

**FORM 37**

Rule 60(1)

**FINDING INTO DEATH WITH INQUEST**

*Section 67 of the Coroners Act 2008*

**Court reference:** 1171/06

**Inquest into the Death of ANDREW PHILLIP MULL**

Delivered On: 22nd December, 2009  
Delivered At: Melbourne  
Directions Date: 1 April, 2009  
Hearing Dates: 11-15 May, 2009, 18-22 May, 2009, 25-29 May, 2009,  
15-16 July, 2009 and 14th August, 2009  
Findings of: PETER WHITE  
Representation: Counsel assisting the Coroner, Mr J Ribbands with  
Ms D Siemensma, of Counsel, on the instructions of the Victorian  
Government Solicitor, (Mr J Perry).  
Counsel for the family of Andrew Mull, Mr C Kiliias of Counsel.  
Counsel for the Civil Aviation Safety Authority, Mr I Harvey of  
Counsel, on the instructions of the Civil Aviation Safety Authority,  
Senior Solicitor, (Mr J Rule).  
Mr Stephen Dines, who represented himself.

Place of death: In a paddock situated adjacent to Damms Road,  
Tawonga, 3697

**FORM 37**

Rule 60(1)

**FINDING INTO DEATH WITH INQUEST**

*Section 67 of the Coroners Act 2008*

**Court reference:** 1171/06

In the Coroners Court of Victoria at Melbourne

I, PETER WHITE, Coroner

having investigated the death of:

**Details of deceased:**

Surname: MULL  
First name: ANDREW

AND having held an inquest in relation to this death between 11th and 29th May, 2009; 15th and 16th July, 2009 and on the 14th August, 2009  
at Southbank  
find that the identity of the deceased was ANDREW PHILLIP MULL  
and death occurred on 29th March, 2006

in a paddock situated adjacent to Damms Road, Tawonga 3697

from

1a. MULTIPLE INJURIES

in the following circumstances:

**BACKGROUND<sup>1</sup>**

1. Andrew Mull was born on the 5th of August 1971 and was raised in Tawonga South by his parents, Allan and Margaret Mull. He grew up with sisters, Joanne and Heather, and a brother Roger, with whom he worked as a builder.

2. He was married to Justine Mull and was the loving father of two young children, Tommy and Shania. The family resided at 88 Simmonds Creek Road, Tawonga South, in Victoria.

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<sup>1</sup> I have been supplied with two transcripts for the first three days of the hearing, neither of which has entirely sequential page numbering. To the best of my knowledge and belief the relevant footnote references from within this first section of transcript, come from the copy transcript supplied to the interested parties and used by them in the preparation of written submissions.

3. From a young age, Andrew was interested in flying. His father, Allan Mull, held a private pilot's licence and operated his own fixed wing aircraft. His brother was an ultra light enthusiast and Andrew himself became an accomplished hang glider pilot.<sup>2</sup>

4. During his early adulthood, Andrew began to take an interest in helicopters, but was discouraged by the cost involved in the purchase and maintenance of same. Notwithstanding that concern, he maintained his passion and began to look around for a safe alternative that would offer him the same level of enjoyment, yet could be achieved within his budget.

5. At sometime in 2003, Roger Mull, who was aware of his brother's increasing interest in helicopters, began to pass on aviation magazines, which included advertisements for the sale of new and second-hand helicopters.

6. It was in these circumstances that Andrew became attracted to the idea of purchasing a kit and building his own helicopter, which he believed he could achieve at a fraction of the cost involved in the purchase of a commercially designed and manufactured equivalent.

7. In 2004 - 2005, Andrew sought advice from a friend, Jim Miles, about both pilot training and the purchase of a helicopter. Mr Miles recommended that Andrew undertake training from Kestral Aviation in Mangalore.<sup>3</sup>

8. At about this time Andrew also approached his father about the possibility of his taking a 50% share in the purchase of a second-hand Robinson 22 helicopter, which Mr Mull Snr testified may have cost about \$200,000, at that time.<sup>4</sup>

9. This proposal did not go ahead at least in part, because Mr Mull Snr understood that the particular aircraft Andrew had in mind would require an extensive and costly overhaul in the near future.

10. In January 2005, Andrew travelled to Dubbo, together with his brother and Jim Miles, where he inspected an Angel model kit-built helicopter. They took a trailer with them in case they decided to go ahead and buy, but ultimately Andrew decided not to proceed with the purchase, a decision with which Jim Miles agreed.

## **ROTORWAY INTERNATIONAL PTY LTD AND ITS AUSTRALIAN AGENT, KEVIN LUNN<sup>5</sup>**

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<sup>2</sup> See Allan Mull at transcript 51.

<sup>3</sup> See statement of James Miles at Exhibit 21 Page 1.

<sup>4</sup> See transcript at page 104, the evidence of Allan Mull. The Robinson 22 is a two-seater type certificated and commercially built (non-kit) helicopter, comparable in size to the Rotorway Exec 162.

<sup>5</sup> Rotorway International Pty Ltd (through its CEO), was informed of its rights as an interested party, but did not appear at inquest. The Victorian Government Solicitors Office (VGSO), through Principal Solicitor David Ryan and his associate James Perry, thereafter kept Rotorway International informed of relevant matters, which included the provision of transcript and the final submission of Counsel assisting. See the affidavit of James Perry at exhibit 26. The company's representative in Australia, Kevin Lunn, was also separately advised of his rights as an interested party. Because of the pressures created by his absence from work whilst in Melbourne testifying, I understand that he was not available to participate in the inquest after the completion of that testimony.

A recent internet search suggests that Rotorway International Pty Ltd, is currently involved in a restructuring exercise, which involves a second Company located in Capetown, South Africa. In the circumstances, I have arranged for a copy of this Finding to be sent to that Company.

11. On the 23rd of February 2005, having previously seen a magazine published photograph of the Rotorway Exec 162, Andrew Mull flew to Perth where he met and stayed with Kevin Lunn and his wife, Enid.

12. Rotorway International Pty Ltd was at the relevant time and remains an international company, based in Arizona in the United States, which manufactures helicopter kits for both the domestic and export market.

13. The company's representative in Australia was Kevin Lunn who, at the relevant time ran his business from Waroona, some kilometres south of Perth, Western Australia.<sup>6</sup>

14. Kevin Lunn is a diesel mechanic by trade and has been the distributor of Rotorway aircraft in Australia, which includes the kit built Exec 162, since February 2002.<sup>7</sup>

15. He obtained his private pilots licence in 1995, but did not fly at all between July 1995 and February 2002.<sup>8</sup>

16. He obtained a single engine aeroplane, (less than 5700 kg), endorsement in May 2002 and, a Robinson R22 helicopter endorsement in March 2002.<sup>9</sup>

17. Kevin Lunn further testified that one of the reasons he obtained the Robinson 22 endorsement was that he had become the Australian distributor for Rotorway.<sup>10</sup>

18. From the 29th of July to the 2nd of August 2002, Kevin Lunn visited the Rotorway Flying School in Arizona and received transitional flight training, with his logbook recording 10.8 hours of training during this period.<sup>11</sup>

19. He further commented in regard to this training that he did not,

"want to fly my aircraft which was brand new as well without relevant experience".

20. He was not required to undertake the training but did so because,

"anybody that's going to hop into an aircraft that they know absolutely nothing about would be absolutely crazy to fly one without having proper training or not necessarily proper training but at least high familiarization."

21. He considered that this form of familiarisation training would be of value to any person about to fly a new type of aircraft.<sup>12</sup>

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<sup>6</sup> I note here that, according to Kevin Lunn, the agreement by which he became the Rotorway agent was an oral agreement only, and his arrangements with Rotorway International, had never been reduced to writing. See transcript at page 1388-1399, the evidence of Kevin Lunn.

<sup>7</sup> See Kevin Lunn at transcript page 721.

<sup>8</sup> See Kevin Lunn's Pilot's Logbook at Exhibit 16(b).

<sup>9</sup> See Exhibit 16b and transcript at page 1247, the evidence of Kevin Lunn.

<sup>10</sup> See Kevin Lunn at transcript at page 1250.

<sup>11</sup> See Exhibit 16(b) and discussion at transcript page 1386.

<sup>12</sup> See Kevin Lunn at transcript 741-742.

22. At this time, he also spent two weeks in the company's factory (in Arizona), learning to put assembly-kits together.<sup>13</sup>

## **BUYING AND BUILDING THE HELICOPTER**

23. Whilst classed by CASA as an 'experimental' aircraft, the helicopter presented to Andrew on his arrival gave every appearance of being a modern, technically sophisticated and safe aircraft.<sup>14</sup>

24. Mr Lunn testified that during Andrew's first trip to Waroona, which took place in February, 2005, Andrew flew as a passenger in his own Rotorway162, (VH-CCW), however no record of such a flight was recorded in Mr Lunn's logbook for February, 2005.<sup>15</sup>

25. Despite some misgivings, Andrew was excited and optimistic. On the same day, i.e. the 23rd of February 2005, (the day of his arrival), Andrew purchased his Rotorway 162 kit for the sum of \$99,462.<sup>16</sup>

26. Initially, Andrew intended to buy the kit and have it landed in Victoria, where he would have it built in Mount Beauty under the supervision of Jim Miles.

27. In March 2005 Andrew sent Jim Miles to Waroona, south of Perth, to meet Kevin Lunn and to evaluate the helicopter and assess its suitability for his needs.<sup>17</sup>

28. According to Jim Miles, following his arrival at Waroona, Kevin Lunn took him through his workshop where he saw several Rotorway aircraft in various stages of construction.

"(Kevin Lunn), told me that he built the helicopters for customers and that people paid him for the cost of his time to build them. He gave Andrew a quote initially for the price of a basic kit and a price for a helicopter totally built by him. I was aware that under the experimental licensing provisions of the Civil Aviation Act and Regulations an owner must build greater than 51% of the aircraft. I am almost certain that Mr Lunn was building over 99% of these aircrafts for people and that his shed appeared to be a professional 'production line' set up for the construction of the machines".

29. Mr Miles further stated that he believed, Kevin Lunn told him that he held no licence from CASA to build aircraft as a LAME, and that Mr Lunn became defensive when he mentioned his own professional background in aviation.

30. Mr Miles also stated that he indicated his wish to see a machine running or ideally to be a passenger,

'or even have a small fly to see how they handled-but he flatly refused.'<sup>18</sup>

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<sup>13</sup> See Kevin Lunn at transcript at 743.

<sup>14</sup> See diagrams at Exhibit 7(c) and 9(b)-9(d) and photographs at Exhibits 7(a) and 16(p).

<sup>15</sup> The first such flight recorded by Mr Lunn with 'Andrew', was recorded on the 9th of July 2005, which appears to have been during Andrew's second trip to Perth, which took place between 8th of July and 12th of July.

<sup>16</sup> See Exhibit 22, at page 300. See The 'Dare to Dream' article, Exhibit 22 at page 295.

<sup>17</sup> Jim Miles, a former police officer in both the Northern Territory and Victoria, was a professional helicopter pilot, having commenced his flying career as a (helicopter) pilot in the Australian Army in 1996. During 2004-5, he was the Chief Pilot for Bright Helicopters, based in Bright, Victoria. By the time, Jim Miles went to Perth I note that Andrew had of course already purchased the Rotorway Exec 162, helicopter kit.

<sup>18</sup> See Exhibit 21 at pages 1 and 2.

31. As against this, Mr Lunn testified that his usual practice was to allow visitors to fly in the helicopter, if they wished, and that he had no recollection that he had departed from this approach, when he met with Mr Miles.

32. It appears that on his return to Victoria and despite his reservations, Jim Miles recommended the Rotorway Exec 162 to Andrew.

33. Soon after he accepted a position flying in Western Australia and so had to withdraw from his arrangement to supervise the build.<sup>19</sup>

34. On the advice of Jim Miles, Andrew Mull had made contact with Kestral Aviation in Mangalore in Central Victoria and on the 4th of March 2005, while his helicopter kit was being brought to Australia, he commenced helicopter flight training in a Robinson 22 helicopter. He completed auto rotations on the 17th of March and the 6th of May, and completed his first solo flight on the 3rd of May. On the 20th of April 2005, he obtained his student pilot's licence and later on the 11th of August 2005, his private pilots licence, this after the completion of 52.5 hours of flight time.<sup>20</sup>

35. Mr Lunn gave evidence that shortly before the kit was due to arrive in Melbourne, Andrew contacted him and asked him to re-direct the kit to Perth so that he might undertake the build, under his Builder Assist Programme.<sup>21</sup>

36. However, it appears that Andrew had decided to use the Builder Assist Programme before the 31st of May, as he had referred to this matter in a letter addressed to Stephen Dines, which bore that date.<sup>22</sup>

#### Andrew Mull and the Builder Assist Programme

37. The kit was transported to Perth in accordance with Andrew's wishes and was then constructed by Kevin Lunn, under his Builder Assistance Programme. I note here that Kevin Lunn was not a LAME qualified person and was not required by law to be so.<sup>23</sup>

38. From June 1st, to August 31st 2005, Kevin Lunn sent emails to Andrew Mull with attached photographs, which purported to show the progress being made with the construction of the aircraft.<sup>24</sup>

39. Many of these photographs were also included in an album belonging to Andrew, which he would show to family and friends.<sup>25</sup>

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<sup>19</sup> See Exhibit 21 at page 2. I note here that Mr Lunn disputed much of what Mr Miles alleged in his (untested) statement.

<sup>20</sup> See Andrew Mull's Pilot Logbook at Exhibit 1(d) and discussion below at Section 2.

<sup>21</sup> See Mr Lunn's evidence at transcript pages 761 and 774, and Mr Miles statement Exhibit 21 page 2 at paragraph 3.

<sup>22</sup> See Exhibit 18(h). Letter from Andrew Mull to 'Stephen' dated 31/05/05.

<sup>23</sup> See Exhibit 18(h) at page 326.

<sup>24</sup> See Exhibit 2(a), which includes the email dates.

<sup>25</sup> See Exhibit 1(j).

40. This album was also later used to seek to authenticate the claim that Andrew Mull had satisfied the 'major portion requirement' of the helicopter build, claims which had to be made in order to have the Certificate of Airworthiness, issued.<sup>26</sup>

41. The album was subsequently referred to in evidence as the 'Builders Log' by the CASA approved person, Stephen Dines, who would later agree to issue the Certificate.

42. As suggested above, Andrew travelled to Perth and stayed with the Lunn between the 8th and 12th of July 2005, this ostensibly to work on his aircraft under the direction of Kevin Lunn. Andrew flew to Perth again on the 22nd of August, returning to Victoria on the 26th. At that time, he again participated in what appears to have been the final part of the build.

43. In regard to the level of Andrew's contribution, Mr Lunn confirmed in testimony, information provided by him when he was formally interviewed in August 2007, by S/C Kontos,

"(Andrew) did all the engine install, drive train install, rotor install, control install, the only thing basically that I did on that machine was mainly the fibreglass work, and that was it. And on the final assembly did that with me as well."<sup>27</sup>

44. He further confirmed that Andrew was qualified to do the replacement of the tail rotor belts because,

"he did it originally."<sup>28</sup>

45. I note, however, that a comparison of Exhibits 2(a) and 1(j) tends to suggest that major pre-built components, which include the engine and the main rotor shaft, were attached to the main frame during Andrew's initial visit, while the work on the installation of pre-built electronic and fuel delivery systems took place in his absence.<sup>29</sup>

46. I further note Mr Lunn's comments concerning the 260 hrs needed to construct the aircraft<sup>30</sup> and the evidence concerning the significantly fewer hours contributed to the build by Andrew.

47. See also the hearsay views of Allan Mull and (the untested statement of), Jim Miles in regard to the issue of the level of Andrew's participation in the build, together with the sometimes confused evidence given by Mr Lunn, concerning this matter.<sup>31</sup>

### Financial Arrangements

48. In regard to the financial arrangements entered into by the parties it is relevant that Kevin Lunn was unable to tell how much money he had charged Andrew for his work on the build.

<sup>26</sup> See discussion at Section 11(m) below.

<sup>27</sup> See Exhibit 22 at pages 314-315.

<sup>28</sup> See Exhibit 16(h) at brief page 314, and transcript at page 850.

<sup>29</sup> See also transcript at page 854 where Mr Lunn acknowledges the work of Mr Mark Ballard, on the helicopters electronics, undertaken in the absence of Andrew, together with his statement at Exhibit 16(h) from brief page 326 where Mr Lunn discusses his understanding of the majority build rule.

<sup>30</sup> See Exhibit 16H at page 15.

<sup>31</sup> See transcript page 852, where Mr Lunn stated that his approach was to put the aircraft together and, "It is if you're a first time builder, yes, but not if you go down the sequence we do, we fit things the first time and leave them in there". And his later evidence that, "once we're happy with that, we go through every nut, bolt and washer together on the machine, in actual fact I insist that the owner does that so that he double checks all my work as well, prior to it all going together..." See transcript at page 854.

According to his explanation, he could not retrieve that information from his records due to computer failure.<sup>32</sup>

49. He explained that the kit arrived with the major components included but that the purchaser had to pay an additional sum for consumables such as glues, fillers, screws and gloves.<sup>33</sup>

50. There was a spreadsheet/invoice prepared by Mr Lunn, which suggested that he had charged \$69 per hour for his labour and a total of some \$22,542 for the builder assist, inc GST. According to Mr Lunn there was also a further sum of \$10,000 paid in cash,

"for the construction of the aircraft."<sup>34</sup>

51. However, I also note the existence of a Rotorway International Australia Invoice dated 23rd of February 2005, which suggests that the \$10,000 referred to above, may in fact have been a deposit paid by Andrew, at the time of purchase.<sup>35</sup>

52. I further observe that Mr Lunn's evidence did not suggest that he had provided Andrew with a written quotation concerning the cost of participation in the Builder Assist Programme. Nor did the evidence suggest that there had been a written contract setting out the conditions of the build, or any related matter.

#### **LEARNING TO FLY AND THE CHALLENGES FACED BY ANDREW MULL**

53. On March the 4th Andrew Mull commenced learning to fly a Robinson 22 helicopter at Kestral Aviation's facility at Mangalore, Central Victoria. Captain Ray Cronin, for twenty one years the Chief Flying Instructor and proprietor of Kestral Aviation College Pty Ltd, (Kestral) provided evidence concerning this training and with the Courts leave, gave further expert evidence concerning the flying of helicopters generally.

54. Captain Cronin testified that Kestral employed five full-time helicopter instructors and six or seven casual instructors and is one of the two biggest flying schools in the country. His additional evidence was that Kestral obtains the larger proportion of its income from fire fighting.<sup>36</sup>

55. Captain Cronin further testified that he had been a helicopter instructor for 28 years and had flown over 8500 helicopter pilot hours and had extensive experience undertaking 'testing approvals' for CASA.<sup>37</sup>

56. He explained that in order to qualify for a private helicopter licence an applicant would be required to obtain a minimum of 50 hours of flight training. Out of the 50 hours, 35 hours would be spent on general handling, 25 hours 'of that is dual (instruction), 10 of solo'.<sup>38</sup>

57. He further testified as to Andrew Mulls flight training by reference to his flight training records.<sup>39</sup>

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<sup>32</sup> Transcript page 728. Kevin Lunn.

<sup>33</sup> Transcript page 728-9. Kevin Lunn.

<sup>34</sup> Transcript page 730. According to the spreadsheet, approximately half of this amount was charged for labour.

<sup>35</sup> See Exhibit 22 at page 300.

<sup>36</sup> See transcript at page 369. Evidence of Captain Ray Cronin.

<sup>37</sup> See transcript 366-7. Captain Cronin.

<sup>38</sup> See transcript at page 370. Captain Cronin.

<sup>39</sup> See exhibit 22 at pages 437-507 and transcript from page 370. Captain Cronin.



### Design differences

58. From Captain Cronin's evidence, we know that Andrew Mull undertook his training in a Robinson 22 which, unlike the Rotorway Exec 162 kit build, was an American built production helicopter. Design differences between the two aircraft included, that the Robinson 22 had a drive shaft driven rear rotor as opposed to a belt/pulley driven rear rotor, which was considered an unusual design feature and not known in 'western' type certified helicopters.<sup>40</sup>

59. Further differences included the pilot seating positions, differences concerning the inclusion/non-inclusion of engine governors and the opposite positioning of the two helicopters' instrumentation.

60. Captain Cronin additionally commented that Andrew Mull was a very good student having obtained his licence after 52.5 hours and he often found that people with the

'practical background normally found in tradesmen',

make very good pilots.

"I remember him, he was a very intense person. That tends to mean they were very studious, they put in the homework, put in the effort before they get there, and they get maximum value out of their flying time."<sup>41</sup>

61. Captain Cronin further testified about how he tried to persuade Andrew against the purchase of a kit build helicopter and how he instead encouraged him to consider a second-hand Robinson 22.<sup>42</sup>

62. Andrew, however, had evidently made up his mind on the Rotorway 162 and could not be persuaded to change that view.

### Endorsement Training and Handling Differences

63. Captain Cronin also testified that he informed Andrew that his training on a Robinson 22 meant that he was both licensed to fly a helicopter, as well as endorsed to fly a Robinson 22. He further explained (in error as it happens), that in order to be permitted to fly another type of helicopter he would be expected to undertake a minimum of 3 hours transition training on the new aircraft, which he referred to as

"endorsement training".

64. Accordingly, Captain Cronin was concerned as he believed the Robinson 22 endorsement would not legally qualify Andrew to fly a Rotorway 162 kit build, Andrew would therefore have to find someone else to teach him to fly that particular aircraft - before he would be permitted to do so.

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<sup>40</sup> See transcript at pages 371-373. Evidence of Captain Cronin.

<sup>41</sup> See transcript at page 375. Captain Cronin.

<sup>42</sup> See transcript at page 377-79. Captain Cronin.

65. He raised this matter directly with Andrew who stated in reply that he believed he didn't require further endorsement on a kit-build helicopter before he could be licensed to fly that aircraft. After they both consulted Captain Cronin's civil aviation orders, the issue was left unresolved with Andrew promising that he would further investigate.<sup>43</sup>

66. Captain Cronin's further opinion was that without,

"undertaking some form of endorsement I don't think there is a sane, experienced helicopter pilot (who) would recommend that practice, regardless of my opinion. I don't think anyone would agree to that,"<sup>44</sup>

- which opinion I note coincides with the view set out above as expressed by Kevin Lunn.

67. Captain Cronin supported his opinion by outlining further differences involved in flying the Rotorway 162. These included handling differences arising from the fact that in a Rotorway, the rotor spins in a clockwise direction as against the Robinson 22, where the rotor spin is anti-clockwise and on how this difference effects general handling and the manner in which the tail rotor functions in both aircraft.<sup>45</sup>

68. Captain Cronin further set out that other,

"fundamental differences",

in flying the two aircraft included,

"the speed of the engine revolutions, the ambient noise, the different control functions, the positioning of the controls and the centre of gravity is different on the different types. Generally they are very different aircraft."<sup>46</sup>

69. His further belief was that, as Andrew had in fact not undertaken endorsement training on a Rotorway,

"that given we have identified he was an above average student, I think that he would be in a very fragile state. I mean he... even if he was say self-taught. If he's done that he's you know doing quite well, but you know has he received the fundamentals that are required or has he - is it by chance that he is getting away with it?"<sup>47</sup>

See also footnote 51 below concerning advice from Mr Harvey of Counsel, representing CASA, which established to my satisfaction that Andrew Mulls endorsement on a Robinson 22 by Kestral, satisfied all of the then existing legal requirements in regard to his flying of the Rotorway Exec 162.

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<sup>43</sup> See transcript at page 381. Evidence of Captain Cronin

<sup>44</sup> See transcript at page 382. I further note here that Captain Cronin also testified that he had been endorsed on the Rotorway, following 3 hours of training.

<sup>45</sup> See transcript at page 384-85. Evidence of Captain Cronin.

<sup>46</sup> See transcript at page 385. Evidence of Captain Cronin.

<sup>47</sup> See transcript at page 387. Evidence of Captain Cronin.

### Auto-rotation

70. Captain Cronin gave further evidence concerning Andrew's training in auto-rotation.<sup>48</sup> Andrew had undertaken this training while at Kestral, but it was Captain Cronin's view that it should not occur while Andrew was flying solo.

"I'm quite horrified to hear that he was practising them on his own. ... If we had become aware of that we would have phoned Andrew and actually asked him to stop.

Q. At what point in their progress... is that permitted?

A. Even with commercial pilots post training we recommend them not to practise that exercise... All of the emergency exercises we appeal to them to come back to us on a regular basis post training 90 days then 180 days and then try and get them in a pattern of six monthly check rides".<sup>49</sup>

71. Captain Cronin was further questioned about Andrew Mull's logbook entries which suggest that he undertook solo flights on January 19th, January 20th, February 2nd and March 1st and 2nd 2006, which included auto-rotations.

72. In response, Captain Cronin observed that it would not be commonplace for a pilot to do this and that in his opinion it related back to Andrew's character as he was trying to be a perfectionist. Captain Cronin further observed that it was a difficult situation for Andrew to talk to Kestral, because of Kestral's policy not to allow training pilots, to fly in kit-build helicopters,-this policy put in place because of his safety concerns about flights in such aircraft.

### Kestral and Kit Build Helicopters

73. Captain Cronin further elaborated on Andrew's difficulty, stating that in his view it would have been very hard for him to find a training pilot to undertake his training in a Rotorway kit build, for endorsement purposes in Australia, because of an industry distrust of kit-build helicopters.<sup>50</sup>

74. In further explaining his view, Captain Cronin stated,

"My attitude relates to the whole process of how a kit is put together and my ability to ensure that due diligence is done. So far as putting staff in aircraft which are not maintained or by a process that I can check I'm not comfortable with them, I'm afraid".<sup>51</sup>

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<sup>48</sup> For discussion of auto rotation and how it is achieved, see the evidence of expert witness Mark Ogden at transcript pages 459-460.

<sup>49</sup> See transcript at page 388. Evidence of Captain Cronin.

<sup>50</sup> See transcript pages 390-392. Evidence of Captain Cronin.

<sup>51</sup> See transcript page 401. See also transcript at pages 402-405 where Mr Harvey on behalf of CASA informed the Court that Civil Aviation order 40.3.0. issued by CASA in 2004, removed the requirement of individual endorsement in regard to kit build helicopters and established that pilots who obtain endorsement on the Robinson 22, automatically obtain an endorsement to fly all kit build aircraft not exceeding 2,750 kilos, which included the Rotorway, without undertaking flight training in such a craft.

No explanation was provided for CASA's decision to institute this change although the evidence of Captain Cronin in particular, tends to suggest that the change may have been connected to the general reluctance of pilot instructors in Australia, to fly in kit built helicopters.

75. Captain Cronin gave further anecdotal evidence about a kit-build helicopter pilot who was confronted with a similar predicament and who flew his aircraft without a licence.

76. He then gave evidence about CASA's request for his assistance to train a group of unlicensed pilots believed to be flying in Central Victoria, and of the dramatic event which then occurred, which ultimately led Kestral to finally inform CASA that it would have no further involvement with the training of pilots in kit build helicopters.<sup>52</sup>

### **THE SPECIAL CERTIFICATE OF AIRWORTHINESS AND ANDREW MULL AS TEST PILOT**

77. Captain Cronin was further questioned about the process by which a special certificate of airworthiness can be issued to fly an aircraft in the 'experimental' category, which category includes both kit build fixed wing and rotor-wing aircraft.

78. Captain Cronin confirmed the arrangements for the provision of the initial airworthiness certificate and that the further CASA requirement was that the applicant pilot, having obtained his private pilots licence, was then permitted to test fly his aircraft over a period of 25 hours and later attest to its airworthiness following which a certificate of airworthiness Phase II, would be issued by an approved person - (in this instance, Stephen Dines).<sup>53</sup>

79. Captain Cronin was also referred to Andrew Mull's aircraft logbook Exhibit 1(E) where Andrew had recorded the maintenance he carried out on his aircraft. And further, to Andrew's stipulation at page 8, after 25.5 hours,

"that the prescribed flight test hours have been completed and the aircraft is controllable throughout its range of speeds and throughout all manoeuvres to be executed, has no hazardous operating characteristics or design features and is safe for operation".<sup>54</sup>

80. Captain Cronin's view was that there would need to be training and experience, coupled with a manufacturers approved system of maintenance and maintenance checking or testing against an independently established standard, before such a claim could properly be made.

81. His further opinion was that you needed to be trained to evaluate, which he distinguished from being trained to fly.

82. I note here that the evidence did not suggest that Andrew Mull was provided with any Rotorway Pty Ltd or other criteria to evaluate issues pertaining to airworthiness of his aircraft, or that he was otherwise instructed or qualified as to how to assess these matters.

83. In generally condemning these arrangements, Captain Cronin stated:

"When it comes to analysing the performance of the aircraft and its control ability - I mean how can a person who has only ever flown one of these types determine whether its performing the way a normal production aircraft of that type would perform?"

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<sup>52</sup> See transcript pages 396-401.

<sup>53</sup> See all 5 folios at Exhibit 18(E).

<sup>54</sup> See exhibit 1E and transcript at page 408, evidence of Captain Cronin, and the requirement set out in the Phase I Certificate of Airworthiness Exhibit 18(E) at condition 18, that he records the above stipulation in his aircraft logbook, as a condition precedent to obtaining his phase II Certificate.

I mean it's preposterous to propose that."<sup>55</sup>

84. Captain Cronin's further evidence was that Andrew would not have the experience to determine subtleties concerning the origin of vibrations he may observe in the aircraft.<sup>56</sup>

#### **MAINTENANCE OF THE AIRCRAFT**

85. Captain Cronin also confirmed the abovementioned arrangements, which included the stipulation that the applicant as primary builder of the aircraft had completed a major portion of the build, and was permitted to take on the responsibility for the maintenance of the aircraft, or to engage a LAME to do so.

86. Stephen Dines also provided Andrew with a letter dated 14th of September 2005, which advised him of his future obligations in regard to aircraft maintenance.<sup>57</sup>

#### **THE ISSUE OF THE CERTIFICATE OF AIRWORTHINESS**

87. Roger Mull gave evidence that before the aircraft was transported to Andrew's home in Tawonga, Andrew had told him that he thought he had made a mistake.<sup>58</sup>

88. In late September 2005, the aircraft arrived at the Mull home in a truck and was unloaded into Andrew's shed. Kevin Lunn was present at the time and undertook the final attachment and adjustment phase of the construction which included the attachment of the rotors.

89. On September 27th, Stephen Dines, the CASA authorised person, inspected VH-AMB ('Andrew Mull's Beauty') and granted a special "Certificate of Airworthiness".<sup>59</sup>

90. The application for issue of the Certificate was supported by an "eligibility statement", which included under the heading "Major Portion Eligibility Statement of Applicant" - the claim that Andrew Phillip Mull had,

"fabricated and assembled the aircraft".<sup>60</sup>

91. Stephen Dines inspected the controls of the aircraft on September 27th, but did not fly in it.

92. He also did not have the benefit of staged inspection reports, prepared by a qualified person who was independent.

93. It is also the case that he did not put himself in a position in which he might evaluate "airworthiness" and nor was he required by the CASA administered system, to do so.<sup>61</sup>

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<sup>55</sup> See transcript pages 406-07, the evidence of Captain Cronin. See also transcript pages 410-11, and at pages 666-668, the evidence of Captain Cronin, which set out discussion concerning existing US, (FAA) requirements in regard to the aviation qualifications and the independence, expected of test pilots of amateur built aircraft, in that country.

<sup>56</sup> See transcript page 671.

<sup>57</sup> See Exhibit 18 (L).

<sup>58</sup> See transcript at page 354.

<sup>59</sup> See Exhibit 18 (E).

<sup>60</sup> See Exhibits 18(P) and (Q).

<sup>61</sup> See Exhibit 18 (M), which is a checklist of the matters considered by Stephen Dines.

94. Further, it appears that the requirement that Andrew Mull was to sign a CASA issued eligibility statement in which he undertook that he had 'fabricated and assembled the aircraft' can only have caused him to confirm in his own mind that there was an element of masquerade in the activity in which he and the others present, were then engaged.<sup>62</sup>

95. Adding to this masquerade element was the fact that both Mr Lunn and Mr Dines knew that he, Dines, was not required by CASA to certify as to airworthiness, but instead, that he was there primarily to receive Andrew's documentation supporting his claims to have made a major contribution to the build.

96. Counsel representing the Mull family suggested that during the day both Mr Lunn and Mr Dines had a heated discussion over the 51% rule. This was denied by Mr Lunn, but accepted in part by Mr Dines, who provided a different and further explanation for this event.<sup>63</sup>

97. Once the Special Certificate Of Airworthiness was issued, Andrew Mull became legally qualified to fly and maintain his helicopter VH-AMB subject to the condition that he was not to carry passengers and not to fly other than within a 25 km radius of Mount Beauty or over a built up area with 'flights over persons or dwellings to be avoided'. Mr Dines also imposed the additional condition that these arrangements were to remain in place for a period of 25 hours of flying time, (the test pilot phase), following which Andrew was required to give (or given the right to give) certain other undertakings in regard to both maintenance and airworthiness, following which a phase II Certificate of Airworthiness may be issued.<sup>64</sup>

98. Following the issue of the Certificate, Mr Lunn undertook what he described as a commissioning of the aircraft.

#### **DARE TO DREAM<sup>65</sup>**

99. As of the 29th of March 2006, the date of the crash, the aircraft VH-AMB, had flown a total of 37.3 hours. Andrew himself had only flown for a total of slightly less than 90 hours.

100. During this period, and indeed for most of the 6 months between the initial licensing of the aircraft and crash landing on the 29th of March, it is clear that Andrew faced significant ongoing difficulty.

101. It is also the case that he failed to properly document some of the more serious of these issues in his aircraft logbook, this certainly because of a lack of training and experience. It is possible that his failure to properly document these matters also arose from a concern that a record of same may prejudice his future application for a 25-hour Certificate of Airworthiness and Phase II aircraft license.

102. As a result, not all of the incidents referred to below are mentioned in Andrew's aircraft log, with details of some coming via other witnesses who provided evidence of their own observations, and in some cases of their hearsay recall of earlier conversations.

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<sup>62</sup> See Exhibit 18(O).

<sup>63</sup> See Transcript at page 1200. (Mr Lunn) and at page 1926-1928. (Mr Dines).

<sup>64</sup> See Exhibit 18 (E) as discussed by Mr Dines in 18 (L). This also meant that Andrew was legally qualified to issue maintenance releases in respect of his aircraft. The issue of a Phase II Certification of Airworthiness on the 2nd of February 2006, effectively withdrew the requirement that Andrew not carry passengers in his aircraft.

<sup>65</sup> See Andrew Mull's article, 'Dare to Dream', which was published in the Pacific Flyer of February 2006, at Exhibit 8 (B). 'Dare to Dream', was also the name he gave to his aircraft.

103. These include the following events.<sup>66</sup>

- a) Initial adjustments of various kinds were made to the aircraft on each day between the 27th and 30th of September. These encompass multiple adjustments and the retensioning of the tail rotor belts, together with observations of aircraft vibration.
- b) On the 30th of September with Mr Lunn as his passenger, and while only travelling a few feet above the ground, Andrew lost control of his helicopter, the fuselage of which commenced to do full rotations. Kevin Lunn responded to this emergency with the words, 'Houston we have a problem,'  
  
and took control and was able to land safely but heavily.

Kevin Lunn testified that this had not occurred with any of the 24-30 aircraft in which he had been involved, but was not an extraordinary occurrence in itself.<sup>67</sup>

These matters were not resolved before Kevin Lunn departed on the 30th of September, because of an ongoing problem with the tail rotor belts.<sup>68</sup>

- c) Kevin Lunn ordered new tail rotor belts on the 30th of September, which were installed by Andrew Mull on the 7th of October.<sup>69</sup>
- d) Allan Mull also testified that at or about this time, Kevin Lunn sought to reduce the weight of the aircraft by cutting back the exhaust. He also made modifications to the heat shields and re-routed part of the electrical wiring.

At the time Andrew Mull was alleged to have complained to both Roger and Allan Mull that the belts provided with the kit were made of nylon. Kevin Lunn testified that he did not recall nylon belts being an issue. He also testified that although some people were using nylon belts, Rotorway was now using Kevlar belts.<sup>70</sup>

- e) Also from Exhibit 1(E) we know that on the 11th of October, Andrew adjusted the lead-lag, which is a hinge near the rotor blade attachment. He noted in his logbook that it appeared to be,  
  
'settling well'.
- f) On the 12th of October, he notes that he tightened the new tail rotor belts, (half turn), and tightened the water hose clamps.
- g) On the 13th of October, Andrew carried out a ten-hour maintenance Service, which included changing oil and the oil filter and tightening clamps on the water and fuel lines.

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<sup>66</sup> I have included here all events recorded in Andrew Mulls aircraft log, together with other events allegedly witnessed by third parties. I note that these encompass matters which have to do with what I consider to have been normally expected maintenance events.

<sup>67</sup> See transcript at page 848

<sup>68</sup> See Aircraft logbook Exhibit 1(E) at page 3.

<sup>69</sup> See Allan Mull at transcript page 113 and Kevin Lunn at transcript page 828.

<sup>70</sup> See transcript at page 829.

h) On the 17th of October, Andrew noted in his logbook that,

'ABM is still to fulfil the prescribed 25 hours for a special certificate of airworthiness but at this stage,

"I certify that the aircraft is controllable throughout its range of speeds and throughout all manoeuvres to be executed, has no hazardous operating characteristics or design features and is safe for operation".

And that the aircraft,

"flew beautifully,"

after the ten hourly.<sup>71</sup>

i) On both the 20th and 27th of October, Andrew noted in his pilot logbook, but not in his aircraft logbook, that he had engaged in local flying and also in a flight to Wangaratta.

j) On the 28th of October, Andrew set off to fly to a SAAA 'fly in' at Wagga Wagga, which was also attended by Kevin Lunn. He stopped to refuel at Holbrook and local pilot, David King, notified Andrew that he had heard a clicking sound, which was in time with the movement of the main rotors. David King then assisted Andrew and they discovered that the rear rotor gearbox had jumped off its rails at one corner. Andrew Mull with Mr King's advice and support, then refitted it by first removing the centre tail boom pullies.<sup>72</sup>

Kevin Lunn testified that following Andrews late arrival at the 'fly in', Andrew told him that he had landed on route and that the tail rotor shaft was lying at a funny angle. Mr Lunn further alleged that Andrew told him that when he replaced the tail rotor belt, about 15 flying hours earlier, he had not put the sliders back on the rail properly.<sup>73</sup>

k) On the 28th and 30th of October and the 1st of November, there were no records made in Andrew Mulls' aircraft logbook of the difficulties he had on his flight to Wagga. In each instance, there is a statement in the pilot logbook only, Exhibit 1(D), which simply records the fact that the flights between Mount Beauty, Holbrook and Wagga took place.

l) On the 3rd and 5th of November, Andrew made adjustments to the horizontal stabilizer.

m) On the 9th of November his Pilot logbook suggests local flying.

n) On the 22nd of November, Andrew experienced high water temperature. On this date, Andrew planned to take up a passenger, Glen Lawrence. Roger Mull who was nearby observed a fine jet of liquid spray at the rear of the aircraft and heat waves near the exhaust.

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<sup>71</sup> See Exhibit 1 (E). See also Exhibit 22 at page 292 and paragraphs 103 (j) and (n).

<sup>72</sup> See Transcript at pages 333-336, evidence of David King and Exhibits 9 and 9A

<sup>73</sup> See transcript at page 356 where Mr Dines informed the Court of his theory concerning the absence of a slider bolt, 'needed to hold the tail rotor sliders in place', and 'usually inserted after about 20 hours of flight', and of the denial concerning that suggestion from Mr Lunn. See also the view of Mr Ogden concerning Andrew's treatment of this matter, at transcript pages 436-437.



Roger Mull ran towards his brother and was able to signal to Andrew to shut the aircraft down, which he did. On shut down, Andrew observed that the top main drive belt was broken and arrangements were later made for Kevin Lunn to travel from Perth on the 6th of December, to help with the instalment of new derive belts.

- o) The maintenance release suggests that on the 24th of November Kevin Lunn came from Perth to help install new drive belts. When the new drive belts were installed Andrew took the helicopter off the ground and hovered when, according to Kevin Lunn, Andrew, "lunched" another set of belts.

Allan Mull stated that this occurred because Kevin Lunn had incorrectly placed the heat shields too close to the main belts.<sup>74</sup> Kevin Lunn on the other hand testified that it occurred because a clamp had been installed incorrectly.<sup>75</sup>

Kevin Mull left and returned with a new set of main belts which were installed.

Allan Mull expressed concern about the shield but received assurance from Mr Lunn that putting it back with a minor alteration, would not cause a problem. Allan Mull maintained that the use of a non-factory aluminium shield had caused the overheating problem and was the cause of the first and second main belt failures. He further maintained that each time belts stretched, they vibrated and made contact with the heat shield.<sup>76</sup>

Roger Mull claimed that Andrew informed him that the gauges had indicated that the performance of the drive belts was irregular and that when he put the helicopter down he observed that the heat shield was placed too close to the belts.<sup>77</sup>

- p) At some point before late November 2005 scuff marks of unknown origin appeared on the back or outside of one of the two main drive belts.<sup>78</sup>

Allan Mull stated that Andrew could not find a cause for the scuff marks.<sup>79</sup>

- q) On a date in early December (according to Kevin Lunn, the 6th of December), Kevin Lunn flew to Mount Beauty to replace the main belts again. A rag was mistakenly left near the engine and became caught in the water pump fan which caused damage necessitating the use of a further replacement belt. During this incident Roger Mull observed black smoke coming from the engine. Kevin Lunn agreed that a rag had been caught in the fan which had caused damage to the new belts. He also agreed with Roger Mull's observations that there was rubber dust all over the engine compartment area and tail boom. Kevin Lunn stated that he was angry with himself because he had failed to realize that the rag had been left in the aircraft.<sup>80</sup>

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<sup>74</sup> Allan Mull stated that when the new drive belts were first installed Andrew took the helicopter up but only flew 150 meters down the airstrip. The gauge alerted him to a problem so he set the helicopter down. On inspection it was discovered that the top main belt was split. According to Allan Mull, Mr Lunn replaced the heat shield and positioned it closer to the main belt drive.

<sup>75</sup> See Transcript at page 1112-1113. Evidence of Kevin Lunn.

<sup>76</sup> See Exhibit 16(H) Record of Interview with Kevin Lunn at pages 334 and 339.

<sup>77</sup> See Allan Mull Statement at Exhibit 1.

<sup>78</sup> See Transcript 119-121 and at 114, the evidence of Allan Mull.

<sup>79</sup> See Allan Mull Statement at Exhibit 1.

<sup>80</sup> See Transcript at Page 1209-1212. Evidence of Kevin Lunn.

Roger Mull testified that Kevin Lunn told Andrew Mull that the belt did not need replacing. Kevin Lunn agreed that Andrew told him that he would not fly again until the belt was replaced. Kevin Lunn further testified that the belt was replaced that afternoon.<sup>81</sup>

- r) However, the aircraft logbook suggests that the belts were not replaced until the 7th of January and that on this date Kevin Lunn arrived from Perth with a new set of main drive belts. He also supervised the completion of the 25 hour maintenance during this visit. Blade Adjustment was made to the lead lag and using Kevin's new tips, the blade tracking was done. Andrew again commented that VH-AMB was,

"flying beautifully".<sup>82</sup>

- s) On the 16th of January Andrew re-tightened the main belts and practised hovering and CCTS.<sup>83</sup>

- t) On the 19th of January Andrew recorded in his aircraft logbook,

"I certify that the prescribed flight test hours have been completed and that the aircraft is controllable throughout its range of speeds and throughout all manoeuvres to be executed, have no hazardous operating characteristics or design features and is safe for operation."<sup>84</sup>

- u) On the 20th of January Andrew recorded,

"Did first auto's today. Flew well through all manoeuvres."<sup>85</sup>

- v) On the 30th of January Andrew recorded,

'Re checked tightening device to secondary sprocket. All correct. Tightened tail rotor belts half turn'.<sup>86</sup>

- w) On the 2nd of February Mr Dines issued Andrew with a phase II annexure to the Certificate of Airworthiness. The evidence does not suggest that he inspected the aircraft again at this time.<sup>87</sup>

- x) On the 8th of February Andrew recorded,

"Tightened main belts. Had a great flight to Yackandandah yesterday."<sup>88</sup>

- y) In her first statement Justine Mull states that in mid February she went on a flight with her husband and that,

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<sup>81</sup> See Transcript at Page 1209, Kevin Lunn.

<sup>82</sup> See Aircraft logbook Exhibit 1(E).

<sup>83</sup> See Exhibit 1(E).

<sup>84</sup> See Exhibit 1(E).

<sup>85</sup> See Exhibit 1(E).

<sup>86</sup> See Exhibit 1 (E).

<sup>87</sup> See Exhibit 18(E) at folio 5.

<sup>88</sup> See Exhibit 1 (E).

"Shortly after takeoff, there seemed to be an over-heating problem with gauges... (related)... to the secondary shaft. Andrew returned to Mount Beauty and landed and mentioned a heating problem... about what he called the secondary shaft. Andrew rang Kevin Lunn and they discussed the problem at length. Lunn said that it would be all right and not to worry about it".<sup>89</sup>

z) On the 28th of February Andrew recorded,

"Cleaned air filter today with K&N cleaner and oil. Also fitted helipod. Looks great and looking forward to seeing how it flies with it loaded".<sup>90</sup>

and on the 3rd of March 2006,

"Tensioned main belts about 1/8 inch they looked in good condition".<sup>91</sup>

104. John McMahon stated that he flew with Andrew on this date and testified as to unexplained aircraft vibration and to experiencing a nauseous smell, which he believed arose from the suns heat on fibreglass and plastic.<sup>92</sup>

105. David King stated that one month before Easter Andrew told him that he had flown to Mangalore and had 'thrown a belt'. David King believed the problem occurred while the aircraft was still on the ground.<sup>93</sup>

106. On the 7th of March 2006, Roger Mull stated that he flew with Andrew not long before the accident. Andrew asked if he could do auto-rotations, which he did.

107. According to Roger, Andrew was not happy with the main rotors because they had been vibrating for some time and the vibration was getting worse. It is unclear as to whether he made this statement to Roger before or on the same day.<sup>94</sup>

108. On the 25th of March in his last aircraft logbook recording, Andrew noted,

"Retracked and lead lagged blades. Tracking didn't hardly need any adjusting but lead lag was out quite a bit. See how it flies tonight".

109. According to Justine Mull's first statement, on the night of the 25th or 26th of March Andrew took her for a flight in which Andrew (again) noticed and heard vibration. He called Kevin Lunn in the evening to speak about the aircraft.

110. She said that Andrew told her that Kevin said the vibration would not be a problem and not to worry about it.<sup>95</sup>

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<sup>89</sup> See Exhibit 22 at page 25. I note here that Justine Mull was not called to testify and like Jim Miles, that her allegations were not tested in cross-examination.

<sup>90</sup> See Exhibit 1(E).

<sup>91</sup> See Exhibit 1(E).

<sup>92</sup> See John McMahon statement at Exhibit 7 and transcript at pages 280-287.

<sup>93</sup> See David King statement at Exhibit 22, the Brief, at page 60.

<sup>94</sup> See Roger Mull statement at Page 32. I further note here that much of what has been attributed to Andrew Mull, by both Roger and Allen Mull, is hearsay evidence.

<sup>95</sup> See Justine Mull's statement at Exhibit 22 at page 26, which was corroborated in part by Kevin Lunn's own evidence.

111. According to Kevin Lunn's statement to the police informant, Andrew called him about 3 days before the incident and complained of unusual vibration at the rear of the aircraft.<sup>96</sup> The call was made at approximately 8 pm. Kevin Lunn stated that he told Andrew,

"to double check everything and make sure there are no mud wasps in the tail rotor"

112. He said the call lasted for ¾ of an hour and that he also told him to check the bearings and bearing plates.<sup>97</sup>

113. At inquest he further testified that,

"I was basically telling Andrew to go through and check the whole aircraft and look for anything that may cause the vibration, and we did discuss the tail rotor, and we discussed all the other bearings to go through, and check all the bearings throughout the aircraft. And basically go through it very thoroughly, because if there was something that was going to catastrophically fail, there would be evidence of it." <sup>98</sup>

114. Kevin Lunn further stated that he assumed that Andrew would not have flown the machine until he had worked out what was wrong with it. <sup>99</sup>

115. Kevin Lunn further testified that he wouldn't say 'not to worry about it,' to Andrew and that Andrew was just seeking to reassure his wife, in the same or in similar manner, that he also would have, (done ....).

116. And that he may have said that it would be OK, if after inspection, nothing wrong had been found.<sup>100</sup>

117. From this evidence then, I understand that Kevin Lunn was aware of Andrew's ongoing concerns about aircraft vibration, but did not recommend that Andrew ground his aircraft, until the reasons for the vibration, were determined.

118. It is also the case that he did not suggest that Andrew obtain a further opinion from a LAME or other qualified person, before again taking the aircraft for flight.<sup>101</sup>

119. The maintenance release indicates that Andrew flew on both the 28th and 29th of March. There is no reference to vibration problems in the maintenance release or in the aircraft or pilot logbook, on these dates.<sup>102</sup>

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<sup>96</sup> See Exhibit 16(H) at page 335. See evidence of Kevin Lunn.

<sup>97</sup> See transcript at page 901. See evidence of Kevin Lunn.

<sup>98</sup> See transcript at page 1135. See evidence of Kevin Lunn.

<sup>99</sup> See transcript at page 1137-1139. See also transcript at page 1152 where Mr Lunn further stated that, *"There's no legal responsibility for me to ground an aircraft unless I am actually prepared to fly it at that point. And it's up to the pilot and the owner. If he feels that there is a problem with that machine, then he should not fly it. It's got no responsibility on my shoulders whatsoever, and I'm only offering assistance to these people"*.

<sup>100</sup> See transcript at page 1150. Evidence of Kevin Lunn.

<sup>101</sup> See transcript at page 1311 and at 1345-46. See evidence of Kevin Lunn.

<sup>102</sup> As mentioned above Andrew appeared to be wary of including negative assessments in his earlier documentation. In the circumstances, I find myself unable to draw any inference concerning the vibration issue, from his failure to mention such matters in his logbooks.

120. At around 9.30 am on the day of the fatality, the 29th of March 2006, John McMahon testified that Andrew was

'trueing',

the (main) rotor blades and that he had lead probe lights attached to the blades. John showed Andrew what he thought was a crack in the metal joints. Andrew said it was a paint crack. He assured John McMahon that the helicopter was,

"running beautifully,"

and according to John McMahon,

"it sounded normal at take off."<sup>103</sup>

121. I note here that John McMahon's evidence details his personal observations and evidence of a conversation with Andrew Mull, which took place after Andrew had carried out certain maintenance and presumably, signed the maintenance release.

122. The evidence establishes that these events occurred before flight. While running the machine on the ground and hovering in the aircraft after making adjustments to the Pitch Change Links, may have disclosed some problems, it cannot be said that Andrews observation to John McMahon is an indication that he had either correctly identified the source of his ongoing problem with vibration, or that he had been able to solve it.<sup>104</sup>

## **THE ACCIDENT**

123. On the 29th of March, shortly before 10.50 am Andrew Mull took off from Mount Beauty Airport in VH-AMB. A number of witnesses observed his helicopter in flight and its subsequent crash landing in a heavily treed area to the north of the East Kiewa river.

124. Allan Mull provided a hand drawn diagram of Andrew's flight path which he observed from the veranda of his Mount Beauty home.<sup>105</sup>

125. During testimony a further diagram was prepared which was accepted as accurate by Allan Mull.<sup>106</sup>

126. Notwithstanding the crash site indicated in Exhibit 1(K), the uncontested evidence which I accept was that the crash site was north of the East Kiewa river.<sup>107</sup>

127. Following take-off, Andrew travelled in a northerly direction. He was seen to be climbing until approximately point 3 on Exhibit 1(K).<sup>108</sup>

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<sup>103</sup> See Exhibit 22, the Brief at pages 46-48.

<sup>104</sup> See also discussion on Andrews Mulls adjustments to the Pitch Change Links at paragraphs 180 - 192 below.

<sup>105</sup> See Exhibit 1(I).

<sup>106</sup> See Exhibit 1(K).

<sup>107</sup> See the evidence of Sergeant Duncan at transcript page 623.

<sup>108</sup> See Transcript page 67-69. See the evidence of Allan Mull.

128. Witnesses have testified that it appeared to be travelling normally to this point with nothing unusual in its engine noise or pitch.<sup>109</sup>

129. At point 2 on Exhibit 1(K) the aircraft executed a 180 degree turn and travelled southwards back towards the airport, whilst continuing to climb.<sup>110</sup>

130. Ms Brianna McIllree a young housepainter, who was engaged in painting the external walls of a house with her employer, observed the movement of VH-AMB from her ladder. The house in question was situated on Ryders Lane/Mt Creek Rd on the eastern side of the valley, a relatively short distance from Andrew's flight path.<sup>111</sup>

131. Ms McIllree, who had developed an ongoing interest in helicopters, looked up and observed that as Andrew's aircraft passed, the tail rotor stopped rotating. She described it as stopping and then starting again and continuing to operate. This, at a point as it travelled past Ranch Road in a southerly direction over Ranch Road.<sup>112</sup>

132. As the aircraft reached point 3, Allan Mull had turned away and was no longer observing the helicopter. Margaret Mull said to him that the aircraft was 'spinning'. She testified that at this point she observed at position 3, experience 'two violent' revolutions.<sup>113</sup>

133. On hearing this, Allan Mull turned back to look by which stage the helicopter had stopped rotating and was approaching point 3A on Exhibit 1(K). Allan Mull explained an absence of engine noise but qualified that observation by reference to the fact that he estimated he was 1500 metres away and had hearing problems.<sup>114</sup>

134. Thereafter, the aircraft was observed to descend in a seemingly stable auto rotation. Most witnesses described the helicopter as sitting straight and level but descending at an angle of approximately 45 to 60 degrees.<sup>115</sup>

135. Following on at point 3B on Exhibit 1K, Allan Mull testified that he observed small light pieces apparently detach from the aircraft and 'float' from the back of the aircraft.<sup>116</sup>

136. In further cross-examination, it was conceded that what was observed floating from the aircraft was of light weight and not indicative of anything heavy such as might have been the consequence of a severe strike on the tail boom assembly.<sup>117</sup>

137. At point 3B on Exhibit 1(K), a plume of smoke was observed to emanate from the aircraft.<sup>118</sup>

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<sup>109</sup> See transcript page 69 and Exhibit 1, Allan Mull; transcript at page 180, Elizabeth Smith; transcript at page 187-188, Brianna McIllree; transcript at page 206, David Chew; and transcript at page 256-257, Jeremy Dewar:

<sup>110</sup> Witness Carol Tonn stated that at or about Ranch Road the aircraft was travelling at 450 metres in altitude. Ms Tonn was unable to be cross-examined concerning her view as to whether the aircraft was still climbing at this point. See statement of Carol Tonne at Exhibit 22 page 51.

<sup>111</sup> See (lead pencil) marked position 3, on Exhibit 1(K).

<sup>112</sup> See Exhibit 22 at Brief pages 43-45 transcript pages 189-91,193,200 and at 202-204. Evidence of Ms McIllree.

<sup>113</sup> See transcript at page 154-155. Margaret Mull.

<sup>114</sup> See transcript at pages 70, 75, 76 and 84. Allan Mull.

<sup>115</sup> See transcript at pages 72,73,75 and 76. Allan Mull.

<sup>116</sup> See transcript at pages 70-72, 76, 149-150. Allan Mull.

<sup>117</sup> See transcript at page 149-150. Allan Mull.

<sup>118</sup> See transcript at pages 72, 76 and 77. Allan Mull.

138. None of the witnesses was able to attribute this plume of smoke to anything in particular.

139. By reference to Exhibit 1(K) Allan Mull then observed the aircraft turning back in a north-easterly direction from point 3.<sup>119</sup>

140. This evidence was broadly corroborated by other witnesses with the possible exception of witness, Jeremy Dewar, who testified that from his position the aircraft appeared to descend immediately in front of him.

141. I note that his observations are consistent with the aircraft descending in altitude while flying forward, although away, rather than towards him.

142. I further note that his evidence is consistent with the evidence of Mr and Mrs Mull, if the flight path of the aircraft as it moved from point 3 north to point 4 is shifted east.

143. I also note that Ms McIllree was not in agreement with the final turn east before the crash, as described by Allan Mull.<sup>120</sup>

144. I also note here my view that it would be surprising indeed, if witnesses did have an exactly similar recollection of movements of the kind we are considering.

145. At point 5 on exhibit 1(K) Mr Mull testified that the aircraft flattened and appeared to wobble slightly.<sup>121</sup>

146. From this point and when at an altitude of approximately 3-500 feet, we have varying descriptions of the aircraft noise changing pitch, sounding 'sick' and ceasing altogether.<sup>122</sup>

147. The change in engine pitch is consistent with changes in throttle positions. David Chew described the rotors being in a state of,

"high collective pitch,"

for about four revolutions followed by silence.<sup>123</sup>

148. From the expert evidence of Mr Ogden we know that the change of pitch is consistent with a reduction in the collective so that the angle of the rotor blade to the oncoming air, is effectively nil.

149. I also note that the silence observed by witness, David Chew is consistent with a reduction in engine power and that both of these events are consistent with a commencement of auto-rotation.

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<sup>119</sup> See Allan Mull statement Exhibit 1.

<sup>120</sup> See transcript of Ms McIllree at 190 and 196.

<sup>121</sup> See transcript at pages 77-79. Allan Mull.

<sup>122</sup> See transcript of Allan Mull at 70 and 75-76; Elizabeth Smith at 179-182; Brianna McIllree at 188-189; Jeremy Dewar at 229-230, 238, 240-242 and 244; and David Chew at 206-207.

<sup>123</sup> See transcript from page 204. I note here that Mr Chew was for seven years a LAME.

150. As VH-AMB continued its descent (in auto-rotation), to a point approximately 300-500 feet above the ground the aircraft was observed to move violently. Ms McIllree observed that after descending slowly it then, 'nose dived'.<sup>124</sup>

151. As it nose dived, she testified that she could hear the main rotors spinning and making a 'de de de', like noise. She further testified that the fuselage then spun two or three times sounding 'louder' and then 'softer' and there was then a sound of metal striking metal.<sup>125</sup>

152. Witnesses then observed a cloud of brownish smoke.<sup>126</sup>

153. At this point, witness Jeremy Dewar also observed a rotor blade flap upwards, with the aircraft totally out of control, with numerous sounds of metal squealing and banging.<sup>127</sup>

154. Jeremy Dewar also observed the aircraft turn to its right and roll over ultimately impacting when it was nearly upside down.<sup>128</sup>

### **EXPERT EVIDENCE ON CAUSE OF CRASH AND RELATED MATTERS**

155. Mr Mark Ogden is a very experienced helicopter pilot with extensive aviation qualifications, who was granted leave to give expert evidence.<sup>129</sup>

156. Mr Ogden at the courts request, prepared a detailed initial report in respect of the accident.<sup>130</sup>

157. In his initial report, he examined several possible causes based upon the then available information.<sup>131</sup>

158. At the time of writing his report and on a consideration of the evidence then available, he felt unable to offer a definitive opinion as to the cause of the accident.

159. At inquest, however, Mr Ogden reviewed his position having regard to Brianna McIllree's evidence concerning the stopping of the tail rotor, in the context of her other observations about the aircrafts movement as it passed her position, approximately one kilometre away.

160. He testified that the evidence of Ms McIllree, and the evidence of Margaret Mull of the 'violent (fuselage) revolutions' at point 3 on exhibit 1(K), which evidence was supported by other eye witnesses, suggested that the drive to the tail rotor was slipping and that the tail rotor had failed at point 3.<sup>132</sup>

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<sup>124</sup> See transcript at page 197. Ms Mc Illree.

<sup>125</sup> See transcript at page 193. Ms Mc Illree.

<sup>126</sup> See Jeremy Dewar evidence at transcript page 232, although he (I find in error), estimated that the aircraft was at an altitude of 3500-4000 feet at this time.

<sup>127</sup> See also the evidence of Brianna McIllree at page 191-194 and at 196 and 201.

<sup>128</sup> See transcript at page 232-234. Jeremy Dewar.

<sup>129</sup> See transcript at 426-30 and Exhibit II. I note here that leave was granted after the interested parties were given an opportunity to cross-examine and or make submissions on the matter of his expertise. See also Mr Ogden's comments at Exhibit II page 1.

<sup>130</sup> See Exhibit II at Brief page 86.

<sup>131</sup> Brianna McIllree's initial statement did not include a reference, to her later evidence at transcript pages, 189-191 and 203, that she had observed the tail rotor cease spinning, for a short time as the helicopter passed her position.

<sup>132</sup> See transcript 451-457. Evidence of Mr Ogden.



161. Having further testified as to how the tail rotor in the Rotorway Exec 162, worked by its belts and pullies, Mr Ogden testified that this sort of occurrence was very unlikely to occur in a helicopter where the tail rotor is driven by a shaft.

162. And further,

'(Quest). But with pulley's and belts and your reference to the tail rotor drive slipping-what is it you were referring to, or how could you describe what may possibly be taking place that would result in this effect of the tail rotor momentarily stopping?

(Ans)-- if the tail - if the drive - one of the drive belts is loose or not properly engaging with the pulley, there is a good chance then that it would not transfer the - power to the tail rotor fully.'<sup>133</sup>

163. Mr Ogden was also asked about a previous incident of belt disintegration and re-stated his view concerning tail rotor failure and how the tail rotor stopping and starting may have led to the pilot not reacting and getting the aircraft to land as soon as possible.<sup>134</sup>

164. Mr Ogden was further questioned about what action a pilot should take when at point 3 on exhibit 1(K), he experiences fuselage rotation, which we know had also occurred previously.

'(Ans)-He has to lower the collective and bring the engine back-remove the engine power ... moving the collective down changes the angle of the blade to flat against the airflow and removes drag ... and its not producing lift... and in fact the airflow keeps the blades moving... coming up through the rotor... giving us auto-rotation'.<sup>135</sup>

'And if it slows down too much it becomes unstable and you could have the blades flapping and ultimately striking the fuselage.'<sup>136</sup>

165. Mr Ogden's further opinion was that at point 3 Andrew Mull had recovered control, 'sufficiently' and stabilized the aircraft in auto-rotation.

166. Mr Ogden gave additional testimony in which he was asked questions concerning the contents of a letter received from Rotorway International Ptd Ltd.<sup>137</sup>

167. He then testified further, concerning the level of difficulty for a pilot having to undertake an auto-rotation, in circumstances where the aircrafts tail-rotor had failed.<sup>138</sup>

168. Mr Ogden also testified that in his view a catastrophic control problem, (such as one caused by a tail rotor failure), followed by a decision to land and a reduction in power (and loss of control) was very highly (likely).<sup>139</sup>

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<sup>133</sup> See transcript at page 456. Evidence of Mr Ogden.

<sup>134</sup> See transcript at page 457. Mr Ogden.

<sup>135</sup> See transcript at pages 459-460. Mr Ogden.

<sup>136</sup> See transcript at page 460-461. Mr Ogden.

<sup>137</sup> See Marked For Identification II (B).

<sup>138</sup> See Transcript at page 477-478. Mr Ogden.

<sup>139</sup> See transcript at page 478-79. Mr Ogden.

169. Mr Ogden further testified about kit build helicopters generally. He testified broadly supporting the evidence earlier given by Captain Cronin, concerning what he perceived to be the dangers in flying in such aircraft.

170. His principal concern was his view that kit build helicopters in Australia are built to unspecified standards, (with no staged inspections undertaken during the build), by people who may or may not know what they are doing. His additional concern was that the maintenance and flight testing of such aircraft is similarly unregulated and that the system cannot guarantee the quality of the maintenance.<sup>140</sup>

171. He further testified, again supporting Captain Cronin's view, that adequate endorsement training was a necessity and that the need for same was made even more imperative in the case of a pilot who is inexperienced.<sup>141</sup>

172. Mr Ogden went on to discuss the maintenance of other certificated commercially constructed (non-kit), aircraft and how manufacturers supply,

'a very extensive suite of maintenance obligations and flying publications called a flight manual and that the aircraft through its life is updated and monitored by both the manufacturer and also by the Regulator, so there is very close supervision given at all levels on that type of aircraft. It also assumes then that the person who works who maintains... the person who assembles the aircraft is highly qualified and has a quality control system... that the person who flies is qualified to fly and endorsed on the aircraft type, so there's a lot stronger regulatory management and supervision of a fully type certificated aircraft.'<sup>142</sup>

173. Mr Ogden additionally expressed reservations about the linking of kit build helicopters (and kit build aircraft generally), with other 'experimental' aircraft.<sup>143</sup>

174. He also testified how a then CASA test pilot, a Mr Keith Englesman, tested an original Rotorway 90 when it first appeared on the Australian market.<sup>144</sup>

175. Mr Ogden also critically commented on the Australian process for the licensing of kit build helicopters by reference to the American FAA procedure which recommends the need for test pilot experience, skill and competence.<sup>145</sup>

176. Mr Ogden was also critical of the failure of the Australian process to require that a person who is independent of the build, performs the test pilot function.<sup>146</sup>

177. Mr Ogden was further called upon to offer his opinion on the CASA approved requirement that passengers in a phase II Certificate of Airworthiness certified helicopter be requested to

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<sup>140</sup> See transcript at pages 496-497 and also at 502, and at page 503-08, where Mr Ogden critically discusses the role of the home build owner pilot, in the testing phase of the process.

<sup>141</sup> See transcript at page 492. Evidence of Mr Ogden.

<sup>142</sup> See Transcript at page 497. Mr Ogden.

<sup>143</sup> See transcript at page 498. Mr Ogden.

<sup>144</sup> See transcript at page 498-99. I note here that the original 'generic' testing of what was doubtless a properly built and maintained aircraft, by Mr Englesman, can not now be seen as providing any guarantees, as to the quality of the build and the maintenance performed on subsequently constructed Rotorway kit build aircraft.

<sup>145</sup> See transcript at page 519-522.

<sup>146</sup> See transcript at page 525-526. See also Footnote 52 above.

acknowledge that they are aware of the status of the aircraft and accept the inherent risk involved in the flying of same.<sup>147</sup>

178. Mr Ogden expressed further reservations about this aspect of the system, specifically in regard to the content of the acknowledgement and its application, particularly to child passengers, of whom it is understood that Andrew Mulls son, Tommy, had been one.

#### Mr Dines and Mr Lunn

179. Mr Dines and Mr Lunn, both advanced certain other hypothesis, as to the cause of the accident.<sup>148</sup>

#### Adjustment to the pitch change links

180. The pitch-changed links are a rod mechanism whereby adjustments can be made which affect the pitch of the main rotor blades. They are the devices, which are adjusted in the course of undertaking a tracking adjustment to the main rotor blades. A post crash, examination of the wreckage showed that one of the nuts was loose.

181. The evidence indicated that the process of testing and separately adjusting the pitch change links, which Andrew Mull had been engaged in on the morning of March 29th, is time consuming as it is necessarily to hover observing the position of the tracking lights, land, shut down and making adjustments and then re-flying the aircraft to ascertain the effect of the adjustments made.

182. It was suggested by Mr Dines that the repetitive nature of the process may have led Andrew to fail to tighten the torque nut on the pitch link rod, which may have led to a gradual change of position of the pitch link rod during flight, resulting in catastrophic failure.

183. Kevin Lunn initially stated that when he first noticed a loosened link he believed it might have occurred on impact. However, during his cross-examination by Mr Dines, he appeared to adopt Mr Dines theory that the pitch links were not loosened at the time of impact.<sup>149</sup>

184. In re-examination Mr Lunn accepted that there might be other reasons relating to the impact that might have caused the nuts to loosen.<sup>150</sup>

185. He conceded that the loosened links did not explain the evidence of Ms McIlree, concerning the tail rotor or other evidence concerning the violent fuselage revolutions.<sup>151</sup>

186. Mr Ogden who had observed the free play of the pitch links, did not consider this to be the cause of the accident.<sup>152</sup>

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<sup>147</sup> See Exhibit 7(e), the Acknowledgement and Releases that Andrew Mull obtained from four separate passengers, carried by him.

<sup>148</sup> Mr Dines was not given leave to testify as an expert, but having regard to his position as an interested party and his extensive experience in the kit build helicopter industry, several hypothesis raised by him, one of which was supported by Mr Lunn, were examined in my investigation.

<sup>149</sup> See Transcript at page 1353-54. Evidence of Mr Lunn

<sup>150</sup> See transcript at page 1413. Mr Lunn.

<sup>151</sup> See transcript at page 1417. Mr Lunn.

<sup>152</sup> See his supplementary report Exhibit II (h), dated 24th of May, 2009.

187. In his view if Andrew had failed to tighten the pitch links it would have led to noticeable vibration rather than a loss of directional control. He further said that the onset of vibration would not be sudden and he considered that Mr Dines' theory was inconsistent with Andrew's apparently successful auto rotation observed until the last moments when the aircraft fell out of control to the ground.

188. Mr Ogden also pointed out that this hypothesis was inconsistent with Ms McIllree's observations, concerning the tail rotor.

189. I further note that Captain Cronin agreed with Mr Ogden's opinion concerning this matter.<sup>153</sup>

190. It is also relevant that expert witness Mr Michael Bilton, who was a LAME from Blue Demon Aviation which company examined the aircraft wreckage, stated that the movement in the pitch link nuts was minimal.

191. He said it was 50/50 as to whether this had occurred before the accident or on impact.<sup>154</sup>

192. Mr Bilton gave further testimony about the effects of failing to tighten the locknuts (before flight), and broadly supported the evidence as to effect, earlier given by Captain Cronin and supported in Mr Ogden's supplementary report.

#### The absence of a safety bolt on the Slider Assembly

193. During the inquest also Mr Dines raised the question of whether there was a safety bolt in the tail slider assembly. The relevant parts of the aircraft were recovered by the police informant, S/C Kontos, from Blue Demon Aviation and were viewed in court by the interested parties. Mr Dines confirmed his suspicion that there was no safety bolt in the slider and there was no hole drilled in the assembly for the purposes of installing a safety bolt.

194. Kevin Lunn did not recall telling Andrew Mull that he needed to install a safety bolt in the slider. He said that a safety bolt was not installed as a matter of course in the aircraft that he sold because he did not consider it necessary. The factory Rotorway Aircraft also did not have a safety bolt installed as Kevlar belts expand and shrink depending on the weather.

195. According to Mr Lunn, this would require the builder to constantly drill holes for the safety bolts and would compromise the integrity of the slider rails.

'I don't think anyone uses them any more.'<sup>155</sup>

196. I note here that Rotorway International Pty Ltd, drawings for the construction of the aircraft require the installation of a bolt on the slider rail assembly only after the adjustments on the tail rotor has,

'settled down'.

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<sup>153</sup> See transcript at page 1528 and Exhibit 10B.

<sup>154</sup> See transcript at page 1501-2. See evidence of Mr Bilton.

<sup>155</sup> See transcript 1139-1140, and 1334-1335. See evidence of Mr Lunn.

197. It may also be relevant that the drawings are dated 1993 and that, according to Mr Lunn, Rotorway has been using Kevlar belts since 1995.

### Mast Bumping

198. Stephen Dines suggested that the teeter blocks showed evidence of (main rotor shaft) mast bumping as they were bent upwards. In addition, he pointed to scoring on the rubber surrounding the mast, as further evidence of mast bumping.

199. Mr Ogden discounted this as a factor possibly contributing to the accident, pointing out that significant mast bumping would cause the mast to break off.

### Other hypothesis

200. Stephen Dines offered a further hypothesis, that there had been a catastrophic tail rotor failure which had led to the onset of vibration in the main rotor. As a consequence, Andrew Mull had entered into auto-rotation by suddenly decreasing the collective, which caused the aircraft to pitch nose down.

201. This had caused the motor RPM to decrease rapidly in response to which Andrew had applied aft cyclic to lift the aircraft's nose. He then also applied throttle to try and increase the reducing RPM. This led to a tail strike in which the tail boom was struck by the main rotor and ultimately to the three violent fuselage revolutions.

202. I simply note here that while the evidence supports the tail rotor failure aspect of this hypothesis, the eyewitness versions which establish that Andrew successfully achieved auto rotation before ultimately losing control of the aircraft, are inconsistent with it.

## **FINDINGS<sup>156</sup>**

203. At approximately 10.50 am on the 29th of March 2006, a Rotorway helicopter VN-AMB, owned and operated by Andrew Mull, crashed into a heavily treed area near his home in Tawonga, in North-East Victoria. Andrew was the only passenger and he suffered a pattern of injuries, which were consistent with a high velocity impact and he died, either from the injuries sustained as his helicopter fell out of control or from the multiple injuries sustained at the point of the helicopter's impact with the ground.

204. This occurred against a backdrop of a CASA approved system, which permitted the licensing of Andrew Mull's Rotorway Exec 162 kit build helicopter for flight - without the approved person seeking, or required, to be satisfied as to issues pertaining to design safety, build safety, pilot skill or the adequacy of Andrew Mull's aircraft maintenance training.

a) Having particular regard to the observations made by the different eye witnesses and to the findings and views expressed by Mr Ogden, I find that the failure of the tail rotor,

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<sup>156</sup> I direct myself that the standard of proof which must be applied in a Coronial Inquest is that established by the leading authority *Briginshaw v Briginshaw*. (1938) 60 CLR 336. See also the discussion of principle, in the text, "Death Investigation and the Coroners Inquest", Freckleton and Ranson at page 554-55. I further note that I am satisfied that Rotorway International Pty Ltd and its Australian representative have been provided with 'procedural fairness', at this inquest. (See Exhibit 26 and discussion at footnote 5.)

which was accurately observed in its initial phase, by Brianna McIllree, caused or materially contributed to the crash of VH-AMB.

It is not clear whether Andrew was aware of this problem at the time of Ms McIllree's observation.

I am satisfied, however, that Andrew later became aware that he was in trouble and had suffered a catastrophic failure. I am further satisfied that he attempted an emergency auto rotation of his aircraft to the ground. This manoeuvre was initially successful but ultimately he again lost control of the aircraft.

I further find that there is insufficient evidence to allow me to determine whether the absence of a safety bolt in the tail rotor slider assembly, contributed in any way, to the tail rotor failure.

I also find that soon after the failed auto rotation, the aircraft fell to the ground and that in the final moments of its flight Andrew Mull, was unable to exercise any control over its movement.

- b) I further find that Kevin Lunn was an unreliable witness and that I did not believe his evidence. Absent other corroborating evidence, I find that it is unsafe to attach weight to that testimony.
- c) I am instead, satisfied from the statement of Jim Miles, that Kevin Lunn refused to allow him access to the performance characteristics of his own Rotorway Exec 162, when the two met in Woorawa in March 2005.
- d) I also find that Kevin Lunn built VH-AMB with minimal input from Andrew Mull, as I find was alluded to in his early conversation with Jim Miles referred to above.
- e) Kevin Lunn was present at the Mull residence during part of the period while the aircraft VH-AMB, was being initially tested by Andrew Mull and provided Andrew with some flight training and maintenance advice during that time.
- f) Kevin Lunn had previously informed Andrew of the scheme that existed which allowed for Andrew to obtain rights to licence, pilot and maintain his aircraft on the basis of undertakings concerning his participation in the build, that he would be required to give the CASA approved person.
- g) Based upon a limited inspection and Andrew Mull's assurances about the build which, I find, had in effect been coached from him, the approved person licensed the aircraft for flight as 'airworthy' without being satisfied, or being required by CASA to be satisfied, as to the accuracy of that appraisal.
- h) Notwithstanding Mr Lunn's denial, and Mr Dines' only limited acceptance of an assertion put to witnesses by the Mull family,<sup>157</sup> I am also satisfied that the question of Andrew Mull's meaningful participation in the build did not sit comfortably with Mr Dines. I find instead that his reserve came to a head in the Mull home on the 27th of September, when he and Kevin Lunn exchanged words about the home build rule in front of Justine Mull.

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<sup>157</sup> See Justine Mulls statement at Exhibit 22 page 27.

I further find that Stephen Dines' position on this issue was in fact driven by his underlying concern that Andrew Mull's actual contribution to the build of VH-AMB, may have been minimal.

- i) Following the licensing of his aircraft which he had named 'Dare to Dream', Andrew almost continuously experienced problems. These difficulties were often concerned with, but were not necessarily limited to, the tail rotor and to general vibration within his aircraft.
- j) Andrew's own level of relevant experience and training was minimal. Those levels were such that he was usually limited by an insufficient understanding of the maintenance issues and was therefore unable to comprehend the general danger with which he was often confronted.
- k) Recognizing perhaps some of his own limitations, and in the absence of any other Rotorway experienced support structure in remote Mount Beauty, Andrew came to rely heavily upon Kevin Lunn for both advice and assistance.
- l) On the evening of the 25th of March 2005, that assistance did not include the advice to cease flight outings until the matter of the ongoing vibration could be re-examined by a competent person.
- m) I also find that the 'major portion rule', as it came to be applied to Andrew Mull provided him with only minimally enhanced maintenance skills and with little or no improved ability to identify and/or understand the reasons for his ongoing difficulties.<sup>158</sup>
- n) Notwithstanding the arguments to the contrary advanced by CASA, I find that the above described system, failed to properly address the risks involved in permitting an otherwise unqualified person to be entrusted with the legal responsibility of building, and later piloting, testing and having the option of maintaining an arguably design deficient<sup>159</sup> kit helicopter.

I further note that there is no on-going collection of relevant design standards for kit build helicopters, as occurs in regard to ABBA type tested and licensed aircraft.

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<sup>158</sup> CASR 21.191(g) allows for the issue of a special certificate of airworthiness in respect of experimental aircraft '21.191 (g) reads as follows.

'An experimental certificate may be issued for one or more of the following purposes:

(g) Operating an amateur built aircraft: that is an aircraft a major portion of which has been fabricated and assembled by a person who undertook the construction project solely for the persons own education or recreation.' The emphasis is mine.

CASR 21.191(g) appears to have had as an objective a connection between fabricating and assembly, with a person who undertakes the work for his/her own education. In its genesis, it encouraged 'experimental aircraft' in the true sense of those words. I consider however that that objective has now been overwhelmed in regard to kit build helicopters, because of the introduction of largely pre-fabricated kit build models.

<sup>159</sup> The absence of an engine governor is an example of arguable design deficiency in the Rotorway Exec 162. See discussion at transcript page 540-541.

The Rotorway Exec 162, (unlike its successor, the A600 Talon), has a belt/pulley operated tail rotor, rather than a metal drive shaft, which is arguably (another) design deficiency. (See Mr Ogden's supplementary report, Exhibit II(A) at page 3).

It is also the case that there is no significant history of relevant ATSB investigations and following accident investigation reports. The absence of such a documented history effectively limits the possible identification of potential design deficiencies.

- p) Importantly, the system also failed Andrew Mull because it did not require that aircraft testing be carried out by a properly qualified and independent assessor.
- q) The evidence establishes that these were together ill-conceived arrangements, which demonstrated what I find to be an unacceptable disregard for both pilot safety and the safety of the community at large, and that they contributed to the death of Andrew Mull.

## COMMENTS

Pursuant to section 67(3) of the **Coroners Act 2008**, I make the following comment(s) connected with the death:

205. In the course of this inquest, I have examined the system established by federal authorities to license kit build helicopters.

- a) I note here my opinion that the manner in which CASA has appointed 'authorized persons' to carry out its Section 9 (1) duties under the Civil Aviation Act in respect of kit build helicopters, falls short of transferring its duties and responsibilities under that provision, to such persons.

CASA has the function of conducting the safety regulation of the following in accordance with this act and the regulations.

(a) civil air operations in Australian Territory;

(b)

(ba)

by means that include the following:

(c) developing and promulgating clear and concise aviation safety standards;

(d) developing effective enforcement strategies to secure compliance with aviation safety standards;

(da) administering Part iv (concerning drug and alcohol management plans and testing);

(e) issuing certificates, licences registrations and permits;

(f) conducting comprehensive aviation industry surveillance, including assessment of safety-related decisions taken by industry management at all levels for their impact on aviation safety;

(g) conducting regular reviews of the system of civil aviation safety in order to monitor the safety performance of the aviation industry, to identify safety related trends and risk factors and to promote the development and improvement of the system;

(h) conducting regular and timely assessment of international safety developments.

- b) Sect 9(2) sets out certain other safety related functions, which include education and training, the provision of timely safety advice and the fostering of awareness of the importance of ... aviation safety and legislative compliance.

- c) I note here that CASA submitted that (Stephen Dines) the approved person, was properly entrusted with CASA's oversight responsibilities in regard to the licensing of Andrew



Mulls aircraft.<sup>160</sup>

- d) As I understand his evidence, CASA aviation adviser, Mr Dukats, in discussing the rationale for the earlier CASA approach to experimental aircraft, frankly stated that it was two fold,<sup>161</sup>

‘one to make the regulation very much a mechanical regulation and the other one was to exempt us from liability.’

- e) It is well established law that CASA like any other entity created by statute, is not entitled to delegate its power to another without lawful authorization.

‘So if a statute gives a decision making power to ‘A’ it can not be lawfully exercised by ‘B’ unless the statute allows that course. The rule against delegation accords with the principal of legality in the sense that those who purport to exercise public power must be properly authorized to do so. It could also be said that the rule serves the purpose of ensuring that parliaments choice of a decision maker is observed, particularly where the person or official empowered was chosen on the basis of relevant skill and experience or for some other reason related to the purpose of the statute.’<sup>162</sup>

- f) In *Re Reference Under Section 11 of Ombudsman Act* for an advisory opinion; *Ex parte Director General of Social Services*, Brennan J confirmed that where there is a permissible delegation, the delegate is effectively using the power in their own name and their acts are not treated as acts vicariously done by the delegating authority. However where there is no delegation but merely an authorisation by the repository of the power for another person to act on their behalf, that person does so in the name of the repository of the power.<sup>163</sup>

- g) In the present case, Mr Dines was appointed as an authorised person by CASA to administer certain aspects of the regulations which included the power to issue an experimental certificate pursuant to Reg 21.191(g). Mr Dines undertook formal training from CASA, in respect of the powers vested in him under the instrument of appointment.<sup>164</sup>

- h) The evidence establishes that when Mr Dines inspected Andrew’s aircraft on the 27th of September 2005, and issued a special certificate of airworthiness, he did so in his capacity as an authorized person and not under the now repealed Reg 201.002.

- i) I further find that the fact that Andrew Mull was required to sign a release in favour of Stephen Dines did not alter the essential nature of the relationship between CASA and Stephen Dines.

- j) Applying the direction given by Brennan J *In Re Reference under Section 11* (ibid), I find that in all of his dealings with Andrew Mull, Mr Dines was acting in CASA’s name, rather than in his own name.<sup>165</sup>

<sup>160</sup> CASA’s position in regard to its duties under Section 9 appears to have changed recently, as detailed in material produced by Counsel Assisting, at Exhibit 20(E) and 20(F).

<sup>161</sup> See transcript at page 2203.

<sup>162</sup> (1979)2ALD 86 at 94. *Administrative Law in Australia* p139-140.

<sup>163</sup> See (1979) 2 ALD 86

<sup>164</sup> See Transcript at page 1558-1559.

<sup>165</sup> See also Mr Dukats discussion of the relationship between Approved Persons, and CASA at transcript pages

- k) Moving now to the scheme itself, I find that the existing arrangements are inherently dangerous and pay insufficient regard to the risk that low (flying) time owner pilots of kit build helicopters like Andrew Mull, will simply not be able to identify or cope with the multiple challenges presented over many areas.
- l) In so finding, I reject the view put forward by CASA that I should look at the system as one, which simply and reasonably permits participants to engage in another extreme sport.
- m) It is also relevant that the evidence in this case which includes the ATSB (2009) survey on 'Amateur-built and experimental aircraft',<sup>166</sup> establishes that the background of aviators involved in the purchase and build of 'experimental aircraft', is extremely diverse.
- n) I also note that only a very small number of the total number of aircraft owners who responded to the survey were rotor wing kit build owner pilots.
- o) I further find that the nature (and duration) of the build, typically involved in the construction of a *fixed wing* aircraft, is more technically difficult and involves a considerably longer period than the time needed to construct a rotation wing kit build.<sup>167</sup> This situation has come about because the engineering complexity required in the construction of key component parts for a helicopter is such that kit build manufacturers provide these key component parts, already fully constructed. With this development the notion that these aircraft remain 'experimental', truly is a thing of the past and not relevant to existing realities.
- p) I also find that the skills that might be learnt in the course of a kit build helicopter project are further limited by the reduced time typically involved in the build.
- q) I note and adopt the remarks of Captain Cronin concerning the unique characteristics of helicopters, and his observation that they are extremely complex and very unstable.<sup>168</sup>
- r) The result is that the learning of maintenance skills through the build is limited by the complex nature of helicopters and the related fact that most of their primary components are pre-fabricated, with their internal and collaborative workings and maintenance secrets not easily divulged or understood.
- s) I further direct myself that there is no evidence that the high proportion of kit build helicopter mishaps, within the class, (as set out in relevant ATSB records Exhibit 20 B which individual matters are of course not before me), is related to the decision to include kit build helicopters within the experimental aircraft category or to the consequences of that decision.

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2222-23.

<sup>166</sup> See Exhibit 20A.

<sup>167</sup> See Exhibit 20 A and discussion at transcript pages 2227-28.

<sup>168</sup> See transcript at page 377.

- t) I find that whatever the position was in 1998, when the existing arrangements were adopted, that there is now a pressing need for the responsible federal authority to give kit build helicopters special consideration and henceforward regulate this category of aircraft, independently of the experimental aircraft class.<sup>169</sup>
- u) I also find that faced with such difficulty and with an absence of any meaningful financial support, the Sporting Aviation Association of Australia (SAAA), which has attempted to assist with the construction and commissioning of fixed wing kit build aircraft, has made little or no progress in regard to the problems presented by build your own helicopter kits.
- v) It is also relevant that the ATSB has shied away from the investigation of aircraft accidents involving kit build helicopters, which do not as a rule involve a commercial relationship between operator and aircraft passengers.
- w) As earlier noted, the consequence of this has been that the recreational aircraft community has been denied the improved knowledge which ATSB investigations and investigation reports, may have been expected to contribute.
- x) Anticipating that this approach is unlikely to change, with new arrangements having recently been introduced between the ATSB and other interested bodies, which include CASA, the need for significant change in the existing arrangements for the CASA licensing of kit build helicopters is in my opinion, made even more important.

## RECOMMENDATIONS

Pursuant to section 72(2) of the coroners Act 2008, I make the following recommendation(s) connected with the death:

206. I recommend that the responsible federal authorities distinguish the position of kit build helicopters from the legal framework set up to apply to other so called 'experimental' aircraft, and that instead of existing arrangements, the need to develop a separate and different legal framework for kit build helicopter enthusiasts, is now recognized.

The issues which then arise should be addressed having primary regard to the physical safety of kit build helicopter pilots and to those others likely to be effected by an aircraft component or maintenance failure.

207. Having regard to the inherent and significant risk that existing Rotorway Exec 162 kit build helicopters may constitute to their owner pilots, as well as to the public at large, I recommend that as an interim measure CASA issue an Airworthiness Directive under CASA Regulation Part 39 (and/or uses such other powers as it may deem appropriate),

<sup>169</sup> See transcript discussion by Mr Dukats at pages 2231-36 and Mr Hunter, (Chair of the SAAA), at 1646, as to the manner in which the existing arrangements were adopted from the US. See Exhibit 20 D, which sets out statistical information supplied at the Courts request by CASA, and a discussion of same by Mr Dukats. See also the discussion from Transcript page 2187, which suggests that of 1,140 registered experimental class aircraft, only 82 are helicopters with only 32 of these holding current certificates of airworthiness. I further note that of these 32 aircraft, a total of 20 are Rotorway 162's or its predecessor, the Rotorway 90, which aircraft also has a belt driven tail rotor.

- a) to prohibit the flying of all Rotorway Exec 162 aircraft with immediate effect, with such prohibition to remain in force until the manufacturer, satisfies design (and build) standards to be established by CASA, following consultation with the manufacturer, and until each owner demonstrates to CASA in a test which includes flight testing, that any particular individual helicopter satisfies that airworthiness standard.

I further recommend that,

- b) no further permissions are to be given for the building of, or future maintenance of, either existing or newly built Rotorway Exec 162 aircraft, by persons who are either non-LAME qualified persons, (or non-CASA approved, qualified persons).<sup>170</sup>
  - c) no further pilot licences or licence upgrades or licence renewals, to fly Rotorway Exec 162 aircraft are to be issued until pilots receive appropriate endorsement level training in Rotorway Exec 162 aircraft, or in such other similar aircraft as may be approved by CASA.
  - d) CASA places such additional limitations on the future licensing arrangements, relating to the Rotorway Exec 162, that CASA may consider are needed to provide a reasonable level of safety for pilots, passengers and any other person likely to be effected by component or maintenance failure.
208. I also recommend that the Office of the Deputy Premier and Attorney General in the State of Victoria, provides the Federal Minister for Transport, with a copy of these findings, comments and recommendations, and further liaises with the Federal Minister as appropriate.<sup>171</sup>

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<sup>170</sup> In my view, CASA should decide between restricting the build and maintenance of kit build Rotorway Exec helicopters, to LAME qualified persons and, or extending that power to other CASA approved persons, whose academic qualifications and rotor wing engineering and avionic experience, satisfy yet to be determined CASA requirements.

The bracketed section of Recommendation 207(b) anticipates the possibility that CASA will in future establish and publish criteria concerning the required level of that training/experience, which non-LAME qualified applicants will be required to satisfy before they are permitted to build and or maintain a Rotorway Exec 162, kit build helicopter.

<sup>171</sup> Amalgamated Society of Engineers v Adelaide Steamship Co Ltd (1920); Pirrie v McFarlane (1925); Commonwealth v Cigamic Pty Ltd (1962) and The Residential Tenancies Tribunal of NSW and Henderson; Exparte Defence Housing Authority. ('Henderson')(No S75 of 1996) considered and followed.

## CONCLUSION

I take this opportunity to thank Counsel and those instructing, together with Mr Stephen Dines, for their assistance and at times, highly spirited debate. I am also grateful to the witnesses who testified, including the Police Informant SC Kontos, and to Police Reconstructionist Ms Jo Szczepanska, of the Criminal Identification Squad, as well as to the authors of the various written submissions, who also gave of their time and expertise.

I am also grateful to the family of the late Andrew Mull for participating in what must have been a very difficult and upsetting exercise.

Signature:

A handwritten signature in black ink, appearing to read "Peter White". The signature is written in a cursive style with a long, sweeping underline that extends to the right.

**Peter White**  
**Coroner**

Date: 22nd day of December, 2009.

### Distribution

The widow of Andrew Mull, formerly Ms Justine Mull.

Mr and Mrs Allan Mull.

Mr Roger Mull.

The Deputy Premier and Attorney-General, in the State of Victoria.

The Minister for Transport, in the State of Victoria.

The Director, Civil Aviation Safety Authority of Australia.

The Commissioner for Police, in the State of Victoria.

Mr Stephen Dines.

Mr Kevin Lunn.

The Chief Executive, Rotorway International Pty Ltd.

The Chief Executive, Rotorway South Africa Pty Ltd.

The Chief Executive, Australian Transport Safety Board.

The Chairman, Sports Aviation Association of Australia.

Through the good offices of the Director of the Civil Aviation Safety Authority, all known owners of kit build helicopters in Australia.