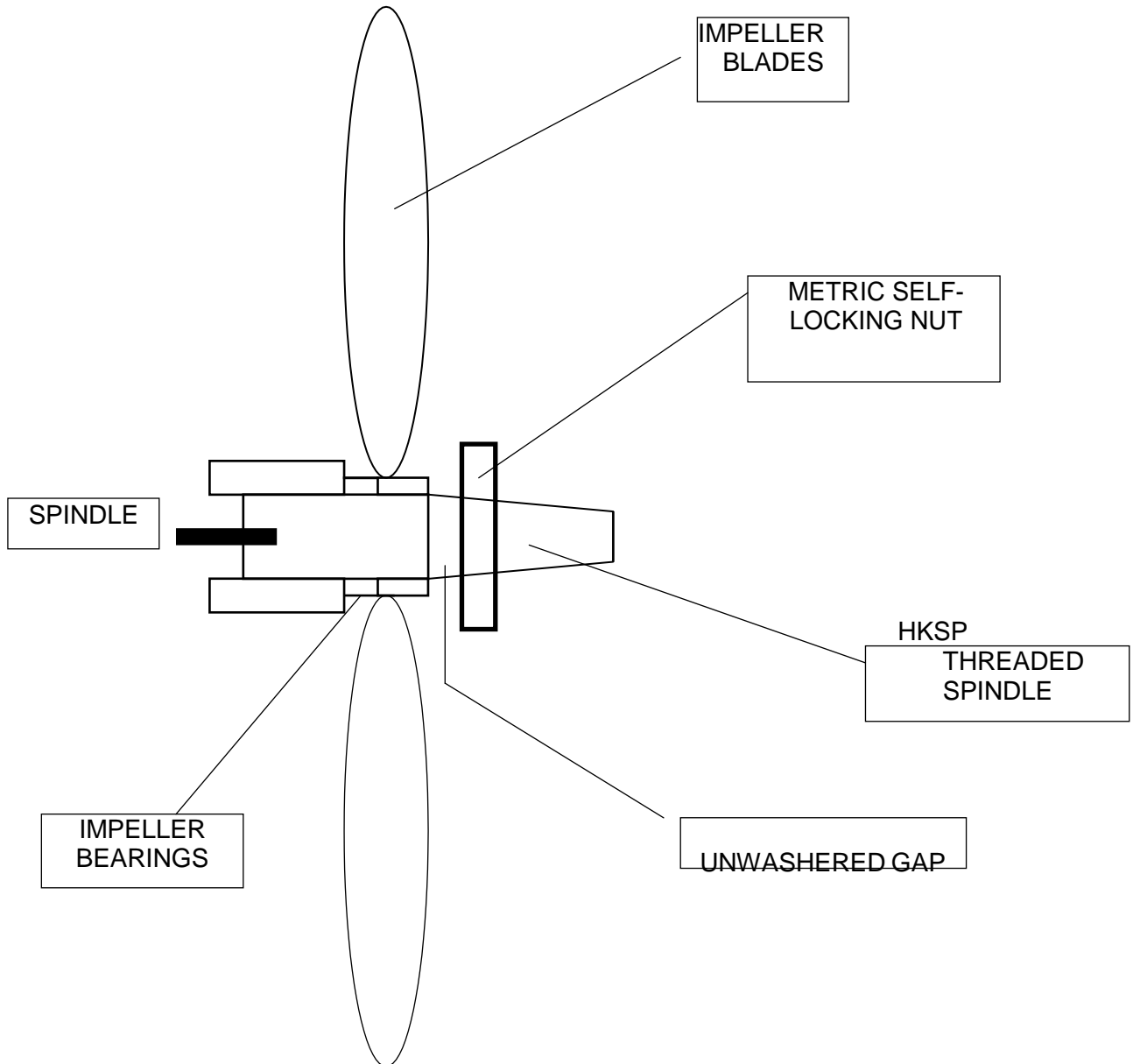


DIAGRAM OF IMPELLER ASSEMBLY

[Note - The Parties agree that if Craven's diagnosis was correct, this is a fair representation of what he would have seen. The defendant does not agree that even if the impeller was in fact in this state, it would have had the effect described by Craven].



GLOSSARY OF TERMS

Impeller:	That part of the pump which revolves to push water through the system (rather like a ship's propeller).
Spindle:	The shaft upon which the impeller revolves.
HKSP and Metric threads:	Two shapes of thread on nuts and bolts. They are not compatible with each other. HKSP stands for Hong Kong Standard Pipe and is an Imperial dimension.
Phosphor-bronze:	A non-corrosive alloy used in bearings.
Furnace oil:	A type of oil used in heating boilers.
Single phase electricity:	Electricity is supplied by electricity companies by three cables (or "phases") transformed down to 240 volts AC. One phase is connected for domestic or other light uses. Commercial premises will have all three phases connected, to give a greater supply (a "three phase" supply). They will also have power supplied at a higher voltage (e.g. 440 volts) to a transformer on site.
BSC:	Batchelor of Science
MSC:	Master of Science
MIHVE:	Member of the Institute of Heating and Ventilation Engineers
FIHVE:	Fellow of the Institute of Heating and Ventilation Engineers (e.g. equivalent to Membership of the Council of the Law Society).