STATE CORONER'S COURT
OF NEW SOUTH WALES

Inquest:	Inquest into the death of Leonard Bartholomeusz
Hearing dates:	25 to 27 June 2018
Date of findings:	13 July 2018
Place of findings:	NSW State Coroner's Court, Glebe
Findings of:	Magistrate Derek Lee, Deputy State Coroner
Catchwords:	CORONIAL LAW – cause and manner of death, Sydney Hospital, Prince of Wales Hospital, ST elevation myocardial infarction, ECG, delirium
File number:	2016/72079
Representation:	Mr J Harris, Counsel Assisting, instructed by Mr J McLachlan, Crown Solicitor's Office Ms L McFee, instructed by Unsworth Legal, for Dr J Holden Ms R Rodger, instructed by Avant Law, for Professor J Close and Dr D Lasschuit Ms J Sandford, instructed by Hicksons Lawyers, for South Eastern Sydney Local Health District and Dr I Samarasinghe
Findings:	I find that Leonard Bartholomeusz died on 6 May 2013 at Prince of Wales Hospital, Randwick NSW 2031. Mr Bartholomeusz died from consequences of myocardial infarction with coronary artery atherosclerotic disease being an antecedent cause. Mr Bartholomeusz died in circumstances where he had suffered traumatic injuries following a fall, and where an ECG demonstrated that he had suffered a ST elevation myocardial infarction, on 30 April 2013.

Recommendation: ***To the General Manager, Prince of Wales Hospital:***

Pursuant to section 82(1) of the *Coroners Act 2009*, I recommend that consideration be given to incorporating the contents of the 25 June 2018 memorandum from the Directors of Clinical Services and Nursing relating to proper processes for the performance of, filing of, and attendance on, an ECG into a policy directive, protocol, or guideline to provide for a greater degree of reliability, visibility and training in clinical practice.

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Introduction

1. On the morning of 30 April 2013, Leonard Bartholomeusz, a 73-year old gentleman, went to do buy his daily groceries as he had done many times before. Whilst shopping Mr Bartholomeusz came into contact with a police officer causing him to fall to the ground and suffer injuries. Mr Bartholomeusz was taken to hospital and initially treated for a dislocated shoulder but it was later discovered that he had fractured his hip, which required surgery the following day. On 6 May 2013, five days after surgery and whilst still in hospital, Mr Bartholomeusz suddenly and unexpectedly became unresponsive. Despite resuscitation attempts he could not be revived and died.

Why was an inquest held?

2. Under the *Coroners Act 2009* (**the Act**) a Coroner has the responsibility to investigate all reportable deaths. This investigation is conducted primarily so that a Coroner can answer questions that are required to be answered pursuant to the Act, namely: the identity of the person who died, when and where they died, and what was the cause and the manner of that person's death. All reportable deaths must be reported to a Coroner or to a police officer. One type of reportable death is what the Act describes as a sudden death where the cause is unknown.[1]

3. In Mr Bartholomeusz's case the coronial investigation gathered sufficient evidence to answer the questions about his identity, and where and when he died. However, in the initial period following Mr Bartholomeusz's death there were unanswered questions about what caused his sudden and unexpected death, and whether any circumstances surrounding his death may have contributed to it. The inquest was therefore focused on answering these questions relating to the cause and manner of Mr Bartholomeusz's death.

4. Inquests have a forward-thinking, preventative focus. When making findings following an inquest Coroners often exercise a power, provided for by section 82 of the Act, to also make recommendations. These recommendations are made, usually, to public and private organisations, in order to seek to address systemic issues that are highlighted and examined during the course of an inquest. Recommendations in relation to any matter connected with a person's death may be made if a Coroner considers them to be necessary or desirable. The recommendations made by Coroners are made with the hope that they will lead to some positive outcome following a person's death by improving public health and safety within the community at large.

Mr Bartholomeusz's life

5. Inquests and the coronial process are as much about life as they are about death. A coronial system exists because we, as a community, recognise the fragility of human life and value enormously the preciousness of it. Recognising the impact that a death of a person has, and continues to have, on the family and loved ones of that person can only serve to strengthen the resolve we share as a community to strive to reduce the risk of preventable deaths in the future. Understanding the impact that the death of a person has had on their family only comes from knowing something of that person's life and how the loss of that life has affected those who

[1] *Coroners Act 2009*, section 6(1)(a).

loved that person the most. Therefore it is extremely important to recognise and acknowledge Mr Bartholomeusz's life.

6. Mr Bartholomeusz was born in Colombo in 1939 (making him a citizen of the United Kingdom). After later moving to London, Mr Bartholomeusz met and formed a relationship with Sheila O'Brien. Ms O'Brien had a daughter, Ann, who became Mr Bartholomeusz's adopted daughter. Ms O'Brien and Mr Bartholomeusz later had a son, Samuel, together. However, the relationship later ended resulting in Ms O'Brien and Mr Bartholomeusz separating.

7. Mr Bartholomeusz later formed another relationship and had two further children. Following the birth of his second child from this relationship Mr Bartholomeusz migrated to Australia, initially living in Brisbane. After some years this relationship also ended and Mr Bartholomeusz moved to Sydney and began living in the Darlinghurst area. One of Mr Bartholomeusz's neighbours described him as a friendly and cheery person who was always happy to have a chat.

8. Although Mr Bartholomeusz had four siblings, it appears that he maintained limited contact with them, and with other members of his family whilst in Australia. Ann Bartholomeusz, however, remained in contact with her father and visited him for several months in 1990. Some 12 years later, she and her partner, and their two children, migrated to Australia and stayed with Mr Bartholomeusz for a time. Following this, Ann and her family moved to different locations in Australia, mostly in remote areas, but she continued to stay in contact with her father by calling and writing to him, and sending him gifts at Christmas time.

9. Sadly, Ann had not seen her father for some 10 years at the time of his death. At the time, she and her family had recently moved to Townsville and it had been her intention to visit her father once they had settled in. It is distressing to know that Ann did not have a final opportunity to see her father in person before his death.

10. Ann recalls her father as being an independent and creative person who influenced her own creativity and love of art. She described her father as being a source of wisdom for her and who provided great assistance to her when her family moved to Australia. This willingness of Mr Bartholomeusz to help others was not, it seems, only limited to members of his family. Ann recalls that her father was active within his community and often provided assistance to friends and acquaintances by repairing things, or simply being a person to talk to. Ann did not even know that her father had been hospitalised and said that this was representative of the type of person he was: someone who never wanted to impose on others. There is no doubt that Mr Bartholomeusz was greatly loved by his daughter and will be missed enormously.

What happened on 30 April 2013?

11. At around 9:40am on Tuesday, 30 April 2013 Mr Bartholomeusz went to the Woolworths supermarket at Town Hall to buy some groceries, as he routinely did every day. He made his way to the fruit and vegetable section in the lower ground floor. A group of three police officers were standing in one of the aisles there having a conversation. Mr Bartholomeusz attempted to walk past the group and in doing so came into contact with one of the police officers, resulting in Mr Bartholomeusz falling to the ground.

12. Woolworths staff come to Mr Bartholomeusz's assistance, helped him to a chair and called an ambulance. When paramedics arrived they noticed that Mr Bartholomeusz had limited range of

movement in his left shoulder and a small laceration to the bridge of his nose, which was bleeding. Mr Bartholomeusz was taken by ambulance to Sydney Hospital with a suspected dislocated shoulder.

13. On arrival at the Emergency Department (**ED**) at Sydney Hospital Mr Bartholomeusz was noted to be very agitated and complaining of pain in his left shoulder. Dr Joshua Holden was a locum junior emergency registrar working in the ED at the time. After Mr Bartholomeusz had been triaged by nursing staff Dr Holden reviewed him and formed the view that Mr Bartholomeusz had a suspected anterior shoulder dislocation. With the assistance of nursing staff, and nitrous oxide provide to Mr Bartholomeusz for pain relief, Dr Holden attempted to reduce Mr Bartholomeusz's shoulder. However, due the degree of Mr Bartholomeusz's agitation and non-compliance with the procedure, the reduction was unsuccessful.

14. This meant that Mr Bartholomeusz needed to be taken for an x-ray and for the reduction to be performed under sedation. Before this occurred Dr Holden took a medical history from Mr Bartholomeusz in which he noted that Mr Bartholomeusz had a past history of high blood pressure, but could not determine from Mr Bartholomeusz what medication he had been taking. After performing a physical examination Dr Holden noted that Mr Bartholomeusz was experiencing obvious pain and distress from his dislocated left shoulder but had no obvious fracture or other significant injury.

15. There was a delay in arranging for an x-ray to be performed. Due to the pain that Mr Bartholomeusz was in, and the risk of more permanent injury if the shoulder remained unreduced, Dr Holden decided to proceed with the reduction under sedation without waiting for an x-ray. He told Mr Bartholomeusz what he intended to do and Mr Bartholomeusz agreed.

16. Mr Bartholomeusz was given two sedatives (fentanyl and propofol) and Dr Holden, using a traction method, was able to reduce Mr Bartholomeusz's shoulder successfully. Following the reduction Dr Holden arranged for an x-ray to be taken which was unremarkable.

17. Dr Holden later reviewed Mr Bartholomeusz at around 1:00pm. He noticed that Mr Bartholomeusz's pain appeared to be well controlled and that Mr Bartholomeusz was keen to go home. Dr Holden discussed the matter with Dr Iromi Samarasinghe, the consultant staff specialist emergency physician on duty. Together, Dr Holden and Dr Samarasinghe formulated a discharge plan for Mr Bartholomeusz to return at a later date for review at a fracture clinic, to receive regular pain relief medication, and to keep his arm in a sling. Dr Holden prepared a discharge summary and arrangements were made for Mr Bartholomeusz to go home by taxi.

18. At around 2:00pm nursing staff told Dr Holden that Mr Bartholomeusz was complaining of pain in his left hip pain when he walked. Dr Holden arranged for an x-ray which showed a fractured neck of femur (commonly referred to as a hip fracture). Dr Holden informed Mr Bartholomeusz that he would need surgery to repair the fracture but Mr Bartholomeusz said that he wanted to go home. Despite Dr Holden explaining the risks to Mr Bartholomeusz if his hip was not repaired Mr Bartholomeusz remained adamant that he wanted to leave hospital.

19. In an attempt to obtain further history Dr Holden called Mr Bartholomeusz's GP, Dr Maureen Harrington, who indicated that Mr Bartholomeusz had a degree of cognitive impairment and expressed concern that Mr Bartholomeusz did not have the capacity to appreciate the risks if he was discharged home with a fractured hip. Dr Harrington also explained that in the 12 years that

she had known Mr Bartholomeusz she was not aware of him having any family or close friends in Australia.

20. After discussing the matter with Dr Samarasinghe, Dr Holden decided to admit Mr Bartholomeusz. Dr Holden noted that Mr Bartholomeusz was becoming increasingly agitated and non-compliant, and that if he were allowed to leave hospital it would likely mean further displacement of the fracture caused by Mr Bartholomeusz walking.

21. As Sydney Hospital did not have an orthopaedics department, the surgery to repair the hip fracture could not be performed there. Instead, Dr Holden contacted the orthopaedic registrar at Prince of Wales Hospital (**POWH**) and arranged for Mr Bartholomeusz to be admitted for surgery.

22. In preparation for surgery Dr Holden arranged for routine pre-theatre workup which included blood tests and an electrocardiogram (**ECG**) being performed on Mr Bartholomeusz. The ECG was performed at 4:40pm and Dr Holden subsequently reviewed the ECG results (or tracings) (**the first ECG**). Dr Holden noted that the computer generated interpretation of the tracings recorded the following:

> *"Slightly depressed ST segment (lateral, anterior, inferior). Probably normal ECG".*

23. After forming his own opinion of the tracings Dr Holden wrote the following on the tracings:

> *"Slightly depressed ST, inferior lateral ST, nil pain".*

24. Mr Bartholomeusz was later transported to POWH and arrived shortly before 7:00pm. At about 7:40pm Dr Goldberg reviewed Mr Bartholomeusz. At this time it appears that the first ECG was not available, leading Dr Goldberg to write the following instruction in Mr Bartholomeusz's medical records: "*ECG if not already done please*".

25. Three further ECG tests were subsequently performed at POWH at 10:25pm, 10:26pm and 10:27pm (**the second ECG**). The computer generated interpretation of these tracings recorded the following:

> *"Probable anterior infarct, acute; borderline T abnormalities, inferior leads".*

26. These results indicated that Mr Bartholomeusz had suffered an ST elevation myocardial infarction (**STEMI**), or heart attack.

1 May 2013

27. The following morning, 1 May 2013, Dr Danielle Lasschuit, an advanced trainee in geriatric medicine, reviewed Mr Bartholomeusz for a pre-operative assessment. She noted that his vital signs were stable and that there were no symptoms or signs to indicate myocardial ischaemia. She also noted results of the first ECG and made the following entry in Mr Bartholomeusz's progress notes, "*ECG SR rate 71*" to indicate that Mr Bartholomeusz was in sinus rhythm (normal, regular heart rhythm) and that his heart rate was 71.

28. Dr Kate Smith, the resident medical officer assigned to anaesthetics, later reviewed Mr Bartholomeusz prior to surgery to repair his fractured hip. She noted no clinical concerns whilst commenting that Mr Bartholomeusz had dual heart sounds and was in sinus rhythm.

29. At about 12:00pm Dr Lilian Yuan, the senior anaesthetic registrar, observed no clinical concerns with Mr Bartholomeusz. She found that all of Mr Bartholomeusz's vital signs were normal. She had no recollection of looking at any ECG tracing but noted that no abnormality was observed during the ECG monitoring during surgery. She noted that Mr Bartholomeusz was stable during surgery and that there was no cardiac abnormality.

30. The surgery proceeded without complication and a dynamic hip screw was inserted in Mr Bartholomeusz's left hip to stabilise the fracture. Following surgery, Mr Bartholomeusz was later reviewed at 7:00pm and noted to be confused and delirious, being disorientated to time and place.

2 May 2013

31. At around 8:00am the next morning Dr Lasschuit and Professor Jacqueline Close, the consultant geriatrician, reviewed Mr Bartholomeusz. They found that Mr Bartholomeusz had become agitated and delirious overnight and, as a result, had been given antipsychotic and benzodiazepine medication. On review Mr Bartholomeusz was noted to be sedated but haemodynamically stable. A behaviour chart was requested to document ongoing agitation and a recommendation was made for use of a low-dose antipsychotic (risperidone) if required for severe agitation.

3 May 2013

32. Dr Lasschuit reviewed Mr Bartholomeusz again the following morning. She noted that a urinary catheter had been inserted the previous day for urinary retention. Mr Bartholomeusz had remained agitated and so had required one to one nursing overnight. Dr Lasschuit noted that the fluctuation in Mr Bartholomeusz's level of consciousness, with intermittent confusion and agitation, was consistent with a diagnosis of ongoing delirium.

33. Dr Lasschuit considered that the cause of this delirium was multifactorial including the following: Mr Bartholomeusz having recently undergone general anaesthesia, his post-operative state, having been prescribed opioid analgesia, urinary retention, constipation and possible aspiration pneumonia. Dr Lasschuit ordered repeat blood tests, a urine sample, a chest x-ray and commenced Mr Bartholomeusz on antibiotics for possible aspiration pneumonia after noting that he had developed a most cough with audible crackles over his right lung.

4 and 5 May 2013

34. Over the weekend of 4 and 5 May 2013 Mr Bartholomeusz continued to be reviewed. He was noted to still have ongoing delirium but his observations were otherwise stable. There was no mention of any sign of cardiac failure.

6 May 2013

35. Professor Close and Dr Lasschuit reviewed Mr Bartholomeusz again at about 9:45am on 6 May 2013. They noted that Mr Bartholomeusz had remained delirious over the weekend, requiring one-to-one nursing, but that he was alert, attentive and partly oriented at the time of review. They also noted that Mr Bartholomeusz had been attempting to climb out of bed, as well as remove his urinary catheter and his intravenous drip. They found Mr Bartholomeusz to be haemodynamically stable with his oxygen saturations, blood pressure, pulse and temperature all within normal range.

36. Professor Close and Dr Lasschuit formulated a plan to do a CT scan of the brain when Mr Bartholomeusz was settled and referred him to the Acute Aged Care Extension (**AACE**) unit for ongoing management. The AACE is a purpose built six-bed secure unit within POWH specialising in the care of people with behavioural disturbance due to dementia or delirium.

37. Mr Bartholomeusz was later reviewed by an AACE registrar and transferred to the unit at around 3:30pm. At 4:40pm Mr Bartholomeusz was noted to be alert and confused but cooperative with no signs of dysphagia (difficulty in swallowing).

38. At 7:00pm Mr Bartholomeusz was given his medication and helped to his chair beside his bed. Fifteen minutes later Mr Bartholomeusz complained of feeling hot and a nurse began helping him to remove his jacket. As this was occurring Mr Bartholomeusz's head titled back and he suddenly slumped forward and became unresponsive. The nurse pressed an emergency button and called for immediate assistance. Cardiopulmonary resuscitation was commenced and continued for 20 minutes. However, Mr Bartholomeusz could not be revived and was later pronounced deceased at 8:24pm.

What was the cause of Mr Bartholomeusz's death?

39. Mr Bartholomeusz was subsequently taken to the Department of Forensic Medicine at Glebe where Dr Issabella Brouwer, senior staff specialist forensic pathologist, performed an autopsy on 8 May 2013. The autopsy revealed evidence of a ruptured healing myocardial infarction on the anterior aspect of the heart. Dr Brouwer was unable to determine the age of the infarct but estimated it to be several days old. She explained that myocardial rupture is a well-known complication following a heart attack and that the heart rupture usually occurs in the first few days following an infarction when the heart muscle is soft due to the necrosis of the heart muscle cells and the associated influx of inflammatory cells.

40. The autopsy also revealed that all three coronary arteries showed atherosclerotic disease with the left anterior descending coronary artery most severely affected with critical luminal narrowing. Dr Brouwer noted that plaque haemorrhage and a fibrin thrombus (blood clot) were visible microscopically.

41. Ultimately Dr Brouwer opined that Mr Bartholomeusz's death was due to consequences of myocardial infarction (**MI**) with coronary artery atherosclerotic disease being an antecedent cause.

What issues did the inquest examine?

42. Mr Bartholomeusz's sudden and unexpected death on 6 May 2013 raised a number of questions. The questions centred around two main areas:

    (a) the results of both the first and the second ECG, and any steps taken in response to them; and

    (b) whether the cause of Mr Bartholomeusz's delirium following surgery was appropriately and adequately investigated.

43. In seeking to answer these questions, and as part of the coronial investigation, an independent emergency physician, Dr John Vinen, was briefed to consider the general appropriateness of the care and treatment provided to Mr Bartholomeusz at both Sydney Hospital and POWH. Dr Vinen later prepared reports outlining his opinions in relation to these issues.

44. Expert opinion was also obtained from other independent medical experts. Firstly, Dr Mark Cooper, a consultant cardiologist, was briefed by the NSW Police Force. Secondly, Dr Tim Green, an emergency physician and a former recent Director of Emergency Medicine at Royal Prince Alfred Hospital (**RPAH**), was briefed on behalf of Dr Holden. Thirdly, Dr Gail Jamieson, a consultant geriatrician, was briefed on behalf of Professor Close and Dr Lasschuit. Each of these experts also prepared a number of reports, and all four of the experts gave evidence concurrently during the inquest.

45. It should be noted at this point that the events of 30 April 2013 at the Woolworths at Town Hall, and the circumstances in which Mr Bartholomeusz came to fall to the ground whilst there, were later the subject of criminal proceedings. Those proceedings were eventually resolved to finality and therefore any examination of the issues relating to those events did not form part of the inquest. Instead, as already noted the inquest examined issues relating to Mr Bartholomeusz's care and treatment at Sydney Hospital and POWH.

What did the first ECG show?

46. In evidence during the inquest, Dr Holden described the results of the first ECG as a non-specific finding. Dr Holden said that this was due to the fact that Mr Bartholomeusz was not displaying any symptoms other than from traumatic injury (due to the fall at Town Hall), and that the amount of ST depression shown on the tracing appeared to be less than 1mm and was therefore insignificant. Dr Holden also said that he was nearby when the ECG was performed and recalled that Mr Bartholomeusz was agitated and unable to lie completely still. Dr Holden said this accounted for some baseline wander (artefact on an ECG tracing) and believed that the evidence of ST depression was probably due to this. Dr Holden also noted that Mr Bartholomeusz was not displaying any signs of concurrent chest pain, or any other cardiac related symptoms such as shortness of breath, sweating, or palpitations. Having regard to all of the above Dr Holden did not consider the ECG findings to be clinically significant or to warrant any further investigation.

47. Further, Dr Holden confirmed that the ECG was performed at the request of Dr Goldberg and not because he (Dr Holden) had any suspicion that Mr Bartholomeusz might have been suffering from an undiagnosed cardiac condition. Dr Holden said that whilst it was routine for the POWH orthopaedic department to request that an ECG be performed on a patient at Sydney Hospital in

order to speed up the process of pre-operative workup, it was not routine for an ECG to be performed as part of the workup for a Sydney Hospital ED patient only. In Mr Bartholomeusz's particular case Dr Holden said that he not think any further investigation as to the origin of Mr Bartholomeusz's injury was required as he had clearly identified the mechanism of injury (that is, a fall) and there was nothing from his clinical findings which suggested the need to look any further than that.

48. In his first report Dr Vinen opined that the first ECG was diagnostic of acute myocardial infarction. Further, he said that the baseline in the tracing was not wandering and that the interpretation of the first ECG as being non-specific was incorrect. Dr Vinen concluded with the following:

> "*The fact that [Mr Bartholomeusz] did not complain of chest or other types of pain associated with an acute myocardial infarction [whether or not he was distracted by the pain associated with the dislocated shoulder] did not detract from the fact that the ECG findings were very abnormal and should have resulted in this diagnosis of acute anterior myocardial infarction…*".

49. In forming this opinion, Dr Vinen expressed the view that it was possible that Mr Bartholomeusz's fall at Town Hall had been due to a syncopal event as a result of an acute MI and not due to coming into contact with a police officer.

50. In contrast, in his first report Dr Cooper described the first ECG as abnormal but, in the circumstances of trauma and in the absence of any evidence of chest pain, not alarming. Dr Cooper did not believe that the first ECG fulfilled the criteria for diagnosis of STEMI and agreed with Dr Holden's assessment that there was evidence of baseline wander and that this exaggerated the ST segment changes. However, Dr Cooper said that even allowing for this there was still a mild degree of ST depression in the inferolateral leads.

51. Dr Cooper explained that it appeared that Dr Vinen had based his opinion of anterior infarction on the fact that ST segment elevation was present in the anterior chest leads. However Dr Cooper noted that only 1mm of ST elevation was present. He went on to explain that both the extent, and the shape (concave upwards), of the ST elevation was insufficient to diagnose STEMI according to current international criteria established by the American College of Cardiology and he European Society of Cardiology. According to these international bodies, 2mm of ST elevation is required. In evidence Dr Cooper described the degree of ST depression to be "*extremely common*" and indicative of non-specific findings, particularly when interpreted in the clinical context where there was no evidence of chest pain.

52. Dr Green described the first ECG as demonstrating minor abnormalities which "*would commonly be described as non-specific ST-T wave changes and have a number of different causes and need to be considered within the context of the clinical presentation*". Importantly, it should be noted that Dr Green was not provided with any records or reports relating to Mr Bartholomeusz's admission to POWH and that Dr Green was not made aware of the circumstances of Mr Bartholomeusz's death at the time that his opinion was sought, thereby eliminating any possibility of hindsight bias. In evidence Dr Green said that he would describe the ECG globally as abnormal but non-specific. He said that it did not reach the threshold for significance and was within normal limits. Further he said that it was not particularly remarkable, describing it as the type of result that he would routinely see every day in clinical practice where his response

would be to do nothing further other than note it. Dr Green concluded that Mr Bartholomeusz was not demonstrating any clinical features that suggested that he was suffering from a cardiac condition, and that it was "*entirely reasonable to conclude that the minor ECG changes may have represented either a normal variant, or a chronic abnormality in an elderly patient*".

53. Dr Green agreed with Dr Cooper's reference to the diagnostic criteria for STEMI requiring 2mm of elevation, which was not present, and also pointed out that the clinical findings did not support such a diagnosis. Dr Green emphasised the fact that Sydney Hospital staff performed the first ECG at the request of the POWH orthopaedic registrar as part of a routine pre-operative workup, and not because of clinical suspicion of a cardiac problem. In this regard, Dr Green expressed strong disagreement with Dr Vinen's hypothesis that Mr Bartholomeusz's fall may have been due to a syncopal episode. Dr Green instead pointed to the evidence from the attending paramedics which established that the fall was mechanical in nature. Dr Green said there was nothing in the Sydney Hospital clinical records to suggest that there was any acute cardiac problem.

54. Dr Jamieson said that the ECG was not uncommon and that its relevance would depend on the clinical context. She explained that in Mr Bartholomeusz's case there were no clinical signs to suggest an MI. Dr Jamieson went on to indicate that she would likely have enquired if there was a previous ECG result available but would not have acted any further than that.

55. In the course of his evidence during the inquest Dr Vinen appeared to resile to a degree from the position he adopted in his reports. He agreed that the ST depression did not meet the diagnostic criteria for STEMI. However, he qualified this by explaining that having examined many ECG tracings over 40 years of practice it was not uncommon for a patient to present in the early stages of MI without demonstrating diagnostic criteria.

56. **Conclusion:** Given the considered and measured evidence of Dr Cooper and his specialist expertise as a cardiologist, and Dr Green's more recent experience of clinical practice, their opinions are to be preferred over the opinion offered by Dr Vinen. This leads to a conclusion that the first ECG did not meet internationally accepted diagnostic criteria for STEMI, both in terms of the degree of ST elevation and the clinical presentation. Whilst this was not Dr Vinen's initial view, it was one which was ultimately acknowledged by him in evidence. Indeed the expert evidence from Dr Cooper and Dr Green indicates that the first ECG represented an abnormal but not uncommon finding, particularly in a patient of Mr Bartholomeusz's age. There is no evidence to support the hypothesis that Mr Bartholomeusz's fall at Town Hall was due to a cardiac-related syncopal episode and not mechanical in nature as a result of interpersonal physical contact.

Should any further clinical steps have been taken following the results of the first ECG?

57. In his first report Dr Vinen opined that the first ECG warranted a diagnosis of STEMI which in turn meant that Mr Bartholomeusz should have been commenced on the Acute Coronary Care pathway. In evidence, and having qualified his earlier opinion as to diagnosis of STEMI, Dr Vinen said that if he saw a patient with an ECG result the same as the first ECG, he would repeat the ECG within an hour, order troponin levels and put the patient on a cardiac monitor.

58. In contrast Dr Cooper said that he would not have done anything differently to Dr Holden. Specifically, Dr Cooper opined that the findings of the first ECG on their own, in the absence of definite cardiac symptoms, would not have precluded proceeding with Mr Bartholomeusz's

planned surgery the following day. Further, Dr Cooper said that even if troponin levels had been measured they would have been normal because elevated levels in the case of an MI takes several hours to manifest.

59. Dr Green said that that he did not believe that Dr Holden ought to have taken any other action beyond noting the slight ST depression and arranging for Mr Bartholomeusz's transfer to POWH, both of which occurred. Dr Jamieson shared the views of both Dr Cooper and Dr Green.

60. **Conclusion:** The combined evidence of Dr Cooper, Dr Green and Dr Jamieson is to be preferred over the evidence of Dr Vinen. That combined evidence establishes that Dr Holden's actions in making a note of the abnormal, but non-specific, ECG findings was consistent with competent medical practice. The non-specific nature of the first ECG did not indicate that any other clinical steps ought to have been taken or that the planned surgery on 1 May 2013 should not have proceeded.

Should the first ECG have been raised with a consultant?

61. In evidence, Dr Holden was asked whether he thought that the first ECG should have been raised with his supervisor, Dr Samarasinghe. Dr Holden said that it was not usual practice to do so and not in the specific circumstances in which Mr Bartholomeusz presented. That is, Mr Bartholomeusz was not presenting with any other symptoms for a MI such as chest pain, shortness of breath, sweating, or palpitations.

62. In his first report Dr Vinen said that the first ECG should have been reviewed by the duty emergency physician, in this case Dr Samarasinghe. In evidence he said that in the emergency departments where he had previously worked it was routine practice for all ECG results to be shown to a senior doctor on duty to review, and to annotate with their name, the date and time, and their interpretation of the results.

63. In his second report Dr Green said that he did not accept that it was mandatory for an ED consultant to see the results of every ECG which might be performed during a shift. He explained that it is routine practice for advanced trainees in emergency medicine, such as Dr Holden, to review ECG tracings independently and to use their discretion as to whether further opinion or advice from a consultant, or other specialist, is necessary. Dr Green concluded by saying that he did not think that an experienced emergency physician would have had a different interpretation of the first ECG, or a different management plan for Mr Bartholomeusz, to that of Dr Holden.

64. In evidence Dr Green elaborated and said that the practice at RPAH is for all ECG results to be seen by a suitable senior staff member, which includes both registrars and consultants. He explained that registrars (as opposed to residents and interns) had sufficient seniority to be allowed to use their discretion as to whether any concern about an ECG would be escalated for the attention of a consultant. Dr Green said that if he himself had been shown the first ECG he would have agreed with Dr Holden's interpretation and would not have done anything differently other than make an effort to look for any previous ECG results in order to determine if the findings represented old or new changes. He said that if they represented new changes then that would have mandated a different approach.

65. Dr Samarasinghe herself said that she would not necessarily expect that the first ECG would be drawn to her attention, especially if Mr Bartholomeusz was asymptomatic and if Dr Holden had nil concerns about what it showed. In evidence Dr Samarasinghe was asked whether, looking at the first ECG result now, she expected that it would have been brought to be her attention. She said that with the benefit of hindsight it is arguable that every test result should be brought to a consultant's attention. However, she emphasised that at the time it was noted that Mr Bartholomeusz had no ischaemic symptoms of a cardiac event and that the mechanism of injury was clearly trauma, and not some cardiac-related episode. On this basis she expressed the opinion that the first ECG had no bearing on this matter and the eventual outcome.

66. **Conclusion:** The evidence has already established that the first ECG was abnormal but non-specific. Dr Holden had sufficient seniority to interpret the results and to exercise his clinical judgment as to whether it should have been escalated to Dr Samarasinghe. There is no evidence to suggest that Dr Holden did not exercise sound clinical judgment in this regard. Further, Dr Samarasinghe's evidence established she would not have expected the first ECG to be brought to her attention given the clinical context, and that even if it had been, she said that her clinical impression would be identical to that of Dr Holden. This view is also supported by the opinion of Dr Green who also confirmed that he would have taken no different action to that of Dr Holden.

What is the relevance of Mr Bartholomeusz's previous ECG results?

67. In 2008 Mr Bartholomeusz also had an ECG performed at Sydney Hospital (**the 2008 ECG**). Given the passage of time the circumstances in which this ECG was performed is unclear. Regardless, none of the doctors who examined Mr Bartholomeusz at either Sydney Hospital or POWH in 2013 had regard to the 2008 ECG. However, the presence of the 2008 ECG raised questions as to its relevance, if any, regarding interpretation of the first ECG.

68. Dr Holden was asked about the 2008 ECG in evidence and said that it gave him more cause for concern. This is because Dr Holden observed that it was noted on the 2008 ECG that Mr Bartholomeusz was experiencing chest pain at the time. Dr Holden said that on this basis it would have made him more likely to undertake further investigation.

69. Dr Cooper said that the 2008 ECG showed more marked changes that the first ECG. He said that if he had seen the 2008 ECG it would have made him think that the findings from the first ECG represented old changes and were indicative of a chronic issue. Dr Green similarly said seeing the 2008 ECG would give him reassurance that the first ECG represented an old finding, rather than any acute change, and that no further action was required other than transferring the ECG results to POWH. Dr Jamieson was of similar view for identical reasons. She said that the 2008 results gave her more assurance that any further action in response to the first ECG was unnecessary. Dr Samarasinghe herself, who first drew attention to the 2008 ECG in a statement which she provided as part of the coronial investigation, said that she did not think that the first ECG represented new changes and that the changes had occurred five years earlier.

70. In contrast, Dr Vinen agreed that whilst the 2008 ECG was more abnormal than the first ECG, it simply confirmed that Mr Bartholomeusz had heart disease and it would not change his approach to Mr Bartholomeusz's management. Dr Vinen said that he considered Mr Bartholomeusz to be a poor historian in relation to his medical history, and Dr Vinen remained of the view that the fall at Town Hall could be indicative of a syncopal cardiac event meaning that more care in relation to interpretation of the first ECG was needed.

71. **Conclusion:** There is no disagreement within the body of expert evidence that the 2008 ECG was more demonstrative of abnormality than the first ECG. These findings confirm that the changes detected in the first ECG were chronic, rather than acute. Given this fact, and the clinical picture as at April/May 2013, if the 2008 ECG had been available to Mr Bartholomeusz's treating doctors in 2013 it would have given them reassurance that no other action was required.

What did the second ECG show?

72. Dr Cooper described the second ECG as being quite different to the Sydney Hospital ECG. This is because they showed definite and significant ST elevation consistent with an ST elevation myocardial infarction. There was consensus of opinion amongst all the experts that this was the case. Dr Cooper explained that the T waves on the second ECG (representing the repolarisation, or recovery, of the ventricles) were also inverting which implied that the infarction may have occurred a couple of hours previously.

73. In evidence Dr Cooper was asked about the most likely timing of the MI. He said that given that there was significant change between the first ECG at 4:40pm and the second ECG at 10:25pm it was likely that the MI had occurred around 6:00pm. However, he explained that an MI is not a discrete event and is something which evolves over the course of several hours.

74. It should be noted that in his first report Dr Vinen appeared to draw no diagnostic distinction between the first ECG and the second ECG, and described them in the same terms: that is, that they were "*significantly abnormal and diagnostic of acute anterior myocardial infarction*".

75. **Conclusion:** The second ECG showed evidence of definite ST elevation consistent with Mr Bartholomeusz experiencing a MI some hours earlier, likely around 6:00pm on 30 April 2013.

Why was no action taken in relation to the second ECG?

76. In evidence Professor Close described the results of the second ECG as being so obvious for STEMI that even the most junior doctor would have recognised it. The obvious question then is why no action was taken in relation to it? The simple answer is that neither Dr Lasschuit nor Professor Close saw the second ECG. Whilst the answer is therefore clear, the reason why this was the case is not.

77. Despite an extensive investigation it is not known who ordered the second ECG. It is only possible to infer that it performed as a result of Dr Goldberg's instructions on 30 April 2013 of "*ECG if not already done please*". The fact that the second ECG was performed indicates that relevant clinical staff were unaware of the existence of the first ECG. It is also unclear who performed the second ECG and whether the results were ever brought to any doctor's attention. Certainly it is plain that the second ECG was never brought to the attention of either Dr Lasschuit or Professor Close. Indeed, Dr Lasschuit said in evidence that the changes demonstrated on the second ECG were so abnormal and obvious that she was certain she was not aware of it at the time.

78. Dr Pauline Rumma, the Director of Clinical Services - Medical at POWH, provided confirmation of the above. In a statement dated 26 June 2018 she said the following:

"*I have caused all possible enquiries to be made with a view to identifying the circumstances in which [the second ECG] [sic], including the identity of the responsible staff member, and the chain of possession of the tracings. Regrettably, those inquiries have not shed any further light on the circumstances in relation to the tracings*".

79. Given Professor Close's opinion as to what the second ECG plainly and unequivocally showed, the question that then arises is whether appropriate systems now exist within POWH to prevent a similar reoccurrence of the events of April/May 2013. In this regard, as part of the coronial investigation, POWH was requested to provide a response addressing this issue. That request was made to POWH by at least January 2018. On 26 June 2018, the second day of the inquest, a copy of Dr Rumma's statement was provided and tendered as an exhibit. In that statement Dr Rumma referred to the creation of a memorandum which was *proposed* to be circulated to all Heads of Department and Nurse Unit Managers within POWH. The memorandum itself is dated 25 June 2018, addressed to All Medical and Nursing Staff, and signed by Dr Rumma and Verity Luckey, the POWH Acting Director of Nursing. The memorandum sets out the following:

> *In the meantime I wish to re-iterate the process for the performance, filing and communication concerning ECG in clinical areas outside the Emergency Department in particular:*
>
> *(a) All tracings once printed are to be handed to the ordering doctor or otherwise placed in the front of the patient's medical record (located at the nurses' station) pending medical review.*
>
> *(b) All staff performing an ECG must document in the Progress Notes for the patient that and [sic] ECG has been attended.*
>
> (c) *In the event of a concerning automatic ECG machine analysis, such as a probable infarct, a medical officer must [sic] alerted immediately"*.

80. Dr Rumma's statement referred to the fact that although Mr Bartholomeusz's death was reported to the Coroner as a sudden and unexpected death, no internal investigation or further clinical review of the circumstances surrounding it was undertaken. In particular Mr Bartholomeusz's death was not the subject of a morbidity and mortality review. On this basis, it was explained that the issues surrounding why the second ECG was not seen by any treating clinician did not become apparent until at least during the course of the coronial investigation.

81. **Conclusion:** The available evidence does not allow for any finding to be made as to the origin of the second ECG, who performed it, the circumstances in which it was performed, and whether the results of it were ever brought to the attention of a clinician. Given the critical diagnostic importance of the second ECG, and the fact that this was so self-evident, a repetition of such an occurrence should obviously be avoided in the future.

82. The memorandum proposed to be issued by Dr Rumma and Ms Luckey is endorsed and clearly represents a positive step in clinical governance designed to prevent such repetition. However, even allowing for an initial lack of awareness as to the importance of the second ECG as it related to Mr Bartholomeusz's death, the clinical governance response within POWH has not been timely. It has taken at least five months for the memorandum to be created, meaning that it was

only provided on the penultimate day of the inquest. Further, if the memorandum is examined critically, it is clear that it contains at least two obvious typographical errors. This, in combination with the timing of its provision, may suggest that its preparation was somewhat hurried, rather than carefully considered.

83. It is accepted that a memorandum from the Directors of Clinical Services and Nursing addressed to all medical and nursing staff carries with it some considerable force. However, the events of May 2013, and the length of time that has elapsed since without there being any instruction provided to clinical staff in relation to proper processes concerning the performance of, filing of, and attendance on, an ECG, suggests that a more robust document, in the form of a policy directive or protocol, is required. This will ensure that, like other similar documents, it is subject to regular review, is incorporated into ongoing training provided to clinical staff, and is more easily visible and referrable. It is therefore desirable to make the following recommendation.

84. **Recommendation:** I recommend that consideration be given to incorporating the contents of the 25 June 2018 memorandum from the Directors of Clinical Services and Nursing relating to proper processes for the performance of, filing of, and attendance on, an ECG into a policy directive, protocol, or guideline to provide for a greater degree of reliability, visibility and training in clinical practice.

What should have occurred in response to the second ECG and would it have altered the outcome?

85. Dr Vinen said that if the MI had been detected from the POW ECGs there should have been an immediate referral to a cardiology service and they would have taken over Mr Bartholomeusz's care in a coronary care unit (**CCU**). He said that much improved outcomes, even for patients of Mr Bartholomeusz's age, indicated that Mr Bartholomeusz would have had every chance of survival and recovery. Dr Vinen expressed the view that stenting could have been performed and opined that early treatment of the MI would most likely have prevented Mr Bartholomeusz's subsequent death from myocardial rupture.

86. Dr Cooper agreed that the second ECG warranted Mr Bartholomeusz being transferred to a CCU where monitoring could occur and an angiogram performed. However Dr Cooper explained that if stenting were performed then a course of anti-platelet drugs would have been required. If this were the case Dr Cooper suggested that it may have precluded Mr Bartholomeusz's hip surgery from proceeding on the basis that an orthopaedic surgeon would likely have been unwilling to perform such a procedure on a patient taking blood thinning medication.

87. Dr Cooper also noted that the autopsy findings suggested that the left anterior descending artery (**the LAD artery**) spontaneously re-perfused in the absence of stenting. He said that this could explain why Mr Bartholomeusz displayed no ongoing chest pain in the early hours and days after the MI. Dr Cooper said that it was difficult to ascertain whether stenting would have reduced the risk of myocardial rupture occurring six days later.

88. Dr Cooper described this as speculative on the basis that it is not entirely clear that cardiac rupture is prevented by early treatment. Dr Cooper explained that the practice of re-perfusing blocked coronary arteries with angioplasty to reduce the rate of subsequent myocardial rupture has been suggested but not proven. Dr Cooper noted that whilst a declining rate of rupture has

been noted in retrospective case reviews, it has been suggested that the declining rate of postmortem studies has meant that the true incidence of rupture may be underestimated.

89. **Conclusion:** If the second ECG had been made known to Mr Bartholomeusz's treating doctors at POWH it would have led to admission to a CCU and an angiogram being performed. Mr Bartholomeusz's management from that point on is less certain. On the one hand stenting could have been considered but that may have precluded surgery to correct his hip fracture, which itself was deemed to be a serious condition and requiring urgent corrective surgery. The evidence established that any decision made in this regard required careful consideration and a consultative process between different medical disciplines.

90. It is of course not possible to know for certain whether there might have been a different outcome. However, there is evidence to suggest that Mr Bartholomeusz's LAD artery spontaneously re-perfused in the absence of stenting and this did not prevent the subsequent rupture. Further, medical literature suggests that a more guarded view should be taken as to the prospects of the eventual outcome being any different, even if there had been an adequate and appropriate clinical response to the second ECG.

Was the cause of Mr Bartholomeusz's delirium appropriately investigated?

91. In his first report Dr Vinen opined that Mr Bartholomeusz's workup for delirium at POWH was "*manifestly inadequate*" and described the physical examination and investigations as "*incomplete*". In evidence Dr Vinen was asked to expand on this opinion. He said that from his reading of the POWH records it did not appear that there was a structured process for assessing the risk of delirium, and then investigating what was causing it. He said there was no clear cut documentation and the investigative process appeared unstructured. Further, he said that after reviewing the statements made by Dr Lasschuit and Professor Close he did not doubt that investigation was performed but that it did not appear to be a structured process in order to understand what steps had been taken.

92. So far as the possible cause of delirium was concerned, Dr Lasschuit said that she took a history from Mr Bartholomeusz and made daily observations. She also reviewed his nutrition and fluid intake, looked at his bowel chart, and assessed his daily pain levels. She explained that when his oxygen saturation dropped she ordered an x-ray and later commenced treatment for aspiration pneumonia and that Mr Bartholomeusz also had a septic screen and routine pathology workup.

93. Dr Lasschuit said that she was aware that MI can cause delirium but that it was one of about 60 possible causes to be considered in the clinical context which itself drives investigations. She said that she noted at the time that Mr Bartholomeusz was not complaining of chest pain, that he tolerated physiotherapy well, and that he never became haemodynamically unstable. She said that whilst in the back of her mind she considered all possibilities, she focused on those that were indicated by the clinical picture, none of which warranted an ECG to determine whether an MI was causative of delirium.

94. Dr Lasschuit said that she disagreed with Dr Vinen's opinion that a cardiac cause for the delirium ought to have been considered and investigated after six days. She explained that the average duration of delirium is seven days so it was not unexpected following major trauma, surgery, and general anaesthetic. Further, she said that delirium often persists longer than the underlying precipitant and that after six months 20% patients remain delirious.

95. Professor Close explained that there is higher incidence of delirium amongst orthogeriatrics patients following surgery of some 30% to 40%. When asked if a particular procedure is followed to rule in or rule out delirium Professor Close said that she is guided by the clinical context, and that any intervention is tailored to such context.

96. Professor Close was asked why specific investigation was not conducted for MI. She explained that in her experience it is relatively uncommon to see delirium caused by MI and therefore it was not high on the list of possibilities. She also said that there was little to guide her and Dr Lasschuit to suggest that MI was a contributor to Mr Bartholomeusz's delirium. Further, she explained that in patients with an average age of 84 years who suffer a hip fracture, 5% to 7% percent will have a cardiac complication usually associated with shortness of breath or haemodynamic compromise. However, she explained that Mr Bartholomeusz had no such signs to guide the treating team down this route.

97. Professor Close accepted that following a MI, delirium could be the only presenting symptom but said that this was very rare. She was also asked whether it would have been optimal to investigate MI six days following Mr Bartholomeusz's surgery. She said if optimal meant that every test, such as MRI, lumbar puncture, and ECG was to be performed, then it would have been optimal, but not practical. Professor Close explained that the persistence of delirium six days post-surgery was not unusual as it can persist for 7 to 14 days and, in some cases, never resolve. She concluded by noting that she had personally treated over 2,000 hip fracture patients and that medical literature and clinical practice both indicated that 30% to 40% of patients develop delirium after surgery.

98. Dr Jamieson disagreed with Dr Vinen's opinion that the workup and investigation was inadequate and incomplete. To the contrary, Dr Jamieson pointed to the fact that Mr Bartholomeusz's medication regime was initially considered to be the most likely cause but that other possible causes were then considered and investigated. In this regard Dr Jamieson noted that it had also been observed that Mr Bartholomeusz's vital signs were stable and at no stage was there any indication of cardio vascular compromise.

99. Dr Jamieson explained that virtually any medical condition can precipitate delirium in a susceptible individual, and that it is the history and physical examination which guides investigations. She noted that by the time Dr Lasschuit reviewed Mr Bartholomeusz on 3 May 2013, a number of factors contributing to his delirium had been identified, namely: his age, underlying cognitive impairment, hip fracture and recent surgery, analgesics and psychotropic medication, urinary retention, aspiration pneumonia and constipation. Dr Jamieson concluded that the history and clinical context provided no indication that further investigation beyond this scope was warranted. That is, she said that there was no evidence of any underlying cardiac instability (noting that all of Mr Bartholomeusz's vital signs were stable), no signs of cardiac failure and therefore no indication to perform an ECG.

100. In terms of diagnosing delirium for Mr Bartholomeusz, Dr Jamieson noted that there were a number of additional challenges: he had no relatives or carers who could corroborate a history; he may not have been able to communicate exactly what his symptoms were; and due to confusion he may have been uncooperative which can make clinical examination and investigations more difficult. Dr Jamieson noted that delirium can be persistent and continue for up to a week in 60% of patients. She explained that in Mr Bartholomeusz's case he had multiple

reversible causes for delirium identified and so it would not be expected that he would improve until those underlying issues were resolved.

101. Although he was not specifically briefed to examine the care provided to Mr Bartholomeusz at POWH Dr Green said that his general opinion was that there was a systematic approach to investigate the cause of delirium. Dr Cooper similarly was not briefed to consider this aspect of Mr Bartholomeusz's care but in the course of his evidence he noted that Mr Bartholomeusz was very stable following the MI and all of his observations did not imply that he was haemodynamically unstable. As an example Dr Cooper pointed to chest x-rays which had been performed and which a radiologist had reported on as indicating the absence of any heart failure.

102. **Conclusion:** The evidence does not support an assertion that the workup and investigation of the cause of Mr Bartholomeusz's delirium was inadequate or incomplete. The opinion expressed by Dr Vinen in this regard was in the nature of a sweeping statement that was inconsistent with the contemporaneous progress notes and other evidence. That evidence establishes that Dr Lasschuit and Professor Close undertook a structured investigation which was appropriately guided by the clinical context. There was appropriate adjustment of Mr Bartholomeusz's medication regime (such as cessation of benzodiazepines and use of antibiotics for possible respiratory tract infection), identification of possible causes (recent general anaesthetic, post-operative state, opioid analgesia and urinary retention), and investigation of other likely causes (aspiration pneumonia, repeat urine samples to look for infection, blood tests to look for fluid and electrolyte disturbances, anaemia and infection, and use of aperients to treat constipation).

103. The evidence established that MI was a possible cause of Mr Bartholomeusz's delirium, and that it was considered by Dr Lasschuit and Professor Close. However, there was no aspect of the clinical context that indicated that it was a likely possibility and ought to have been investigated over other more likely possibilities that were indicated, or in a timelier manner. The evidence establishes that the persistence of delirium six days post-surgery for a patient with Mr Bartholomeusz's history and presentation was not uncommon. Further, the transferral of Mr Bartholomeusz to a specialist unit to better manage, and investigate the cause of, his delirium was consistent with competent clinical practice.

Findings

104. Before turning to the findings that I am required to make, I would like to acknowledge, and express my gratitude to Mr Jake Harris, Counsel Assisting, and his instructing solicitor, Mr Jamie McLachlan of the Crown Solicitor's Office. Their assistance during both the preparation for the inquest, and during the inquest itself, has been invaluable.

105. The findings I make under section 81(1) of the Act are:

Identity

The person who died was Leonard Bartholomeusz

Date of death

Mr Bartholomeusz died on 6 May 2013.

Place of death

Mr Bartholomeusz died at Prince of Wales Hospital, Randwick NSW 2031.

Cause of death

Mr Bartholomeusz died from consequences of myocardial infarction, with coronary artery atherosclerotic disease being an antecedent cause.

Manner of death

Mr Bartholomeusz died in circumstances where he had suffered traumatic injuries following a fall, and where an ECG demonstrated that he had suffered a ST elevation myocardial infarction, on 30 April 2013.

Epilogue

106. It is devastating to know that six days before his death, 30 April 2013 began as an otherwise unremarkable day, like so many days before it, for Mr Bartholomeusz. On behalf of the Coroner's Court, and the counsel assisting team, I extend my deepest sympathy and offer my respectful condolences to Mr Bartholomeusz's family, and in particular his daughter, Ann, for their tragic loss.

107. I close this inquest.

Magistrate Derek Lee
Deputy State Coroner
13 July 2018
NSW State Coroner's Court, Glebe