Coroners Act, 1996
[Section 26(1)]

Western *Australia*

RECORD OF INVESTIGATION INTO DEATH

Ref No: 19/13

I, Dominic Hugh Mulligan, Coroner, having investigated the death of ***Thomas Michael BRASIER****, with an Inquest held at Perth Coroners Court on 13-17 May 2013 and 28 June 2013, find that the identity of the deceased person was* ***Thomas Michael BRASIER*** *and that death occurred on 27 October 2009, at Sir Charles Gairdner Hospital, Nedlands, the cause of death being* ***Consistent with Multiple Injuries,*** *in the following circumstances;*

Counsel Appearing:

Ms Melanie Smith assisted the Coroner
Mr Damian Matthews (State Solicitors Office) appeared for the Rottnest Island Authority
Ms Amanda Blackburn (D.G. Price & Co) appeared for Mr and Mrs Callan
Mr Jeremy Ludlow (Downings Legal) appeared for Oldfield Knott Architects

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INTRODUCTION

1. Thomas Michael Brasier was born on 20 July 2006.

2. In October 2009 he was a three-year-old boy who lived with his mother, father and older sister at their home in Leeming.

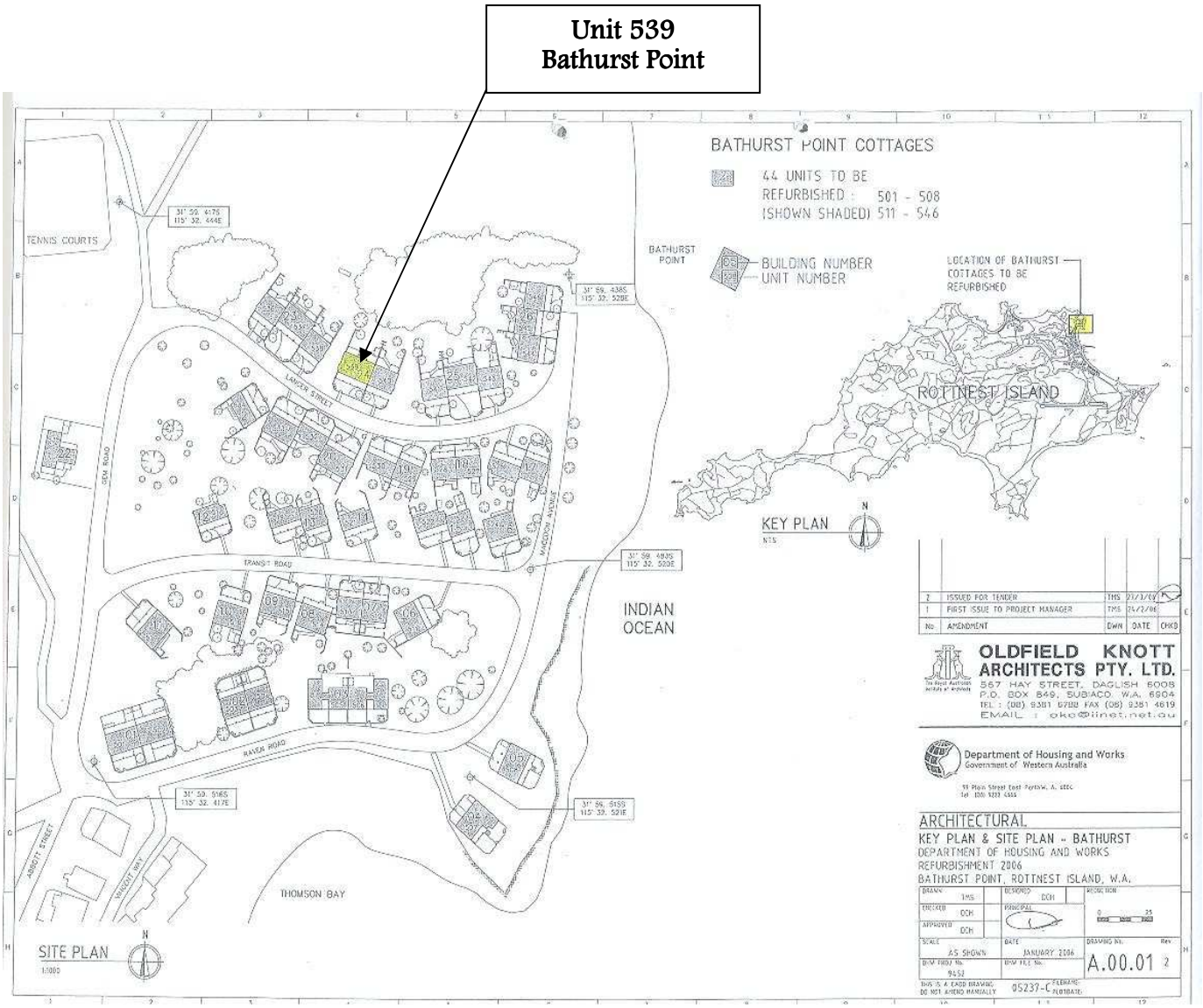
3. On Monday, 26 October 2009, the Brasier family left Perth on a ferry to travel to Rottnest Island for a holiday.

4. The Brasier family were going to share their week-long holiday with three other families, also travelling from Perth. The four families had been planning a joint holiday for some time and had booked their accommodation about a year in advance.

5. The other three families holidaying with the Brasier's were the Daly's, the Donaghan's and the Rafiq's. In total eight adults and ten children went to Rottnest Island for their holiday.

6. The four families were to be staying in the Bathurst Point area on the island. Each family was given their own unit. The units were next to one another.

7. The Daly family were allocated Unit 539, also known as Macedon. The Brasier family were given unit 540, which adjoins Unit 539. The Donaghan family were in unit 541 and the Rafiq's were in an adjoining property, unit 542.



Map of Bathurst Point
Exhibit 4, Volume 2, Tab 26

8. The four families were looking forward to a relaxing and enjoyable week's holiday with one another.

9. At about 11am on Tuesday, 27 October 2009, the families returned from a morning at the beach.

10. Shortly after returning back to Unit 539 Mr Daly decided to put up a hammock which he had brought with him to the island.

11. Mr Daly secured one end of the hammock to a tree at the rear of his unit (Macedon, 539). He secured the other end of

the hammock to a brick pillar which supported a small veranda or porch roof.

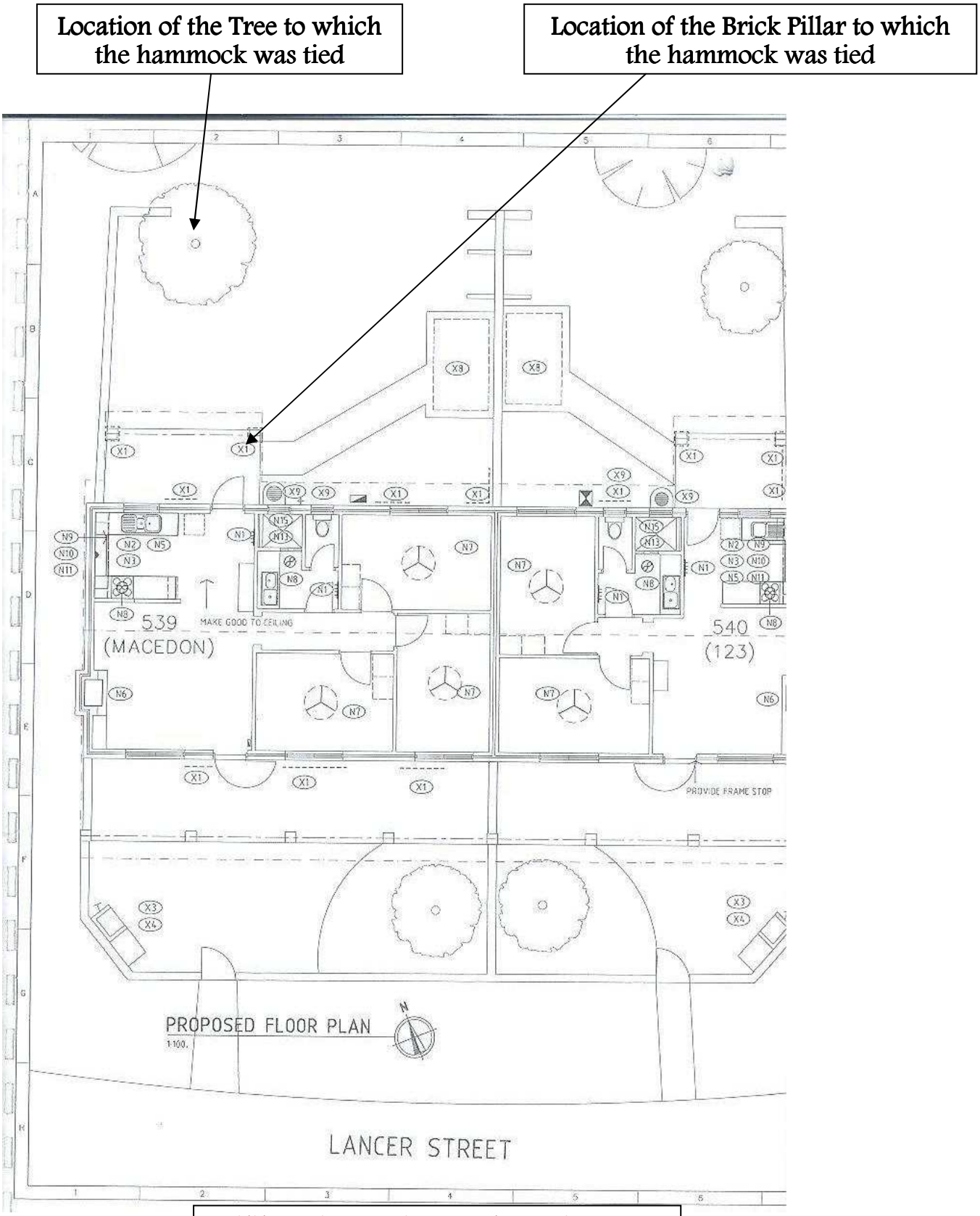


Exhibit 4, Volume 2, Tab 26, Drawing Number A.24.02

12. The masonry pillar was approximately 2300mm x 310mm x 320mm. It was constructed of bricks and mortar and was very heavy. The top 700mm of the pillar was hollow.

13. The pillar was meant to have been constructed in accordance with an architect's design, which would have seen the pillar tied to the veranda roof by means of a rod, secured at its base by a metal plate built into the fabric of the pillar.

14. The rod was intended to protect through the top of the masonry pillar and through the wooden support beam. The rod was then meant to be bolted on top of the wooden support beam tying the veranda securely to the masonry pillar.

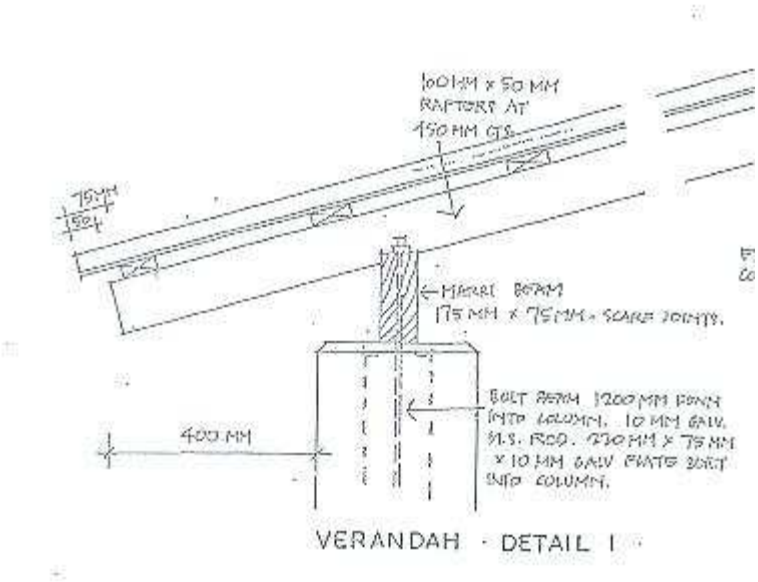


Figure 1 – Exhibit 1 - Mr Ferguson's Design for the Veranda Roof Tie Down

15. The rod was not built into the masonry pillar when it was constructed in 1975. This defect was not detected at the time or during later refurbishments in 1996 and 2006.

16. Had the brick pillar been constructed in the intended manner there would have been little or no risk associated with Mr Daly's decision to use his hammock.

17. Because of the defective construction, the brick pillar was unable to resist lateral forces, such as that placed on it by the loaded hammock.

18. After tying the hammock into position Mr Daly, who weighed about 82kg, got onto it and rested for about 20 minutes. For a time he was rocked as he lay in the hammock his daughter, Jamie, and by Thomas' sister, Sarah Brasier.

19. Mr Daly's use of the hammock was unremarkable. He didn't feel any movement in the pillar or hear any sounds indicative of its imminent failure.

20. After Mr Daly got off of the hammock Sarah and Jamie were allowed onto it. The two young girls remained on the hammock for a short time before they went inside for lunch. Jamie was aged five and she weighed about 20kg. Sarah was also aged five and she weighed about 18kg.

21. At about 2pm the fathers and children were in the units. The mothers had all gone out together to enjoy a cup of coffee at the cafe.

22. Six of the children were playing twister.

23. At about 2:45pm, after the game of twister finished, Sarah and Jamie asked if they could have another go on the hammock. Mr Daly agreed and he placed the two young girls on it. They enjoyed themselves for two or three minutes before the other children wanted to have a go.

24. The two young girls were replaced on the hammock by the two Daly twins; Asha and Clancy, who were both aged two. Asha weighed about 13kg and Clancy weighed about 11kg.

25. Clancy was seated on the hammock at the end nearest the tree. Asha was lying in the middle of the hammock with her head on Clancy.

26. Thomas also wanted a go on the hammock, and Mr Daly put him onto the hammock at the end closest to the masonry pillar.

27. Thomas weighed 14kg. Asha, Clancy and Thomas weighed a total of about 38kg.

28. Mr Daly was standing on one side of the pillar as the children were gently swinging on the hammock.

29. About 20 to 30 seconds after Thomas got onto the hammock the masonry pillar supporting the hammock failed, broke and fell forward in the direction of the children.

30. The pillar broke into three pieces.

Exhibit 4, Volume 1, Tab 14

31. Sarah was hit and covered by a part of the pillar and rubble. She screamed with pain and fear.

32. Mr Daly and Mr Brasier rolled the portion of collapsed pillar off Sarah.

33. Thomas was silent.

34. As the hammock fell to the ground it encased him in its material.

35. Initially Mr Daly and Mr Brasier did not know where Thomas was.

36. Mr Daly and Mr Brasier found Thomas and un-wrapped him from the folds of the hammock.

37. Thomas had received extensive and unsurvivable head injuries as a consequence of being struck by a large piece of the collapsed pillar.

38. Mr Brasier, who was a retired fireman and a practising, registered nurse, did all that he could to try and save his son. He performed cardiopulmonary resuscitation (CPR) until the emergency services arrived.

39. Mr Daly called '000' and sought the assistance of the emergency services.

40. Mr Daly was also a fireman and he tried to save Thomas. He performed expired air resuscitation (EAR) as Mr Brasier was performing CPR.

41. Mrs Brasier was contacted and she quickly returned to the unit. She knew that a colleague, Dr David McCoubrie, was on the island and may be able to help Thomas. Dr McCoubrie worked as an Emergency Department consultant.

42. The police helped to locate Dr McCoubrie, who immediately offered his assistance to try and help Thomas.

43. Before Dr McCoubrie arrived at Unit 539, the crew from the Rottnest Island ambulance arrived and began to help Thomas.

44. Thomas was asystole, meaning that when he was attached to a defibrillator the ambulance officers could not find a shockable cardiac rhythm.

45. The ambulance officers took over Thomas' care and they together with the assistance of Mr Daly placed a Guedel airway into his mouth and throat, to help secure his airway.

46. Ambulance officers administered adrenaline and atropine.

47. Dr McCoubrie arrived at the unit at about 3:35pm, about 10 minutes after he was contacted on his mobile phone.

48. He examined Thomas whose head injuries were some of the worst the doctor had seen.

49. Thomas' cardiac function was being monitored and he was found to still be asystole. CPR was recommenced and Dr McCoubrie tried to secure his airway using an endotracheal tube.

50. Thomas' chest began to rise and fall and the doctor could hear air entering both of Thomas' lungs.

51. Thomas was given further doses of adrenaline, after which it was found that a cardiac rhythm could be detected. Thomas' heart was functioning at about 24bpm. Superficially, the recommencement of cardiac function was a positive sign, however no pulse was detected with the electrical complexes. Thomas was in a condition of agonal bradycardia, which is a condition which is unable to sustain life.

52. Dr McCoubrie continued to care for Thomas until helicopter paramedics arrived at about 3:45pm.

53. Thomas was then taken by ambulance to a rescue helicopter waiting at the sports oval. Thomas was then taken by helicopter to Sir Charles Gairdner Hospital. He arrived in the Emergency Department at about 4:25pm.

54. Thomas was assessed on arrival by medical staff at the Emergency Department.

55. He had no cardiac output and his pupils were dilated and non-reactive. These observations did not improve at any time during the subsequent resuscitative efforts.

56. Medical staff did all they could to try and resuscitate Thomas however their efforts were unsuccessful. Resuscitative efforts were ceased at 4:42pm at which point Thomas was confirmed to be deceased.

57. Mr and Mrs Brasier objected to a full post mortem examination of their son. The objection was upheld by a coroner.

58. On 28 October 2009, the Chief Forensic Pathologist, Dr Clive Cooke performed an external post mortem examination of Thomas. Dr Cooke also considered the Sir Charles Gairdner Hospital file and radiology examination.

59. In addition to the severe head and facial injuries noted by Dr McCoubrie, Dr Cooke found that Thomas had suffered a chest injury with fractures to his ribs as well as a fracture to his right upper arm.

60. Dr Cooke determined the cause of death to be consistent with Multiple Injuries.

THE DESIGN OF UNIT 539

61. Unit 539 was 1 of 44 cottages built in the Bathurst Point area on Rottnest Island in the 1970's.

62. The unit was designed by Mr Ronald Ferguson, architect, from R J Ferguson & Associates. He was engaged to design Unit 539 together with a number of other properties located at Bathurst Point and other parts of Rottnest Island.

63. Mr Ferguson was not engaged on a *'full commission'* basis. He was engaged only to design the cottages. He was not contracted to supervise the building work or to ensure the unit was constructed in accordance with his architectural drawings.

64. Mr Ferguson was not offered a full commission contract because the Rottnest Island Board (the authority then responsible for Rottnest Island) wanted to undertake the construction of the new units using their own workforce when circumstances allowed.

65. The original designs drawn by Mr Ferguson relating to Unit 539 have been lost. The Rottnest Island Authority (the body who succeeded the Rottnest Island Board) have been unable to locate the original drawings.

66. Mr Ferguson gave evidence during the course of the inquest. He was unable to find his original drawings relating to the

unit however he did provide drawings[1] relating to similar units at Thomson's Bay. Mr Ferguson gave evidence that the porch detail in Exhibit 1 (see figure 1 on page 5 of this finding) was a standard detail and the same as that for units at Bathurst Point, including Unit 539[2].

67. After completing his commission to the Rottnest Island Board Mr Ferguson had no further involvement with the design and construction of Unit 539.

68. The final drawings submitted by Mr Ferguson were likely to have been drafted in 1974.

69. Unit 539 was built in 1975.

70. Of particular interest Unit 539 was constructed with a small veranda or porch at the rear of the property. The porch was approximately 4.5m long by 2.3m wide. The northern end of the veranda roof was supported by two brick piers.

71. Each pier was made of clay masonry bricks with 10mm mortar joints between the courses. The pillars were rendered and painted.

72. The masonry pillars were about 2.3m in height. Each pillar was rectangular in shape. The sides of the pillars were 310mm by 320mm.

73. The top 700mm of the pillar contained a hollow central core.

74. Mr Ferguson designed the property to be structurally sound. Part of his design related to the construction of the masonry pillars. Each pillar was designed to incorporate a mechanism which would hold the roof to the pillar in order to ensure the roof would not been blown away in adverse winds.

[1] Exhibit 1
[2] Evidence of Mr Ferguson, Transcript Page 97

75. The roof was to be secured to the masonry pillar by a steel rod which was meant to be welded to a steel plate built into the fabric of the masonry pillar.

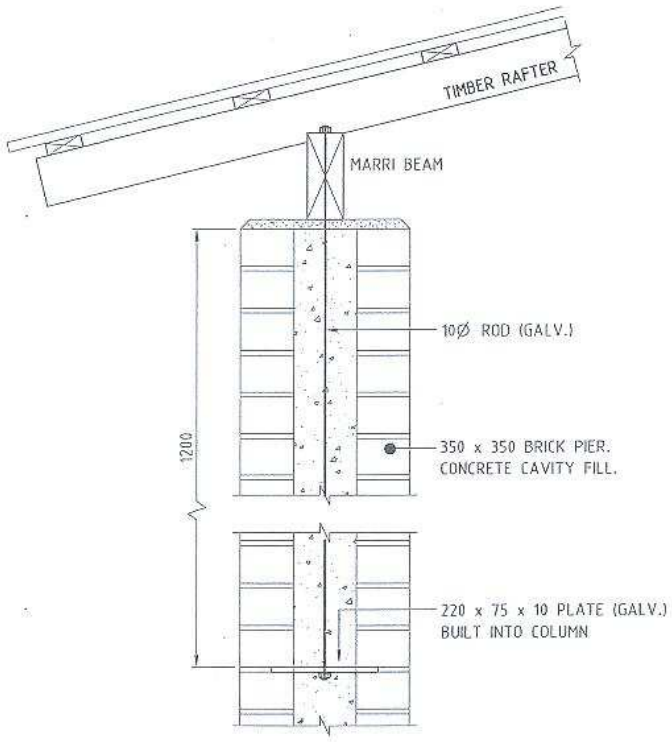


Figure 2 - The manner in which the pillar and tie down should have been constructed [3]

76. The galvanised mild steel rod was designed to be 1200mm in length and 10mm in diameter. The galvanised steel rod was meant to be connected to a 10mm thick galvanised steel plate measuring 220mm by 75mm.

77. The galvanised plate was intended to be anchored to the pillar by courses of brick work built over and around it. The hollow centre of the masonry pillar where the rod was located was intended to be filled with concrete. The rod and plate were intended to provide a strong and effective mechanism for securing the porch roof to the brick pillar.

78. As the rod rose above the level of the brick pillar it was intended that it run through a wooden porch support beam. The wooden support beam was an important structural element of the porch roof. A bolt was then to be used to

[3] Exhibit 4, Volume 2, Tab 19, Page 9

ensure the wooden support beam was tightly secured to the brick pillar.

79. Had Mr Ferguson's design been followed when the property was constructed in 1975, the brick pillar which subsequently collapsed and killed Thomas would have had sufficient strength to resist the lateral load placed on it when Thomas was lying on the hammock immediately before his death.

80. I have no doubt that had the brick pillar been constructed as originally designed, Thomas' death could have been avoided.

81. As it is, a total of six different designs were used by workmen on Rottnest Island to tie down veranda roofs to isolated brick pillars. It is not known how these alternative designs came into existence and who authorise the use or confirmed their structural suitability.

THE CONSTRUCTION OF UNIT 539

82. Unit 539 was built in 1975. Due to the passage of time and the absence of meaningful records, it has not been possible to determine who was involved in the construction of the unit. It is likely to have been built by employees of the Rottnest Island Board together with the assistance of tradesmen from the mainland.

83. Mr Matthews, counsel for the Rottnest Island Authority, (the successor to the Rottnest Island Board) made the following submissions, which best describe the manner in which Unit 539 was constructed:

> 8. Unit 539, along with other cottages in the Bathurst area, was constructed in the 1970's by a Rottnest Island based work force employed by their Rottnest Island Board augmented by trade's people from the mainland, subject to need and availability.
>
> 9. At attachment 1 to the letter of Mr Paolo Amaranti to Ms Melanie Smith, Counsel assisting the coroner, dated 14 December 2012, (exhibit 4, volume 3, attachment 1) may be found the minutes of meetings of the Rottnest

Island Board relating to the construction of the units at Bathurst in the 1970's.

10. The minutes reflect the 'piecemeal' nature of the construction work. In particular the minutes reflect difficulties in getting brick layers to Rottnest Island and that they were engaged as and when available.

11. The way in which the construction project was done in the 1970's may explain (but not excuse) why uniformity and adherence to the Ferguson drawings was not achieved. It would appear that different people were doing different works at different times without specialist oversight. The brick layers, almost without exception, failed to include the anchor or base plate provided for in the Ferguson plans. The roof carpenters, when time came to fix the roofs, were presented with a variety of tie down options to Veranda piers and in some cases, no tie down options. In the overwhelming majority of cases (around 580 out of 600 masonry piers according to the evidence of Mr Airey, see page 3 of his report dated 17 November 2009, Exhibit 4, Volume 14, Tab 13) a tie down was affected in some way but in relation to a total of 22 masonry piers, over 15 cottages, including Unit 539, roof carpenters, for reasons now unknown, completed their work without remedying, or having remedied the emission of a tie down option.

12. Although the roofs at Bathurst proved to be adequately tied down for assist the uplift forces to which they were subjected between construction in the 1970's and the refurbishment work in the mid 2000's, the failure to follow the Ferguson drawings meant that a number of Veranda piers did not have good resistance to moderate lateral forces.

84. It is clear that the north eastern pillar at the rear of the Unit 539 (the one which collapsed on to Thomas) was built without incorporating the design feature specified by Mr Ferguson which would adequately secure the veranda roof to the pillar.

85. The brick pillar was constructed without a galvanised metal rod being incorporated to tie the roof to the brick pillar. The galvanised metal rod was not connected to a galvanised base plate built which was in turn built into the fabric of the pillar. Additionally the hollow centre of the pillar was not

filled with concrete, which would have given greater strength to the pillar and which would have increased its ability to withstand lateral loads.

86. These omissions to adequately construct the pillar and to effectively tie down the porch roof were described by most of the witnesses who gave evidence during the course of the inquest as '*unthinkable*'.

87. These actions were significant departures from safe building practise and from the designs drawn by Mr Ferguson.

88. These design flaws meant that the brick pillar which subsequently collapsed and killed Thomas was inherently unable to resist lateral forces. From the time of its construction the brick pillar was a significant risk to the health of anyone who applied a lateral load against its structure.

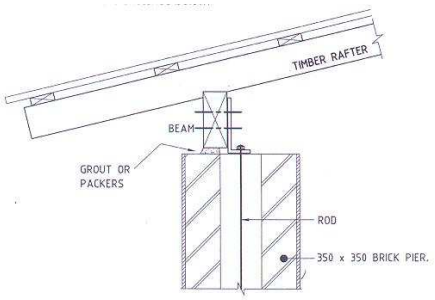
89. The brick pillar could have collapsed at any time between its construction and Thomas' death. It was extremely unfortunate that the collapse occurred so long after the faulty construction and in circumstances where the lateral load was so low.

90. The problems associated with the brick pier which collapsed on Thomas were not unique to Unit 539. After Thomas' death a complete audit of the properties on Rottnest Island was undertaken. The audit identified 22 brick pillars which had no effective method of tie down. This number included the two porch pillars at the rear of unit 540, where the Brasier family were staying at the time of the tragedy.

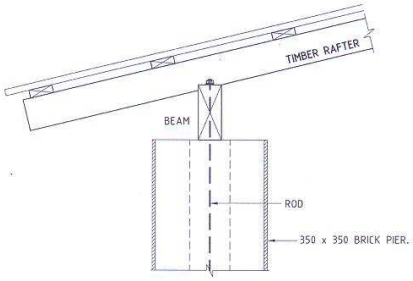
91. Mr Ferguson designed a single method of tying roofs down to brick pillars.

92. As a matter of fact six methods were employed to tie roofs down to brick pillars on Rottnest Island. It is not known who developed the five alternative methods of tying roofs down to the pillars and how they were determined to be safe and appropriate methods.

93. The six methods employed to tie down veranda roofs to brick pillars are depicted below:[4]



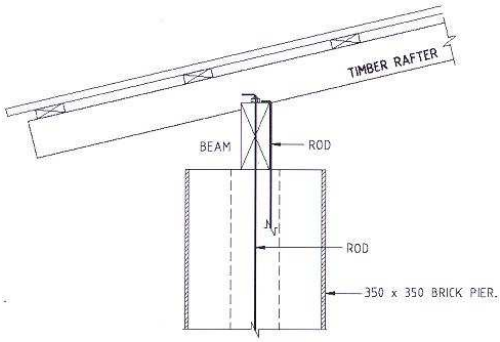
TYPE 1



TYPE 2

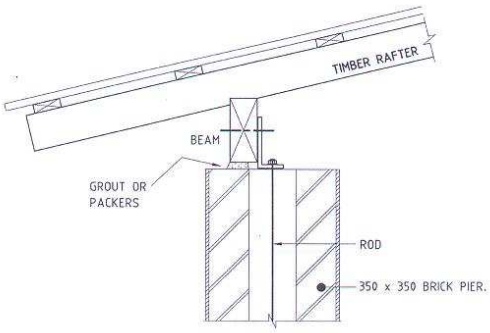
Photo 4 : TYPE 2

The tie down designed by Mr Ferguson for Unit 539



TYPE 3

Photo 5 : TYPE 3



TYPE 4

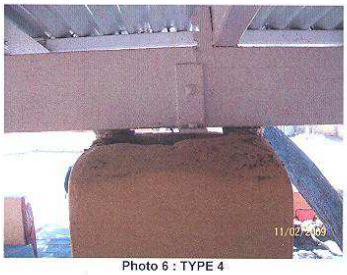
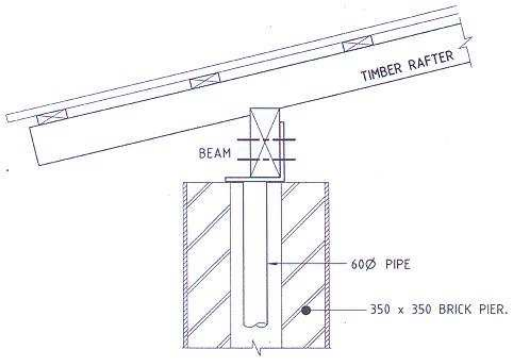
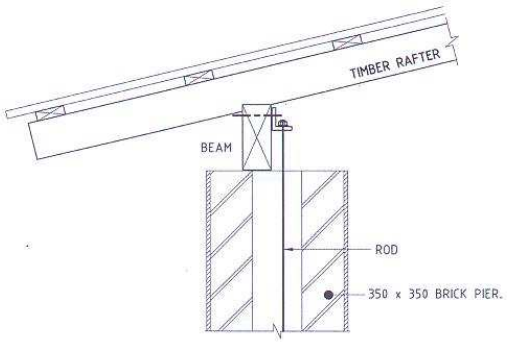


Photo 6 : TYPE 4

[4] Exhibit 4, Volume 2, Tab 19, Pages 11, 13-17



TYPE 5



TYPE 6

Photo 7 : TYPE 5

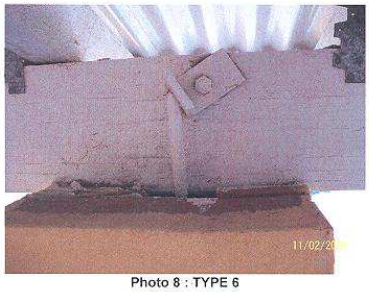


Photo 8 : TYPE 6

94. It appears clear from the evidence heard during the course of the inquest and from the submissions of counsel, that 22 brick piers out of a total of 600 brick piers were not tied to veranda roofs as intended by Mr Ferguson. The 22 piers which were not tied down were found in 15 cottages.

95. These deficiencies were uncovered after Thomas' death when a full and proper audit was undertaken in order to try and ensure a tragedy like Thomas' death could not happen again.

96. As a consequence of those pillars not having any form of tie down those pillars did not offer good resistance to even moderate lateral forces.

97. Following Thomas' death a report dated 30 November 2009, was written by Airey Taylor Consulting Engineers and Scientists relating to the failure of the brick pier.

98. The report was provided to the Court. In summary the reviewing engineer concluded the pier failed because[5]:

> 1. The pier was not effectively restrained at the top by tying into the roof structure.
>
> 2. Reliance was placed upon the column's ability to resist lateral loads in cantilever mode so that tensions experienced at the level of the failure plane near the base were well in excess of those considered acceptable for transient loads such as wind. Live loads such as those applied by attaching a loaded hammock are not considered to be transient loads and if assessed on the basis of live load application, loading of the columns are prohibited under Australian Standard (AS) 3700 from this use. The characteristic flexural tensile strength for unreinforced, reinforced and pre-stressed masonry shall be zero except under actions resulting from wind, earthquake loads or similar forces of a short-term, transient nature. The bending loads applied to the pier by swinging a hammock from the pier are live loads of the sort not to be considered as of a short-term transient nature.
>
> 3. Failure occurred within the mortar bed and as a result of bond failure between the mortar and the bricks at the upper side of the failure plane bed joint. There was no evidence of the failure being due to poor workmanship. Reliance on the tensile capacity of brick work joints for loads other than transient loads is prohibited due to the notorious variability of brick work tensile capacity when subject to bending.

99. It is possible to construct a masonry column while able to carry lateral loads of the type imposed by the hammock and people within the hammock with adequate safety margins. This could be achieved in a number of ways; one method would require the pier to be reinforced full height by use of a rod embedded in a concrete warm water matrix, preferably galvanised, and tied into the roof structure by an acceptable detail.

[5] Exhibit 4, Volume 1, Tab 18, Page 9

100. The engineer highlighted the fact the brick pillar which failed at Unit 539, as well as the 21 other piers later discovered not to have been tied down, lacked the reinforcement detail designed by Mr Ferguson.

101. The engineer believed that had the tie down and pillar been constructed as intended by Mr Ferguson the pillar would not have collapsed when Thomas was lying on the hammock. The engineer concluded:

> Had the column been effectively restrained at the top of the column by a holding down bolt embedded and cast into the top of the column and passing through the edge bearing beam, the bending moment likely to have been experienced on the column would have been of the order of 0.31kN metres and under these circumstances the bed joint tension (maximum) would be 0.04Mpa'. Under these circumstances, even though reliance would have occurred on the bed joint capacity to endure tension, failure seems, in the reviewing engineers opinion, to have been unlikely to occur, particularly as there are some dead loads applied to the top of the column by the Veranda roof edge beam and the self-weight of the concrete above the point of application of the load.[6]

GEORDIE BAY 1981

102. On 19 May 1981 the roofs of two units located at Geordie Bay, Rottnest Island, failed in heavy wind. The roofs belonged to units 408 and 409. The reason the roofs failed was that they had not been tied down in the prescribed manner.

103. Shortly after the roofs failed, the architect, Mr Ferguson, was summonsed to the island in order to try and determine what had gone wrong.

104. Mr Ferguson went to the two properties and tried to find an explanation as to why the roofs had lifted. The roofs were meant to be secured to the fabric of the properties by rods designed to pass through the cavity walls and be secured securely to the masonry brick work.

[6] Exhibit 4, Volume 1, Tab 18, Page 8

105. A metal rod was meant to pass through the cavity walls of the structures and hook onto a bolt which itself was firmly anchored to the ground.

106. Upon inspection Mr Ferguson found that whilst the steel work was present it hadn't been hooked and consequently the roofs were not tied down. In evidence Mr Ferguson was asked:[7]

> **Coroner:** Was it your view that some of the steelwork had been present or none of it had been present?
>
> **Mr Ferguson:** The steel was there, but it wasn't hooked, it wasn't tied down. It was just hanging, flopping in the cavity, so the roof just flipped straight off.

107. Mr Ferguson also found that some of the tie downs could not have been connected as the hook bars were too short.

108. Mr Ferguson was very concerned by what he had discovered. He was not only concerned about the safety implications relating to the two properties in which the roofs had failed (Units 408 and 409) but he was concerned for the wider safety implications relating to the poor workmanship he had found.[8]

> **Coroner:** Was your concern specific to those cottages or general to all cottages?
>
> **Mr Ferguson:** It was general. I started to panic at that stage that either visiting tradesmen were taking shortcuts or something was going wrong and pleaded that somebody do something about it and we decided to decline any more commissions after that.
>
> **Coroner:** All right. You made the comment in general terms - and I'm not asking you to recall the exact terms of the conversation - but you had a discussion with Mr Fitzhardinge in which you expressed your concern that the rooves generally may not be adequately connected to the supporting pillars?

[7] Transcript Page 110
[8] Transcript Page 111

Mr Ferguson: The concern was that the cottages weren't being built as drawn.

Coroner: How did Mr Fitzhardinge respond?
Mr Ferguson: It was a long time ago. He took it on board that, yes, there was a problem and I said, "What do I do now?" and he said he'd take it from there, I think, words similar to that which meant, I assume, he'd talk to the workforce or talk to the board or take whatever action was necessary internally.

109. Mr Ferguson had no further dealings with either the properties at Geordie Bay or in relation to Unit 539, where Thomas died.

110. Mr Ferguson left matters with the Rottnest Island Board, who he understood would take appropriate action.

111. The minutes of the Rottnest Island Board Works and Finance Committee dated 10 June 1981[9] note that Mr Ferguson, and others, were '*of the opinion that faulty roof fixings was the cause'*.

112. The Rottnest Island Board met on 17 June 1981 at which time the Board '*agreed that Mr J B Fitzharding discuss with our roof architects the possibility of building in fixed roof hook bolts'*.

113. It has not proved possible to find out what the Rottnest Island Board did to remedy the situation. In particular there is no evidence as to whether or not the Rottnest Island Board performed any form of audit in order to try and determine whether properties at Geordie Bay had been constructed in accordance with the original architect's drawings. There is no evidence of what remedial work was done.

114. The significance of the 1981 roof failures is that it demonstrated the construction standards in the 1970's had been lax and roofs had not been tied down in the manner prescribed by the architect.

[9] Exhibit 10

115. The failure of the roofs on units 408 and 409 could have acted as the trigger for a wider consideration as to the adequacy of the construction methods employed by island staff during the construction of unit's upon the island.

116. There is no evidence to suggest the Rottnest Island Board considered the failure of the roofs at unit's 408 and 409 to be anything but isolated incidents.

THE CREATION OF THE ROTTNEST ISLAND AUTHORITY

117. In 1987 the *Rottnest Island Authority Act 1987 (WA)* was past. As a consequence of the Act the Rottnest Island Authority became responsible for the control and management of the island. Of particular significance it became the authority responsible for accommodation, such as Unit 539, which is made available to the public.

RENOVATIONS AND REPAIRS IN 1996

118. During 1996 Unit 539 was upgraded. The work was cosmetic in nature and exceedingly unlikely to have resulted in the discovery of the absence of the tie down on the north east brick pier.

119. The upgrade has some significance as it represented one of the few opportunities where the unit was actively considered by a combination of the Rottnest Island Authority, architects and builders, who were looking for ways to improve the property.

120. Unit 539 needed little in the way of repair and refurbishment. The list of items for repair comprised:[10]

a. BBQ tiles grout not complete.
b. Front door sand & re-paint clear section.
c. Remove paint from hardware.
d. Top and sides to shelves-see schedule.
e. Provide clear edge between tiles to paint.

[10] Exhibit 4, Volume 3, Tab 3

f. Refit stove and missing knob.
g. Overhead cupboard, make good old holes and vent. Make good fixing of handles.
h. Plugs to kitchen bench shelf. –see drawings issued.
i. No more gaps use as sealant, this is not acceptable where silicone is required.
j. Spread coat hooks to then 200CTRs.
k. WC striker, make good.
l. Clean bathroom.
m. Make good back of overhead shelves bed one (wax).
n. Hall light to be Ikea fitting, as per bedrooms.
o. Bed three, window, ease.
p. Replace missing hooks in bedrooms.

121. As can be seen from the items requiring attention, consideration was given to the aesthetic qualities of the unit, rather than its structural integrity.

122. In making that comment, I am not critical of those involved in the repair and renovation process. The property had been standing since 1975 without evidence of any significant structural defects and it would have been difficult to imagine that the unit had been constructed without tying down the roof to the brick porch pillar.

123. I simply note that this upgrade to Unit 539 was as close to the Rottnest Island authority or Rottnest Island Board came to reconsidering the integrity of the structure since its completion in 1975.

THE EVENTS OF NOVEMBER 2003-2006

124. In November 2003 the Auditor General published a report relating to Rottnest Island called '*Turning the Tide*'[11]. The Auditor General found the islands accommodation and infrastructure had been run down over many decades, to a dilapidated state and was in need of an urgent and costly upgrade.

125. The Rottnest Island Authority established a task force known as the Rottnest Island Task Force which was charged

[11] Exhibit 4, Volume 1, Tab 4

with producing a prioritised infrastructure plan consistent with sound management and commercial principal.

126. The Task Force produced a report in May 2004 entitled *'Open for Business'* in which it made 103 recommendations.

127. The Task Force's report recommended, as recommendation 79, that *'the authority develops a comprehensive refurbishment (of accommodation) strategy for the next 5 years'*.

128. Cabinet endorsed 101 out of the 103 recommendations, including recommendation 79, and approved initial funding of $20.142 million for accommodation upgrades. This sum was later increased to a total of $32.319 million.

129. The Rottnest Island Authority decided as part of the refurbishment work that the existing asbestos roofs located on properties at Bathurst Point would be taken off and replaced with roofs made of zincalume (colorbond).

130. The Rottnest Island Authority engaged the Department of Housing and Works (now known as the Management and Works Unit of the Department of Finance) to administer the work on its behalf.

131. The Department of Housing and Works engaged a reputable architectural firm, Oldfield Knott Architects, to design and document the project work to be undertaken on the Bathurst Cottages, including the re-roofing.

132. This documentation was then used by the Department of Housing and Works to call for tenders from builders to complete the works. The documentation was prepared by an architect employed by Oldfield Knott Architects, Mr Domenic Chiappalone.

133. The large-scale redevelopment of properties on Rottnest Island was broken into a number of contracts.

134. The contract relating to the 44 units at Bathurst Point (including Unit 539), was known as Package "C".

135. Part of the refurbishment of the units on Rottnest Island involved the replacement of asbestos roofs with a light

weight, colorbond roof. In order to ensure the structural integrity of such a change an engineer's report was obtained from Wood & Grieve Engineers.

136. Wood & Grieve Engineers consulted on this issue in relation to reroofing works to be undertaken at Geordie Bay, Thomson's Bay and Bathurst Bay.

WOOD & GRIEVE ENGINEERS

137. Wood & Grieve Engineers wrote to Mr Chiappalone on 5 April 2005[12], relating to the roof structures at properties at Geordie Bay, Thomson's Bay and Bathurst Bay.

138. The report does refer to properties at Bathurst Bay, it does not refer to properties located at Bathurst Point. The executive summary of the report said, in part;[13]

> We have completed our preliminary assessment of the roof structures to the typical holiday units and general store to resist the wind loads following substitution of light weight metal roof sheeting (custom ORB) for the existing heavier roof cladding.
>
> Our preliminary assessment involved a desk top study of the existing architectural and structural drawings. Analysis of the structural adequacy of roof members and documented tie downs under current Australian Standard design wind loadings has performed for the lighter roof cladding.
>
> Our preliminary analysis indicates that the roof structure for the general store is structurally adequate for the lighter roof cladding. However the roof tie downs to the cottages, (h)as documented is in our opinion marginal for the lighter roof cladding.
>
> Prior to a final structural assessment inspection is required to check the existing structures compliance with the original design drawings. Following this inspection, any remedial works that may be required can be determined.

139. Wood & Grieve recommended a number of items of particular structural importance that needed to be

[12] Exhibit 22
[13] Exhibit 22

inspected. In particular Wood & Grieve recommended the inspection of the following points;[14]

a) Ridge and Intermediate Roof Beams – Check that tie downs are in the locations shown on the attached typical floor plans.

b) Tie Downs for Ridge and Intermediate Roof Beams – Confirm the tie downs are constructed as per the "Ridge Beam Holding Down Detail" typically at bathroom walls and where the beam bears on the cottage end walls.

c) Rafters bearing onto Ridge Wall Plate – Confirm that connections of the rafters to the wall plate, and Tie Downs of the wall plate to the masonry wall are as per detail "Ridge Detail At Wall".

d) Internal Wall Plates – Check that tie downs are typically installed in the locations shown on plan. If construction of the wall tie downs is not as per the typical detail, advice is required as to what method of holding down internal wall plates has been adopted on site.

e) Rafters bearing onto Ridge Beam – Ensure the connection of rafters to the wall plate, and wall plate to the Ridge Beam are as per the "Ridge Detail at Beam".

f) External Wall Tie Downs – Confirm that every 2nd rafter bearing onto external walls is tied down (excluding over wall openings) as per the "Detail at Eaves". If the rafters are tied down via an alternative method to the "Detail at Eaves" then document which method has been adopted.

g) Balcony Timber Columns – Check the base fixing is as per the "Timber Column Detail" Check for corrosion of steel elements and for any spalling or cracked concrete due to corrosion of cast in holding down bolts. Note any defects.

h) Balcony Roof Beams – Check that beams are fixed to timber columns as per "Elevation of Balcony Butting into Adjoining Cottage". The condition of bolts and washers and the timber should be checked and any defects noted

As well as confirming that the above tie downs are present and are in compliance with the original design drawings, a check of the general condition of the roof structure is required. The builder is to note signs of degradation such as corrosion of steelwork, corrosion or absence of cavity wall ties, spalling of concrete and the like.

Initial calculations, assuming the documented extent and form of construction of the existing tie downs, indicate that installation of a lighter roof cladding will likely require additional roof tie downs to resist wind loading calculated to current Australian Standards.

[14] Exhibit 22

140. It should be noted that the engineer from Wood & Grieve expressed concern about the roof structures being adequately tied down. He took the view that[15] '*installation of a lighter roof cladding will likely require additional roof tie downs to resist wind loading calculated to current Australian Standards'*. The engineer gave instructions to check tie downs on balcony timber columns and at other locations.

141. The engineer gave no instruction or mention of the need to check the tie downs on the particular type of pillar which collapsed and killed Thomas; namely a brick pillar supporting a veranda or porch roof.

142. It should also be noted that Wood & Grieve conducted a desktop study. They did not physically inspect the premises in question. Moreover it appears unlikely they had access to the original design drawings relating to Unit 539 drawn by Mr Ferguson, prior to the unit's construction. It is even more unlikely Wood & Grieve were aware of the six different methods used on Rottnest Island to tie down roofs to brick veranda or porch pillars.

THE REFURBISHMENT OF 52 COTTAGES AT GEORDIE BAY IN 2005

143. Part of the Rottnest Island Board's plans to upgrade accommodation on the island included the refurbishment of 52 cottages at Geordie Bay.

144. A contract of works relating to the package of works at Geordie Bay was drafted by Oldfield Knott Architects Pty Ltd. Mr Domenic Chiappalone was the architect responsible for drafting the relevant works contract relating to the project.

145. Part of the contract (section I – Roofing) called for the reroofing of the units at Geordie Bay. The contract called for the existing roof structure to be assessed by the builder, during the course of the construction work. The relevant obligations placed on the builder under the works contract is detailed in section 4.8 which provides:

[15] Exhibit 22

4.8 EXISTING ROOF STRUCTURE ASSESSMENT

A structural assessment of the existing roof structures compliance with the original design drawings is required. The Principal has engaged Wood & Grieve Engineers to under take this assessment.

Inspection check list for a typical cottage in each of the following areas is required:

- Geordie Bay

Allow to remove sufficient roof to enable final inspection.

Items of particular structural importance that require inspection are noted below:

a) Ridge and intermediate Roof Beams – Check that tie downs are in the locations shown on the attached typical floor plans.
b) Tie Downs for Ridge and Intermediate Roof Beams – Confirm the tie downs are constructed as per the "Ridge Beam Holding Down Detail" typically at bathroom walls and where the beam bears on the cottage end walls.
c) Rafters bearing onto Ridge Wall Plate – Confirm that connections of the rafters to the wall plate, and Tie Downs of the wall plate to the masonry wall are as per detail "Ridge Detail At Wall".
d) Internal Wall Plates – Check that tie downs are typically installed in the locations shown on plan. If construction of the wall tie downs is not as per the typical detail, advice is required as to what method of holding down internal wall plates has been adopted on site.
e) Rafters bearing onto Ridge Beam – Ensure the connection of rafters to the wall plate to the Ridge Beam are as per the "Ridge Detail at Beam".
f) External Wall Tie Downs – Confirm that every 2nd rafter bearing onto external walls is tied down (excluding over wall openings) as per the "Detail at Eaves". If the rafters are tied down via an alternative method to the "Detail at Eaves" then document which method has been adopted.
g) Balcony Timber Columns – Check the base fixing is as per the "Timber Column Detail". Check for corrosion of steel elements and for any spalling or cracked concrete due to corrosion of cast in holding down bolts. Note any defects.
h) Balcony Roof Beams – Check that beams are fixed to timber columns as per "Elevation of Balcony Butting in to Adjoining Cottage". The condition of bolts and washers and the timber should be checked and any defects noted.

As well as confirming that the above tie downs are present and are in compliance with the original design drawings, a check of the general condition of the roof structure is required. The contractor is to note signs of degradation such as corrosion of steelwork, corrosion or absence of cavity wall ties, spalling of concrete and the like.

Initial calculations, assuming the documented extent and form of construction of the existing tie downs, indicate that installation of a lighter roof cladding will likely require additional roof tie downs to resist wind loading calculated to current Australian Standards. Allow for 4 tie downs per cottage as detailed on drawings.

Inspection Check List – Geordie Bay Store

Items of particular structural importance that require inspection are noted below:

a) Structural Steelwork – Survey the existing structural steelwork to ensure that the erected members and their connections comply with the original design drawings.
b) Check the general condition of the structure noting any signs of deterioration such as corrosion of steelwork, cracking and spalling concrete and the like.

Initial calculations, assuming the documented form of structural steel construction and connection of members, indicate that installation of the lighter roof cladding is structurally acceptable without modification to the structure. Do not allow for any additional tie downs.

Refer to the following attached drawings:

Plan : 2 and 3 bedroom cottages – Anticipated location of existing roof tie downs noted.
Plan : 4 bedroom cottages – Anticpated location of existing roof tie downs noted.
Typical Cottage Section – Sheet 1.
Typical Cottage Section – Sheet 2.
Ridge Detail at Wall and Ridge Detail at Beam.
Ridge Beam Holding Down Details.
Balcony Beam to Timber Column Detail.
Typical Column Detail.

146. Section 4.8 of the Geordie Bay works contract did not call for consideration of the adequacy of tie downs on veranda/porch roofs to brick pillars. This is likely because the properties at Geordie Bay did not have brick pillars supporting the veranda/porch roofs. The properties at Geordie Bay appear to have had balconies, as opposed to veranda's/porches which were supported by timber columns.

147. As can be seen from a perusal of section 4.8 of the Geordie Bay works contract, the builder who undertook the works at Geordie Bay was contractually obliged to consider whether tie downs were present and in compliance with the original design drawings. The builder had an obligation to check the general condition of the roof structure and to ensure that there were at least four tie downs per cottage as detailed on the relevant drawings.

148. These obligations imposed on the builder were in accordance with the tenor of the advice given by Wood & Grieve that tie downs be inspected.

OLDFIELD KNOTT ARCHITECTS PTY LTD

149. Oldfield Knott Architects provided architectural services to the Department of Housing and works/Rottnest Island Authority for its proposed refurbishment of the 44 units at Bathurst Point, under Package "C".

150. Mr Domenic Chiappalone, an architect with Oldfield Knott Architects, prepared the documents relevant to the tender of the Package "C" work.

151. In order to allow interested builders quote on the work required at Bathurst Point (including Unit 539) Mr Chiappalone drafted a specification and works contract). The document was entitled "Rottnest Island Refurbishment – 2006, 44 Cottages at Bathurst Point (package 'C')" (I will refer to this document as the works contract).

152. In addition Mr Chiappalone drafted a number of architectural drawings which described the premises and

provided additional notes relating to general matters, refurbishment notes and re-roofing notes.

153. Mr Chiappalone was required to draft the drawings afresh, as the original drawings drafted by Mr Ferguson were not available. Mr Chiappalone consequently did not have the advantage of knowing how Mr Ferguson had intended that roof tie downs be performed.

154. The works contract drafted by Mr Chiappalone was on the Department of Housing and Works letterhead although the document also bore the details of Oldfield Knott Architects Pty Ltd. Similarly the drawings relating to Unit 539 bore the name of Oldfield Knott Architects as well as the Department of Housing and Works.[16]

155. Oldfield Knott Architects were engaged to administer the works Package "C" contract; that is to ensure the work done by the builder was in accordance with the contract.

156. Mr Dominic Chiappalone, an architect employed by Oldfield Knott Architects, was appointed by the Department of Housing and Works as the superintendent's representative.[17]

157. Having prepared the appropriate documents (the works contract[18] and the design drawings[19]) the project was tendered by the Department of Housing and Works.

158. Callan Construction Pty Ltd was the successful tender for the Package "C" contract. Callan Constructions Pty Ltd was a small building company run by Mr Michael and Mrs Mary Callan.

159. Coincidentally Callan Construction Pty Ltd was the company which in 1996 undertook the refurbishment of Unit 539.

160. Callan Constructions subcontracted the reroofing work on the 44 Bathurst Point properties to a company known as Timefield Pty Ltd.

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[16] Exhibit 4, Volume 2, Tab 25 Drawings A.24.02 & A.24.03
[17] Exhibit 7
[18] Exhibit 4, Volume 2, Tab 25
[19] Exhibit 4, Volume 2, Tab 25 Drawings A.24.02 & A.24.03

161. Timefield Pty Ltd is a small business run by Mr Stephen Woosenam.

THE SPECIFICATION RELATING TO THE ROOFING OF UNIT 539

162. The works contract drafted by Mr Chiappalone dealt with the roofing requirements of the 44 units at Bathurst point. The works contract and the relevant drawings (*Drawings A.24.02 & A.24.03)* provided all of the written instruction available to Callan Constructions and Mr Woosnam in relation to the reroofing of Unit 539.

163. Section F of the works contract (found on pages 74–77) set out the requirements relating to the re-roofing of Unit 539 (as well as the re-roofing of the other 43 units at Bathurst Point).

164. No mention is made in Section F to tie downs or the need to confirm the existence or structural stability of tie downs in the type of brick pillar which collapsed and killed Thomas.

165. The works contract and the architectural drawings did not require the builder or sub-contractor to consider the state of the existing tie downs or to consider whether additional tie downs were required.

166. The works contract required the existing asbestos roof to be replaced with a particular quality of zinc coated or aluminium/zinc coated steel sheet. It also set out the manner in which the roof and its constituents be affixed.

167. In particular the contract for Package "C" required the following standards to be adopted.[20]

> **1.2 STANDARDS**
>
> Materials and workmanship shall comply with the following Australian Standards unless otherwise specified:
>
> AS.1445 76mm pitch corrugated hot-dipped zinc-coated steel sheet
> AS.1562 Design and Installation of metal roofing
> AS.1903 Reflective foil laminates
> AS.1904 Code of practise for the installation of reflective foil laminate in buildings
> AS.2179 Metal rainwater goods

[20] Exhibit 4, Volume 2, Tab 25, Page 74

AS.2180 Code of practise for the selection and installation of metal rainwater goods
AS.2376.2Plastics building sheets – glass fibre reinforced polyester (GRP)
AS.2424 Plastics building sheets – general installation requirements and design of roofing systems
AS.2904 Dampproof courses and flashings
AS.3566 Screws – self drilling – for the building and construction industries

3. INSULATION

Insulate the whole of the area, except exposed eaves, porches and balconies.

Support insulation on existing ceiling structure prevent insulation from sagging. (Provide approved galvanised mesh if required).

Insulation shall be resin bonded fibreglass blankets having a moisture absorption capacity of not more than 0.2% by volume.

For steel roof areas generally on rake fibreglass shall have a thermal resistance of R2.5.

4.2 FIXING ROOFING SHEETS

Fix sheets to purlins using fasteners complying with AS.3566 external use, corrosion resistance class 3 and specified in the following table:

Purlin material – screw size and type

Roofing Sheets	timber
Custom Orb or Equal Approved	No.14x50mm type 17

Screws shall have hexagon washer heads and EPDM sealing washers.

Locate fasteners in 1st, 3rd, 5th, 7th and 9th crest corrugations at end supports and end laps and 1st, 4th and 8th crest corrugations at internal supports.

Series 500 “Tek” screws shall be “Climaeal” coated and shall have epoxy painted head to match roof colour all to comply with AS.3566 – class 3.

Provide either No.8 x 12mm hexagon washer head self drilling stitching screws with EPDM sealing washers or 4mm diam monel. Sealant sealed waterproof blind rivets in side lap crest corrugation at mid span between purlins.

4.9 EXISTING ROOF STRUCTURES

The following rectification work required to all roofs:

(i) Batterns to be fixed at each rafter intersection with No 14 Type 17 Screw x Min 90mm long

(ii) All rafters to be Trip-L-Grip as per manufacturer’s recommendations to supporting beams at veranda locations

(iii) At external wall locations every 2nd (between openings) and rafters directly adjacent to openings to be tied with DIA 10mm rods x min 1300mm long

(iv) All rafters over ridge to be Trip-L-Grip fixed

(v) Rafter pairs at ridge to be strapped via min 30 x 0.8 mm galv, strap x min 600mm long. Straps to fold over rafters and fix to rafter side via 3 clouts each rafter. Battens are then to be placed over strap and fixed to rafter through strap via 1 no 14 type 17 screw x min 90mm long

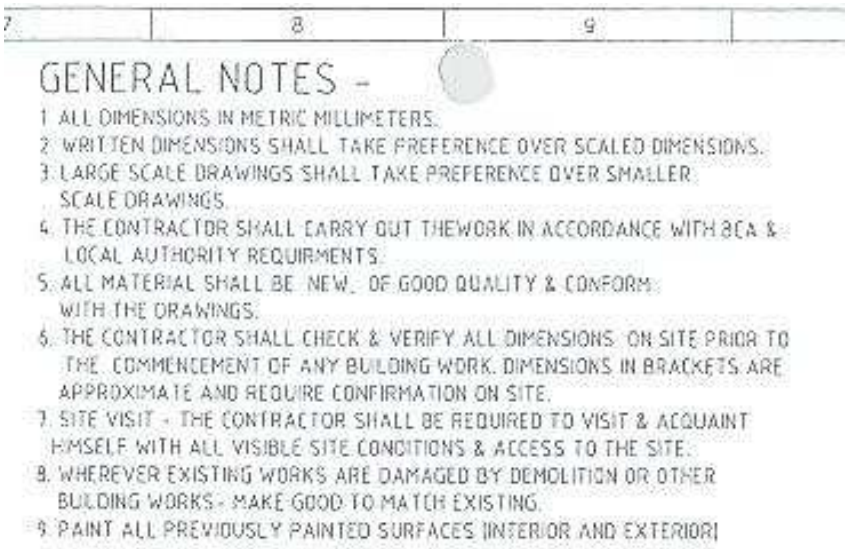
(vi) If rafters are spliced at any location, straps as detailed above are to be installed

(vii) Rafters over intermediate beams to be skew nailed as per AS1684

168. As can be seen the material parts of the works contracts relating to the re-roofing of Unit 539 did not require the builder (or roofing sub-contractor) to consider the issue of tie downs.

169. The only other documents which provided formal guidance as to the manner in which the new colorbond roof should be affixed to Unit 539 was found in the architect or drawings (A.24.02 & A.24.03).[21]

170. The architectural drawings (A.24.02 & A.24.03) were similarly silent as to there being an obligation to consider the adequacy of the existing roof tie downs to the brick pillars of the type which collapsed and killed Thomas. On drawing A.24.03 the re-roofing notes read as follows;



GENERAL NOTES -

1. ALL DIMENSIONS IN METRIC MILLIMETERS.
2. WRITTEN DIMENSIONS SHALL TAKE PREFERENCE OVER SCALED DIMENSIONS.
3. LARGE SCALE DRAWINGS SHALL TAKE PREFERENCE OVER SMALLER SCALE DRAWINGS.
4. THE CONTRACTOR SHALL CARRY OUT THEWORK IN ACCORDANCE WITH BCA & LOCAL AUTHORITY REQUIRMENTS.
5. ALL MATERIAL SHALL BE NEW, OF GOOD QUALITY & CONFORM WITH THE DRAWINGS.
6. THE CONTRACTOR SHALL CHECK & VERIFY ALL DIMENSIONS ON SITE PRIOR TO THE COMMENCEMENT OF ANY BUILDING WORK. DIMENSIONS IN BRACKETS ARE APPROXIMATE AND REQUIRE CONFIRMATION ON SITE.
7. SITE VISIT - THE CONTRACTOR SHALL BE REQUIRED TO VISIT & ACQUAINT HIMSELF WITH ALL VISIBLE SITE CONDITIONS & ACCESS TO THE SITE.
8. WHEREVER EXISTING WORKS ARE DAMAGED BY DEMOLITION OR OTHER BUILDING WORKS - MAKE GOOD TO MATCH EXISTING.
9. PAINT ALL PREVIOUSLY PAINTED SURFACES (INTERIOR AND EXTERIOR)

[21] Exhibit 4, Volume 2, Tab 25 Drawings A.24.02 & A.24.03

171. The notes did not require an inspection of the existing tie downs nor an examination of the existing porch pillars to check whether they were structurally sound.

172. The terms of the works contract when read with the roofing notes did not put either Callan Constructions or Mr Woosenam on notice that there may be a query about the structural integrity of any of the brick pillars in the Package "C" works or that there may be issues as to the existence or adequacy of the tie downs used in the brick pillars in the Package "C" properties.

173. The contractual obligations imposed on Callan Constructions, to consider the issue of tie downs, was markedly different from the contractual obligations imposed under section 4.8 of the Geordie Bay works contract.

174. The builder who undertook the works at Geordie Bay was contractually obliged to consider whether tie downs were present and in compliance with the original design drawings. The builder had an obligation to check the general condition of the roof structure and to ensure that there were at least four tie downs per cottage as detailed on the relevant drawings.

175. No similar obligation was placed on the builder in the package 'C' works contract relating to the 42 cottages at Bathurst Point. The roof section under the works contract placed no obligation on the builder to consider or inspect the existing tie downs.

176. This appears to have been an unfortunate oversight.

177. Had the builder been obliged to consider the adequacy of the existing tie downs, the absence of a tie down in the north-east pillar at the rear of Unit 539 may have been discovered, the pillar could then have been reinforced/repaired or replaced and the tragedy which led to Thomas' death may have been averted.

SUBCONTRACT OF THE ROOFING WORK BY CALLAN CONSTRUCTIONS PTY LTD TO TIMEFIELD PTY LTD

178. Callan Constructions Pty Ltd did not have the capacity to undertake all of the building and reroofing work itself. It engaged sub-contractors to help it undertake the Package "C" works.

179. Callan Constructions invited Timefield Pty Ltd, a company run by Mr Stephen Woosenam, to quote for the substitution of the pre-existing asbestos roofs with colorbond roofs on the 44 Bathurst Point properties.

Roofing

TIMEFIELD PTY LTD
2515 Great Eastern Highway
HOVEA WA 6071

Quote

Invoice #: 00000058
Date: 2/06/2006
Ship Via:
Page: 1

A.B.N. 69 709 596 871
A.C.N.

Bill To:

Callan Constructions

Ship To:

Callan Constructions

Description		Amount	Code
Estimation quote only (units)			
501 & 502	283m2	$13,150.00	GST
503 & 504	221.58m2	$11,079.00	GST
505 & 506	255.56m2	$12,778.00	GST
512 & 513	188.42m2	$9,421.00	GST
515	126m2	$6,300.00	GST
519 & 520	181m2	$9,050.00	GST
522 & 523	187.5m2	$9,375.00	GST
526	97m2	$4,850.00	GST
527 & 528	189m2	$9,450.00	GST
529	99m2	$4,950.00	GST
531	123m2	$6,150.00	GST
533	123m2	$6,150.00	GST
536,37,38	322m2	$16,100.00	GST
539 & 540	217m2	$10,850.00	GST
541,42,43	324.5m2	$16,212.50	GST
544,45,46	291m2	$14,549.00	GST
This quote includes .48 colourbond sheeting, comprahband, flumes, anticon R2.5, triplegrips and removal of old roofing from site.			
Not included - accomodation, travel and barge.			

CORONERS COURT
Inquest into the death of –
THOMAS MICHAEL BRASIER
Exhibit "13"
Date 15 / 05 /2013

Your Order #: Rott			Customer ABN:		Freight:	$0.00
Shipping Date:			Terms: Net 30th after		GST:	$16,041.45
COMMENT	CODE	RATE	GST	SALE AMOUNT	Total Inc GST:	$176,455.95
	GST	10%	$16,041.45	$160,414.50	Amount Applied:	$0.00
					Balance Due:	$176,455.95

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Figure 3 - Exhibit 13 - The Timefield Pty Ltd Roofing Quote

180. The Timefield Pty Ltd quote dated 2 June 2006 was accepted by Callan Construction on 9 June 2006.

181. Mr Woosenam was a qualified Boilermaker, a first-class welder, an advanced rigger, a crane driver and a roof plumber.

182. In order to become a roof plumber Mr Woosenam was not required to undertake any particular form of education, training or accreditation. He worked for a company as a roof plumber for a period of about three years before starting his own business.

183. The quote called for the supply of 48 colorbond sheeting, comprahband (foam applied to ridge caps to stop debris ingress) flumes (flume chimneys) anticon R2.5 (a form of 5mm insulation), triple grips (an L shaped connection used to connect battens to rafters) and the removal of the pre-existing asbestos roofing from the site.

184. Mr Woosnam's role was affectively to fix metal roofs, such as colorbond onto existing structures and then to install the gutters and downpipes. He was not a roof joiner of carpenter. Mr Woosenam gave evidence to the following effect;[22]

Coroner: You said that you did an apprenticeship?

Mr Woosenam: It was like an apprenticeship. I just worked on a day rate with this company.

Coroner: All right. Apprenticeships normally entail a training component, a TAFE component and then an entry into an association or guild-type arrangement at the end of the apprenticeship. Did you have any of that?

Mr Woosenam: No.

Coroner: So you didn't do any TAFE education?

Mr Woosenam: No. It's just a matter of speech, sorry.

Coroner: All right?

[22] Transcript 15.05.13, Page 229-230

Mr Woosenam: I was a labourer and I - for three with this same - one fellow, and - - -

Coroner: What does roof plumbing entail? Perhaps you could just tell me what you have to do?

Mr Woosenam: Just put tin on the roofs, do the gutters and downpipes.

Coroner: Is that a distinct position from a roof joiner? Who does the joinery work? Who does the roof framing work? Who puts up the - - -?

Mr Woosenam: That's a carpenter.

Coroner: Carpenter? Okay. So that's not your role?

Mr Woosenam: No.

Coroner: So you're presented with a structure; it's got battens, purlins and support beams - - -?

Mr Woosenam: Correct.

Coroner: - - - and you simply affix the appropriate roof to the appropriate portion of that structure?

Mr Woosenam: Yes.

Coroner: And then you arrange for the drainage to the downpipes and the proper slope to ensure that any rainwater or debris naturally falls from the roof?

Mr Woosenam: Yes.

185. It should be noted Mr Woosenam was not a roof carpenter and had no particular qualifications or experience which would enable him to undertake joinery work on the roof.

186. Mr Woosenam did perform some joinery in relation to the roof structure of the porch at Unit 539. He applied the battens, also known as purlins, to which the new roof would be secured. In this regard Mr Woosenam spoke of his involvement by way of reference to a photo (see photograph 56 on page 41 of this finding).[23] He said:[24]

[23] Exhibit 4, Volume 1, Tab 17, Photo 56
[24] Transcript 15.05.13, Page 237-238

Coroner: If I tell you that that is Unit 539, can you tell me what work you did on the photograph 56[25]?

Mr Woosenam: Put the new battens on.

Coroner: The battens - they're also referred to as purlins, are they?

Mr Woosenam: Yes.

Coroner: And they would run in the direction the photograph has been taken. They're the highest of the wooden structures beneath the roof?

Mr Woosenam: Yes.

Coroner: Then running counter to that are the rafters?

Mr Woosenam: Yes.

Coroner: Did you do those?

Mr Woosenam: No.

Coroner: So they were pre-existing, were they?

Mr Woosenam: Yes.

Coroner: Towards the right of the roof we can see the supporting beam?

Mr Woosenam: Yes.

Coroner: What work did you do on that?

Mr Woosenam: I put triple grips on every rafter on that main support beam.

Coroner: So when I asked you about doing work on rafters, the answer was that in fact you did do work on rafters, in that you triple gripped them to the existing support beam?

Mr Woosenam: Yes.

Coroner: To be clear, you worked on the support beam, each of the rafters and each of the purlins?

Mr Woosenam: Yes.

Coroner: Why were you adding triple grips?

Mr Woosenam: That's what it said in the specis.

[25] Exhibit 4, Volume 1, Tab 17, Photo 56

Coroner: Did you have an understanding as to why they were being put on?

Mr Woosenam: Yes.

Coroner: What was your understanding?

Mr Woosenam: It's just to make it stronger.

Coroner: The roof was being changed and the roof needed to be made stronger. Is that correct?

Mr Woosenam: Yes

THE PROCESS OF REMOVING THE ASBESTOS ROOF ON UNIT 539 AND REPLACING IT WITH A COLORBOND ROOF

187. In order to apply the new colorbond roof to Unit 539 Mr Woosenam first had to remove the pre-existing asbestos roof. Because of the inherent dangers of working with asbestos this needed to be carried out in a considered and safe manner. After removing the asbestos roof, the wooden substructure upon which the roof sat was visible.

188. With the asbestos removed from the portion of the rear porch at Unit 539, it was possible to see the support beam which sat on top of the brick pillar which collapsed and the rafters and purlins.

189. A rafter is a wooden member which sits atop and at 90° to the support beam.

190. A purlin (also known as a batten) sits atop the rafter and runs in the same direction as the support beam.

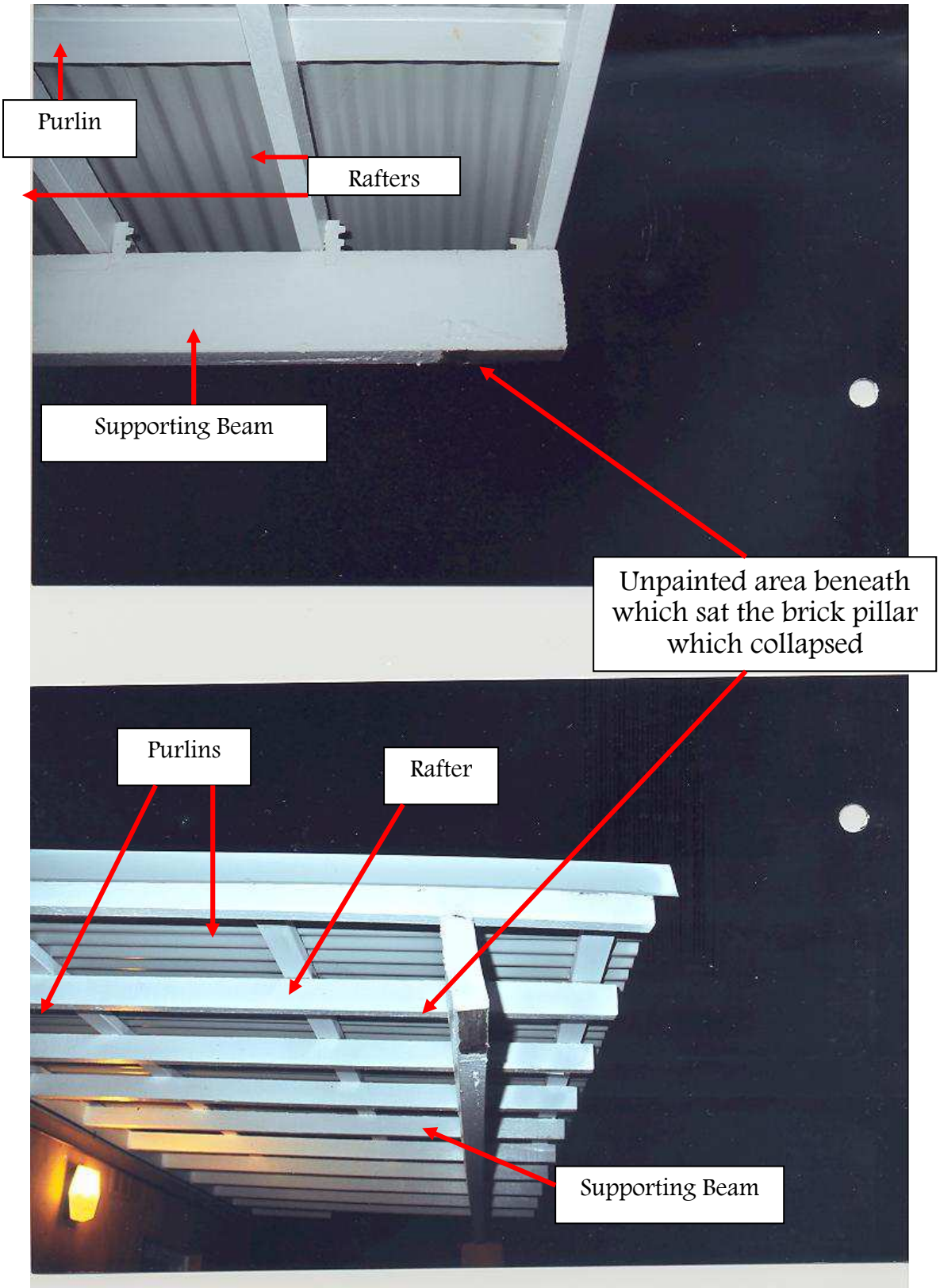

Exhibit 4, Volume 1, Tab 17, Photograph No. 55 & 56 depict the unsupported roof of the veranda/porch of Unit 539

191. Mr Woosenam's job was to attach the new colorbond roof to the purlins (battens) using the appropriate fixtures.

192. It was only during the short interval between the asbestos roof being removed and the colorbond roof reapplied that the absence of the tie down would have been apparent to a person working on the structure.

193. It would only have been possible for a person standing on top of the roof, whilst no roofing material was in place, to definitively consider and determine that there was no tie down.

194. I make that comment because it would have been possible, using Mr Fergusons design drawings, to properly tie down the support beam to the brick pillar which collapsed without there being a reveal of the tie down rod, from ground level. The tie down rod could have been countersunk and bolted within the support beam, or alternatively only a very small portion of the tie down beam may have risen above the support beam.

195. In any event neither Callan Construction, nor Mr Woosenam were directly asked to consider the structural stability of any of the brick pillars associated with the 44 cottages at Bathurst Point. Nor were they asked to consider the existence or effectiveness of existing tie down's. Their obligation, under the contract, was to replace asbestos roofs with colorbond roofs.

196. I have no doubt that had either Mr Woosenam, or Callan Construction, been aware that there was no tie down on the brick pillar which collapsed, they would have taken immediate steps to draw the deficiency to the attention of Mr Chiappalone and seek instructions to remedy the defect.

197. Mr Woosenam was not a registered builder and was not familiar with the building code of Australia. Likewise he was not an engineer and it was not within his competence to assess the adequacy of the tie down between the wooden roof beam which sat atop the brick pillar and brick pillar which subsequently collapsed.

198. Nevertheless Mr Woosenam had an awareness of the need for some form of tie down.

199. Mr Woosnam's concern was to ensure that the new roof was adequately connected to the support beam upon which arrested. He was not concerned with the manner in which the brick pillar upon which the support beam rested had been constructed.

200. Before the inquest Mr Woosenam provided answers to questions asked by Counsel Assisting, Ms Smith and Sergeant Housiaux, a police officer attached to the Office of the State Coroner. In his answer he said:[26]

> I agree that when heavy roof cladding is removed and a lighter weight cladding is installed, roof framing members should be checked and modified, as was done. In regards to the tie downs – Yes tie downs should be checked and modified to suit light weight cladding and this is why we triple gripped the rafters to the support beams, from my memory. In regards to the actual column of Unit 539, I am not qualified to assess how the column was built.

201. Likewise I am confident that had Mr Callan become aware that the brick pillar which collapsed on Thomas was not adequately tied down, then he would have taken prompt and immediate steps to draw the defect to the notice of Mr Chiappalone and sought instructions to correct the deficiency.

202. Regrettably the absence of adequate tie downs was not in the contemplation of either Callan Constructions or Mr Woosenam.

203. From their perspective there was no reason to suggest the brick pillar was not structurally sound. The pillar had been standing for more than 30 years without apparent failure. The terms of their contract did not require them to specifically consider the structural integrity of the brick pillar or any other structural element in the 44 units that were under refurbishment and repair.

[26] Exhibit 4, Volume 2, Tab 29

204. Neither Callan Constructions nor Mr Woosenam were aware of the incident in 1981 when roofs were blown off two units which were inadequately, or not at all, tied down. Had they been told of this incident they may have considered the issue of tie down's more closely.

205. Neither Callan Constructions, nor Mr Woosnam were parties to the Geordie Bay redevelopment in 2005 which placed an obligation on the builder to consider the issue of tie downs as part of the works contract associated with that redevelopment.

206. In any event the colorbond roof was applied to the porch of Unit 539 without it being noticed that there was no tie down between the roof beam and the brick pillar which subsequently collapsed and caused Thomas' death.

ARCHITECTURAL OVERSIGHT

207. Oldfield Knott Architects acted as superintendant's representative throughout the subsequent refurbishment of the properties. In this capacity Mr Chiappalone attended site meetings, dealt with the builders queries and carried out other associated tasks during the construction phase of the project.

208. Mr Chiappalone attended the site on approximately 13 occasions during the construction phase of the project. His visits were not exclusively to inspect the builders work on the project. During his visits he attended site meetings for other refurbishment projects referred to as Package A and Package B projects. Mr Chiappalone also held discussions with the Department of Works manager, other Rottnest Island Authority representatives and suppliers during those visits.

209. Mr Chiappalone's role was not to supervise or review the builders work practises, but to identify areas where the builder had not complied with its contractual obligations.

210. During the course of his various inspections Mr Chiappalone discovered no such inadequacies during the construction phase of the project.

211. As a consequence, Mr Chiappalone did not inspect Unit 539 after practical completion of the works. He made a final inspection of the project to check that previously notified inadequacies had been rectified by the builder to achieve practical completion, which occurred on or around 27 September 2006.

212. It is plainly not within the terms of an architectural retainer for the architect to oversee each and every action of a builder and his or her subcontractors.

THE SIGNIFICANCE OF THE 1981 INCIDENT AT GEORDIE BAY, AND THE REPAIRS AND REFURBISHMENTS WHICH OCCURRED ON ROTTNEST ISLAND IN 1996 AND 2006.

213. I have recited the fact of the 1981 incidents in which two roofs were lost due to inadequate tie downs, subsequent response of the Rottnest Island Board to that situation, in 1996 renovations and repairs to Unit 539, and the 2006 refurbishment to Unit 539 as they presented the only realistic opportunities to remedy the defective workmanship undertaken when the unit was constructed in 1975.

214. I believe the 1981 incident should have resulted in a wider consideration of the adequacy of the tie downs throughout Rottnest Island given the very poor level of workmanship and regard to safety noted by Mr Ferguson after he inspected the properties damaged after they lost their roofs.

215. The 1996 and 2006 repairs and renovations presented opportunities when the Rottnest Island Authority, architects, builders and sub-contractors had an opportunity to closely consider the fabric of the buildings on Rottnest Island.

216. The sad truth in this case is that in 1975 a person or persons unknown constructed the north-east brick pillar at the rear of Unit 539 in an extremely unsafe manner.

217. It was extraordinarily unlikely that such a well hidden defect, as the absence of the tie down in the north-east pillar in the backyard of Unit 539 would come to light during the renovation process unless a specific direction had been given to the builder or sub-contractor to consider the structural integrity of each and every unit and each and every brick pillar.

218. The ability to detect missing tie downs would have been even more difficult to accomplish in the absence of the original design drawings drafted by Mr Ferguson in the 1970's. They were the only authoritative document which those coming later in time could properly refer to in order to determine the location and type of tie down originally intended for the property.

219. The pillar was not built in accordance with Mr Ferguson's design and it was not constructed with a metal plate and rod tie down built into its fabric. The hollow centre of the brick pillar was also not filled with concrete as intended by Mr Ferguson. These extremely unsafe and well hidden failures compromised the integrity of the brick pillar and directly led to Thomas' death more than 30 years later.

220. These defects were extremely unsafe and *'unthinkable'* to those who came later to try and repair and renovate the property.

221. I accept without hesitation that had Mr Chiappalone, Mr Callan or Mr Woosnam been aware of the absence of an adequate tie down of the veranda roof to the north-east brick pillar in the rear courtyard at Unit 539, they would have taken immediate and appropriate steps to ensure the situation was remedied.

222. Considering the large scale of refurbishment and redevelopment work carried out on Rottnest Island in 2006, finding '*unthinkable*' defects in the north-east pillar in the rear courtyard at Unit 539 was like looking for a needle in a hay stack.

223. It would have taken great good fortune to have detected and repaired the pillar more than 30 years after its defective construction, in the absence of a clear directive to consider

the adequacy of tie downs during the package 'C' works at Bathurst Point.

THE RELEVANT BUILDING CODES

224. This case highlights the effect bad building practise may later have on innocent parties completely unconnected with the original construction.

225. When Unit 539 was built in 1975 the relevant building regulation in force were the Uniform Building By-Laws 1974. The Uniform Building By-Laws did not provide by-laws or refer to standards for the construction of masonry columns.

226. It was therefore incumbent on those responsible for constructing Unit 539 to build the column in accordance with the design drawings and specifications prepared by the architect Mr R Ferguson.

227. The construction of the north-east pillar at the rear of Unit 539 was not constructed in the appropriate manner.

228. After construction there was no form of building inspection or check, to ensure the construction had taken place in accordance with Mr Ferguson's drawings and that the veranda roof at the rear of Unit 539 was adequately tied down to the brick pillar which was supporting it.

229. Since the construction of Unit 539 in 1975, the Building Code of Australia (the BCA) was introduced.

230. The BCA is a code which is updated annually.

231. The BCA does not act retrospectively. Nor does it have application on Rottnest Island, as the island is exempt from its application by virtue of the *Building Regulations 1989 (WA)* (Regulations 2A, 5 and Schedule 2).

232. Under the *Local Government (Miscellaneous Provisions) Act 1960 (WA),* the State was exempt from the need to obtain a building licence and consequently public works were not required to conform to the BCA.

233. In this case the BCA was contractually included into the works contract by virtue of note 4 of the general notes contained in the architectural drawing relating to Unit 539,[27] which stated '*the contractor shall carry out the work in accordance with BCA & local authority requirements'*.

234. Clause 3.3.1.4 of the BCA (2006)[28] dealt with the issue of isolated piers.

235. It required isolated masonry piers supporting carports, verandas, porches and similar roof structures (with sheet roofs), which form part of the main roof, or are attached to a wall of a Class 1 building to be constructed with;

    i. a built-in 32×0.8mm galvanised steel strap fixed to the roof structure and extending the full height of the pier which is looped around 810mm diameter galvanised steel rod cast into the footing when poured; or

    ii. a 10mm galvanised steel rod cast into the footing, threaded at the top and extending the full height of the pier.

236. Mr Gronow was asked about the application of clause 3.3.1.4 of the BCA (2006) to the roofing work undertaken on Unit 539 in 2006 by Mr Matthews who appeared on behalf of the Rottnest Island Authority and Department of Finance. During the course of evidence the following exchange between Mr Matthews and Mr Gronow took place:[29]

Mr Matthews:	Thank you, Mr Gronow. The Building Code of Australia doesn't apply retrospectively, does it, if I can put it that way?
Mr Gronow:	No. Each year the Building Code comes into force on 1 May of that year, so you're right. It's not retrospective. It's when the building work was carried out that the Building Code in force at that time applies.

[27] Exhibit 4 Volume 1 Tab 25 Drawing A.24.02
[28] Exhibit 3
[29] Transcript 13.05.13, Page 74

Mr Matthews: So if I put it another way, if there's a change to the Building Code from one year to the next, it's not necessary to go out and check existing buildings for compliance with the new code?

Mr Gronow: Correct.

Mr Matthews: All right. But if there's new work being done to an existing building, that new work, of course, has to comply with the new code, the changed code?

Mr Gronow: Yes, I agree.

Mr Matthews: I think that's the point you make in relation to your analysis of the code and its application to this work is that the re-roofing had to be compliant with the new code insofar as the new code made provisions to make sure that uplift wouldn't result in the roof coming off?

Mr Gronow: That's right.

Mr Matthews: So your comments aren't related to the structural integrity of columns. They're about preventing rooves coming off. Is that right?

Mr Gronow: Correct. Yes.

Mr Matthews: I think that's what you mean when you say that you wouldn't have to necessarily rebuild the piers because the code isn't retrospective, but in re-roofing you would have to take account of the fact that the columns had not been constructed in compliance with 3.3.14C. Have I put that correctly?

Mr Gronow: Yes.

237. As I understand Mr Gronow's evidence, any new isolated masonry pillar built in 2006 was required to be built in accordance with clause 3.3.1.4 of the BCA (2006). It would either have to be constructed with a galvanised steel strap to tie the roof to pillar or it would need to be constructed with a galvanised steel rod cast into the footings, in order to achieve the same goal.

238. As I understand Mr Gronow's evidence a pre-existing pillar onto which a new roof was being placed in 2006 would not have to retrospectively comply with clause 3.3.1.4 of the BCA (2006), provided that proper engineering consideration was given to the pillar and its design was determined to be of a quality that achieved the aim of clause 3.3.1.4 of the BCA (2006).

239. In this case there does not appear to have been any consideration by an engineer as to the adequacy of the design of the pillar at Unit 539 which collapsed and caused Thomas' death.

240. Furthermore, as Mr Ferguson's original architectural drawings were lost it would have been impossible for an engineer to undertake a desktop audit of the integrity of the pillar's design and its adequacy under clause 3.3.1.4 of the BCA (2006).

241. During the course of submissions counsel for Mr Callan, Ms Blackburn, submitted that clause 3.3.1.4 of the BCA only applied to Class 1 and Class 10 buildings. Counsel submitted that clause 3.3.1.4 of the BCA (2006) did not apply to Class 2 – 9 buildings because of the manner in which the BCA (2006) was written.

242. In particular Ms Blackburn pointed to the fact that the BCA was written in two volumes. The introduction to the BCA provides:

> *The BCA is published in two volumes:*
>
> *Volume One: pertains primarily to class 2 to 9 buildings*
>
> *Volume Two: pertains primarily to class 1 and 10 buildings (houses, sheds, carports etc)*

243. Counsel in effect submitted that as clause 3.3.1.4 of the BCA (2006) was found in Volume Two of the BCA (2006), it could only apply to Class 1 and Class 10 buildings.

244. Counsel submitted that clause 3.3.1.4 of the BCA did not apply to work done at Unit 539 because Unit 539 is a Class

2 building to which clause 3.3.1.4 of the BCA does not apply as it falls within the ambit of Volume One of the BCA.

245. The BCA (2006) classifies buildings into 1 of 10 classes:

PART A3 CLASSIFICATION OF BUILDINGS AND STRUCTURES

A3.1 Principles of classification

The classification of a building or part of a building is determined by the purpose for which it is designed, constructed or adapted to be used.

A3.2 Classifications

Buildings are classified as follows:

Class 1: one or more buildings which in association constitute—

(a) **Class 1a** — a single dwelling being—

(i) a detached house; or

(ii) one of a group of two or more attached dwellings, each being a building, separated by a *fire-resisting* wall, including a row house, terrace house, town house or villa unit; or

(b) **Class 1b** — a boarding house, guest house, hostel or the like-

(i) with a total area of all floors not exceeding 300 m^2 measured over the enclosing walls of the Class 1b; and

(ii) in which not more than 12 persons would ordinarily be resident,

which is not located above or below another dwelling or another Class of building other than a *private garage*.

Class 2: a building containing 2 or more *sole-occupancy units* each being a separate dwelling.

Class 3: a residential building, other than a building of Class 1 or 2, which is a common place of long term or transient living for a number of unrelated persons, including—

(a) a boarding-house, guest house, hostel, lodging-house or backpackers accommodation; or

(b) a residential part of a hotel or motel; or

(c) a residential part of a *school*; or

(d) accommodation for the aged, children or people with disabilities; or

(e) a residential part of a *health-care building* which accommodates members of staff; or

(f) a residential part of a *detention centre*.

Class 4: a dwelling in a building that is Class 5, 6, 7, 8 or 9 if it is the only dwelling in the building.

Class 5: an office building used for professional or commercial purposes, excluding buildings of Class 6, 7, 8 or 9.

Class 6: a shop or other building for the sale of goods by retail or the supply of services direct to the public, including—

(a) an eating room, cafe, restaurant, milk or soft-drink bar; or

(b) a dining room, bar, shop or kiosk part of a hotel or motel; or

(c) a hairdresser's or barber's shop, public laundry, or undertaker's establishment; or

(d) market or sale room, showroom, or *service station*.

Class 7: a building which is—

(a) **Class 7a** — a *carpark*; or

(b) **Class 7b** — for storage, or display of goods or produce for sale by wholesale.

Class 8: a laboratory, or a building in which a handicraft or process for the production, assembling, altering, repairing, packing, finishing, or cleaning of goods or produce is carried on for trade, sale, or gain.

Class 9: a building of a public nature—

(a) **Class 9a** — a *health-care building*, including those parts of the building set aside as a laboratory; or

(b) **Class 9b** — an *assembly building*, including a trade workshop, laboratory or the like in a primary or secondary *school*, but excluding any other parts of the building that are of another Class; or

(c) **Class 9c** — an *aged care building*.

Class 10: a non-habitable building or structure—

(a) **Class 10a** — a non-habitable building being a *private garage*, carport, shed, or the like; or

(b) **Class 10b** — a structure being a fence, mast, antenna, retaining or free-standing wall, *swimming pool*, or the like.

A3.3 Multiple classification

Each part of a building must be classified separately, and—

(a)

(i) where parts have different purposes — if not more than 10% of the *floor area* of a *storey*, being the minor use, is used for a purpose which is a different classification, the classification applying to the major use may apply to the whole storey; and

(ii) the provisions of (i) do not apply when the minor use is a laboratory or Class 2, 3 or 4 part; and

(b) Classes 1a, 1b, 7a, 7b, 9a, 9b, 9c, 10a and 10b are separate classifications; and

(c) a reference to—

(i) Class 1 — is to Class 1a and 1b; and

(ii) Class 7 — is to Class 7a and 7b; and

(iii) Class 9 — is to Class 9a, 9b and 9c; and

(iv) Class 10 — is to Class 10a and 10b; and

(d) A plant room, machinery room, lift motor room, boiler room or the like must have the same classification as the part of the building in which it is situated.

A3.4 Parts with more than one classification

(a) Notwithstanding **A3.3**, a building or part of a building may have more than one classification applying to the whole building or to the whole of that part of the building.

(b) If a building or part of a building has more than one classification applying to the whole building or part in accordance with **(a)**, that building or part must comply with all the relevant provisions of the BCA for each classification.

246. Clause A3.2 of the BCA (2006) deals with the difficulty of classifying some buildings. At page 58 the BCA (2006) provides:

> *Class 2 or Class 3?*
>
> *There is a fine line between a Class 2 building and a Class 3 building with a bathroom and cooking equipment in its units. For example when does a motel unit (probably Class 3) become a holiday flat (probably Class 2) and vice versa.*

247. The precise class of Unit 539 was not determined during the course of evidence. However I have some sympathy for the proposition that Unit 539 may be a holiday flat and therefore possibly a Class 2 building.

248. Mr Gronow took the view that clause 3.3.1.4 of the BCA (2006) did apply. Consequently he thought the property must be a Class 1 building.

249. Mr Steve Hackett, General Manager, Infrastructure Delivery Department of Treasury and Finance, Building Management & Works Division, gave evidence during the course of the inquest. Mr Hackett's opinion was that Unit 539 was most likely a Class 1B building although it could be argued that it was a Class 3 building.

250. The proposition that clause 3.3.1.4 of the BCA (2006) applies to Class 1 and Class 10 buildings, but not to Class 2 – 9 buildings was not the subject of evidence during the course of the inquest.

251. However, having read the portion of the BCA (2006) referred to by counsel during the course of submissions, it may be the case that clause 3.3.1.4 does only apply to Class 1 and Class 10 buildings.

252. In my opinion, irrespective of whether the building was a Class 1 building, a Class 2 building or a Class 3 building, the BCA should adequately protect those exposed to isolated masonry pillars and ensure they are constructed in a

manner which is safe and which adequately guards against normal usage and environmental conditions.

253. In my opinion masonry pillars should necessarily have the ability to withstand the lateral forces placed on them by the weight of three small children, without there being a risk of collapse.

254. During the course of his evidence, Mr Gronow highlighted the fact that currently drawings submitted to local governments for building approval do not require the details of tie downs to be specified on the plans. Mr Gronow highlighted the fact that plans commonly address the issue of tie downs by carrying a statement to the effect '*builder to comply with the BCA'*

255. In this case the architectural drawings contained a similar requirement that '*the contractor shall carry out the work in accordance with BCA & local authority requirements'*.

256. Mr Gronow highlighted the fact that local governments currently require builders to submit footing and slab details as part of the approvals process.

257. Mr Gronow recommended that tie downs should also be submitted to local governments as part of the process of obtaining a building permit for a property so that all parties to the building process are clear as to the location, number and adequacy of the tie downs incorporated into the building.

258. In order to safely construct a building, irrespective of its class under the BCA, the issue of tie downs will need to be addressed at some point. In my opinion it would be prudent to address the issue at the planning stage, rather than leaving the issue for the builder to address during construction.

259. In my opinion public safety would be greatly enhanced if the details of tie down connections were required as part of all plans put forward for building approvals.

260. Incorporating engineered tie down connections into the plans submitted for the approval process would overcome

the imprecise and unhelpful manner in which tie downs are currently referred to in building plans.

261. Early consideration of the issue of tie downs would also focus both the builder's and local authority's attention to the vexed issue as to what class of building under the BCA, the proposed building fell.

262. Mr Gronow also suggests mandatory checks be carried out by local governments on tie downs when a permit is issued. This process would have the advantage of potentially identifying defects at the time of construction without putting lives at risk for many years to come.

263. I accept the thrust of Mr Gronow's arguments and make the following two recommendations.

Recommendation No. 1

I recommend that Government consider making it a requirement for local governments responsible for issuing building permits under the Building Act 2011 (WA) to require the details of all tie down connections for residential buildings to be submitted on plans provided to local government as part of the approval process preceding the construction of a residential building.

Recommendation No. 2

I recommend that the Government consider making it a requirement for local governments responsible for issuing building permits under the Building Act 2011 (WA) to undertake inspections during the construction of a residential building to ensure roof tie downs are adequately constructed, placed and fitted.

264. Mr Ferguson's original drawings relating to Unit 539, and much of the drawings relating to other properties on Rottnest Island have been lost. This made it practically impossible for others to determine what had been originally designed, whether what was constructed matched the original design and what should have occurred when constructing elements such as the brick pillar which collapsed and killed Thomas.

265. The absence of the original designs greatly complicated the repair and refurbishment process undertaken in 2006.

266. In my opinion architectural drawings prepared for government bodies should be archived in a central registry which would allow ready access to them in the future. Retaining copies of the drawings in a central registry would also overcome any difficulties inherent in changes to government structure or government organisations.

Recommendation No. 3

I recommend the Government act to ensure that copies of all architectural drawings commissioned by a government body be archived with one government organisation so that in future they will be available to those in need of referring to them.

CONCLUSION

267. On the evidence before me I am satisfied that on 27 October 2009, Thomas Michael Brasier was on holiday with his family at Rottnest Island. At about 2:45pm Thomas was on a hammock which was stretched between a brick pillar at the rear of Unit 539 and a nearby tree.

268. Shortly after getting onto the hammock, the masonry pillar collapsed and a portion fell and hit Thomas.

269. Thomas sustained extremely serious injuries which resulted in his death later that day.

270. I find death arose by way of Accident.

D H Mulligan
Coroner
13 November 2013