QUEENSLAND COURTS

CORONERS COURT OF QUEENSLAND

FINDINGS OF INQUEST

CITATION:	**Joint inquest into the deaths of Haydn Jonathan Redfern and Wayne Patrick Schofield**
TITLE OF COURT:	Coroners Court
JURISDICTION:	Rockhampton
FILE NO(s):	COR 2011/3148 and 2011/3143
DELIVERED ON:	8 December 2017
DELIVERED AT:	Rockhampton
HEARING DATE(s):	6 – 8 December 2017
FINDINGS OF:	Magistrate D O'Connell, Coroner
CATCHWORDS:	CORONERS: Inquest – aviation – double fatality in helicopter crash – consideration of cause of event – defective hydraulic belt, pilot and aircraft suitability for task, adverse weather event, considered.

REPRESENTATION:

Counsel Assisting	Mr J M Aberdeen
Mr Steve Spinaze	Self-represented
ATSB	Mr Patrick Hornby
Family of Mr Schofield	Ms Shelby Schofield (daughter of deceased)

[1]. On 8 September 2011 Wayne Patrick Schofield, as passenger, and Haydn Jonathon Lee Redfern, as pilot, were involved in a fatal helicopter accident. There were questions as to how the accident occurred, whether the pilot was suitably experienced, that is, should he have been tasked for a pinnacle or peak landing site, if weather conditions were a factor, or if there was a failure of a component of the helicopter, being the drive belt of a hydraulic pump.

Tasks to be performed

[2]. My primary task under the Coroners Act 2003 is to make findings as to who the deceased person is, and how, when, where, and what, caused them to die[1]. In this inquest there is no real contest as to who, when, where, or what caused them to die, the real issue is directed to the 'how' they came to die.

[3]. Accordingly the List of Issues for this Inquest are:-

1. The information required by section 45(2) of the *Coroners Act 2003*, namely, when, where, and how Mr Schofield and Mr Redfern died, and what caused their deaths?

2. Whether the collision with terrain of *Eurocopter* helicopter VH-RDU on 8 September 2011 was caused by, or contributed to by:
   (a) the failure of the aircraft's hydraulic pump drive belt; or
   (b) any other mechanical or technical fault in that aircraft?

3. (a) Whether the said collision was caused by, or contributed to by, pilot error?
   (b) Whether the said collision was caused by, or contributed to by, adverse weather event?
   (c) Whether the experience of the pilot was adequate to the flight tasked to him?

4. Whether any feature of the helicopter landing site (HLS) at Double Mountain South was a contributing factor to the said collision?

5. What preventative measures (if any) relating to:-

   (i) remote mountaintop landing sites;
   (ii) as to assessed or demonstrated pilot experience,

   can be implemented in order to:

   (a) prevent such fatal events in the future; or
   (b) reduce the risk of re-occurrence of any event or state of affairs which may have contributed to these deaths?

[4]. The second task in any inquest is for the coroner to make comment on anything connected with the death investigated at an inquest that relates to public health or safety, the administration of justice, or ways to prevent deaths from happening in similar circumstances in the future[2].

[1] Coroners Act 2003 s. 45(2)(a) – (e) inclusive
[2] ibid s.46(1)

[5]. The third task is that if I reasonably suspect a person has committed an offence[3], committed official misconduct[4], or contravened a person's professional or trade, standard or obligation[5], then I may refer that information to the appropriate disciplinary body for them to take any action they deem appropriate.

[6]. In these findings I address these three tasks in their usual order, *s.45 Findings, s.46 Coroners Comments*, and then *s.48 Reporting Offences or Misconduct*. I have used headings, for convenience only, for each of these in my findings.

Factual background & evidence

[7]. The pilot of the helicopter, Mr Redfern, held a Commercial Pilot (helicopter) license, a Helicopter Class endorsement on the particular model helicopter and held a valid Class I Aviation Medical certificate. He commenced helicopter training in 2002 and had a total helicopter experience of 957 hours, including just over 32 hours in that particular model helicopter. The majority of his experience was in small helicopters, namely Robinson R22 and R44 helicopters, and most flights had been operating tourist flights around the Cairns area and out to the Great Barrier Reef. His experience included pinnacle helicopter landing site training which was conducted on 13 March 2011. The training included demonstration of the techniques required for crossing ridgelines during flight. This was the only recorded assessment he had for conducting pinnacle approaches. Why that is important is because pinnacles and ridgelines provide a potential for sudden changes in wind conditions, usually due to the nature of wind travelling around these topographical features.

[8]. It was established that in the twelve months prior to being rostered to fly in the Shoalwater Bay area, Mr Redfern flew this particular helicopter twice, and reportedly he had expressed a preference for flying other model helicopters because he was more familiar with them. Why this may have been a consideration was that the foot operated pedals are opposite[6] in the Eurocopter to those in a Bell or Robinson model[7]. In that time he also did a pinnacle check in relation to helicopter landing sites but had not done a specific authorisation for the helicopter landing sites that exist at Shoalwater Bay. There was no suggestion he was not a pilot with experience; rather that his experience with such pinnacle landing sites, and in this particular helicopter, was in focus.

[9]. Two days prior to the accident Mr Redfern flew 5.9 hours in this helicopter from Cairns to Yeppoon in preparation for the maintenance work this crew was to do. The day prior to the accident his first task in the training area exposed him to two of the high-altitude landing sites, and he recorded 1.8 hours flight time that day with the same passengers as involved in the accident. Mr Redfern was described as being fit and healthy, and was

[3] Ibid s.48(2)
[4] Ibid s.48(3)
[5] Ibid s.48(4)
[6] Such that a control operated by the left foot in a Bell is operated by the right foot in a Eurocopter
[7] An analogy was of the indicator stalks on European versus Japanese built cars being 'reversed' in their position behind the steering wheel of a car. This is an analogy most people would understand and may have even experienced. Mr Roger Humphrey described it this way in his statement exhibit B.6.

not experiencing any medical problems[8], or other problems in his life which may have affected his capacity to fly.

[10]. On 8 September 2011 the helicopter departed that morning from an airfield within the training area at about 9:47 AM. It conducted a successful landing at the first pinnacle site which was at an elevation of about 700 feet. The helicopter remained there for about an hour whilst vegetation maintenance was conducted.

[11]. They then proceeded to a second pinnacle destination. As the helicopter was attempting to land at that second destination, an elevated site on the western peak of Double Mountain South at an elevation of 2,421 feet, it crashed heavily. The pilot and front seat passenger were killed. The rear seat passenger, Mr Purbrick, was seriously injured but survived the incident and fortunately was able to provide investigators with his recollection of what occurred during the approach and at the moments the helicopter lost altitude and crashed.

[12]. The investigations found no specific mechanical failure in the particular helicopter but there was raised a concern by the helicopter operator company as to whether a hydraulic pump motor, and specifically the rubber drive belt on it, failed, which would have led to a loss of hydraulic power, and in turn control of the helicopter. Loss of hydraulic power, after exhaustion of the reserve pressure held in the accumulators, would have meant the controls become very heavy to operate. The failure of the drive belt was a then-known issue, and a worldwide safety bulletin by the helicopter manufacturer had been issued and a modified replacement V-belt and parts (essentially the pulleys of the pump to accommodate a V-belt) had been notified quite some years prior. This helicopter had not had its hydraulic pump upgraded to the new style pump.

[13]. I set-out the above in very general terms only and I detail what occurred as to the critical issues in my findings below.

Investigations into the incident by ATSB:

[14]. Following the accident the Australian Transport Safety Bureau[9] (ATSB) conducted investigations at the scene, which was understandably hampered somewhat due to the difficult nature of the terrain and its' remote location. The recovered aircraft was then transported to a facility nearby where it could be more meticulously inspected by investigators. Their investigation resulted in a Report[10] which essentially concluded that there was no mechanical failure, in terms of an engine failure, and testing of the hydraulic and flight control system components did not find any pre-existing faults; however the hydraulic pump drive belt was not found[11] and so it could not be determined with any certainty if that particular belt had failed in flight or was lost in the crash event. The belt, if it failed in flight, would have caused a loss of hydraulic

[8] Exhibit A.6 Autopsy Report excludes any underlying medical condition as the cause of the crash. For completeness I should also confirm that the Toxicology Screen found no blood alcohol, no prescription medications, and no illicit drugs. Accordingly none of these were a factor in the incident.
[9] ATSB is an independent Commonwealth Government statutory agency and entirely separate from transport regulators, policy makers and service providers. They are responsible for investigating accidents and transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction. The object of their investigations is to identify and reduce safety-related risk.
[10] Exhibit C.2
[11] Nor was the air-conditioner compressor belt

pressure. Alternatively it could have failed during the impact sequence in which case it was not a causal factor in the accident occurring. Significantly the accumulators which give reserve hydraulic pressure were found to contain pressure, and on the evidence[12] sufficient pressure to permit pilot control. The ATSB found that environmental, operational factors, pilot tasking (as to experience), and the helicopter landing site, were all relevant factors in the causation of the accident.

[15]. Their subsequent Report[13] specifically examined the question of the hydraulic pump belt (and I should point out that the hydraulic pump itself was tested for the first Report and it was found to be operating satisfactorily, so it was not the pump itself in question, but rather the rubber belt used to drive the pump). That subsequent Report found that the drive belt itself was installed at the time the accident, was authorised for use, and was within its' service life limit. As I mentioned the belt was not then found at the accident site nor during the subsequent wreckage examination. Again it was not able to be determined if the drive belt had a failure whilst the helicopter was in flight or was simply damaged or was lost during the crash sequence. What was confirmed was that the drive belt was not in situ on the hydraulic pump when the wreckage was examined.

[16]. Accordingly, by process of elimination it is necessary to determine whether a sudden weather event, perhaps coupled with pilot inexperience, led to the accident, or whether the drive belt failed whilst in flight which has led to a loss of control by the pilot.

Prevailing weather on the day

[17]. The prevailing weather on that particular day was fine and clear with slight winds of 15 knots recorded at a nearby airfield. The conditions were described as 'benign' by the rescue helicopter pilot who flew to the crash site just a few hours after the crash occurred. That pilot, who flew a slightly larger and heavier helicopter, had no difficulty approaching the site or hovering over it for some time. The rescue pilot, in his view, also considered that the conditions would have been similar for the smaller helicopter when it crashed.

[18]. Mr Purbrick, the surviving passenger, gave evidence that the helicopter was buffeted by winds as they circled near the peak. He agreed that buffeting was more prevalent at the higher altitude sites.

[19]. Whilst it is accepted that that the rescue helicopter pilot experienced rather benign conditions they did agree that the ridges and peaks at Shoalwater Bay do experience blustery winds around those features.

[20]. It is reasonable to conclude that winds at pinnacles or around ridgelines can be buffeting winds due to the topography and its effect on prevailing winds. This is what the passenger described as being experienced just moments before the crash. Any buffeting winds would also be more pronounced with a smaller aircraft.

[12] Mr Spinaze was a little evasive (despite numerous times I repeated my enquiry on this issue) on what pressures of 70 psi plus meant for the difficulty of the controls, but others confirmed it would have been sufficient
[13] Exhibit C.3

Possible pre-accident mechanical noise

[21]. There was reported by a passenger, Mr Donald Little, who travelled in the helicopter as it was relocated to Yeppoon, that this particular helicopter emitted an unusual 'grinding' sound during the last five or six rotations of the blades when it was being powered down, or shut down. This was explored as to whether it was a possible indication that the drive belt perhaps was failing or perhaps somehow was misaligned which could lead to its failure. Mr Spinaze said it is a common issue with that model helicopter, and was caused when the blades, when shutting down, began resting or touching a metal ring. Mr Little described the sound as metal on metal, and certainly not a high pitched noise such as made by a rubber belt. An ATSB investigator[14] said the metal ring is known as a 'droop stop' onto which the blades lower when they complete their final rotations.

[22]. Clearly the noise heard was not indicative of an issue (or impending issue) with the hydraulic pump drive belt[15]. I accept that it is not related.

[23]. Of some note from Mr Little was that he heard Mr Redfern remark that he was '*trying to get use to the controls*' of the Eurocopter as '*it was all back to front*'. He made this remark as they departed Cairns[16]. That is relevant as to Mr Redfern's experience or familiarity with this aircraft and its' controls being reversed.

Crew rostering

[24]. The Chief Pilot has responsibility for arranging flight crew rosters. He was permitted to delegate that duty to other members of an operator's staff provided the tasking did not involve training or checking. The chief pilot advised that the lead pilot was delegated responsibility for administering the rostering, although this was not reflected in the Operations Manual. Reportedly tasking was displayed on a whiteboard in the operation manager's office. It was said that this was done as a 7 day 'quick reference' guide, and allowed for quick changes which occurred due to the ad hoc nature of charter work. The main operational planning calendar was computerised and available to all. Interestingly the lead pilot reported that he was unaware of the existence of the computerised operational planning calendar at the time this incident occurred.

[25]. The particular tasking to the Shoalwater Bay Training area was slightly different as it was done on an annual basis and so was able to be planned some weeks prior to being conducted. This is an important aspect to clarify as precisely what happened or why Mr Redfern was tasked to the role. There was evidence that the office whiteboard had "*Shoalwater Bay – Steve*' written on it, a reference to Mr Spinaze. This seems logical as he was always scheduled to do this job, but he simply missed the first few days due to an unexpected request to collect a marine pilot off a ship near Cape Flattery.

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[14] Mr Stewart Ross

[15] It was raised for completeness in the inquest. People may be familiar with a motor vehicles' slipping fan belt which emits a squealing sound indicating it is loose or misaligned. .

[16] Of some relevance when consideration is made of the remarks of Mr Humphrey in this regard, see footnote 7. It should also be recalled that Mr Redfern had merely 3.5% of all his logged flying hours in this type of aircraft with the 'reverse' controls.

[26]. How the job was tasked to Mr Redfern was described in the ATSB investigation Report as[17]:-

> *The operations manager was unsure of the exact chronology of events, but reported approaching the lead pilot in the weeks before the accident about assigning the pilot for AS350BA flights. He indicated that the response from the lead pilot at that time had led him to believe that the pilot was approved for operations in the AS350BA. The operations manager reported that he had also checked with the pilot who, after initially rejecting then considering the request for a while, advised him that he was able to conduct the flying required for the Shoalwater Bay task.*
>
> *The managing director reported that the pilot had about 1,000 hours of helicopter experience, over 30 hours on type, had satisfactorily demonstrated operations into pinnacle and confined HLS's, and made all the requirements for the task. He stated that the lead pilot was briefed by himself and the operations manager prior to the pilot's departure to the Shoalwater Bay training area, and that the lead pilot had not expressed any reservations about the pilot's ability to carry out the task. The managing director recalled arranging for the pilot to fly the helicopter to Yeppoon and complete the first few days flying duties before he, the managing director, would travel to Yeppoon to fly those flights that involved external load operations.*
>
> *The chief pilot did not recall seeing the pilot's name against the planned Shoalwater Bay task on the whiteboard in the operation manager's office. He reported having spoken to the pilot in the hanger a few days before his departure to Yeppoon. From that discussion he believed that the pilot was to ferry the helicopter to Yeppoon in preparation for the Shoalwater Bay training area task, where he would be met by the managing director who was to fly the task.*
>
> *The lead pilot reported that he was unaware of the tasking of the Shoalwater Bay training area and that the managing director, the operations manager and the pilot had not consulted him about the planned flight. He thought that the managing director would be flying the Shoalwater Bay task as he had done previously. The lead pilot stated that had he been informed, he would not have considered assigning the pilot to that task because of the pilot's low time on that helicopter type and his inexperience with that type of flying. He estimated that about 100 hours on type would be an appropriate level of experience before assigning a pilot to that task.*
>
> *The safety manager reported speaking to the pilot on the morning of his departure from Cairns for Yeppoon. He was unaware of the intended flying task, and later reported that had he known that the pilot had been assigned to that task, he would have insisted on a risk assessment for the planned flying. That assessment would have included consideration of the necessary level of pilot experience for the task.*
>
> *The ATSB was unable to reconcile the contradictory accounts of the pilot's assignment to the Shoalwater Bay training area tasking*[18].

[17] And for completeness I have reproduced it in full
[18] Exhibit C.2 at pages 28 - 29

[27]. Clearly there were differences of opinion regarding Mr Redfern's capabilities for the task in this particular model helicopter. Mr Spinaze thought he was capable of doing everything except the slinging tasks. Mr Humphrey and others thought he could only handle the ferrying component, which is simply the helicopter's relocation from Cairns down to Yeppoon. Mr Spinaze claimed he specifically discussed tasking Mr Redfern for the job (the pinnacle landings) with Mr Humphrey. That was denied by Mr Humphrey in his evidence. After hearing evidence on this issue from the relevant persons associated with the operator I considered that the more credible evidence was from the Lead Pilot, Mr Humphrey. Mr Spinaze was unimpressive as a witness on this issue. The Lead Pilot stated that if they knew Mr Redfern was to be tasked to a pinnacle job he would have assessed his ability, likely requiring more demonstrated ability. If that could not occur before the job was scheduled then logically the managing director, as a pilot and who conducted the task the prior year, would simply have conducted it. That would have only resulted in a day or two's loss of time as Mr Spinaze was already headed there for certain tasks (the slinged lifts were always to be done by Mr Spinaze).

[28]. The system of tasking was clearly ad hoc, and casual, at best with this operator. There should only be a single system, and one person, with authority to decide who does which tasks. That person must be the Chief Pilot (or if delegated due to the nature of the type of aircraft, fixed or rotary, it is only delegated to a Lead Pilot). This basis of a chain of responsibility where a single person is ultimately responsible becomes more important as the complexity, or difficulty, requiring demonstrated experience of the task increases.

Hydraulic system loss of pressure alarm

[29]. The particular model helicopter is fitted with a hydraulic cut-off switch as well as a hydraulic test switch and hydraulic warning system. The system also includes an audible alarm, or horn, which will warn the pilot if low hydraulic pressure is detected. If a loss of hydraulic pressure is detected then these systems should show with a light illuminated on the instrument panel warning lights but also sound the audible horn/alarm. The aircraft has a minor reserve of hydraulic power, done through accumulators, to allow about thirty seconds maximum of additional hydraulic power (after the alarm first sounds) to allow the pilot to reach an airspeed of 40-60 knots where control is more easily maintained.

[30]. The crash investigators found that the accumulators all had pressure ranging from 70 – 100 psi[19]. Some pressure was reported as likely lost when the accumulators were removed from the crashed aircraft. The pressures detected confirms that the system was pressurised and most likely there would have been sufficient pressure to allow assisted control of the aircraft. This tends to suggest that the hydraulic system had not failed to a point where no hydraulic pressure was available to assist the pilot controls. The evidence from a very experienced[20] pilot, Mr Roger Humphrey, was that if there was found to be pressure in the accumulators after the crash then it was likely the pilot did have hydraulic power before the crash. It tends towards a finding that there was no failure of the drive belt otherwise the reserve pressure in these accumulators would be entirely depleted, and depleted well under the thirty seconds as suggested by Mr Spinaze.

[19] C.2 at page 23
[20] More than 8,000 flying hours

[31]. There was also evidence from the surviving passenger, who remained conscious throughout, that he never heard any alarm or warning horn sound at any time in the moments prior to the crash. He was clear on this when first interviewed shortly after the incident, but tried to 'clarify' his thoughts on this in evidence. Clearly his earlier statement and interviews contain his better recollection.

[32]. It was found in the examination of the wreckage that the metal housing that the hydraulic pump and air conditioning compressor where braced from had been significantly impacted when the aircraft contacted the ground. This meant both units had their bracing structure broken, and so the components moved out of their usual alignment. When this occurred the rubber belts would have become de-tensioned and able to go free. I note that the air conditioner compressor belt was also not found and its' bracing, in a similar location, also broke.

[33]. There was a suggestion by a Mr Swan that he found a broken belt at the landing site two years after the crash. The belt was rubber and described as black[21]. He mentioned it to Mr Purbrick in 2013 and very surprisingly to me they did not mention it to anyone, despite it being a very significant issue of contention, indeed it was the subject of a further investigation Report by the ATSB. He says he only raised this issue of finding a broken belt when he was having dinner with Mr Spinaze the night before the inquest commenced. This is somewhat remarkable in my view and the timing decidedly 'convenient'. I should point out that the ATSB investigator[22] provided evidence that the drive belt in question is green, and green entirely without any black. Accordingly if such a belt was found it was not from this aircraft's hydraulic system. In any event if it was found at the landing site that meant the belt after breaking had to escape from under the metal cowling which covers that area of the aircraft[23]. Whilst that was considered a theoretical possibility the investigator said that in his experience no such broken belt had escaped in that way. That also accords with logic when one considers the location of the belt within the mechanicals and the cowling covering it.

[34]. Records[24] from the aircraft operator showed that on 8 August 2011, just three weeks prior to the incident, Mr Redfern had done an assessment in this aircraft with the Lead Pilot and had satisfactorily completed a number of tests or drills. Importantly this included 'hydraulics off' flying. This suggests he was physically strong enough to handle the controls without hydraulic assistance and was assessed as competent if he encountered such a situation.

[35]. All of this evidence considered together tends to support, in my view, that there was no significant detrimental loss of hydraulic pressure, and accordingly that the drive belt had not failed as some suggested.

[21] In addresses Mr Spinaze advised that Mr Swan was colour-blind, this never been mentioned at all during the inquest. Perhaps this suggestion, it was not in evidence, is yet another decidedly interesting aspect of Mr Swan's late breaking evidence.
[22] Mr Stewart Ross
[23] And although not covered in any evidence despite specific evidence through the ATSB investigators of the apertures in the cowling, Mr Spinze in addresses raised that there is a 15 mm gap running the entire length of the cowling. Again this was not in evidence, nor mentioned by the Investigators who would have if it was a fact.
[24] See exhibit B.6.A

Landing site footprint

[36]. A Report detailed that the particular site footprint that they were attempting to land on was approximately 15 metres x 22 metres, with the helicopter landing space being about 16 metres in diameter. The evidence was that the natural ground also hides rocks and tree stumps meaning the final moments of the landing must be done very slowly which no doubt adds to the time a pilot remains exposed to the conditions.

[37]. In reality the narrow area left very little margin for error and it was recognised that it left a dangerous portion of the flight, during landing and take-off, with the main blades and tail rotors being very close to the vicinity of striking existing vegetation. Clearly there should be sufficient cleared ground for approach, landing, and departure, to allow a safe margin of error for a pilot accessing the site. Being a mountain top site the landing area also needs to allow for the variety of the variable prevailing wind conditions.

[38]. Following the incident a safety audit identified a number of hazards at the particular site and I understand those have been addressed. I understand a similar audit occurred for all such landing sites within the Shoalwater Bay training area and improvements to each site occurred. The minimum standards now set must be maintained, and not watered down, into the future. They may need to be revised upwards if larger aircraft commence to access the sites.

Conclusion as to causation

[39]. After hearing the evidence it was clear to me that as Mr Redfern had aborted his landing attempt, due to the restricted nature of the landing site, he powered up and commenced to climb to 'go around' again. He then began to turn left. This was all conducted in a controlled fashion and at that time he is commencing to leave the landing area.

[40]. His aircraft is then caught by a sudden turbulence caused by the nature of the mountain peak topography. His lack of innate familiarity with this aircraft, with its reversed controls, has then caused him to respond with an initial incorrect control input, which coupled with the unexpected wind turbulence has led to a loss of aircraft control which he was unable to regain before the aircraft's tail struck the standing vegetation. The striking of vegetation then caused the aircraft to invert and impact the ground heavily.

Manufacturer Safety Bulletins and Warnings

[41]. There is a concern to me as to how slow the industry has been to implement change. Eurocopter issued its' first safety warning in 2001. This accident occurred ten years later. Whilst I did not find that the drive belt failed in this instance it has been found to be a factor in a number of other crashes of this aircraft. Clearly regulators need to consider each manufacturer safety bulletin (however termed) to determine if it requires a more timely response. With the suggestion that ten years later operators could still be using a 'suspect' part it suggests that running down stock is not an appropriate approach. This is particularly so when the drive belt was suggested as costing just $150, although the whole pump replacement, including loss of revenue, was said to approach $10,000[25].

[25] That figure includes loss of the aircraft hiring revenue which was about $1,850 per day.

List of inquest issues answers

Coroners Act s. 45(2): 'Findings'

[42]. Dealing with the list of issues for this inquest the answers are as follows:-

[43]. **Issue 1.** My primary task is the information required by section 45(2) of the *Coroners Act 2003*, namely:

a. Who the deceased persons were – Wayne Patrick Schofield and Haydn Jonathan Lee Redfern,

b. How the persons died – Mr Schofield, as the passenger, and Mr Redfern, as the pilot, died in a helicopter crash due to a sudden adverse wind gust, leading to a loss of control by the pilot whilst the helicopter was manoeuvring slowly,

c. When the persons died – Mr Schofield and Mr Redfern both died on 8 September 2011,

d. Where the persons died – Double Mountain South, Shoalwater Bay, Queensland, and

e. what caused the persons to die – Mr Schofield - Multiple injuries, due to a helicopter crash (passenger)[26], and Mr Redfern – multiple injuries, due to a helicopter crash (pilot)[27]

[44]. **Issue 2**. Whether the collision with terrain of *Eurocopter* helicopter VH-RDU on 8 September 2011 was caused by, or contributed to by:
(a) the failure of the aircraft's hydraulic pump drive belt; or
(b) any other mechanical or technical fault in that aircraft?

The collision was due to a sudden adverse wind gust, and a lack of sufficient familiarity with this aircraft, leading to a loss of control by the pilot whilst the helicopter was manoeuvring slowly. There was no hydraulic pump drive belt failure and no identified mechanical or technical fault with the aircraft at that moment.

[45]. **Issue 3.**
(a) Whether the said collision was caused by, or contributed to by, pilot error?
(b) Whether the said collision was caused by, or contributed to by, adverse weather event?
(c) Whether the experience of the pilot was adequate to the flight tasked to him?

The cause of the collision was due to pilot inexperience at pinnacle sites, together with unfamiliarity[28] with the particular aircraft in a situation where a sudden adverse weather condition, being an unexpected wind gust, caused a loss of control.

[26] Exhibit A.3 Autopsy Certificate
[27] Exhibit A.4 Autopsy Certificate
[28] The nature of the 'reversed controls' and unfamiliarity in that just 3.5% of his logged hours (32/957 hours) were in this type of aircraft

[46]. **Issue 4.** Whether any feature of the helicopter landing site (HLS) at Double Mountain South was a contributing factor to the said collision?

There was a contribution to the accident due to the narrow window of approach permitted to the pilot due to the very limited clearing of the landing site and absence of a dedicated landing platform. This caused the pilot to have to approach with much greater caution which increased his time exposed to an adverse weather event, when approaching (or departing) due to concern over aircraft strike on established vegetation. This situation has since been addressed by better clearing of the sites, and dedicated, elevated, steel mesh landing platforms.

[47]. **Issue 5.** What preventative measures (if any) relating to:-

(iii) remote mountaintop landing sites;
(iv) as to assessed or demonstrated pilot experience,

can be implemented in order to:

(c) prevent such fatal events in the future; or
(d) reduce the risk of re-occurrence of any event or state of affairs which may have contributed to these deaths?

These are addressed in my Coroners Comments (Recommendations) but I note that a safety audit of the sites have been conducted and improvements at these sites have been completed.

Coroners Act s. 46: 'Coroners Comments' (Recommendations)

[48]. Accordingly I remake the following recommendations:-

a. Pilots who conduct pinnacle or high altitude landing site operations need to ensure they have sufficient documented experience and have completed appropriate current assessment for such competency before being tasked to conduct such flying duties. This is because pinnacle site competency was suggested, and identified as, a degradable skill. There needs to be a greater awareness of this amongst pilots, and company operators (particularly the responsible tasking person, the chief pilot), to ensure that pilots appreciate the specialised nature of such flying.

b. Regulators need to consider whether any manufacturer issued Safety Recommendation, or CASA issued Airworthiness Bulletins should, in appropriate circumstances, require timely replacement of parts or components when improved parts or components are recommended. The depleting or running down of existing non-conforming, or not recommended parts, is not a best practice. There should also be consideration of whether any Safety Recommendation should be the subject of a minimum compliance period, e.g. 'within 90 days there must be compliance'. This will of course depend upon the issue that is the subject of the Safety Recommendation and the availability of a 'fix',

Coroners Act s. 48: 'Reporting Offences or Misconduct'

[49]. There was no suggestion that any person should be referred for any indictable offence or misconduct.

Magistrate O'Connell
Central Coroner
Rockhampton
8 December 2017