

Appendices

Appendix A – Weather package location data

Safety factors and injuries by location

Table 1: Safety factors and total injuries by weather package location

Location	Wind			Planning			Other weather			Aircraft handling			Communication		
	Occu	Minor Injury	Serious Injury	Occu	Minor Injury	Serious Injury	Occu	Minor Injury	Serious Injury	Occu	Minor Injury	Serious Injury	Occu	Minor Injury	Serious Injury
Melbourne	14	4	2	7	1	0	2	0	0	4	1	0	2	1	0
Yarra Valley	5	11	4	4	4	2	3	7	4	3	1	2	2	7	6
Canberra	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sydney	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Hunter Valley	3	3	1	3	15	3	2	16	4	1	0	0	0	0	0
Brisbane Valley	6	8	2	1	0	0	4	7	2	7	5	0	1	1	0
Cairns	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0
Alice Springs	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Avon Valley	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0

Phase of flight by location

A breakdown of the occurrences by geographical location and phase of flight showed that the locations with a higher number of occurrences had similar percentages of occurrences in the approach and landing phases of flight as the overall totals (71%) (Table 2). However, this is expected as those locations contributed a large proportion of the total occurrences.

Table 2: Occurrences by location and phase of flight

Location	Take-off	Initial climb	Climb	Cruise	Manoeuvring / Airwork / Other / Taxiing	Approach	Descent	Landing	Standing	Total occurrences
Melbourne	0	0	0	2	1	5	0	19	0	27
Yarra Valley	0	0	0	1	0	1	1	7	1	11
Hunter Valley	1	0	0	0	1	0	0	4	4	10
Brisbane Valley	0	0	0	0	1	5	2	7	1	16
Canberra	0	0	0	1	0	0	0	1	0	2
Sydney	0	0	0	0	0	0	0	0	2	2
Cairns	0	0	0	0	0	1	0	3	0	4
Alice Springs	0	0	0	1	0	0	0	0	0	1
Avon Valley	0	0	0	0	0	1	0	1	1	3

Appendix B – Balloon occurrences 2014–2022

The following tables show the summaries of each of the 80 reported incidents or accidents that occurred as a commercial ballooning operation.

Table 3: Balloon occurrences 2014 to 2022

ATSB Ref Number	Investigation Number (if app)	Occurrence Date	Location	Highest Injury Level	Occurrence Class	Occurrence Categories
OA2014-01228		31 Jan 2014	near Mareeba Aerodrome	Minor	Incident	Collision with terrain
During the approach, the balloon basket contacted trees. On landing the basket tipped over and after dragging approximately 15 metres, came to a rest on its side. A passenger sustained a minor injury.						
OA2014-01540		11 Feb 2014	Hawthorne	Nil	Incident	Forced / Precautionary landing Other Miscellaneous
During cruise, the wind decreased significantly, and the balloon was not able to reach the intended landing site. A precautionary landing was conducted in a garden resulting in minor envelope damage.						
OA2014-02168		28 Feb 2014	Essendon Aerodrome, 150° M 8Km	Minor	Incident	Cabin injuries
During the landing, a passenger sustained a minor ankle injury.						
OA2014-02538		12 Mar 2014	Beaudesert (HLS)	Minor	Incident	Cabin injuries
During landing, the balloon basket tipped onto its side and one passenger sustained a minor injury.						
OA2014-07202	AO-2014-157	26 Sep 2014	Gold Coast Aerodrome, 300° M 60Km (near Woodhill)	Serious	Accident	Hard landing
On 26 September 2014 at about 0450 Eastern Standard Time, the pilot of a Kavanagh Balloon, registered VH-CNX, conducted pre-flight preparations for a charter flight with 22 passengers. Due to the forecast winds, the pilot elected to depart from Beaudesert, with a planned landing site in Cedar Grove, Queensland. The pilot conducted a safety briefing including demonstration of the landing position. The passengers then assumed their landing positions and the pilot was satisfied they understood the correct position to adopt. After completing the pre-flight checks, the balloon lifted off at about 0550. After about a 20-minute flight, the pilot commenced the descent to the landing site. During the approach, the pilot observed a light ground fog and was heading directly into the sun, making the landing site difficult to see. The pilot attempted to obtain an accurate rate of descent from the altimeter, but it was reading erratically. The pilot instructed the passengers to adopt the landing position, but not all of them complied. He repeated his instructions to the passengers, the altimeter continued to read erratically and facing directly into the sun made visual assessment of the approach difficult. The balloon landed hard and bounced once before landing about 3 m further along the ground. Two passengers sustained serious injuries, and seven had minor injuries. The balloon was undamaged.						
OA2014-08827		5 Oct 2014	Essendon Aerodrome, 078° T 20Km (Anthony Beale reserve)	Nil	Accident	Collision with terrain
During landing, the balloon's envelope contacted a lighting tower resulting in substantial damage.						

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ATSB Ref Number	Investigation Number (if app)	Occurrence Date	Location	Highest Injury Level	Occurrence Class	Occurrence Categories
OA2014-09253		22 Oct 2014	Gold Coast Aerodrome, 297° M 58Km (near Beaudesert)	Minor	Incident	Hard landing
During approach, the balloon's rate of descent was higher than assessed by the pilot. The balloon landed hard and four passengers sustained minor injuries.						
OA2014-10036		22 Nov 2014	Canberra Aerodrome, 300° T 12Km (Aranda Oval)	Nil	Incident	Other Ground operations
After landing, the deflating balloon envelope made contact with a light pole causing minor damage.						
OA2014-10754		28 Dec 2014	Essendon Aerodrome, 149° T 8Km (Royal Park)	Nil	Incident	Other Ground operations
After landing, the balloon envelope made contact with a barbed-wire fence causing minor damage.						
OA2015-00109		28 Jan 2015	Essendon Aerodrome, 085° M 2Km (Strathmore)	Nil	Serious incident	Wirestrike
During landing, the balloon envelope contacted powerlines.						
OA2015-01205		28 Mar 2015	Essendon Aerodrome, E M 15Km (Yallambie)	Nil	Incident	Collision with terrain
While deflating the envelope after landing, the balloon contacted a tree resulting in minor fabric damage.						
OA2015-02055		10 Mar 2015	Moorabbin Aerodrome, 337° M 20Km (Yarra Glen GC)	Nil	Incident	Ground strike
After landing, the balloon envelope contacted a tree that resulted in minor fabric damage.						
OA2015-03465		19 Apr 2015	Amberley Aerodrome, 306.29° M 6Km	Nil	Incident	Collision with terrain
During landing, the balloon contacted a tree resulting in minor fabric damage.						
OA2015-04640		22 Apr 2015	Yarra Glen (HLS), 40.64° M 3Km	Nil	Incident	Wirestrike
During landing, the balloon's envelope contacted power lines resulting in minor damage.						
OA2015-05274	AO-2015-136	11 Nov 2015	Northam (ALA), 358° M 3Km	Nil	Serious incident	Issues
Early on the morning of 11 November 2015, a Watco freight train was travelling southbound on the Frenches to East Northam rail line in Western Australia. As the train rounded a left corner approximately 3 km north of Northam, the driver saw a hot air balloon. The hot air balloon was low to the ground and inside the rail corridor to the left of the rail tracks. The train driver applied the brakes in an attempt to stop						

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<p>the train before it reached the balloon's location. However, there was insufficient distance to bring the train to a stop before it passed the balloon. The driver also sounded the horn to alert the pilot and passengers of the balloon that the train was approaching. The train passed the balloon at slow speed before continuing on its journey. The balloon had been on an early morning scenic flight in the Avon Valley. The balloon was at the end of the scenic flight and on approach to land in a paddock next to the rail corridor when the train passed. The balloon was just above fence height and moving away from the rail tracks as the train passed.</p>						
OA2016-00167	AO-2016-008	7 Feb 2016	near Mareeba Aerodrome (Byrnes Rd)	Nil	Serious incident	Wirestrike
<p>On 7 February 2016, the pilot of a Kavanagh G-450 balloon, registered VH-RUW, conducted a 30-minute scenic flight from Mareeba, Queensland with 18 passengers on board. Shortly before 0627 Eastern Standard Time, the balloon approached the target landing area. The pilot referred to his iPad, which showed the location of the balloon and a set of powerlines strung across the paddock. The pilot sighted two power poles either side of the landing area but was unable to see the wires. The pilot estimated where the wires would be based on the crossbars on the poles and assessed that the balloon had sufficient height to pass over the powerlines. The pilot then sighted the powerlines, about half a metre ahead of and below the basket. The pilot applied all four burners to try to climb and avoid the powerlines, but the left side of the basket contacted one wire, breaking it. Due to the amount of heat in the balloon, the balloon was climbing. The pilot then conducted a normal controlled descent and landing into a paddock about 500 m beyond the original planned landing site. The balloon landed without further incident, and no one was injured. The wicker basket sustained scorching and a stainless-steel cable fixed to the underside of the basket sustained arc damage.</p>						
OA2016-00569	AO-2016-039	24 Apr 2016	near Cessnock Aerodrome (Rothbury)	Minor	Accident	Fire
<p>On 24 April 2016, the pilot of Kavanagh Balloons B400, registered VH-WNV (WNV) prepared to land at Rothbury near Cessnock New South Wales. On board were the pilot and 16 passengers. After a gentle touchdown, the pilot advised the ground crew that the balloon needed to be moved back about 10 m from the tree line. The pilot checked that the neck of the balloon was not obstructed and then turned on the pilot light of one of the two burners. Moments later the pilot noted that the wind had pushed part of the neck of the balloon back on itself, and there was black smoke emanating from this area. As the balloon envelope kept sliding on itself, the fire continued and some of the melted fabric began to drip onto the occupants of the basket. The pilot quickly re-directed the ground crew from the task of pulling the top of the balloon down, to assisting the passengers to disembark and move away to a safe area. The pilot pulled the smart vent to rapidly release any air. Both the ground crew and the pilot (still in the basket) discharged fire extinguishers. Within a few minutes, the crew were able to spread the balloon envelope out and extinguish the fire. During the emergency disembarkation, two of the passengers received minor injuries. The lower section of the balloon envelope was substantially damaged.</p>						
OA2016-00589		22 Apr 2016	near Cessnock Aerodrome	Serious	Accident	Ground handling Cabin injuries
<p>After landing, the ground crew mishandled the crown line and the balloon basket tipped over. The pilot fell from the basket and was struck by the burner resulting in serious injuries.</p>						
OA2016-00694	AO-2016-052	21 May 2016	near Moorabbin Aerodrome (Black Rock)	Nil	Serious incident	Forced / Precautionary landing Other Flight preparation / Navigation Other Weather
<p>On 21 May 2016, the pilot of a Kavanagh Balloons E-240, registered VH-VBM (VBM), planned to conduct a one-hour scenic flight from Bundoora, Victoria with nine passengers. The wind was from the north to north-west at 5 to 10 kt. The pilot therefore assessed the balloon would track in a southerly direction and nominated potential landing sites at Burnley and Dendy Park in Brighton. At about 0700 Eastern</p>						

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<p>Standard Time, the balloon departed Bundoora in company with five other balloons. About 35 minutes later, the balloon arrived overhead Burnley. The pilot of VBM elected to continue to Dendy Park, along with another balloon from the same operator, to extend the flight to one hour. At about 0800, the balloon in company with VBM landed safely at Dendy Park. The wind speed was about 10 kt as VBM approached Dendy Park. As the balloon descended to land, the pilot sighted a light pole directly in the balloon's path. The pilot then lit the balloon's burners to climb over the pole; however, a second light pole stood directly in the balloon's path on the far side of the available landing area. Due to the balloon's height and the wind, the pilot assessed that the balloon may collide with the second pole if the pilot attempted a landing and therefore elected not to land in the park. The pilot then attempted to land in a golf course beyond the park, but the balloon did not track towards a safe landing area. The balloon continued at low level over parkland, however, the pilot also assessed this area to be unsafe for landing. At about 0820, the balloon crossed the coast and tracked out over Port Phillip Bay. The pilot commenced a climb into a more westerly wind to track towards land. At about 0825, the pilot contacted air traffic control (ATC) and requested a clearance to climb to 5,000 ft. About 90 seconds later, the pilot advised that they were now at 4,000 ft and may require emergency assistance. At that time, the pilot stated that the balloon had an estimated 30 minutes of fuel remaining. At about 0830, the balloon tracked back over land. The pilot advised ATC that in the 5 minutes it would then take to descend and land, the balloon would track back over water. The pilot elected to descend to conserve fuel and prepared for a water landing. The pilot briefed the passengers and descended about 1 km from shore. The pilot then enacted the company emergency procedures. When asked by ATC if it was their 'intention to ditch the balloon at the moment', the pilot confirmed that it was. At about 0845, the pilot established contact with the crew of a nearby vessel. The pilot coordinated with the crew of the vessel to arrange the evacuation of passengers. The passengers evacuated one or two at a time onto the vessel over the next 30 minutes. After evacuating the passengers, the pilot conducted a climb to about 2,000 ft back into more favourable winds and subsequently landed safely at Mount Martha, Victoria. The pilot and passengers were uninjured, and the balloon was not damaged.</p>						
OA2016-01346		13 Apr 2016	Moorabbin Aerodrome, 43° M 40Km	Nil	Incident	Wirestrike
<p>During landing, the hot air balloon's envelope struck power lines resulting in minor damage to the envelope.</p>						
OA2016-01808	AO-2016-080	16 Jul 2016	York (ALA), 139° T 1Km (Bayly Road)	Serious	Accident	Cabin injuries Hard landing
<p>On the morning of 16 July 2016, a Kavanagh Balloons E-300 hot-air balloon, registered VH-LPG, departed for a one-hour scenic flight from Irishtown, Western Australia. On board were the pilot and 16 passengers. The balloon tracked in a south-easterly direction and after about 52 minutes of flight covering a distance of about 33 km, the pilot made an approach to a vacant paddock near York. The balloon made an initial ground contact with about 15 kt forward speed. When the balloon struck the ground, the pilot was ejected from the balloon basket. The basket was then dragged over the top of the pilot as the balloon envelope continued to deflate. The pilot was seriously injured and air lifted to the Royal Perth Hospital. One passenger received a minor injury, and the balloon sustained minor damage.</p>						
OA2017-02689		8 Jun 2017	Southport Aerodrome, 327.42° M 5Km (Robert Dalley Park)	Nil	Incident	Controlled flight into terrain
<p>During approach, the basket contacted a goalpost, resulting in damage to the goalpost.</p>						
OA2017-03172		16 Jul 2017	near Moorabbin Aerodrome	Nil	Serious incident	Collision with terrain
<p>During landing, the balloon struck a fence resulting in minor damage.</p>						
OA2017-04979		3 Oct 2017	Boonah (ALA), 069° M 32Km (Veresdale)	Minor	Incident	Cabin injuries

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During landing, a passenger was not bracing correctly, resulting in minor injuries.						
OA2017-05386		15 Oct 2017	near Cessnock Aerodrome	Nil	Incident	Other Crew and Cabin Safety
During balloon inflation, a passenger got their scarf caught in the fan.						
OA2017-05614		22 Nov 2017	Essendon Aerodrome, 151° T 15Km (Fawkner Park)	Serious	Accident	Hard landing
During landing, the balloon basket landed hard resulting in serious injury to a passenger.						
OA2017-06145		18 Dec 2017	near Lilydale (ALA)	Nil	Accident	Collision with terrain
After landing, the balloon envelope drifted into a tree resulting in damage to the fabric.						
OA2018-00050	AO-2018-004	13 Jan 2018	Maitland (NSW) Aerodrome, 288.92° T 15Km (Greta)	Serious	Accident	Collision with terrain Hard landing
The balloon was conducting a scenic charter flight in the Hunter Valley. Shortly after take-off, the balloon experienced strong winds and turbulent conditions. Consequently, the balloon deviated from its intended flight path and landing area. Due to the adverse conditions, the pilot decided to land at the first suitable site. Due to the wind conditions, the balloon landed with a significant forward velocity and was dragged for a considerable distance on its side by the balloon's partially deflated envelope. As the basket was being dragged, it struck a large bush, forcing it upwards before impacting the ground with considerable force. One passenger received severe injuries, while three others sustained minor injuries.						
OA2018-00097		13 Jan 2018	Maitland (NSW) Aerodrome, 277.82° M 10Km (Greta)	Nil	Accident	Collision with terrain
During landing, the balloon struck a tree resulting in substantial damage.						
OA2018-00197		13 Jan 2018	Maitland (NSW) Aerodrome, 278.73° M 10Km (Greta)	Nil	Serious incident	Fire Control issues Turbulence / Windshear / Microburst
During approach, the balloon encountered unstable wind conditions resulting in a loss of altitude. The pilot applied heat to gain height but the flame blew to the back of the opening, resulting in multiple panels being burnt.						
OA2018-00344	AO-2018-016	8 Feb 2018	Lilydale (ALA), 36.7° T 9Km	Serious	Accident	Hard landing
On 8 February 2018, a Kavanagh B-350 hot-air balloon, registration VH-EUA, departed Glenburn, Victoria for a scenic charter flight with a pilot and 15 passengers on board. About 45 minutes into the flight, over the Yarra Valley, the balloon experienced a sudden wind change with associated turbulence. The pilot decided to land immediately rather than continue over rising and heavily vegetated terrain. The resulting landing was hard and fast and 11 passengers were injured, with four of them receiving serious injuries.						
OA2018-00537		12 Feb 2018	Mareeba Aerodrome	Nil	Incident	Low fuel

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After three missed approaches due to variable surface winds, the balloon landed with minimum fuel.						
OA2018-01542	AO-2018-027	30 Mar 2018	near Cessnock Aerodrome (Pokolbin near McDonald Rd.)	Serious	Accident	VFR into IMC Hard landing
At about 0710 Eastern Daylight-saving time on 30 March 2018, a Kavanagh Balloons G-525 balloon, registered VH-HVW (HVW) and operated by The International Balloon Flight Company (Australia), launched from a site near Pokolbin, New South Wales for a planned 1-hour scenic flight. HVW was one of three balloons launched by the company from the same site. After climbing through fog to about 2,000 ft and realising how far the fog layer extended, the pilot of HVW, along with the other two pilots, decided to abort the flight and descend for a landing at the nearest suitable site. On approach to land in low-visibility conditions, HVW collided with trees, which caused the basket to rotate 180 degrees. It then landed heavily, resulting in injuries to 16 of the 24 passengers, 3 of them serious. The pilot was uninjured and 74 of the balloon's panels required patching or repair.						
OA2018-01543		31 Mar 2018	Tyagarah (ALA), 338.62° T 12Km (The Pocket Road, Billinudgel)	Nil	Serious incident	Wirestrike
During landing, the balloon struck a powerline.						
OA2018-01558		2 Apr 2018	Narrandera Aerodrome, 0° M 25Km	Minor	Incident	Collision with terrain Loss of control
After landing while the balloon was deflating, a gust of wind caused the basket to roll over, and two passengers received minor injuries.						
OA2018-01638	AO-2018-028	2 Apr 2018	Essendon Aerodrome, 085° M 18Km	Minor	Incident	Operational / Crew and Cabin Safety Cabin Injuries
Before flight, the pilot and ground crew conducted safety briefings for passengers on what to do and expect during take-off, flight and landing; including what positions to adopt for each stage of flight. Five minutes before landing the pilot told passengers to adopt the proper landing position. The balloon touched down and the pilot conducted a lay-over landing, where the basket tips and drags on the ground. A passenger sustained minor injuries and there was no damage to the balloon. This incident underlines the importance of following the safety procedures and ensuring that all passengers fully understand the instructions. Due to the effective communication and briefings, the passengers were able to assume the correct landing position, which resulted in only one passenger suffering minor injuries.						
OA2018-01789		9 Apr 2018	near Mareeba Aerodrome	Nil	Serious incident	Other Ground operations
During final approach, a ground crew member walked in front of the approaching balloon. The pilot called out to the ground crew member who took evasive action to avoid the landing basket.						
OA2018-01933		24 Apr 2018	Southport Aerodrome, 280° T 40Km (near Cedar Grove Rd Beaudesert)	Nil	Serious incident	Wirestrike
After landing, the crown rope broke and a gust of wind blew the balloon envelope into powerlines.						
OA2018-02105		2 May 2018	Gold Coast Aerodrome, 316.82° T 22Km (Lakeside Drive, Emerald Lakes.)	Nil	Incident	Controlled flight into terrain

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During final approach over a waterway, the balloon briefly made contact with the water.						
OA2018-04934		17 Aug 2018	The Oaks (ALA)	Nil	Incident	Rejected take-off Ground handling Other Airframe
Prior to take-off, the tie-off rope between the balloon basket and the vehicle snapped resulting in the basket dragging for 20 m. The crew subsequently rejected the take-off.						
OA2018-05220		22 Aug 2018	Kooralbyn (ALA), 56° M 17Km	Nil	Incident	Fire Control issues Turbulence / Windshear / Microburst
Passing 500 ft on approach, the balloon encountered windshear and descended. The turning vent lines of the balloon were subsequently singed by the burner flame resulting in minor damage.						
OA2018-06829		23 Sep 2018	near Essendon Aerodrome	Nil	Incident	Other Flight preparation / Navigation Avionics / Flight instruments
During approach, the hot air balloon lost communication with ATC and landed approximately 4.5 nautical miles from the intended landing site.						
OA2018-06913		5 Oct 2018	Gold Coast Aerodrome, 307° M 61Km	Nil	Incident	Collision with terrain
During landing, the balloon scoop bounced and hit a tree resulting in minor damage.						
OA2018-07160		9 Oct 2018	abeam Southport Aerodrome (Maudsland)	Nil	Incident	Ground handling
Due to another balloon obstructing the take-off path, while the pilot was moving the balloon to a more suitable spot the balloon struck a nearby tree resulting in minor damage to the envelope.						
OA2018-08008		8 Nov 2018	Essendon Aerodrome	Nil	Incident	Airspace infringement Aircraft preparation
During cruise, the hot air balloon climbed above the assigned level of 2,000 ft. The crew were not aware of the updated controlled airspace steps.						
OA2018-08298		18 Nov 2018	Moorabbin Aerodrome, 321° T 11Km (Princes Park in Caulfield South)	Nil	Incident	Collision with terrain Unforecast weather
During landing, the balloon collided with a tree and sustained minor damage.						
OA2018-09104		21 Dec 2018	Lilydale (ALA), 265.70° M 21Km (Ramptons Road Reserve, Eltham)	Nil	Serious incident	Forced / Precautionary landing Collision with terrain Unforecast weather
During approach, the balloon encountered unforecast weather and the crew conducted a precautionary landing. The balloon envelope subsequently struck trees resulting in minor damage.						
OA2018-09128	AO-2019-001	26 Dec 2018	near Coldstream (ALA)	Minor	Accident	Forced / Precautionary landing Collision with terrain Fire

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<p>On 26 December 2018, a Kavanagh B-350 hot air balloon, registration VH-ZYO, operated as a scenic charter flight by Go Wild Ballooning, departed from Wandin, Victoria with the pilot and 15 passengers on board. After 20 minutes in flight, and while operating at an altitude of about 800 ft, the pilot recalled hearing a small explosion from the front left burner and observed that a small fire had started on the outside of the burner. The pilot switched off the vapour valve at the fuel tanks to the front two burners and disconnected the hoses. About a minute later, the pilot attempted to put out the fire using one of two on-board extinguishers, but the fire re-ignited almost immediately. After a further minute, the pilot discharged the second fire extinguisher, but again the fire re-ignited. Moments later, the pilot's compartment caught fire. The pilot was wearing a cotton shirt, synthetic vest, rolled-up pants, and rubber slip-on shoes and began to feel uncomfortable with his proximity to the fire. He then moved from the pilot's compartment to the back left compartment of the basket. About 8 minutes after the fire started, the pilot identified a suitable landing position and began the approach. During the descent, the basket struck some treetops, and the ropes became tangled in the branches. Passengers reported that the branches whipped around and into the basket, with one passenger sustaining cuts to his hand. The pilot freed the ropes from the tree and brought the balloon to rest in the paddock below. As the basket touched the ground, the passengers jumped out and ran to safety. The fire continued to burn as the pilot secured the balloon. When emergency services arrived on site, flames had engulfed the balloon. By the time firefighters extinguished the flames, the fire had destroyed the balloon.</p>						
OA2018-09492		31 Dec 2018	Camden Aerodrome	Minor	Incident	Cabin injuries
<p>During balloon deflation, the basket rolled over, and a passenger sustained a minor injury.</p>						
OA2019-00907		18 Feb 2019	Moorabbin Aerodrome, 41° T 15Km (High St and George St Wantirna South)	Nil	Incident	Collision with terrain
<p>The balloon encountered a sudden wind change resulting in a longer landing run. The balloon subsequently contacted trees and the envelope sustained minor damage.</p>						
OA2019-00909		18 Feb 2019	near Melbourne Aerodrome	Nil	Incident	Collision with terrain Control issues
<p>During landing in windy conditions, the balloon's basket skidded along the ground and the envelope was deflated over trees. The envelope sustained minor damage.</p>						
OA2019-01685	AO-2019-014	16 Mar 2019	Coldstream (ALA), 6° T 5Km	Serious	Accident	Ground handling Cabin injuries
<p>On 16 March 2019, two passengers were seriously injured when the basket of a Kavanagh B 400 hot air balloon tipped over during vehicle-assisted deflation. Prior to the accident, the balloon, operated as a scenic charter flight, landed without incident at a private property near Coldstream, Victoria. Due to a lack of wind and the large size of the envelope, the crew elected to use the retrieval vehicle to assist by pulling the envelope over (by the crown line) during the deflation. During this process, with 16 passengers and the pilot on board, the vehicle assisting inadvertently pulled the basket over, seriously injuring two passengers.</p>						
OA2019-02491		8 Apr 2019	Melbourne Aerodrome, 090° M 46Km	Nil	Accident	Fire
<p>During descent, as the pilot began to arrest the rate of descent by applying heat the burner flame contacted the balloon fabric resulting in substantial burn damage.</p>						
OA2019-02917		30 Apr 2019	Kooralbyn (ALA), 49° T 22Km (Gould Hill Road, Beaudesert)	Nil	Serious incident	Fire
<p>During descent, the burners were pointed backwards resulting in fire damage to the balloon fabric and the turning vent line.</p>						

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OA2019-04093		7 Jun 2019	Moorabbin Aerodrome, 345° M 15Km	Nil	Incident	Forced / Precautionary landing Other Weather
During approach, the wind became unpredictable, and the pilot conducted a precautionary landing on a private property.						
OA2019-05253		23 Jul 2019	Kooralbyn (ALA), 55.50° M 17Km (Beaudesert)	Nil	Incident	Forced / Precautionary landing Collision with terrain Unforecast weather
During the flight, the balloon encountered unforecast weather and conducted a precautionary landing. The balloon envelope subsequently made contact with a tree resulting in minor damage.						
OA2019-07006		22 Sep 2019	Moorabbin Aerodrome, 360° M 11Km	Nil	Serious incident	Collision with terrain
During landing, the pilot deployed the handling line to ground crew. The pilot determined that the balloon was unable to land and instructed ground crew to let go of the handling line in order to manoeuvre to a different landing site. During the subsequent climb, the basket of the balloon contacted the roof of a house.						
OA2019-07324		7 Oct 2019	Maitland (NSW) Aerodrome, 300° M 9Km	Minor	Serious incident	Collision
During landing, the balloon collided with another balloon's basket on the ground.						
OA2019-07651		21 Oct 2019	near Southport Aerodrome (Boylard/Biddadaba)	Nil	Serious incident	Collision with terrain
During descent, the balloon struck treetops resulting in minor damage.						
OA2019-09230		30 Nov 2019	Wirraway Station (ALA), 13.86° T 3Km (Private Property 3459 Beaudesert)	Nil	Incident	Ground handling
During post-flight balloon deflation, the crown line rope gave way and the envelope rolled onto a fence resulting in minor damage.						
OA2020-03379		4 Jul 2020	Alice Springs Aerodrome	Nil	Incident	Air-ground-air
While overflying the aerodrome, the balloon pilot did not make the necessary radio calls on the CTAF.						
OA2020-05252		27 Oct 2020	Cessnock Aerodrome, 256° T 6Km (De Beyers Road)	Nil	Incident	Taxiing collision / Near collision
During preparation for departure, a gust of wind caused the balloon basket to come into contact with the tie-off vehicle.						
OA2020-05343		31 Oct 2020	Maitland (NSW) Aerodrome, 200.08° T 6Km (Bishops Bridge)	Nil	Serious incident	Collision with terrain

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During launch, the pilot released the launch restraint early resulting in the balloon colliding with trees and sustaining minor damage.						
OA2021-00592		31 Jan 2021	Melbourne Aerodrome, 085° T 48Km (Yarra Glen)	Minor	Incident	Other Aircraft control Hard landing
The balloon landed hard and the basket bounced and was dragged by the envelope resulting in minor injuries to 3 passengers.						
OA2021-01304	AB-2021-008	14 Mar 2021	Essendon Aerodrome, 108° T 16Km (Bulleen Park)	Nil	Serious incident	Wirestrike
During approach, the balloon struck a wire resulting in minor damage.						
OA2021-02927		29 Apr 2021	Essendon Aerodrome, 152° T 15Km	Nil	Incident	Collision with terrain Turbulence / Windshear / Microburst
During landing, the balloon encountered an unexpected wind change and made contact with a light pole resulting in minor damage.						
OA2021-03261		23 May 2021	Wangaratta Aerodrome, 044° T 6Km	Nil	Serious incident	Wirestrike
During approach, the balloon basket struck powerlines.						
OA2021-04964	AO-2021-042	8 Oct 2021	14.6 NM 268 degrees from Amberley Aerodrome	Nil	Serious incident	Collision with terrain
<p>On 8 October 2021, a Kavanagh Balloons E-240 balloon, registered VH-LUD and operated by Floating Images Aust. Pty Ltd was conducting a morning scenic flight about 45 km south-west of Brisbane, Queensland. On board was a pilot and 9 passengers. About 55 minutes into the flight, the pilot commenced a descent to locate a suitable landing area. During the descent, the balloon entered an area of localised fog where visibility reduced to 10 m.</p> <p>The pilot continued the descent into the fog until a tree was observed in the path of the balloon. The pilot attempted to avoid the tree by initiating a climb, but the balloon collided with, and came to rest on the side of the tree, damaging the lower part of the balloon envelope. The pilot subsequently climbed the balloon off the tree and above the fog. The flight continued to an uneventful landing in a nearby paddock that was clear of fog. There were no injuries.</p>						
OA2021-05671		31 Dec 2021	2 NM 84 degrees from Lilydale	Nil	Serious incident	Wirestrike Turbulence / Windshear / Microburst
On descent to the landing paddock, the balloon encountered turbulence and struck a wire resulting in minor damage.						
OA2021-05672	AO-2022-003	31 Dec 2021	2 km 169 degrees from Lilydale	Serious	Accident	Hard landing Cabin injuries
On 31 December 2021, a Kavanagh B-350 hot-air balloon, registered VH BSW and operated as a scenic charter flight by Picture This Ballooning (PTB), was being prepared near Glenburn, north of the Yarra Valley, Victoria, with one pilot and 16 passengers. The pilot conducted a pre-flight safety briefing and departed shortly after, intending to land near Yarra Glen. About 42 minutes into the planned						

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1-hour flight, the pilot received a report that the surface wind near the landing area was increasing. The pilot assessed multiple landing options over the next 17 minutes while the wind was increasing. The pilot then made an approach to a landing field and the balloon landed hard with 2 passengers seriously injured.						
OA2021-05712		28 Dec 2021	8 NM 140 degrees from Melbourne Aerodrome	Nil	Serious incident	Collision with terrain
During approach to a small landing area, the balloon struck a tree and building.						
OA2022-00243		24 Jan 2022	3.5 NM 173 degrees from Essendon Aerodrome	Nil	Incident	Collision with terrain
During landing, the balloon struck a pole on the edge of the race track resulting in minor damage to the balloon envelope.						
OA2022-01035	AO-2022-015	27 Mar 2022	Moorabbin Aerodrome	Serious	Serious incident	Hard landing Loss of control
<p>Section 21 (2) of the Transport Safety Investigation Act 2003 (TSI Act) empowers the ATSB to discontinue an investigation into a transport safety matter at any time. Section 21 (3) of the TSI Act requires the ATSB to publish a statement setting out the reasons for discontinuing an investigation. The statement is published as a report in accordance with section 25 of the TSI Act, capturing information from the investigation up to the time of discontinuance.</p> <p><u>Overview of the investigation</u></p> <p>On 28 March 2022, the ATSB commenced an investigation into a hard landing involving a E-240 Kavanagh balloon, registration VH-ZON, which occurred at Moorabbin Airport, Victoria, on 27 March 2022. The balloon was being operated on a scenic passenger flight between Reservoir and Moorabbin Airport with a pilot and 10 passengers on board. The pilot provided the operator's standard safety briefing to the passengers before take-off, while the passengers were in the basket, to explain and demonstrate the position to adopt during normal landings and emergencies. The position was facing opposite to the landing direction, standing with slightly bent knees, holding on to the rope handholds in front, and back rested against padding on the basket. Passengers were to remain in that position until the basket stopped.</p> <p>There were several other balloons operating the same scenic flight route, and the pilots had collectively decided the departure point and that the weather was suitable for their respective flights (all along the same route). The pilots reviewed several sources of weather information, including the Bureau of Meteorology aerodrome forecasts (TAF) for Melbourne, Essendon and Moorabbin. The Moorabbin TAF forecast the wind to be 11 kt from the north-east at the time the balloons were due to land.</p> <p>The pilots had also obtained information about the actual wind conditions prior to departure by releasing 2 piballs[1] in different locations to assess the speed and direction of the wind at different levels. Following this assessment, the balloons departed at about 0700 local time.</p> <p>The pilot had about 30 years' experience as a balloon pilot and had been operating balloons in the area for about 18 years, with extensive knowledge of the planned route.</p> <p>On approach to Moorabbin Airport, VH-ZON was travelling in a south-easterly direction and was about 500 m to the west of the other balloons. The pilot obtained automatic terminal information by radio for Moorabbin, and it advised of a 4-kt north-easterly surface wind.</p>						

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<p>The pilot reported that they had commenced the descent into Moorabbin Airport after the other balloons and found the wind to be faster at the lower levels than expected. Data collected via another balloon pilot’s navigation equipment post-accident showed the wind was about 38 kt at 1,400 ft and 35 kt at 1,000 feet, which was significantly faster than the pilots had anticipated. This meant that the pilot had to conduct a faster than usual descent to ensure they could land the balloon in a suitable area.</p> <p>When the balloon reached 300–400 ft, it travelled through a temperature inversion (where temperature increases with altitude, which is a reversal of typical atmospheric conditions) and the balloon rotated 120°. Although the passengers had been instructed to adopt the landing position, the pilot did not have time to rotate the balloon to the correct orientation (with the passengers facing opposite to the landing direction) before reaching the ground. On landing, the balloon impacted the front right corner of the basket and bounced. The basket was then dragged for a short distance, coming to rest in a culvert at the end of a runway within the airport boundary.</p> <p>As a result of the hard landing and the orientation of the basket, 1 passenger was seriously injured and 2 passengers received minor injuries.</p> <p>As part of its investigation, the ATSB interviewed the pilot and passengers and reviewed:</p> <ul style="list-style-type: none"> • weather information including observations and forecasts used by the pilot • air traffic control recordings • recorded navigation information used in-flight by one of the other balloon pilots (data could not be retrieved from the equipment used on the accident balloon) • the operator’s procedures for passenger briefings • photographs taken in-flight by the balloon operator and others that were provided by passengers and a witness on the ground. <p>The ATSB notes that, due to unexpected wind speed on descent (which was much higher than the surface wind information that the pilot had previously obtained), and the limited landing site options, the pilot decided to land as soon as possible. This resulted in a faster and harder landing than normal. The balloon’s abnormal orientation after passing through the temperature inversion meant that although the passengers were in the correct position for landing, there was a greater risk of injury.</p> <p><u>Reasons for the discontinuation</u></p> <p>Based on a review of the available evidence, the ATSB considered it was unlikely that further investigation would identify any systemic safety issues or important safety lessons from this specific occurrence. Consequently, the ATSB has discontinued this investigation.</p> <p>However, the ATSB is concerned about the number of accidents that have been occurring in commercial balloon operations and has listed the reduction of passenger injuries in commercial ballooning operations as one of its Safety Watch items. The evidence collected during the investigation involving VH-ZON will be used in a safety study further examining these types of accidents.</p>						
OA2022-01466	AO-2022-028	20 Apr 2022	14.6 km 314 degrees from Moorabbin Aerodrome	Minor	Serious incident	Forced / Precautionary landing Collision with terrain Flight controls
<p>On the morning of 20 April 2022, a Kubicek BB78Z hot-air balloon, registered VH-RJR and operated by Liberty Balloon Flights, was being prepared for a balloon transport flight for 13 passengers from Royal Park, Victoria. This was the first flight of the balloon since manufacture and the intended destination was Moorabbin Airport.</p> <p>The pilot did not observe any abnormalities during the pre-flight inspection, and after the passengers boarded, the balloon departed for an anticipated 1-hour flight. Shortly after departing, and while flying over the Melbourne Central Business District, the pilot noticed a small gap in the balloon’s manually operated deflation system between the edge of the vent panel – a fabric panel used to</p>						

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<p>vent air out of the circular opening at the top of the balloon (vent aperture) – and the vent aperture. This gap allowed hot air to leak out reducing the buoyancy of the balloon. The pilot was unable to seal the gap and descended the balloon to a lower altitude in search of a suitable landing location.</p> <p>The pilot decided to attempt a landing at Elwood Beach, with the basket impacting the roofs of 2 buildings on the way there. During the approach to the beach, the pilot descended the balloon through trees into a suburban street. The basket landed outside the entrance of an apartment building and the envelope deflated over the building's roof. The balloon and basket sustained minor damage during the forced landing, and 3 passengers sustained minor injuries.</p>						
OA2022-02688		15 Jul 2022	near Canberra Aerodrome	Nil	Incident	Forced / Precautionary landing Other Weather
<p>During cruise, the wind became unpredictable and the pilot conducted a precautionary landing on the side of the road.</p>						
OA2022-04444		25 Nov 2022	6.7 NM 131 degrees from Essendon Aerodrome	Minor	Serious incident	Collision with terrain
<p>During landing, the balloon struck a tree resulting in minor damage to the envelope. One passenger sustained a minor injury.</p>						
OA2022-04461		18 Nov 2022	4.06 NM 42.07 degrees from Lilydale	Minor	Incident	Cabin injuries Hard landing
<p>The balloon bounced and landed hard resulting in a passenger sustaining minor injuries.</p>						
OA2022-04611		21 Nov 2022	8.58 NM 160.07 degrees from Essendon Aerodrome	Nil	Incident	Collision with terrain
<p>During landing, the balloon basket came into contact with a sign.</p>						
OA2022-04850		4 Nov 2022	near Northam	Minor	Incident	Other Ground operations
<p>During inflation, the balloon envelope came into contact with a person and a fence.</p>						