QUEENSLAND COURTS

OFFICE OF THE STATE CORONER

FINDINGS OF INVESTIGATION

CITATION:	**Non-inquest findings into the death of Christopher James Gear and Steven Frank Sayer**
TITLE OF COURT:	Coroner's Court
JURISDICTION:	Southport
DATE:	27 August 2015
FILE NO(s):	2008/610 and 611
FINDINGS OF:	James McDougall, Southeastern Coroner
CATCHWORDS:	CORONERS: Investigation, swing stage scaffold failure, Workplace Health and Safety Queensland investigation and prosecution.

Christopher James Gear (aged 36) and Steven Frank Sayer (aged 56) died on 21 June 2008, after a swing stage scaffold failed whilst they were carrying out concrete patching work on the exterior wall of the Meriton Pegasus building, a multi-storey commercial structure under construction in Broadbeach.

Mr Gear and Mr Sayer died from multiple injuries sustained as a result of a fall from height.

Coronial investigation

Police and Inspectors from Workplace Health and Safety Queensland (WHSQ) were immediately notified of the incident and attended the site. Extensive investigations were subsequently conducted by both parties in a collaborative manner, and comprehensive coronial reports prepared.

Whilst I do not propose to detail all of the evidence obtained during the course of these investigations, the relevant facts of the matter, and subsequent conclusions reached by WHSQ and the Police, are summarised below.

Background

The company responsible for the building's construction was Karimbla Constructions. They engaged the services of Pryme Constructions, who employed Mr Gear and Mr Sayer. The scaffolding system used on site had been installed by Allscaff Systems Pty Ltd at the direction of Karimbla Constructions. There were approximately eight swing stage scaffolds set up on site.

A swing stage is a type of suspended scaffold used to provide a temporary work platform, which is capable of being raised or lowered on the exterior of a building. This type of scaffold is used during construction and for ongoing maintenance of the exterior surfaces of the building.

The aluminium swing stage scaffold, which failed during this incident, was 7.1 metres in length and had a safe working load of 350 kilograms. It was designed by Aluminium Access Systems.

A swing stage will generally consist of a suspension system located on or in the building from which hoist ropes are hung. A cradle or work platform is attached to the ropes using hoist motors, which include brakes and a secondary safety support system. These hoist motors provide the means of raising and lowering the cradle to the desired working position.

Operators of the swing stage scaffold are required to wear a personal safety harness, which are attached to the swing stage. They are also required to undergo an induction course into the safe use of the equipment, prior to its use. Part of the induction course covers the necessary safety checks and inspections of the scaffolding to be carried out daily. The scaffold itself must only be erected, modified or relocated by persons who hold an Advanced Scaffolding license issued by WHSQ.

At the time of the incident, the scaffold was suspended from the 26th floor of the building, and had been moved to that location on 19 June 2008 by four scaffolders from Allscaff Systems Pty Ltd. It does not appear that the swing stage was used on 20 June 2008.

On the morning of 21 June 2008, a visual inspection of the scaffold had been carried out by another worker on site and no faults were detected. A physical examination of the scaffold, however, could not be conducted as it was unable to be safely accessed. There was no documentation maintained on site to suggest that either Mr Gear or Mr Sayer had inspected the scaffold, or conducted a jump test, prior to its use on 21 June 2008. In addition, Mr Sayer had not been inducted in the use of the swing stage.

At the time of the incident, both Mr Gear and Mr Sayer were wearing safety harnesses, which were attached to the swing stage scaffold.

Specifics of the failed swing stage scaffold

The installation and setup of the swing stage involved in this incident consisted of two telescopic needles that were located on a non-trafficable roof area located on the 26th floor of tower 1. One needle was set up on a rostrum that raised the height of the needle to approximately 1400 mm ('Needle A'). The second needle ('Needle B') was set up on timbers and the edge beam so that it was at roof level. Both needles incorporated an inboard section and outboard section. The inboard section is the part of the needle, which is located between the centre mass of the counterweight and the pivot point on or near the building edge, over which the needle would pivot. The outboard section of the needle is the part used for the suspension of the swing stage cradle and is locate out over the edge of the building.

Needle A was set up on a rostrum consisting of aluminium modular scaffold components and steel tube and coupler components. The rostrum was located in close proximity to the edge beam of the building. The counterweight box was positioned under the raised needle on the roof surface. The inboard section of Needle A was located on a frame consisting of steel tube and coupler scaffolding components. This frame provided support for the needle at its elevated height and a means of attachment between the needle and the counterweight box. The connections at the counterweight box are critical to ensure the counterweights provide adequate support for the swing stage cradle.

Needle B was set up with the counterweight box mounted on top of the inboard end of the suspension needle. It was set up on the roof of the building. The counterweight box was set on top of the needle and secured with a bolt and nut through the needle.

In the manner the swing stage was constructed by Allscaff Systems Pty Ltd, the scaffold components were required to be secured to the counterweight box by way of couplers. When couplers are used to provide the connection with the counterweight box, it is reliant on the friction of the coupler on the scaffold tube. This prevents the scaffold tube from being pulled up and out of the counterweight box retaining rings. To ensure adequate friction between the coupler and the scaffold tube, the coupler would be required to be tightened to a predetermined value. In this case, it was intended that four couplers be used. At the scene, two couplers were located loose on the roof surface, and the other two were located on top of the weights of the counterweight box.

Technical Report

During the course of WHSQ's investigation into the incident, an Investigation Technical Report (the Report) was prepared by WHSQ Engineers, Mr Terrence O'Sullivan and Mr Stuart Davis. The Report was commissioned for the purpose of obtaining technical comment on the suspended scaffold components and methods of assembly used in this case, and to discuss the factors, which were likely to have contributed to the loss of suspension that caused the swing stage cradle to fall to the ground.

Following a thorough assessment of the remnants of the swing stage scaffold involved in this incident, it was determined that the lack of restraint on the counterweight provided for by Needle A was the primary cause of the incident. It was noted that the structural integrity of any connection between a suspended counterweight box and the suspension needle is critical as its failure can contribute to the cradle falling to the ground. For this reason, such a connection needs to be a 'positive connection', that is, it needs to be reliable, of adequate strength and easily inspected to check for its correct installation. In this case, the scaffold coupler was fitted to a vertical tube underneath the steel rings on the counterweight box, which is not a positive

connection. Such a method relies upon the coupler being tightened to a minimum pre-determined torque to provide sufficient friction in order to ensure that the counterweight box remains attached to the needle at all times. Accordingly, a visual inspection of the scaffold coupler would not have been able to provide a true indication of whether it was tightened to an adequate torque, which can only be done with a calibrated torque wrench. The integrity of the welds connecting the vertical rings to the counterweight box was also pivotal when using this method of construction, which necessitates the development of testing and well documented welding procedures. This had not been done.

The manner in which the swing stage was eventually constructed by Allscaff Systems Pty Ltd deviated from the design drawings developed by Aluminium Access Systems, which showed the counterweight box placed on top of the suspension needle. The deviation in this design at the time of construction was not specified or certified by an Engineer, which would have ensured that the counterweight connection was structurally adequate. The deviation in the design configuration reduced the effectiveness of the needle suspension system, and placed complete reliance on the couplers being tightened adequately. It therefore changed the suspension system from one that could be assessed by a visual inspection to one that necessitated the use of specialised equipment. It also did not follow the guidelines provided for in the Australian Standards, which do not show the use of scaffold couplers as an acceptable means of securing needle counterweights.

The Report notes that had the counterweights and box been positioned and secured on top of the suspension needle, the swing stage would not have failed.

WHSQ investigation findings

Following completion of WHSQ's comprehensive investigation, the swing stage scaffold, which catastrophically failed and caused Mr Gear and Mr Sayer's deaths, was found to be deficient and unsafe. Furthermore, a number of safety measures, which were required to be followed, had not been complied with at the time of the incident. Relevantly, WHSQ found that:

- The scaffolding installed by Allscaff Systems Pty Ltd was done so in a way that deviated from the supplier's original engineer's drawings. Specifically, one of the swing stage needles was secured above the counterweight box with friction couplers, rather than underneath. No plans or drawings by an engineer or competent person were sought by Allscaff Systems Pty Ltd confirming that this alternative method was adequate and safe.

- The method of restraining the counterweight boxes relied on the use of scaffold couplers, the effectiveness of which was dependent upon them being adequately tightened to a pre-determined torque. The tension of the couplers could not be determined by way of a visual inspection, and required the use of specialised equipment. Even when tightened correctly, scaffold couplers should not be used in critical areas, such as restraining counterweight boxes.

- There had been a breach of AS/NZS 4576 – 1996 'Guidelines for scaffolding' and AS/NZS1576.4 – 1991 'Suspended Scaffolding', which stipulated that the preferred erection method for the scaffolding suggested that 'counterweights should be placed directly on the needles or on the innermost components to the needles in the designed location'. This was not the case with one of the needles on the swing stage involved in this incident.

- Testing indicated that one coupler tightened to a reasonable torque would have had adequate capacity to resist slipping. Hence, it is unlikely in this case that the H-Frame would have become disconnected from the counterweight box had the couplers been

adequately tightened. Inspection of the site suggests that the H-frame was pulled up and out of the retaining tubes welded to the sides of the counterweight box.

- There was no evidence to demonstrate that a system was in place to provide adequate checking and monitoring of any swinging stage on site at the time of the incident. There were also no documented procedures to ensure that swing stages were erected and installed in accordance with the manufacturer's specifications. These systems should have been implemented by Pryme Constructions Pty Ltd and Karimbla Constructions Pty Ltd.

- The swinging stage log books kept on the construction site where the incident occurred were not up to date.

- Mr Sayer had not been inducted into the use of the swing stages prior to the incident. There was no system in place on site to prevent an unqualified worker from accessing the scaffold.

With respect to how the incident transpired, it was thought that Mr Gear and Mr Sayer may have moved to the same end of the swing stage where their combined weight would have contributed to the catastrophic failure of one of the needles that was installed on top of the counterweight box. Whilst this was cited as a possibility, the exact scenario could not ultimately be determined, as there were no direct witnesses to the incident.

Police investigation

Police also conducted a thorough investigation into the incident, which included obtaining witness statements, scene photographs and relevant documentation.

A final coronial report was subsequently prepared, prior to receipt of the WHSQ Technical Report. In reaching conclusions about the incident, police were of the view that the southern needle of the scaffold toppled over the side of the building, taking the rostrum with it, and leaving the swing stage platform tilted to one side suspended solely form the northern needle. The northern needle was unable to support the weight and toppled over the side of the building initially landing on level 4, before then falling to the ground. It was thought that the southern needle failed as the counterweight basket and its contents were not clamped onto the inboard end of the southern needle. Whilst police thought it likely that the clamps were not fitted to the scaffold, despite claims to the contrary by employees from Allscaff Systems Pty Ltd, who were responsible for erecting the scaffolding, there was no conclusive evidence to support this scenario. As such, it was determined that there was insufficient evidence to prosecute any individual with a criminal offence relating to the matter.

WHSQ prosecution

Following completion of the WHSQ investigation, prosecutions were commenced against Allscaff Systems Pty Ltd, Karimbla Construction Services Pty Ltd and Pryme Constructions Pty Ltd. Each business, was charged with breaching s. 24 of the *Workplace Health and Safety Act 1995* (repealed) (the Act) having failed to meet its workplace health and safety obligations. The Director of Allscaff Systems Pty Ltd, Mr Ralph Smith, was also charged with breaching s. 167 of the Act*,* as he did not ensure a corporation complied with the Act in his role as an executive officer.

On 19 July 2013 in the Southport Magistrates Court, Pryme Constructions Pty Ltd were found guilty and fined $600,000.

On 19 January 2015, Karimbla Construction Services Pty Ltd pleaded guilty in the Southport Magistrates Court and were fined $25,000 and ordered to pay professional and court costs.

On 27 February 2015, Allscaff Systems Pty Ltd plead guilty in the Beenleigh Magistrates Court and were fined $700 000 plus legal, professional and Court costs.

On 27 February 2015, Mr Smith pleaded guilty in the Beenleigh Magistrates Court and was sentenced to 12 months imprisonment, wholly suspended for an operational period of 3 years. A conviction was recorded.

Timeframe of finalising prosecution

I note that the prosecutions against each of the defendants took some seven years to conclude, which significantly delayed finalisation of the coronial investigation, pursuant to the requirements of s. 29 of the *Coroners Act 2003.* Whilst complaints against each of the defendants were made on 1 June 2009 by WHSQ, a number of interim applications and judicial reviews were sought by each of the defendants. The hearing of each of these applications delayed finalisation of the prosecution considerably. It is unfortunate for Mr Gear and Mr Sayer's families that the prosecution of those involved in this incident, and as a consequence the coronial investigation, took so long to reach a conclusion.

WHSQ organisational response following incident

Following this incident, WHSQ commissioned a review to examine and formulate practical recommendations on the design, installation, maintenance, inspection, training and other operational aspects of suspended or swing stage scaffolding, so as to enhance its safe use. Such an investigation was thought to be necessary after a number of serious incidents involving suspended scaffolding. The investigation involved a review of the relevant Australian Standards and Codes of Practice from a number of State Authorities and overseas. A large reference group was created to assist with the review, including the Builders Labours' Federation, Queensland Master Builders Association, Scaffolder's Association and other industry experts. An audit was also undertaken by WHSQ of all swing stages erected in Queensland at the time.

The review found that the requirements for the design, installation, maintenance, inspection, training and other operational aspects of swing stage scaffolding were well defined in the current standards. Additionally, if the specified requirements were implemented in their entirety, swing stage scaffolding systems could be expected to be safe. However, it was clear that not all parties fully understood their obligations. As such, it was determined that in order to enhance the safe use of swing stage scaffolding, all relevant parties needed to follow the regulations and guidelines in existence. In relation to Mr Gear and Mr Sayer's death, it was thought that the incident was the result of a lack of knowledge by the parties involved, and as such it was recommended that a number of new initiatives be introduced. These initiatives were designed to upgrade the information available to the industry, as well as the levels of competency through the introduction of additional specialised training courses. Other initiatives introduced included:

- Load testing of the suspended scaffold be undertaken to ensure that it is safe for use;
- All aspects of the design of the suspended scaffold system and inspection of initial installation to be carried out by a suitably qualified engineer; and
- A compliance pack containing the documentation for the design, testing, inspection etc. associated with the swing stage scaffold.

The review found that if each of these initiatives were adopted and fully implemented by the industry, then swing stage scaffolding could be considered to be entirely safe.

Amendments to the Scaffolding Code of Practice 2009

In response to the recommendations of the review, WHSQ amended the *Scaffolding Code of Practice*, which was adopted in 2009. The amendments included a requirement that the swing stage scaffolding be designed and certified by a suitably qualified engineer (Part 7, Types of Scaffold, 7.3 Suspended (swing stage) Scaffold), and that installers and users of swing stage scaffolding complete a specific training courses. A Compliance Pack for swing safe scaffolding (Appendix 5) was also introduced.

Two training courses were subsequently developed by WHSQ. The first covered the safe erection/installation of swing stage scaffolds, which examined the scope of work to plan the job, selecting and inspecting scaffolding and associated equipment, set up tasks, installing and commissioning scaffolding equipment, as well as the safe dismantling of scaffolding. The second course related to the safe use of swing stage scaffolds, which covered the scope of work to plan, conducting routine checks, conducting swing stage operations and safely shutting down and securing the swing stage scaffolding.

Both courses were accredited by the Training and Employment Recognition Council Queensland in July 2009 for a period of 5 years.

On 1 January 2015, the Australian Skills Quality Authority approved an application by WHSQ to renew the accreditation of the aforementioned training courses.

Amendments to the Australian Standard Scaffolding – Suspended Scaffolding

In 2012 and 2013, WHSQ were instrumental in amending the content of the **Australian Standard Scaffolding Part 4 Suspended scaffolding AS/NZ 1576.4**. The following key amendments were subsequently made:

- Section 3 System design, 3.3 Cradle, 3.36 Suspension link: Raising the standard of the bolts and connecting pins connecting the cradle suspension point to the scaffolding hoist.

- Section 3 System design, 3.6 Suspension rig, 3.6.2 Stability of suspension rig, 3.6.2.4 Counterweights: Counterweights are to be secured to the suspension rig in such a manner that they cannot be removed without the use of a tool. Scaffold couplers or other friction devices shall not be used where their failure could result in the release of the counterweight. A positive connection, which does not rely on friction shall be used. Also, outlining the method of attaching counterweights to needles is critical to ensure the cradle remains suspended and does not fall.

- Section 4 Installation design and stability, 4.5 Suspension and secondary ropes: Where a swaged ferrule is used to produce a termination, it shall be subjected to a proof force that is not less than twice the WLL of the rope. This test shall be conducted prior to the first use and shall not damage the ropes.

Queensland swing stage scaffold operator compliance campaign & audit

In 2012, WHSQ commenced the Queensland swing stage scaffold operator compliance campaign, which was intended to identify incidents of non-compliance with regard to the operation and erection of swing stages, and to take appropriate enforcement action. It was also used to determine the level of compliance amongst swing stage scaffolding operators with the *Scaffolding Code of Practice 2009* and the relevant Australian Standards. The impact of the recent changes, including the training requirements, in managing risks associated with swing stage scaffolding was also considered.

A majority of Queensland operators (46 in total) were audited during the 18 month campaign. Unfortunately, only a very small percentage of operators were found to be compliant. The majority presented with issues which required the issuance of either verbal advice to rectify, prohibition notices or improvement notices. As a result, WHSQ convened a meeting with engineers known to be involved in the design and certification of swing stage scaffolds to discuss the concerns about the ongoing low levels of compliance. There are approximately 10 companies who install swing stage scaffolding in Queensland. The view of the attending engineers was that they were driven by their client's requests, and had limited ability to assist with improving the rates of compliance.

WHSQ has recently determined that a further campaign is necessary to address the safety issues, which remain in relation to swing stage scaffolding. Inspector training, for the purpose of a further round of audits, is presently being developed and is expected to be completed in the coming months. The purpose of the audits will be to identify incidents of non-compliance with regard to the operation and erection of swing stage scaffolding, and to take appropriate enforcement action.

Conclusion

Mr Gear and Mr Sayer died on 21 June 2008 after the swing stage scaffold they were working on catastrophically failed, causing them to fall from a great height.

Collaborative investigations into the cause of the incident were subsequently conducted by WHSQ and Police. From the evidence and expert opinion obtained during the course of these extensive investigations, I find that the swing stage Mr Gear and Mr Sayer were working on, was clearly unsafe, having been installed by Allscaff Systems Pty Ltd in a manner, which significantly deviated from the original manufacturer's design. Despite the change in design, no advice was sought by anyone at Allscaff Systems Pty Ltd to ensure that the alternative construction was safe. This method also made it impossible for anyone to determine if the scaffold was safe by way of a visual inspection, and necessitated the use of specialised tools. There were also no systems in place on site to ensure that scaffolding was installed in a manner consistent with the manufacturer's specifications, or to prevent workers who had not undertaken the requisite induction, from using it. Clearly, there were a number of deficiencies, which contributed to the collapse of the unsafe swing stage scaffold, and tragically claimed the life of Mr Gear and Mr Sayer. These catastrophic failings were the subject of successful prosecutions against each of the parties involved.

It is clear from the results of the subsequent audit into swing stage scaffolding conducted by WHSQ that there are widespread safety issues associated with its use in Queensland. I applaud and support WHSQ's plan to continue actively reviewing and auditing swing stage operators in an attempt to try and encourage the industry to follow the amended regulations and guidelines, which certainly assist in improving the safety of swing stage scaffolding.

Given the extensive investigation conducted, the amendments made to the Code of Practice and Australian Standards, the successful prosecution of the parties involved in this case, as well as WHSQ ongoing commitment to addressing the safety issues associated with swing stage scaffolding, I am of the view that there are no further issues, which require consideration by way of investigation or inquest. As such, I propose to close the coronial investigation without proceeding to inquest.

James McDougall
Southeastern Coroner
27 August 2015