

Safety investigation brief

Paramotor accident, Poerua River, West Coast, 12 November 2020

Summary of occurrence

At about 1530 hours New Zealand Daylight Time on 12 November 2020, a paramotor pilot ('the pilot') launched from the mouth of the Poerua River for the return flight to his initial launch site - about five kilometres up the river. After launching into the westerly breeze at the river mouth, the pilot was seen flying up-river following the waterway at low level. The pilot had arranged to return to the river mouth by jetboat at 1700, and when he failed to arrive, a search began about 1815. Shortly after 1900, a search party in a jet boat found the pilot at the accident site on the riverbank (Figure 2), which was approximately three kilometres from the river mouth. The pilot had died from injuries sustained during the accident. There were no witnesses to the final moments of the flight.

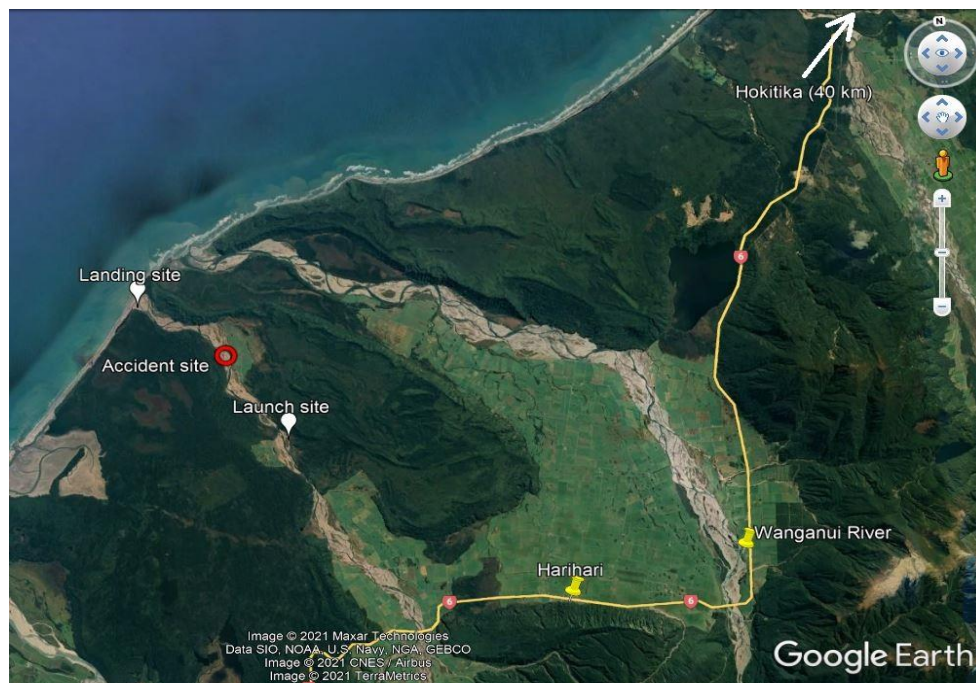


Figure 1: Location of accident, Poerua River, West Coast, adapted Google™ Earth image.

The paramotor and weather conditions

The pilot was using a size 25 Niviuk Link 2 paramotor wing. The manufacturer described it as an intermediate skill level wing suitable for instructing pilots new to paramotoring. It was rated for a total weight range of 90-145 kgs, which included the pilot, wing, engine, frame with harness, and fuel. The estimated total weight during the accident flight was within the allowable weight range.

The manufacturer's manual for the Link 2 wing states, "*in spite of the LINK 2's profile stability, strong turbulent air may cause the wing to collapse asymmetrically*". It also says, "*Normally, the collapsed side of the wing should then recover and reopen by itself.*" Several pilots were asked about the

recovery from a wing asymmetric collapse¹. They said it would recover itself within a turn of 180 degrees but could take up to 200-300 feet of height to recover, depending on the severity of the collapse and the pilot's actions.

The paramotor wing and engine were inspected after the accident, and no pre-existing defects were identified that may have prevented normal operation. The impact damage observed on the left side of the engine frame and inside the left half of the wing indicated the paramotor likely struck the ground in a steep left angle of bank with a high rate of descent.

Automatic weather station observations from the nearest aerodrome at Hokitika indicated overcast cloud conditions with a cloud base of around 1700 to 2100 feet from midday until around 3pm, when the cloud base lifted to around 3000 to 3500 feet. Winds recorded at the aerodrome were from a north-west direction at midday, turning westerly from 2pm. Wind speeds were between six and nine knots and the air temperatures reached around 17 degrees by 3.30pm.



Figure 2. View looking down the Poerua River towards accident site.

The initial training and supervision of the pilot

The pilot went to a specialised training school in Christchurch in early October, to complete the training required to fly the paramotor he had recently purchased. The standard training progression for a paraglider pilot was to complete a PG1² course of theory and practical training over three days, which enabled a pilot to fly supervised. A pilot could then complete a PG2³ course of theory and

¹ An asymmetric collapse is a type of aerodynamic stall, where one side of an inflatable wing collapses and loses lift due to a disruption in airflow. It can be caused by turbulence or through mishandling of the paraglider.

² New Zealand Hang Gliding and Paragliding Association Paraglider Level 1 Certificate.

³ New Zealand Hang Gliding and Paragliding Association Paraglider Level 2 Certificate.

practical training, typically lasting one to two weeks – depending on where the course was held – which enabled a pilot to fly without supervision.

Traditionally a new pilot would fly on a PG2 Certificate for some time, gaining experience as a paraglider pilot before training for a paramotor Certificate. A four-day paramotor conversion course was required to convert a PG2 Certificate to a PPP⁴ Certificate. Alternatively, a 12-day course was offered to people with no flying experience to gain a PPP Certificate.

The pilot attended the 12-day course, and although he exceeded the minimum requirements of 25 unpowered flights plus 25 powered flights for the PPP Certificate, he was likely not exposed to the types of conditions prevalent on the West Coast. The instructor suggested the pilot fly under the supervision of other experienced pilots on the West Coast to learn the local conditions. The instructor was planning on doing some follow-up training with the pilot on the West Coast. However, the accident occurred before this was done.

After finishing his training in mid-October, the pilot returned to the West Coast, and after a two-week break from flying he carried out about six local flights in the Harihari area during the week prior to the accident. He had flown over the lower Poerua River two or three times prior to the accident, and the more open Wanganui River valley and local Harihari area at least three times. The lower Poerua River is a confined area with tall trees near both riverbanks, which would have been, in a westerly wind, conducive to low-level mechanical turbulence over the river.

Flying below a minimum safe height

The pilot had attached a GoPro camera to his helmet to record some of his flights, which included most of the training in Christchurch and his recent flights on the West Coast. On the day of the accident he had recorded the flight to the mouth of the Poerua River but had not recorded the accident flight.

When his recorded flights from the GoPro were reviewed, it was evident he had flown his paramotor below a minimum safe height on multiple occasions. Civil Aviation Rule 91.311 *Minimum heights for VFR⁵ pilots*, states a pilot-in-command of an aircraft must not operate the aircraft at a height of less than 500 feet above the ground. There is an exception to this, under Part 106 *Hang Gliders Operating Rules*, that hang gliders or paragliders can fly below 500 feet for ridge soaring purposes. This pilot, however, was not ridge soaring on those occasions nor at the time of the accident.

An eyewitness at the river mouth watched the pilot take off and then fly downwind up the river, but lost sight of him when he flew behind trees in a bend in the river about two kilometres away. This indicated the pilot was near tree-top height while flying up the river, and that was consistent with the height he flew over the same part of the river on his way to the river mouth. The trees were approximately 80-100 feet high.

A paramotor wing can be successfully recovered from an aerodynamic stall⁶ or an in-flight upset occurring at a safe height. Flying downwind at low level leaves little margin for error and not enough height to recover, if an upset or stall is encountered due to turbulence or mishandling.

⁴ A powered paraglider pilot (PPP) Certificate was required to fly a paramotor.

⁵ Visual flight rules.

⁶ An aerodynamic stall is a breakdown of the smooth airflow over a wing causing a loss of lift.

Conclusion and recommendation

The accident likely occurred as a result of an unrecovered asymmetrical wing collapse during low-level flight from which there was insufficient height to recover.

CAA Safety Action 22A430 has been raised for the NZHGPA to remind paramotor pilots to be aware of the minimum height requirements of CAR 91.311, and to ensure they remain at a safe height during flight and understand the risks in flying paramotors at low levels unnecessarily.

The current Civil Aviation Rules, coupled with the NZHGPA requirements for paraglider flying, are considered suitable for the activity.

Accident data summary

Paramotor wing manufacturer and model	Niviuk, Link 2, size 25	
Paramotor engine manufacturer and model	Corsair, Black Devil Pro, 172.5cc	
Registration	N/A	
Last inspection and date	Warrant of fitness, 13 October 2020	
Location of incident	Poerua River, West Coast, New Zealand	
Date and time of incident	12 November 2020 16:00 NZDT	
Civil Aviation Rules applying	Visual flight rules	
	Part 106 <i>Hang Gliders Operating Rules</i>	
Occurrence number	20/5937	
Injuries	Crew	1 fatal
	Passengers	N/A

Pilot information

Age and gender	50, male	
Pilot certificates	PPP	
Pilot ratings	N/A	
Flying experience (hours)	Total paraglider	26 flights and 2.9 flight hours
	Total paramotor	Approx. 46 flights and 10.7 flight hours
	With Link 2	Approx. 72 flights and 13.6 flight hours
	In last 7 days	Approx. 3 flights and 2 flight hours
	In last 90 days	Approx. 72 flights and 13.6 flight hours

	In last 12 months	Approx. 72 flights and 13.6 flight hours
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Meteorological information and flight plan

Forecast Conditions for the Westland region	Wind	W at approx. 11-17 km/h
	Visibility	More than 15 km
	Cloud	Scattered at 1500-2500 feet
	Pressure	Unknown
	Temperature	17°C
Departure point		Mouth of Poerua River
Destination		Initial launch site, Poerua riverbank

Wreckage and impact information

Paraglider damage	Moderate - from ground impact and rescue activities
ELT activated?	N/A
ELT signal received by Rescue Coordination Centre (RCCNZ)?	N/A
Paramotor recovered?	Yes
Location	43°4.0818'S 170°26.2926'E

About the CAA

New Zealand's legislative mandate to investigate an accident or incident is prescribed in the Transport Accident Investigation Commission Act 1990 (the TAIC Act) and Civil Aviation Act 1990 (the Act).

Following notification of an accident or incident, TAIC may open an inquiry. CAA may also investigate subject to Section 72B(2)(d) of the Act which prescribes the following:

72B Functions of Authority

(2) The Authority has the following functions:

(d) To investigate and review civil aviation accidents and incidents in its capacity as the responsible safety and security authority, subject to the limitations set out in [section 14\(3\)](#) of the [Transport Accident Investigation Commission Act 1990](#)

A CAA safety investigation seeks to provide the Director of Civil Aviation with the information required to assess which, if any, risk-based intervention tools may be required to attain CAA safety objectives.

About this safety investigation brief

The purpose of this brief is to identify to the aviation community:

- what happened
- factors contributing to the accident, and
- any relevant safety messages.

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