



**Australian Government**

**Australian Transport Safety Bureau**

# Collision with terrain involving Cessna R182, VH-EHM

24 km north of Royal Australian Air Force Base Amberley, Queensland on  
29 August 2022

**ATSB Transport Safety Report**

Aviation Occurrence Investigation (Defined)

AO-2022-041

Preliminary – 19 December 2022

Released in accordance with section 25 of the *Transport Safety Investigation Act 2003*

#### Publishing information

**Published by:** Australian Transport Safety Bureau  
**Postal address:** PO Box 967, Civic Square ACT 2608  
**Office:** 12 Moore Street, Canberra, ACT 2601  
**Telephone:** 1800 020 616, from overseas +61 2 6257 2463  
Accident and incident notification: 1800 011 034 (24 hours)  
**Email:** [atsbinfo@atsb.gov.au](mailto:atsbinfo@atsb.gov.au)  
**Website:** [www.atsb.gov.au](http://www.atsb.gov.au)

© Commonwealth of Australia 2022



#### Ownership of intellectual property rights in this publication

Unless otherwise noted, copyright (and any other intellectual property rights, if any) in this publication is owned by the Commonwealth of Australia.

#### Creative Commons licence

With the exception of the Coat of Arms, ATSB logo, and photos and graphics in which a third party holds copyright, this publication is licensed under a Creative Commons Attribution 3.0 Australia licence.

Creative Commons Attribution 3.0 Australia Licence is a standard form licence agreement that allows you to copy, distribute, transmit and adapt this publication provided that you attribute the work.

The ATSB's preference is that you attribute this publication (and any material sourced from it) using the following wording: *Source:* Australian Transport Safety Bureau

Copyright in material obtained from other agencies, private individuals or organisations, belongs to those agencies, individuals or organisations. Where you want to use their material you will need to contact them directly.

#### Addendum

Page	Change	Date

# Preliminary report

This preliminary report details factual information established in the investigation’s early evidence collection phase, and has been prepared to provide timely information to the industry and public. Preliminary reports contain no analysis or findings, which will be detailed in the investigation’s final report. The information contained in this preliminary report is released in accordance with section 25 of the *Transport Safety Investigation Act 2003*.

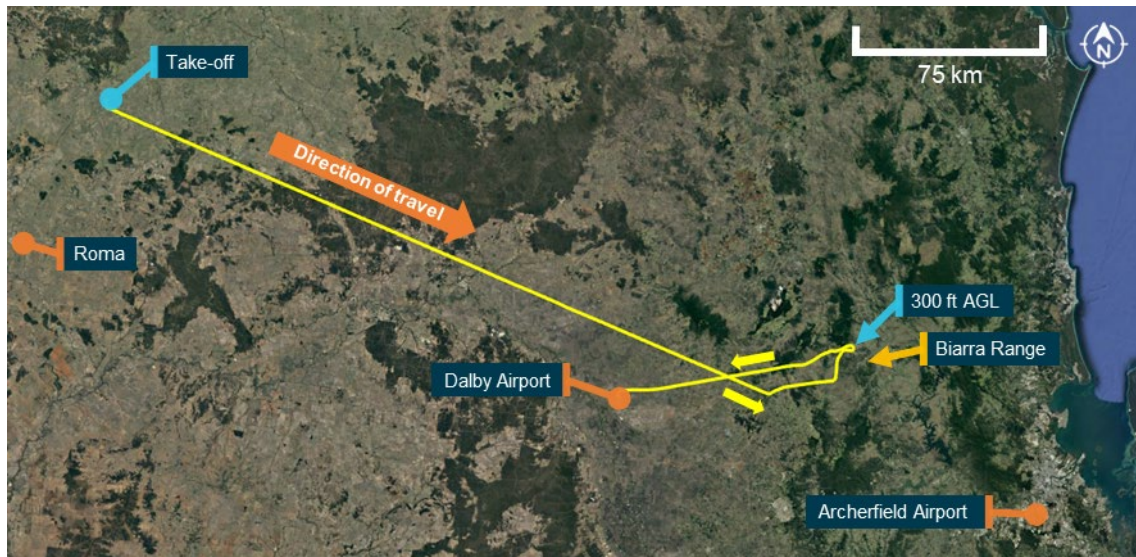
## The occurrence

At 1055 local time on 28 August 2022, a Cessna R182 Skylane RG (R182), registered VH-EHM (EHM) and operated by Executive Helicopters, departed Archerfield Airport, Queensland, for an air transport<sup>1</sup> flight under visual flight rules (VFR)<sup>2</sup> to a private property north-east of Roma, Queensland. The aircraft departed with the pilot and 2 passengers. The aircraft landed at about 1230 and the occupants spent the night at the property.

At 0715 on the following day, the pilot and 2 passengers departed from the property in EHM for a VFR return flight back to Archerfield (Figure 1). Recorded flight tracking data showed the aircraft was initially established on a direct south-easterly track towards Archerfield at cruise altitudes of between 3,400 ft and 3,900 ft above mean sea level (AMSL). The weather forecast available from the Bureau of Meteorology (BoM) at the time of departure indicated that the route to Archerfield could be affected by low cloud, rain, fog and associated reduced visibility.

At 0828, the aircraft turned left and descended to about 1,800 ft AMSL – 600 ft above ground level (AGL). The flight then tracked north before turning east towards the Biarra Range and into a valley before descending to about 300 ft AGL. Shortly after, the aircraft completed a 180° turn, climbed to 3,900 ft and tracked towards Dalby Airport. At 0901, the aircraft landed at Dalby and was refuelled with about 263 L of fuel.

**Figure 1: Flight to Dalby Airport**



Source: Google Earth and OzRunways, annotated by ATSB

Recorded data showed the aircraft depart Dalby 11 minutes later, at about 0912, and tracked south-east, climbing to a cruise altitude of about 2,500 ft (1,300 ft AGL). At 0927, the flight

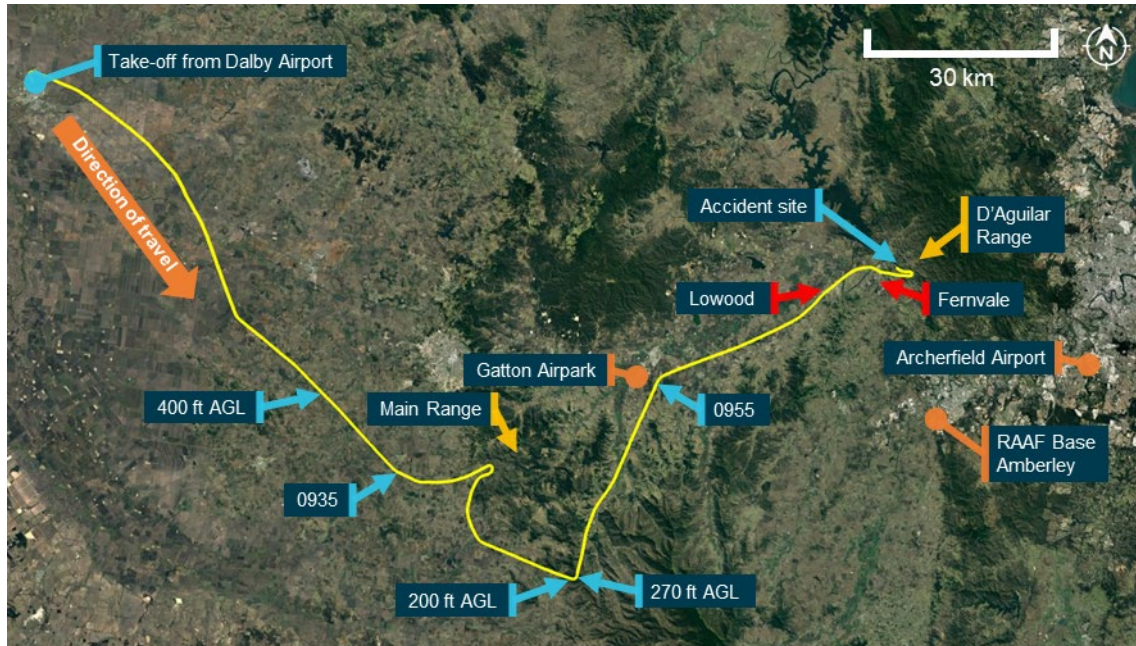
<sup>1</sup> The flight was operated under Civil Aviation Safety Regulations Part 135 (Air transport operations - smaller aeroplanes).

<sup>2</sup> Visual flight rules (VFR): a set of regulations that permit a pilot to operate an aircraft only in weather conditions generally clear enough to fly the aircraft while maintaining visual separation from terrain and other aircraft.

progressed over rising terrain and 3 minutes later was operating at about 400 ft AGL (Figure 2). At 0935, the aircraft turned left towards Main Range before completing a 180° turn between 300-500 ft AGL. It then tracked south-east, climbing to about 1,000 ft AGL.

At about 0946, the aircraft passed over a mountain ridge at a height of about 200 ft AGL before turning left over another ridge at a height of about 270 ft AGL (2,900 ft AMSL). The aircraft then tracked north-east, descending down a valley for 8 minutes at an altitude of about 1,200 ft (700 ft AGL).

**Figure 2: Accident flight**

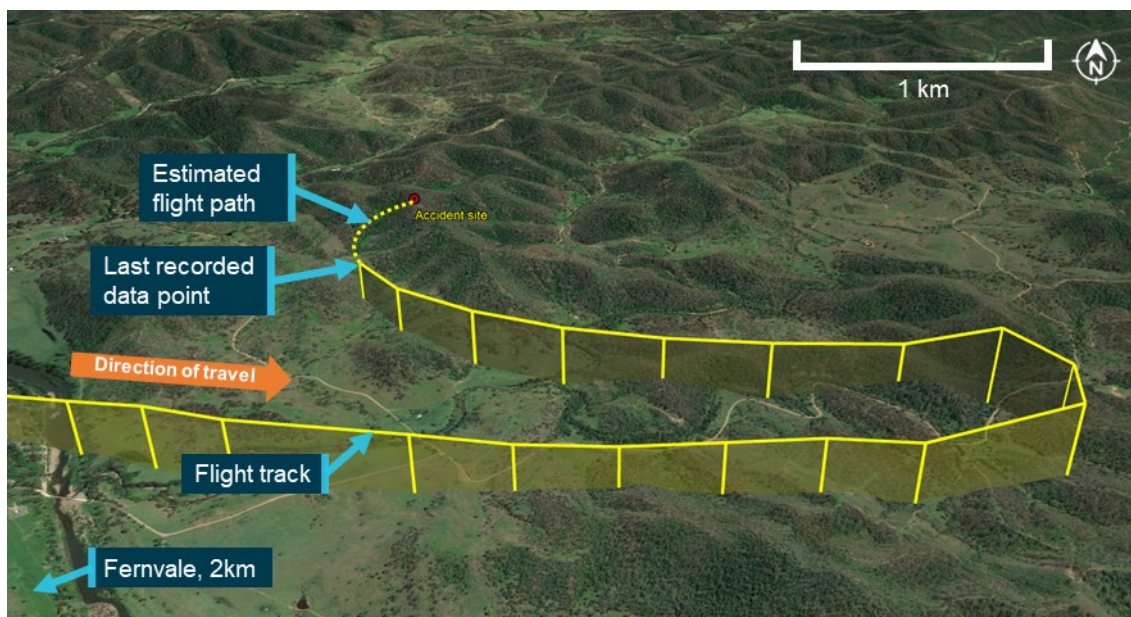


Source: Google Earth and OzRunways, annotated by ATSB

At about 0955, the aircraft passed to the east of Gatton Airpark and turned right towards Lowood. Eight minutes later, the aircraft passed overhead Lowood and descended to 500 ft AGL before turning east towards Fernvale and the D'Aguilar Range. The flight data showed that at 1005, the aircraft passed over a hill at a height of about 200 ft AGL, before climbing to 700 ft AGL.

The flight progressed down a valley before completing another 180° turn while climbing to 1,000 ft AGL. After the turn, the aircraft descended to 800 ft (600 ft AGL) before turning right, back towards the D'Aguilar Range (Figure 3). During this turn, at 1007, the aircraft impacted terrain at an elevation of about 650 ft AMSL. The aircraft was destroyed, and all occupants were fatally injured.



**Figure 3: Flight track and accident site**

Source: Google Earth and OzRunways, annotated by ATSB

### **Search and Rescue**

About 30 minutes after departing the private property, the pilot had left a verbal flight note<sup>3</sup> with a person not associated with the operator to expect their arrival 'late morning'. This person raised concern for the flight after several attempts to contact the pilot were unsuccessful, and notified the operator at 1309 that the pilot was missing. The operator then attempted to contact the pilot and made several calls to other locations to see whether the aircraft had landed at a different location.

At 1331, the operator notified Lowood police and at 1342, arranged for a helicopter from another Archerfield based operator to search for the missing aircraft. At 1344, the operator notified Airservices Australia who coordinated a search and rescue effort with the Joint Rescue Coordination Centre.

At about 1427, the helicopter departed Archerfield and located the wreckage shortly after. The helicopter pilot landed near the wreckage and proceeded to the site on foot, and then reported back to the operator that all of the aircraft's occupants were deceased. Shortly after, a search and rescue helicopter arrived at the site and paramedics confirmed the fatalities.

## **Context**

### **Pilot information**

The pilot held commercial pilot licences (aeroplane and helicopter), with their last aeroplane flight review being conducted in March 2021 and operational proficiency check last completed in March 2022. The pilot also held an aeroplane instrument rating, but this was not current as the last renewal<sup>4</sup> was completed in October 2002 (valid until October 2003).

<sup>3</sup> Details of the route and timing of a proposed flight provided by the pilot-in-command of an aircraft, other than a notification submitted to Airservices Australia, and which is required to be left with a person who could be expected to notify appropriate authorities if the flight becomes overdue.

<sup>4</sup> Before the introduction of the Civil Aviation Safety Authority (CASA) Part 61 licencing regulations in 2014, under Civil Aviation Regulation 5, pilots maintained instrument currency by completing an instrument 'renewal'. Under Part 61, pilots maintained this currency by completing an 'instrument proficiency check'.

The pilot held a night VFR rating (helicopter), but this was also not current as the last proficiency check was completed in May 2019 (valid until May 2021). The pilot held a Class 1 aviation medical certificate, valid until October 2022.

Prior to the accident flight, the pilot had accumulated approximately 13,900 hours of aeronautical experience in helicopters and aeroplanes, of which about 475 hours were in command of the Cessna R182. The pilot also had about 96 hours of instrument flying experience and 22 hours of night VFR experience.

**Aircraft information**

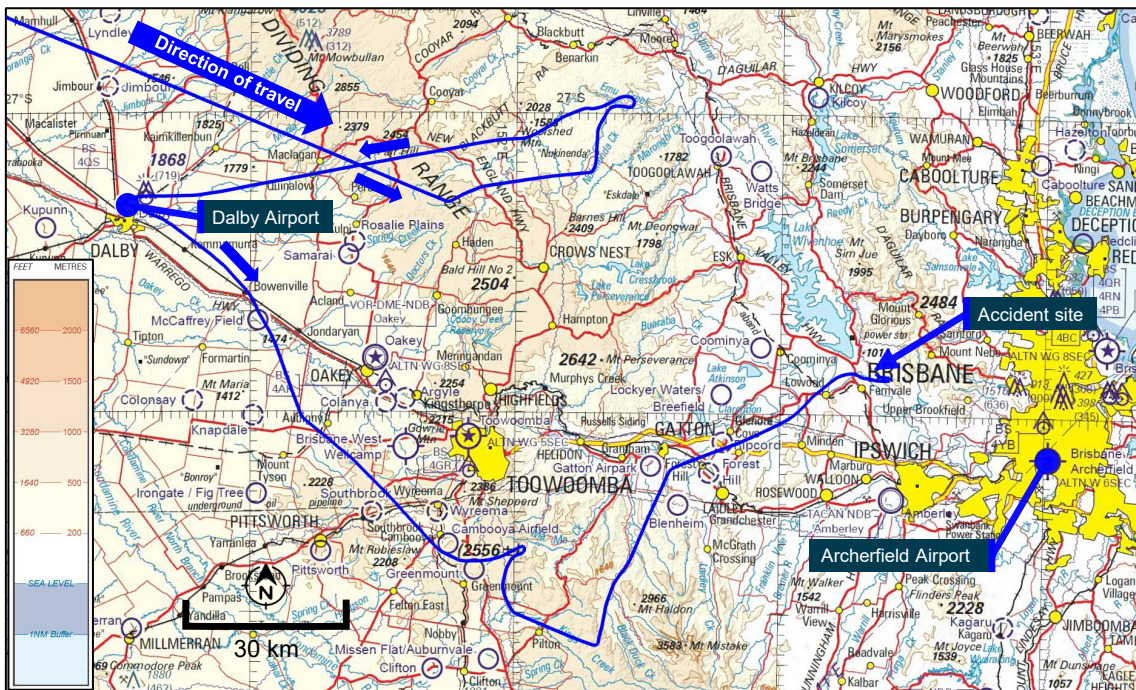
The Cessna R182 Skylane RG is a 4-seat, high-wing, single-engine aircraft with retractable landing gear. The accident aircraft was manufactured in the United States in 1978 and first registered in Australia in 1989 as VH-HZU before being purchased by Executive Helicopters in January 2020 and registered as VH-EHM. The aircraft was fitted with a Lycoming O-540 piston engine driving a 3 blade Hartzell constant speed propeller and was equipped for flight under both VFR and instrument flight rules (IFR).<sup>5</sup>

The last periodic maintenance inspection (100-hourly) was completed on 15 July 2022. Since then, the aircraft had accrued about 30 hours of flight time and had about 5,858 hours total time in service.

**Terrain**

The flight's track towards Archerfield took the aircraft across the Great Dividing Range to the west of Brisbane with terrain elevations generally between 1,500-2,000 ft AMSL. This area also contained numerous peaks between 2,000-2,700 ft (Figure 4).

**Figure 4: Visual navigation chart extract showing terrain along the flight path**



Source: Aircservices Australia and OzRunways, modified and annotated by ATSB

<sup>5</sup> Instrument flight rules (IFR): a set of regulations that permit the pilot to operate an aircraft in instrument meteorological conditions (IMC), which have much lower weather minimums than visual flight rules (VFR). Procedures and training are significantly more complex as a pilot must demonstrate competency in IMC conditions while controlling the aircraft solely by reference to instruments. IFR-capable aircraft have greater equipment and maintenance requirements.

## ***Meteorological information***

### ***Forecast***

The graphical area forecast for the accident region forecast the following cloud conditions at the time of the accident (all heights AMSL):

- broken<sup>6</sup> stratocumulus between 1,500-2,500 ft
- broken cumulus/stratocumulus between 3,000-7,000 ft

Isolated smoke was forecast below 6,000 ft where the visibility reduced to 6,000 m. Isolated showers were forecast with 3,000 m visibility and the following cloud conditions:

- broken stratocumulus between 1,000-2,500 ft
- broken cumulus between 2,500-8,000 ft

The grid point wind and temperature chart for the region forecast 1,000 ft easterly winds between 9-13 kt, with temperatures 12-14 °C.

Airservices Australia held three National Aeronautical Information Processing System (NAIPS)<sup>7</sup> login records for the pilot in the 24-hour period before the accident. These were recorded at 0708, 0709 and 0925 on 29 August 2022.

### ***Observations***

The following METAR<sup>8</sup> observations from nearby airports were reported at 1000 (about 7 minutes before the accident):

- Royal Australian Air Force Base Amberley (24 km south of accident site) – visibility 8,000 m, cloud scattered at 1,400 ft and broken at 2,800 ft<sup>9</sup>
- Archerfield Airport (36 km south-east of accident site) – visibility at least 10 km, cloud scattered at 1,900 ft and 2,300 ft, and overcast at 3,300 ft

Several witnesses along the aircraft's route from Dalby to Fernvale recalled seeing the aircraft flying at low altitude below cloud. One witness in Fernvale reported the aircraft flying at low altitude while heading east towards the D'Aguilar Range with the wings level and undercarriage retracted, before banking left (Figure 3) and disappearing from view as it was obscured by cloud. The witness also reported heavy low cloud, very light rain, and fog covering the Fernvale and surrounding area at the time.

### ***Airspace***

The Amberley military control zone extends from ground level up to an altitude of 8,500 ft (Figure 5). The airspace was active from 0800 to 2300 on 29 August and required a clearance to transit. Preliminary information indicated no record of a transit clearance request by the pilot, however, additional information is being collected by the ATSB to verify this.

---

<sup>6</sup> Cloud cover: in aviation, cloud cover is reported using words that denote the extent of the cover – 'few' indicates that up to a quarter of the sky is covered, 'scattered' indicates that cloud is covering between a quarter and a half of the sky, 'broken' indicates that more than half to almost all the sky is covered, and 'overcast' indicates that all the sky is covered.

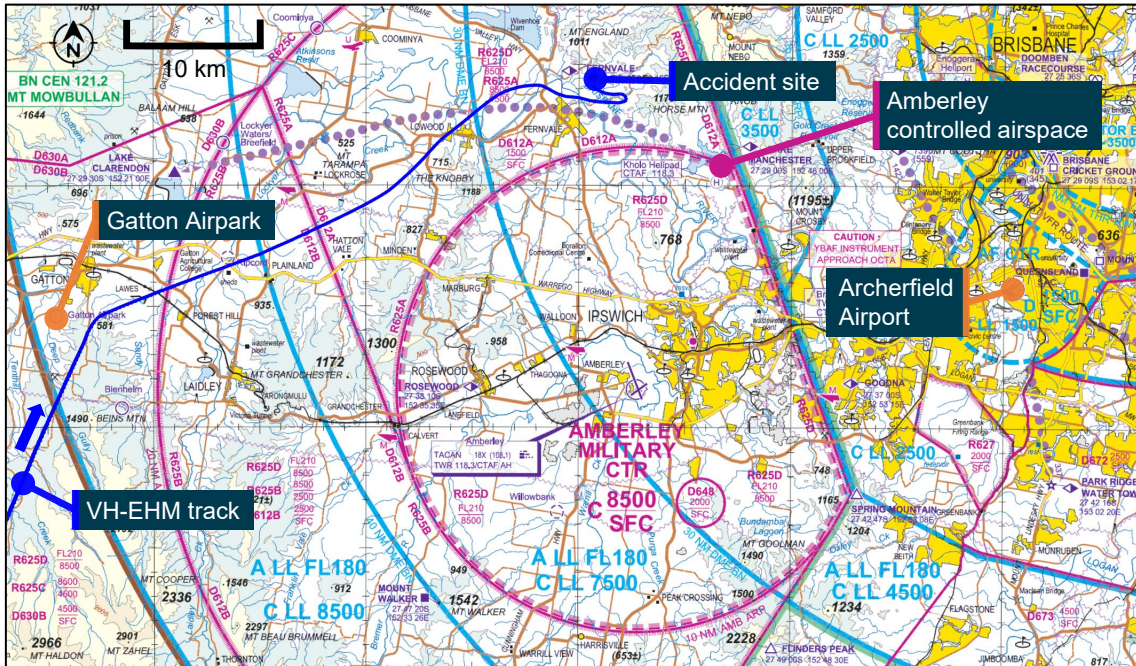
<sup>7</sup> The National Aeronautical Information Processing System (NAIPS) is a computerised, aeronautical information system. It processes and stores meteorological and NOTAM information as well as enables the provision of briefing products and services to pilots.

<sup>8</sup> METAR: a routine aerodrome weather report issued at routine times, hourly or half-hourly.

<sup>9</sup> Cloud heights are reported as above aerodrome elevation. Amberley elevation – 91 ft. Archerfield elevation – 65 ft.



Figure 5: Amberley control area



Source: Aairservices, annotated by ATSB

### Site and wreckage information

The accident site was located within the D'Agular Range on a steep section of mountainous terrain covered with trees (Figure 6).

Figure 6: Accident site



Source: ATSB

On-site evidence indicated that the aircraft was in a right turn with an angle of bank of about 47° when it collided with several trees, before impacting terrain about 28 ft vertically below the top of a



ridge. The wreckage trail extended about 40 m from the initial impact point to the top of a ridge where most of the wreckage was located, including the engine. The propeller was located about 10 m forward of the main impact point.

On-site examination indicated that the engine was providing power at impact, with the landing gear and flaps in the retracted position. There was no evidence of an in-flight break-up or a pre-existing defect with the flight controls.

### **Recorded Data**

The aircraft was not fitted with a flight data recorder or cockpit voice recorder, nor was it required to be. Recorded data was obtained from various sources:

- GPS flight track data from OzRunways
- ADS-B data<sup>10</sup>
- CTAF communications
- CCTV footage
- radar data

The flight track data indicated that the aircraft's ground speed after departing Dalby was generally between 120-140 kt, indicative of normal cruise speeds.

### **Further investigation**

The ATSB has examined the accident site and wreckage, interviewed witnesses, collected meteorological data, pilot and flight records and obtained aircraft tracking data.

The investigation is continuing and will include further review and examination of:

- pilot training, qualifications, experience, and medical information
- aircraft maintenance and flight records
- operator procedures, flight notification practices and management systems
- witness accounts
- meteorological data
- recorded data (CCTV, flight tracking, communications).

Should a critical safety issue be identified during the course of the investigation, the ATSB will immediately notify relevant parties so appropriate and timely safety action can be taken.

A final report will be released at the conclusion of the investigation.

### **Acknowledgements**

The ATSB would like to acknowledge the significant assistance provided by the Queensland Police Service during the onsite investigation phase and initial evidence collection activities.

---

<sup>10</sup> Automatic Dependent Surveillance – Broadcast - A means by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link.

# General details

## Occurrence details

Date and time:	29 August 2022 – 1007 Eastern Standard Time	
Occurrence class:	Accident	
Occurrence categories:	Collision with terrain	
Location:	24 km north of Amberley, Queensland	
	Latitude: 27° 25.548' S	Longitude: 152° 40.731' E

## Aircraft details

Manufacturer and model:	Cessna Aircraft Company R182	
Registration:	VH-EHM	
Operator:	Executive Helicopters	
Serial number:	R18200431	
Type of operation:	Part 135 Australian air transport operations - Smaller aeroplanes	
Departure:	Dalby Aerodrome	
Destination:	Archerfield Aerodrome	
Persons on board:	Crew – 1	Passengers – 2
Injuries:	Crew – 1 (fatal)	Passengers – 2 (fatal)
Aircraft damage:	Destroyed	