



OFFICE OF THE STATE CORONER

FINDINGS OF INQUEST

CITATION: **Inquest into the death of Mark Geoffrey Bayliss**

TITLE OF COURT: Coroners Court

JURISDICTION: Southport

FILE NO(s): 2009/1093

DELIVERED ON: 24 April 2015

DELIVERED AT: Southport

HEARING DATE(s): 21 October 2014, 10 – 12 November 2014

FINDINGS OF: James McDougall, Coroner

CATCHWORDS: Aluminium Privacy Screen, Sever Weather Conditions, Engineer, Certification

REPRESENTATION:

Counsel Assisting: Ms Melinda Zerner, Counsel

Mr Amrit Samra: Mr A. Katsikalis, Counsel

Aluminium Balustrades P/L: Mr K.S. Howe, Counsel

Laurie Oar and Associates: Mr M.T. Hickey, Counsel

Introduction

Mark Geoffrey Bayliss was a 47 years old. He reside at 50 Old Burleigh Road, Surfers Paradise. On 20 May 2009, he sustained fatal injuries after being struck by an aluminium louvered privacy screen ('the privacy screen'). The privacy screen had become detached from an adjacent 46 story high-rise apartment building during a severe storm ('the incident').

After dislodging from the apartment building, the privacy screen went through the glass wall of Mr Bayliss' office. His office was located on level one at 3 Elkhorn Avenue Surfers Paradise where he was operating as a Commercial Realtor. The apartment from which the privacy screen originated, was 2224/23 in the Skyline North Tower of the Chevron Renaissance Resort Apartments ('the unit complex'). It was on the twenty-second floor and was vacant at the time of the incident. The distance between Mr Bayliss' office and the apartment was approximately 60 metres.

The Queensland Ambulance Service ('QAS') transferred Mr Bayliss to the Gold Coast Hospital. Despite valiant resuscitation attempts Mr Bayliss died at 4.52pm.

An external and partial internal (chest only) autopsy was performed which found Mr Bayliss' injuries were fractured ribs and sternum, collapsed lungs, ruptured pericardial sac, and full thickness lacerations to the aorta and left lung. Bleeding had also occurred in the peritoneal cavity.

Senior Constable ('SC') Patrick McDonald of the Queensland Police Service ('QPS') Coomera District Forensic Crash Unit, investigated Mr Bayliss' death.

Circumstances leading up to Mr Bayliss' death

On the day of Mr Bayliss' death, Surfers Paradise was experiencing severe weather conditions. The wind speed at the Gold Coast Seaway was averaging 74km per hour with the maximum wind gust being 96km per hour. Shortly after the incident, SC McDonald inspected the 22nd floor apartment balcony - he noted the wind at that level was significantly stronger at that level than on street level.

Mr Samra and Mr Bayliss had been tenants of the building where they conducted their business since 2007. Mr Samra had not seen a similar weather event prior to the death of Mr Bayliss. SC McDonald had been stationed on the

Gold Coast since 2001 and likewise does not recall experiencing such a severe weather event prior to that day.

SC Adam Hill had been detailed to attend the intersection of Elkhorn Avenue and Surfers Paradise Boulevard to perform traffic control. At approximately 2.30pm (his estimated time) he says when he looked up at the northern tower of the Chevron Renaissance building (the Skyline North Tower) he saw a large metal sheet come loose from one of the top floors and begin to fall. As the wind got hold of it, the metal sheet was blown into the side of the building. He lost sight of the metal sheet as it neared the ground and crossed Elkhorn Avenue.

Mr Samra was in the office next to Mr Bayliss at the time. He was there with a co-worker, Mr Brown, looking out the window observing the wild weather. At this time, Mr Brown recalls Mr Bayliss standing right at the window in his office, talking on his mobile phone. All of a sudden without warning Mr Samra and Mr Brown heard a big pane of glass explode. It was said to be like a bomb going off. There was glass everywhere. Mr Samra and Mr Brown left their office and went to check on Mr Bayliss.

Mr Samra found Mr Bayliss lying on the floor with his head towards the door. Mr Bayliss was observed to be having small fits. He had blood on his face and a gash to his chest. His hands were still in his pockets. A young woman from Home Group across the hall from Mr Bayliss' office, and Mr Samra commenced CPR until the QAS arrived. A police officer also assisted with CPR.

The Aluminium Screen

The privacy screen had been installed on 5 September 2003 during the construction of the unit complex. The owner of the unit, Mr Harry Traub has reported prior to the incident he had no concerns regarding the privacy screen. He advised at no time did it appear to be loose or to be a potential problem.

The company who manufactured and installed the privacy screen was Aluminium Balustrades (Burleigh) Pty Ltd ('Aluminium Balustrades'). Prior to the incident Aluminium Balustrades had been in operation for approximately 16 years. The owner of Aluminium Balustrades is Mr Brian Clifford. He had no direct involvement in the manufacturing or installation of the privacy screens. At the time the privacy screens were installed SC McDonald understood Mr Clifford held a Builder's License.

Aluminium Balustrades tendered to Rapcivic Contractors Pty Ltd ('Rapcivic'), the builders of the unit complex for the contract to manufacture and install the handrails and balustrades to the units. The original contract was for

\$1,109,012.00 and did not include the privacy screens. Included in the original contract price was \$4,000.00 for the 'Engineer's Design & Certification'.

In or around February 2003, Rapcivic asked Aluminium Balustrades to quote to undertake the installation of the privacy screens. Negotiations pursued and a final scope of works and price of \$77,066.00 was settled on, on or around 13 May 2003. The quotation stated, "*All fixings are subject to Engineer's Certification - Laurie Oar*". The scope of works was for the installation of 61 louvered privacy screens and included a privacy screen on level 22.

Mr Owen Phillips is the workshop manager at Aluminium Balustrades. The company has employed him for over 22 years. His role is to oversee jobs, supervise staff, measure up jobs and run jobs. He says the materials used to manufacture the screens were determined by the architect and checked by the engineer who was Mr Laurie Oar. He says it was like any other job where the architect would provide the concept plan; they would draw something up and then run the design past the engineer.

Mr Phillips says he had a meeting with Mr Laurie Oar, the engineer engaged by Aluminium Balustrades to discuss the screen design so he knew what he was quoting on. He conceded the privacy screens were at the concept stage but he needed to know enough as to what would be required in order to quote. There were no shop drawings at this stage.

Mr Phillips confirmed he does the shop drawings. He does not hold any design qualifications. He relies on his experience. Mr Sheldon Hyde, the leading hand, and labourers Mr Heath Bell and Mr Nicholas Johns carried out the installation of the privacy screens. At the time of the installation of the privacy screen, Mr Hyde had worked for Aluminium Balustrades for approximately 15 years. Mr Bell estimates he had been working for Aluminium Balustrades for around 12 months and Mr Johns for around 4 months. None of the installers held any trade qualifications. Any training in relation to installation occurred on the job during the installation process.

All of the installers confirmed each day would start with a Toolbox Talk to plan the day ahead. Mr Hyde was responsible for issuing instructions to Mr Bell and Mr Johns. Mr Bell and Mr Johns deny having access to any shop drawings. Mr Hyde described the purpose of the toolbox talks as being the opportunity to check everyone's harnesses, check the bolts they were going to use, and make sure everyone knew the anchor points they were going to use.

Mr Hyde said he did not get into the engineering aspect of the work. However, said if the engineer was not happy with their design he would change it. Mr Hyde says Mr Brian Clifford, instructed him that he was to only use the bolts he

was given unless they (the builder) wanted them changed and then they have to go through and make sure the engineer is there.

In circumstances where there needed to be a change on site Mr Hyde was of the view he had to obtain instructions from the builder. He stated, *"If there was anything changed other than stuff that would have had to be changed in the factory, I go to Mick Hornabrook first, and if I'm not happy with what he wants to change, then I go to Gavin, and then they get - then they have to get the engineer or the other big boss"*. These were all Rapcivic representatives. He said this was the process unless it was going to cost Aluminium Balustrades money and they had to charge for additional materials. He confirmed the only instruction in terms of communicating any changes on site back to Aluminium Balustrades was when it was likely to incur costs for Aluminium Balustrades. Mr Hyde confirmed his understanding of the contract was that if the builder gave an instruction they would consider the instruction and then agree to what was required.

Mr Oar is a structural engineer and is registered with the National Professional Engineers, and Registered Professional Engineering Queensland. Mr Oar admits to knowing Mr Brian Clifford and Mr Owen Phillips. Aluminium Balustrades had engaged him over a number of years on a number of projects at least since 1997. He could not recall specifically how many jobs he had worked on with Mr Phillips but estimated it could have been 10, could have been 20, some bigger and some smaller. Mr Phillips confirmed he respected Mr Oar and that they had a relationship of mutual good faith, and that trust had been established over a period of a number of years.

Design, Fixing and Installation of the Privacy Screen

The unit development was a significant undertaking. There were three towers built over a number of years. Each had privacy screens. The screen in question came off the north-eastern side of tower two. On this particular aspect of tower two, there were 20 other screens below the level 22 screen.

The screens were installed from bottom up, with each screen being lowered on to the guiding pins of the next. They were then fixed to the balcony edge using 12mm HAS true bolts. At the bottom of the screen three bolts, went through to the top of the screen below to lock it on to that lower screen.

The screens were installed over a number of months. Mr Phillips recalled they would install around five per day. The level 22 screen was the only screen installed on 5 September 2003. Aluminium Balustrades invoiced Rapcivic Contractor Pty Ltd for the supply and installation of the privacy screens on level 22 of the apartment building on 20 September 2003.

Design of Level 22 Screen

The screen on level 22 was the only screen fixed differently to those in that series of screens on the south-western side of tower two. This was due to a change in the slab configuration of the balcony above level 22. As a result of the slab configuration, the screen could not be bolted to the balcony edge. Instead, it had to be vertically fixed to the balcony ceiling, which only extended approximately half way along the privacy screen.

The relevant privacy screen measured 2965mm high, 1717 mm wide. The plate that fastened the screen to the ceiling was 950mm long and the screw holes were 110.

Mr Phillips says they realised they needed to amend the design to the level 22 screen when they had fitted up the last five or six screens in the series of screens for that section of the unit complex. When he went out to measure those screens he realised the top one was different.

Mr Phillips had to measure the very last screen because he needed the measurement from the underside of the concrete. He confirmed he drew up a sketch in the five or so minutes before going out to the site to measure up the screen and amended the sketch following his site visit. He says he already knew they would need to modify the screen and the purpose of the site visit was to work out the dimensions of the metal fixing plate to attach the screen to the balcony roof. He thinks this occurred at around the same time as a site meeting of 2 September 2003. He drew the sketch of the metal fixing plate after he attended the site.

Mr Phillips says he decided what material the fixing plate should be made of and that he ran that by Mr Oar to check it was going to be sufficient. He says he either stopped in and saw Mr Oar or telephoned him. Mr Phillips says Mr Oar approved the 10mm bar to be welded to the top of the screen. He recalls some consideration as to whether the bar should extend across the whole of the top rail. Mr Phillips did not show the drawing to Mr Oar. He confirmed the idea of the fixing plate was his, that is, that it needed 'beefing up'. Mr Phillips concedes it is possible he confused his conversation with Mr Oar regarding the fixing plate with a discussion about building three but did not think so. He thought he discussed the dimension of the fixing plate in the context of the balcony above not covering a part of the balcony.

Mr Phillips was unsure why he drilled 11 mm holes in the fixing plate when all the other screens were fixed with 12mm bolts. He suggest maybe in the rush to

get it done, he put 11 mm down as that was their most common fixing. He said to drill it out to 12mm on site is minimal work.

Mr Hyde recalls that originally the engineer (Mr Oar) was not happy with the bracket being used to fix the privacy screen to the roof and that he wanted an extra plate put on the bracket on top of the screen. He later conceded there was no bracket and that the plate was welded directly onto the top rail of the privacy screen. Further, that he did not hear Mr Oar say the screen was to be 'beefed up' but that he had been told this by Mr Phillips.

Mr Hyde was of the view the extra plate on the screen should have extended the length of the top rail of the privacy screen and that it was Mr Oar who would give Aluminium Balustrades directions about installing the plate. He says he is unsure if anyone expressed any concerns about the fact the pressure on the screen was just going to be in the area where it was attached to the balcony.

Mr Hyde was unsure if there was a shop drawing with the amendment to the screen for level 22 but says he knows he had to take it back to the workshop so the extra piece could be welded on and the screen recoated before it could be fitted.

Mr Oar denies that Mr Phillips 'popped' into his Bundall office sometime around 1, 2 or 3 September 2003 to discuss the level 22 screen and that he had a discussion about the fixing plate. Further, he denied seeing the sketches of the screen and fixing plate for level 2271 prior to seeing the material in the Brief of Evidence. Mr Oar denies having any conversation about the design work for the privacy screens prior to the installation of the level 22 privacy screen.

Mr Phillips was of the view Mr Oar was retained for the design of the privacy screens prior to their installation. However, he was not able to explain why Mr Oar had only been asked to quote for the screens in November 2003.

In Mr Phillip's file note of 2 September 2003, he indicates the level 22 screen was to be fitted by Thursday 4 September 2003 if possible but definitely by the Friday. Mr Phillips confirmed there was time pressure being applied by Rapticiv throughout the project. Mr Phillips agreed the installers would have been aware of the pressure to get the installation completed on the day it was being installed.

Mr Phillips advised Aluminium Balustrades did not have a shop drawing for a 'typical' screen in the series of screens below level 22. Mr Phillips advised the drawings he had located after Mr Bayliss' death were in an old envelope of drawings. It was their usual practice to dispose of shop drawings six months after a job was completed. The only shop drawings for the relevant screens in the material provided were of the fixing concept for the screens. However, Mr

Phillips confirmed this fixing method changed to a system where the fixing was placed in the middle of the hob.

None of the drawings provided by Aluminium Balustrades depicting privacy screens identified the fixings to be used during the installation of the level 22 privacy screen.

Mr Hyde says the fixings that were intended to be used for the level 22 balcony were four 10mm bolts. The lower screens had been fastened with 12mm bolts. Shortly after the incident, Mr Phillips thought the bolts, which had been inserted, were a Hilti screw (HRD URS 10mm diameter 120/5), which were 120mm long. However, this proved to be incorrect when a sheared off screw was located by Mr Phillips during an inspection of the balcony. The fixings that were used were four 5.37mm stainless steel batten screws into Hilti plugs. Hilti, through Mr Cunningham confirmed the screws were not a Hilti product.

Installation

Mr Phillips confirmed the level 22 privacy screen was installed on 5 September 2003 and it was the only screen installed on that day.

Mr Bell recalls there being an unusual screen that they were having issues with fitting. He thought it was on floor 22 or 23. He says there wasn't something right about it and they needed authority to fit it. Following his review of photographs of the damaged screen and the balcony he advised it was likely to be the same screen they were having problems with.

Mr Bell recalls Mr Hyde asked him to get one of the floor supervisors to have a look at the fixing. He says he could not locate the on-site supervisor so spoke with the Rapcivic Safety Officer who in turn contacted a Rapcivic representative to go to the balcony to look at the fixings.

Mr Johns recalls they had been told they had to change the hex head fittings to a countersunk fixing, as the screw head was visible. He has a recollection of the hex head fittings being installed and then removed so the batten screws could be used. However, Mr Hyde says this was not possible because if the hex head fittings had already been installed they could not have been removed. Mr Hyde conceded they might have drilled the holes in preparation for installing the hex heading fittings. Mr Bell has a poor recollection of the types of screws or fittings used on the screens.

Mr Hyde recalls whilst they were installing the screen, Mr Mick Hornabrook, a Rapcivic floor supervisor approached him and asked him what sort of bolts he was going to use on the screen. He says Mr Hornabrook told him he could not

use the proposed hex head bolts, as it 'looks disgusting'. Mr Hyde recalls going down to his vehicle to find an alternative. However, says he was not happy to change the fixings until they had someone authorise the change. In relation to that authorisation he told Mr Hornabrook he wanted their engineer to inspect it. He said in evidence - *"I'm just here to do what I'm told and so we waited and then he'd (Mick) come up with Gavin. I said Gavin's no good. Gavin can't tell where to change the bolts. Now, you got to get your engineer fellow"*.

Mr Phillips confirmed Mr Hyde would not have had countersunk bolts available to him on site. He says countersunk concrete fixings are very limited but they had used them from time to time.

Mr Bell recalls Mr Hyde ringing Mr Phillips and that they had to sit and wait for a couple of hours for the Rapcivic representatives to come up to the balcony. This is consistent with Mr Hyde's recollection. Mr Hyde recalls Mr Phillips telling him to make sure he received approval to make the change. He subsequently said Mr Phillips told him to wait until the engineer attended, he said he thought it was actually Mr Phillips who said he had to get the engineer to okay what they were going to use. Mr Hyde says he was aware that if he was changing the method of fixing he had to get an engineer to certify the change.

Mr Phillips recalls Mr Hyde telephoning him to advise the architect had requested a change to the fixing to something which was counter sunk and that he responded by saying, *'yeah, that's fine, so long as someone signs it off'*. He subsequently thought it was either Doug or Mick who requested the change but that the architect had requested it. Mr Phillips says whilst he only said to Mr Hyde 'it has to be signed off, Mr Hyde would have known it had to be signed off by an engineer. Mr Phillips says he did not make any arrangements to have the screen inspected as Rapcivic would have taken care of that. He conceded according to the subcontract, Aluminum Balustrades was responsible for making sure the fixings were correct. Mr Phillips says he did not discuss the fixings with Mr Hyde.

Mr Bell says he does not recall exactly who came up to the balcony to look at the fixings. He thinks it would have been the floor men, Doug and Mick. He is pretty sure an engineer was also there. He could not be sure if there was an engineer in attendance. Mr Bell thinks there was three or four people and that they had 'their little meeting' and then Sheldon (Mr Hyde) and Mick came back over to him and confirmed what they were going to do. Mr Hyde has a similar recollection. He says there was Mick, Gavin and a third person in a check shirt (not a Rapcivic uniform) who were talking and discussing the fixing and that they then confirmed it was okay to use the fixing. Mr Phillips says in hindsight Aluminium Balustrades should have obtained documentary evidence of the approval of the change of the fixings.

Mr Hornabrook concedes his memory is a bit vague due to the passage of time. He denies having a discussion about the fixings to be used on the level 22 privacy screen. He conceded he might have made a comment if the bolts were hanging out but under no circumstances would he be telling the installers what to use. He says he would not have gone to his supervisor in relation to fixings of a trade material and would have said to the installers that they had to deal with it.

Mr Hornabrook believed the engineer retained by Aluminium Balustrades was Laurie Oar. He denies having any involvement with Mr Oar regarding the level 22 privacy screen or any other privacy screen. Mr Hornabrook does not recall ever having to get the Rapcivic engineer to go to a floor to inspect what other tradesmen were doing. He did not think he would have approached the Rapcivic engineer about the privacy screen.

Mr Oar denies attending the site on 5 September 2003 to approve the fixings and has no record of any attendance or being on site in his diary. Mr Phillips was not able to confirm whether Mr Oar was called to attend the site and that Rapcivic staff who called the engineer. He says he was under the impression or led to believe Rapcivic were supplying an engineer or providing the correct certification or check of the fixings.

Mr Johns says he was told he could go to lunch whilst the issue of the fixings was being sorted. He recalls the screen being roped off and a temporary bolt in place whilst a decision was being made. Mr Johns recalls when he came back from lunch the decision had been made. He does not recall an engineer coming to the site. However, he thought an engineer had to sign off on the change. He remembers taking the burr edge off the already drilled holes in order to screw in the countersunk batten screws.

Mr Johns confirmed at the time of installation he had no idea whether the batten screws were appropriate but now concedes those screws were not suitable. Mr Hyde says he thought the use of the four batten screw were okay to be used and because of this did not argue with the advice and that it was okay to proceed with those countersunk screws. In relation to the proposition that he must have known the batten screw was not as strong as the bolt, he said, "*Yeah. Well, that's - they overkilled it massively, in my opinion*". Further, that he thought the batten screws were strong enough.

Mr Hornabrook was of the view it would be ridiculous to use 5mm screws to fix the privacy screen. Mr Phillips is of the view Mr Oar would not have approved the batten screens. He said, "*No one would- I mean, they were just wrong ... He knows that, I know that*". Further, he said he would have expected someone as experienced as Mr Hyde to have the knowledge that the screws were not suitable. He also said in explaining why the batten screws were used with the

Hilti plugs was because Mr Hyde did not have the proper screws for those anchors.

Mr Johns was involved in replacing the new privacy screen after the incident. He says he thinks the same system was used of lowering the screen onto the screen below, however this time, a Hilti HAS bolt, known as a true bolt was used. He says this is considerably stronger than the ones they originally used.

Certification of the Privacy Screens

In September 2002, Mr Oar was engaged by Aluminium Balustrades to look at the design for the balustrades for the handrails, which were to be installed in, tower two of the building. He recalls his involvement was prior to Aluminium Balustrades tendering for the job because he had to consider wind pressures, and special requirements of the type of glass to meet the wind pressures and that had to be built into the cost of the project.

On 10 November 2003, Laurie Oar & Associates Pty Ltd provided a quotation to Aluminium Balustrades for the design, documentation and certification of additional works associated with pergolas and screens. His fee was \$990.00 including GST. Mr Oar says he did not have any involvement or discussions in relation to the privacy screens prior to this. However, concedes there must have been some sort of casual discussion earlier on in order for him to come up with the price he did.

As he did not hear anything further about the screens he presumed Aluminium Balustrades had not won that component of the work.

Mr Oar recalls when he was undertaking the inspection of the balustrades on 19 May 2004 he was told by Mr Phillips that they did the privacy screens as well and that he had to sign them off. He says he did not have any involvement in the privacy screen up until this time. However, later conceded he had a diary entry of 6 June 2003, which referred to screens on level 6 to 27 with an hour attributed to that entry. He though is now unable to say what that entry was concerning (on the relevant aspect of the building there are no screens above the level 22 privacy screen until level 33).

Mr Phillips denies asking Mr Oar to certify the screens on that day and says Mr Oar was aware he was required to certify the screens in accordance with his Quotation.

During his inspection of 19 May 2004, Mr Oar says he was not able to necessarily see the fixings for the privacy screens but checked on the general concept of what he had been told had occurred. He conceded there was an element of trust in this type of certification because he as the engineer was not

physically on site the whole time, and he could not be there watching every anchor go in over months and months.

Mr Oar was asked why he did not have a screen removed in order to check how it had been affixed and to check the fittings. He advised unless there was a swinging stage it would be a major undertaking to erect a swinging stage for a screen to be removed. Mr Phillips confirmed it would have been very difficult to take the screen off.

Mr Oar was not able to confirm which or the number of screens he inspected on site. He says it would have been more than five and that he definitely did not inspect a unit on level 22. He recorded he spent one hour on site but says this is only an estimate as he was on a fixed price and did not use his diary for billing purposes. He says he recalls looking at a number of screens and that they were all the same and thought to himself, 'I'm not learning anything here'. If he had been advised there was a variation at level 22 he would have gone to the unit to inspect the screen. He specifically recalls asking Mr Phillips that he wanted to look at all variations.

Mr Oar says only a random selection is inspected but his request in doing an inspection is that he wants to see every type of fixture. He says once you look at a certain number they are all the same and you are not learning anything new. He stated, *"So the word random is probably a little bit not quite right in regard that they were randomly chosen examples of what I understood was all the variations"*.

Mr Oar conceded from looking at a photograph of the building, he could see the section of the building where the privacy screen came from had a different slab configuration to the unit above. Mr Oar though states, *"I didn't try to walk around the building to see if I could sight every screen because it was a 50 - storey building. I thought it more prudent to request shop drawings from which they are manufactured because they can't be constructed without shop drawings and then from the shop drawings, I can determine if there are any variable installations and inspect and do appropriate calculations of same"*.

Mr Oar says he was inside the units when asked to undertake his inspection and did not then go outside the building to try and circumnavigate it looking for variations that might not have been shown to him. Mr Phillips denies being asked by Mr Oar if there were any variations on the privacy screens.

To the proposition put to Mr Phillips that 'you expect Mr Oar to go through every single floor in every single unit to find the variations', he said, *"If he wants to"*. Mr Phillips later accepted it was not feasible for an engineer to undertake an inspection of every single panel installed. He confirmed there would not be an engineer on the Gold Coast who would be prepared to undertake that exercise.

Further, that he thought Mr Oar's inspection for an hour to an hour and a half was reasonable and said *"I don't think I've spent longer than that on any inspection"*.

In response to Mr Phillips request to undertake the certification of the privacy screens, Mr Oar asked Aluminium Balustrades to provide the technical information on the die for the blade, what the grade and alloy was for the perimeter box frame, what the fixings were and the shop drawings. He confirmed his request was a verbal request. Mr Phillips conceded if Mr Oar had requested the documents he would have wanted the complete suite of any shop drawings for the products he was being asked to certify.

Aluminium Balustrades provided a number of drawings to Mr Oar. Mr Oar confirmed one of the drawings was of a typical privacy screen and that he understood it was representative of the screens from level 1 up to level 22. He says he presumed they were the ones on the southwest elevation. Mr Oar confirmed the screen he was shown on 20 May 2004 during his inspection was the same as the one in the drawing and that the majority of screens he saw were like that. He recalls one different screen, which was on level 7 on the opposite side of the building to the level 22 screen. It had a different fixing system. He says it is most likely Mr Phillips took him to view this variation.

Mr Oar confirmed the shop drawing of the 'typical screen' did not have the fixings specified and says when he was undertaking the inspection on 19 May 2004, he was provided with a fixing which was a Hilti 12 mm expansion anchor. Mr Phillips confirmed he told Mr Oar the screens were affixed with a 12 mm HAS bolt. Mr Oar also says he physically measured a screen up on site to determine the dimensions. Once Mr Oar had all of the information he required he undertook a number of calculations to satisfy him that the screens and fixings were appropriate. He advised had they not have been appropriate he would have instructed Aluminium Balustrades to insert additional fixings for each screen.

Mr Phillips confirmed the drawing Mr Oar relied on as a 'typical screen' representative of the screen for level 22 and those below were in fact the screens which run from level 7 to 11. They differed to those screens associated with level 22. Mr Phillips was unable to advise what drawings he had provided Mr Oar. He says he did not think it was necessary to inform Mr Oar of the change at level 22 because he believed Rapticvic had taken care of it.

On 21 May 2004, Mr Oar of Laurie Oar & Associates Pty Ltd issued a certificate of certification for the privacy screens to Aluminium Balustrades. It states: - This is to certify that we have inspected randomly chosen samples of the louvered balcony privacy screens. Provided all fixings have been installed in accordance with their manufacturer's recommendations we consider the louvered balcony

screens would be structurally adequate to resist the following design codes:
Live Load – Nil; Wind -Terrain Category 2.

The certificate certifying the balustrades was much more detailed than that for the privacy screens. It included the dimensions of the balustrades and how they were set into the balcony. Mr Oar conceded he wished he had worded the certificate differently and that he would have liked to reference any documents used to certify the structure.

On 8 July 2004, Laurie Oar & Associates Pty Ltd issued a tax invoice for the apartment building. It included, 'Design, Site Inspections and Certification of Balustrades' for \$4,000.00 and 'Design, Site Inspections and Certification of Screens and Pergolas' for \$900.00.

Subsequent to Mr Bayliss' death, Mr Oar undertook calculations for the privacy screen based on the fixings he understood were to have been used on all the screens. He is of the view had those fixings been used, the privacy screen would have maintained its integrity.

Inconsistencies in the Factual Evidence

As this inquest was held five and a half years after Mr Bayliss' death and 11 years after the privacy screen was installed it is understandable there are some inconsistencies in the evidence.

Mr Oar's Involvement prior to Certification

Aluminium Balustrades had retained Mr Oar in relation to the balustrades prior to providing his quotation for the certification of the privacy screens in November 2003. Mr Oar had a good working relationship with Mr Phillips and agreed he had some casual conversations about the screens prior to being asked to certify the privacy screens.

Mr Phillips agreed the ideas in relation to the design of the fixing plate and the materials used for the fixing plate were his. There is no documentary evidence of any conversation between Mr Phillips and Mr Oar regarding the fixing plate. Mr Phillips thought he spoke with Mr Oar but Mr Oar denies such a conversation. Mr Phillips agreed he did not provide his sketch to Mr Oar.

The approval of the fixing on 5 September 2003

Mr Hornabrook thought it was possible he made a comment about the bolts but denied he would advise as to the fixings, which should be used. By his own admission, due to the passage of time he had a poor memory of the construction. He relied on his usual practice.

Mr Phillips advised Mr Hyde he needed to have the change to the fixing 'signed off'. He assumed Mr Hyde knew that was by an engineer. Mr Hyde was aware he needed to have the change signed off by Rapticvic and whilst he referred to an engineer in his evidence he also referred to the Rapticvic big boss. Mr Hyde recalled a person present with Rapticvic staff and thought he was an engineer. It was not established who this person was.

Aluminium Balustrades were under time pressure to install the privacy screen that day. All of the installers recall a period of waiting for Rapticvic to approve the necessary approval.

On the evidence I find it more probable than not that Mr Hyde did consult with a Rapticvic representative (not an engineer) concerning the fixings to be used and that it was agreed between them that the stainless steel batten screws could be used. Further, I find Mr Oar did not attend the site on 5 September 2003 to approve the fixing for the level 22 privacy screen.

EXPERT EVIDENCE

Mr Alex Milligan

I sought an expert report from a structural engineer concerning the Incident - Mr Alex Milligan of XSD Consulting Engineers. Mr Milligan found the failure of the level 22 screen and its detachment from the building was attributed to incorrect fixing selection and specification. Mr Milligan made a number of observations in his report, which included:-

- a) Due to the change in the slab configuration in the apartment above, the privacy screen installed to the balcony of unit 2224 was different to those immediately below it;
- b) Due to the slab not projecting out the full length of the privacy screen as occurred on other levels, the left hand corner (viewed from outside the balcony) could not be secured;
- c) The top corner of the unsecured frame was reliant on sufficient stiffness of the frame to enable it to act as a cantilever;
- d) The type of fixing used was thought to be a Hilti HRD type fixing which has a recessed hexagonal socket (3.9 kN shear and 1 kN tension);

- e) The relevant Australian Standard at the time the screen was manufactured and installed was AS/NZS 1170:2002 (the revised standard AS/NZS 1170.2:2011 is currently in place);
- f) The revised standard has not changed the wind pressures or design load actions required of the screen;
- g) The Ultimate Limit State (strength of the structure) should have had an annual probability of exceedance value of 1 :500 (one in 500 years) with a corresponding wind speed of 57 metres per seconds which equates to an ultimate wind speed of 205km per hour based on three second gust duration;
- h) The Serviceability Limit State (maintain functional performance in relevant conditions) should have had an annual probability of exceedance of 25 years with a corresponding wind speed of 39 metres per second which equates to 140km per hour;
- i) The configuration of the screen was inadequate with respect to the lack of structural support and mechanical fixing to the upper left corner;
- j) Some of the welds to the screen, specifically those associated with the connector plate welded to the top of the frame are poor quality with minimal penetration into the base metal;
- k) The fixings were wholly inappropriate for the connection between the screen and the unit;
- l) The Hilti bolts which were originally intended to fix the screen were appropriate;
- m) There is some conflict over the length of the plastic sleeves inserted into the concrete; and
- n) There was no evidence of material defect in the concrete or the actual fittings used.

Mr Milligan summarised the cause of the failure as: - *“The support reactions at the top connecting bolts occurring under the 117kn/hr. wind gust recorded at 14.30 hours on the date of the incident are close to the recommended shear load of 3.9 KN for the HRD C8 connector. The configuration of the top plate is such that it is highly likely that the actual loads imposed on the bolt would be a combination of shear and tension due to the eccentricity of the line of bolts with respect to the centroid of the top frame member. Failure of the bolt nearest the*

free unsupported edge of the top corner of the frame is believed to have resulted and this would lead to subsequent failure of the remaining three fastenings in turn as the load to be resisted by each would increase with each successive fastening failure.”

In evidence, Mr Milligan conceded he could not say with a 100% certainty this was the cause of the screen becoming detached but suggested it is the most likely cause.

Mr Milligan found there had been a failure in due process with regard to:

- a) Preparation of clear specific numbered and dated design drawings for the modified screen installation to Unit 2224;
- b) Clear and unambiguous specification of the fixings to be used for the installation of the screen to Unit 2224;
- c) Timely supply of the above documents to the design engineer for review and approval of the design proposals;
- d) Clear communication between the installer and engineer with regards to the different aspects of screen installation to Unit 2224 compared to the other screen installed to the floors below;
- e) Record of site inspection of the screen installation to Unit 2224 and any onsite advice issued by the inspecting engineer; and
- f) Retention of fabrication and workshop archive documentation for the project by the manufacturer and installer, Aluminium Balustrades.

Mr Milligan says the fixing plate used on the level 22 screen only provided minimal effect in relation to strengthening the cantilevered screen. He is of the view the fixing plate had been added to the frame purely to provide a means of fixing it to the ceiling of the balcony. Mr Milligan is of the opinion the anchorage of any cantilever is significant and requires particular attention. Mr Milligan is of the opinion had the 12 mm bolt been used the privacy screen would not have become detached from the building.

Mr Milligan concurred with Mr McDonald (the expert engineer engaged on behalf of Mr Oar) that the certificate issued by Mr Oar was lacking in detail.

Mr Milligan is of the view the engineer needs to satisfy him or herself of the scope of works and cannot rely on the installer. He states, *"It's not for them to tell me. Ideally you would be provided with a summary of the scope of work and*

it could be as brief as you are to design every structural element within that part of the building or structure, but I wouldn't be given a complete exhaustive list of every component that I have to design. I have to review the drawings and determine what I'm designing. You may then put that back in writing to the client or whoever is engaging you. So this all comes back to the most important part of any engagement is defining the scope of service and the scope of work and it certainly strikes me here that that certainly is not clear to me".

In relation to the back to front certification, Mr Milligan says it is a difficult task and places on the engineer a significant amount of risk and that the engineer places a significant amount of trust in whoever asks for the certification. He though did not consider it sufficient for Mr Oar to accept there was only one typical screen. He states, *"I think it- it can be argued and it's not unreasonable that Aluminium Balustrades should have perhaps spelled it out, but equally I would see that there would be a responsibility for the engineer to also satisfy him or herself that whatever I am presenting and certifying on this piece of paper encapsulated everything to which I am referring".*

Mr Milligan was of the view an engineer has to look at the whole of the structure and understand the potential implications of the whole on perhaps one component part. Mr Milligan is of the opinion Mr Oar should have inspected level

22.

Mr Milligan advised the time set aside for an inspection depends on different variables. If you were inspecting a standard feature, he thought it would be acceptable to inspect 10% of those installed. He thought an hour in these circumstances would be inappropriate.

Mr Milligan agreed that based on the information Mr Oar had obtained in addition to the drawings provided was potentially sufficient to certify the privacy screens. However, he was critical of the lack of documentation surrounding what Mr Oar had been told and inspected.

Mr Darren McDonald

Mr McDonald was asked to provide an expert report on behalf of Mr Oar. Mr McDonald accepted Mr Oar's version that he had only been approached on 19 May 2004 about the screens. Mr McDonald confirmed whilst not ideal, back to front certifications occur in practice. He says the risk is to the installer as the engineer may reject the design and installation at the inspection stage.

Mr McDonald was of the view the documentation provided by Aluminium Balustrades was lacking and that further information would have been required.

This included knowing what fixings were used and that it was appropriate to make that enquiry.

Mr McDonald confirmed if there was a standard installation it does not really matter how many there are it is acceptable to look at two samples of that standard installation. In relation to variations he says unless the engineer was to inspect every single installation, they would not know. He says the onus falls to the installer to inform the engineer of the variations. Mr McDonald did not consider it a reasonable approach for the engineer to have to go to the base of the building and walk around the building to see if any changes to the configuration of the privacy screen could be identified. Mr McDonald agreed that the change in the slab configuration between level 22 and level 23 would alert the engineer to consider there may be a different design for that screen.

Mr McDonald conceded Mr Oar's level of documentation on the certificate certifying the privacy screens was lacking. He said he would put more information on the form so that information was readily available to whoever was viewing the documents. However, advised it was ultimately up to the building certifier to accept or reject the certificate provided by the engineer.

Mr McDonald was not aware of how many screens Mr Oar inspected or how long his inspection took. He estimated if he was doing the certification he would allow a half day to a full day. He later confirmed there are a number of variables at play and thought two to three hours out of the office for the site inspection would be reasonable.

ANALYSIS OF THE CORONIAL ISSUES

In accordance with section 45 of the *Coroners Act 2003* ('the Act'), a coroner who is investigating a suspected death must, if possible, make certain findings.

On the basis of the evidence presented at the inquest, I make the following findings:-

- a) The identity of the deceased person was Mark Geoffrey Bayliss;
- b) The deceased person died as a result of a blunt force chest injury sustained as a result of a large aluminium privacy screen striking him in the chest after it had become dislodged from the 22nd floor balcony of the Skyline North Tower of the Chevron Renaissance Resort Apartments;
- c) The date of death the deceased person died was 20 May 2009;

- d) The place of death the deceased person died was Gold Coast Hospital, Southport, Queensland; and
- e) The cause of death was massive haemorrhage due to, or as a consequence of a tear to the aorta.

The events surrounding the installation of the privacy screen on level 22 at the Skyline North Tower of the Chevron Resort Apartments.

The events surrounding the installation of the privacy screen have been addressed above.

Whether the amended design for fixing of the privacy screen for level 22 at the Skyline North Tower of the Chevron Resort Apartments had been approved by an engineer, prior to installation.

As outlined above, based on their long standing working relationship and the fact Mr Oar was already working with Aluminium Balustrades in relation to the balustrades it is likely there was some casual conversations concerning the privacy screens between Mr Phillips and Mr Oar. However, I find Mr Oar was not retained to undertake work on the privacy screens until after the screens had been installed; and that the amended design for the fixing of the privacy screen for level 22 was not approved by an engineer prior to installation.

Whilst Mr Hyde consulted Rapcivic representatives concerning changing the fixing whilst the screen was being installed on 5 September 2003, it is unlikely it was a competent engineer.

The role of Laurie Oar in relation to the privacy screen installed on level 22 at the Skyline North Tower of the Chevron Resort Apartments, and if applicable, the adequacy of that role.

I find the scope of Mr Oar's retainer concerning the privacy screens only extended to the certification of the privacy screens.

There is criticism of Mr Oar's certification. Whilst Mr Oar says the one hour in his diary is only an estimate, it seems on the evidence his inspection which included not only the privacy screens but all of the balustrades was inadequate.

Mr Oar relied entirely on Aluminium Balustrades to provide him with the relevant shop drawings and to bring any variations in design to his attention. As it turns out, the drawings Mr Oar was provided were rudimentary and lacking detail. He mistakenly proceeded on the basis that all of the screens from level 22 down were the same as the screen marked 'typical'. There was no shop drawing for level 22 and Mr Oar was not provided with Mr Phillips' sketches of the level 22 screen and fixing plate. Further, he was not advised of this variation to what he

thought were the typical screens. Mr Oar measured the screen he had been taken to and obtained the fixings used on 'all' the screens.

Whilst it is arguable Mr Oar should have sought further material, he had a long standing working relationship with Aluminium Balustrades and preceded under the belief he had been provided with the relevant material and any variations had been pointed out to him. By Mr Phillips own admission he did not consider it necessary to advise Mr Oar of the change of fixing at level 22 as Rapcivic had taken care of it.

The adequacy of the processes Aluminium Balustrade Pty Ltd had in place in relation to the manufacturing, installation, engineering design and certification of the privacy screens for the Skyline North Tower of the Chevron Resort Apartments.

Mr Phillips and Mr Hyde had no formal qualification but both were very experienced, having worked for Aluminium Balustrades for a number of years. Mr Phillips was responsible for the shop drawings. Despite being provided with the architectural plans, Aluminium Balustrades did not appreciate what the difference to the slab configuration between level 22 and level 23 would have on the privacy screen for level 22 until the majority of screens had been installed.

Mr Phillips acknowledges they were under time pressure and at a site meeting on 3 September 2003 it was confirmed the level 22 privacy screen had to be installed by 5 September 2003. It was around this meeting Mr Phillips went to level 22 to measure up for the screen and to consider how it would be fixed to the balcony roof. After returning to the workshop he sketched up the fixing plate which would be used to affix the screen to the underside of the level 23 balcony floor. I find Mr Phillips did not consult Mr Oar at this time as he was proceeding on the basis the screen would be fixed to the slab with four strong bolts which based on his experience would have been adequate for fixing the screen to the building.

It is clear on the evidence Aluminium Balustrades did not have a system in place in relation to having its shop drawings checked by its engineer prior to installation. Whilst Mr Phillips advised the majority of shop drawings had been discarded prior to Mr Bayliss' death, the shop drawings in evidence were rudimentary and lacking detail. The shop drawings provided to Mr Oar were clearly inadequate and were not representative of all the privacy screens he had been asked to certify. As outlined above, Mr Oar was not provided with a shop drawing for level 22 at the time he undertook his certification. He mistakenly proceeded on the basis all of the screens were as per the 'typical' design.

Mr Hyde was responsible for the installation of the privacy screen. Whilst he consulted with Mr Phillips regarding the change of fixings to level 22, Mr Phillips confirmed it had to be signed off. Despite Aluminium Balustrades contractual obligations to Rapcivic, both proceeded under the incorrect understanding that it was okay to shift the responsibility for the signing off of the amended fixing for the level 22 screen to Rapcivic.

Aluminium Balustrades were responsible for ensuring the adequacy of the fixing and should have asked Mr Oar to attend the site or at least consulted with Mr Oar as to what was required. Aluminium Balustrades clearly did not. I find had they done so it is more probable than not that an adequate fixing would have been recommended for the privacy screen and it would not have become detached.

Every witness, except Mr Hyde appreciated that the fixings, which were used, were not fit for purpose. Mr Phillips assumed Mr Hyde would have known this. Mr Hyde was of the belief the screens had been over engineered and stood by his belief the fixings were adequate. He was clearly wrong. I am of the view this misapprehension should be corrected.

RECOMMENDATIONS IN ACCORDANCE WITH s.46

Section 46 of the Act provides that I may comment on anything connected with a death that relates to: public health and safety, the administration of justice, or ways to prevent deaths from happening in similar circumstances in the future.

In this case Mr Oar was required to undertake a back to front certification. Whilst this type of certification occurs in industry it is fraught with dangers. Mr Oar relied on verbal information and poor documentation in order to undertake the certification.

DISCRETION OF THE CORONER TO REFER IN ACCORDANCE WITH 548(3)

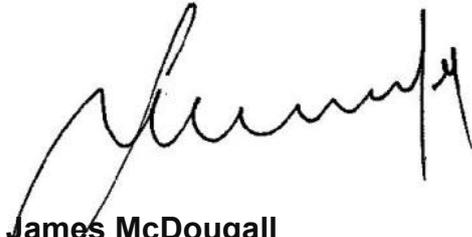
Section 48(2) of the Act provides: if, from information obtained whilst investigating a death, a coroner reasonably suspects a person has committed an offence, the coroner must give the information to the director of public prosecutions or the chief executive of the department in which the legislation creating the offence is administered. Under Section 48(3) of the Act, I have a discretion to refer information about a person's professional conduct to the relevant professional disciplinary body, if I reasonably believe the information might cause that body to inquire into or take steps in relation to conduct.

Having regard to the definition of 'disciplinary body' under section 48(5) of the Act, the disciplinary body for an engineer is Engineers Australia. The

disciplinary body for an installer such as Aluminium Balustrades is the Queensland Building and Construction Authority.

While there is criticism of Mr Oar in relation to the lack of information provided on his Certificate certifying the privacy screens and arguably the time allocated to the inspection, on the evidence I am of the view Mr Oar's involvement in the privacy screen does not warrant referral to Engineers Australia for consideration of disciplinary action. Mr Oar was reliant on substandard information provided by Aluminium Balustrades and preceded incorrectly on this information.

Aluminium Balustrades holds a Building License. Mr Phillips and Mr Hyde do not hold any professional qualifications. By Mr Phillips own admission, Mr Clifford was not involved in the work related to the privacy screens. Mr Phillips and Mr Hyde were charged with the responsibility for the design, manufacture and installation of the privacy screens at the unit complex. Aluminium Balustrades' design drawings were lacking; they had poor documentation of design amendments and design meetings; they had poor systems in place regarding changes to design intention whilst on site; and did not seek engineering input from Mr Oar into the change to the fixings for the level 22 privacy screen. Having regard to the time that has passed since the screens were installed, I do not propose to make any referral under the *Queensland Building Services Authority Act*.



James McDougall
South Eastern Coroner

