

Safety Investigation Report

Fatal Paraglider Accident Mount Cheeseman, Canterbury, 14 January 2020

Summary of occurrence

At approximately 1330 hours New Zealand Daylight Time on 14 January 2020, a paraglider pilot ('the pilot') launched from the car parking area at Mount Cheeseman Ski Area ('Mt Cheeseman')¹ (refer to Figure 1) for a private flight in the local area.

Shortly after the launch, the pilot was seen flying close to a scree slope² when a frontal collapse³ of the paraglider wing occurred. Video evidence showed that the pilot recovered from this. Witnesses reported that the wing then collapsed asymmetrically⁴ on its right side⁵. This turned the pilot towards the slope and she disappeared from view of the witnesses.

Attempts to contact the pilot by radio were not successful. Shortly after, witnesses found the pilot at the accident site (refer to Figure 2). The pilot was conscious for a time but subsequently died from impact injuries.

¹ Referred to as Cheeseman Skifield in the Canterbury Hang Gliding and Paragliding club site guide. Referenced as Mt Cheeseman Ski Area in Google Earth™. Referred to as Mt Cheeseman in this report.

² This is normal practice for paragliders as they try to get lift from thermal activity.

³ A frontal collapse is when the leading edge of the wing deflates.

⁴ An asymmetrical collapse is when one side of the wing deflates, creating drag and inducing a turn in that direction. This causes the pilot to tilt, which can exacerbate the turn towards the collapsed side of the wing.

⁵ Video recording of the flight ended prior to the asymmetrical collapse.



Figure 1: Location of Mt Cheeseman, New Zealand. Adapted Google™ Earth image.

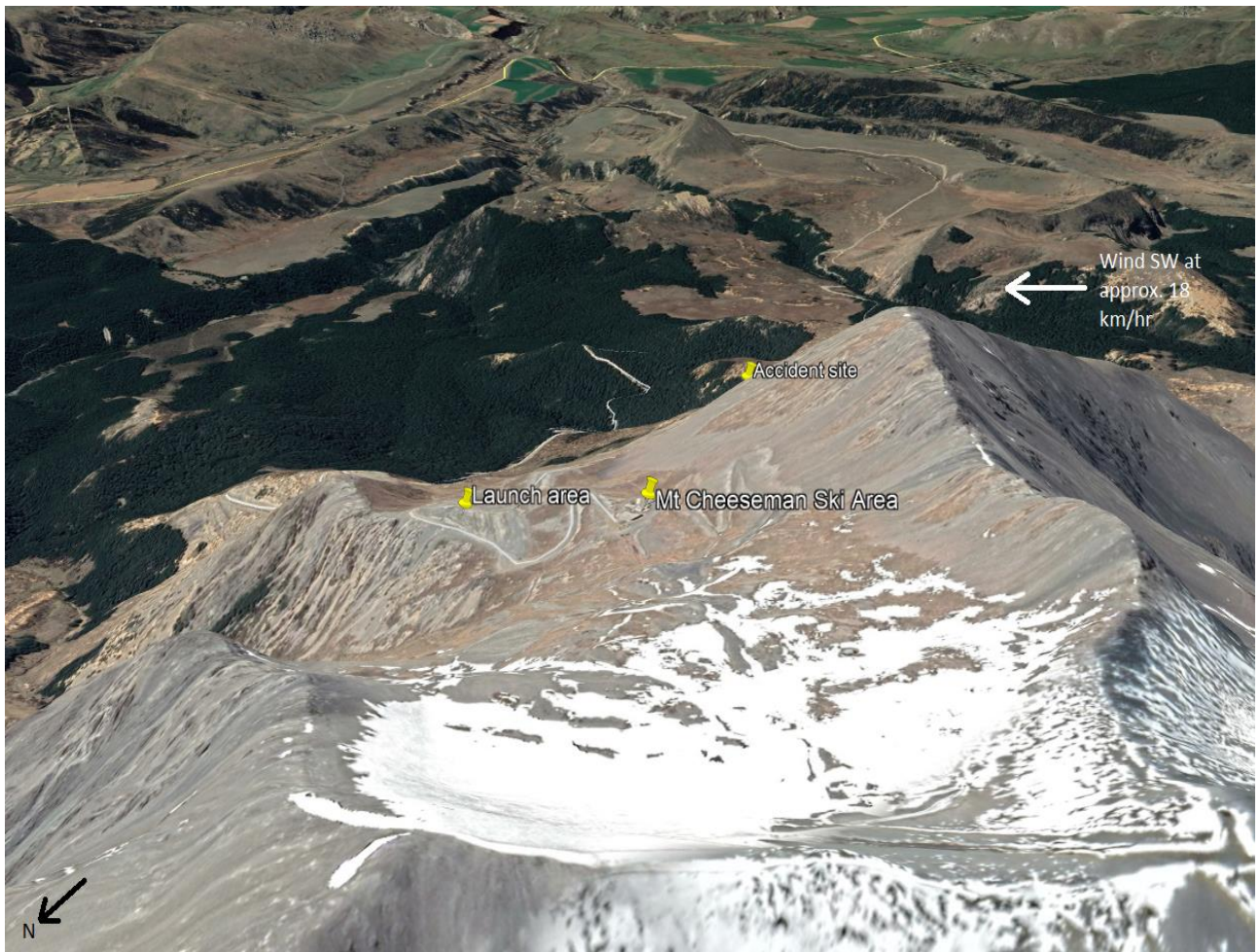


Figure 2: Accident location. Adapted Google™ Earth image.

The pilot had considerable paragliding experience, mostly in soaring conditions

The pilot was a South African national. She held a current South African PG – Sport licence obtained in 2014. The closest New Zealand equivalent licence is a PG-3, the highest NZ solo paragliding licence.

She also held an appropriate New Zealand Hang Gliding and Paragliding Association (NZHGPA) temporary licence. The pilot was qualified to fly in the PG2⁶ rated Cheeseman Skifield site and had considerable experience in soaring conditions, completing about 160 flights on average annually. She had a moderate level of experience in thermal conditions.

On a previous visit to New Zealand, the pilot had conducted approximately five flights in Christchurch. The pilot had returned to New Zealand three weeks before the accident and had conducted several flights including one at Mt Cheeseman the week before.

⁶ The Canterbury Hang Gliding and Paragliding Club rates Cheeseman Skifield as a PG2 site. This requires pilots to have a PG2 or higher rating to fly unsupervised.

Other paraglider pilots found the airborne wind conditions more challenging than expected

The pilot's husband reported that the pilot had obtained weather information from various websites prior to leaving home that morning. She had stated to him that the weather "looked good for flying".

The reported weather forecasts were for light winds and gentle thermals. Several other pilots reported discussing the weather conditions on arrival at Mt Cheeseman, observing that conditions seemed to match the forecast conditions. They noted that there was a south-west wind coming around the side of the mountain at the time, with thermals coming up the slope.

However, some pilots that flew on the day reported that airborne wind conditions were more turbulent and challenging than had been forecast or assessed from the ground. One pilot stated that had he known how rough the flight would be, he would not have taken off.

Mt Cheeseman is a challenging paragliding site due to strong thermals and turbulence

The Canterbury Hang Gliding and Paragliding Club Sites Guide current at the time of the accident⁷ noted that:

'Cheeseman is an Alpine site and, in the summer, thermals and turbulence can be strong.'

It also noted:

'**DO NOT FLY** here in a NW. Take-off is leeward and it may seem ok, but it will be very turbulent.'

The accident occurred in south-west wind conditions. The location of the launch site in these conditions meant the flight path of the accident flight was also on the lee side of the slope. Any light thermal rising from the valley floor from the east would quickly be dominated by a stronger prevailing south-west wind. As the pilot tracked around the ridgeline on the lee side of the slope, she would have encountered a lot of turbulence (refer to Figure 3).

This lee side turbulence is the most probable cause of the initial frontal collapse and the subsequent asymmetric collapse.

⁷ CHGPA Sites Guide, 2015/2016, Cheeseman Skifield

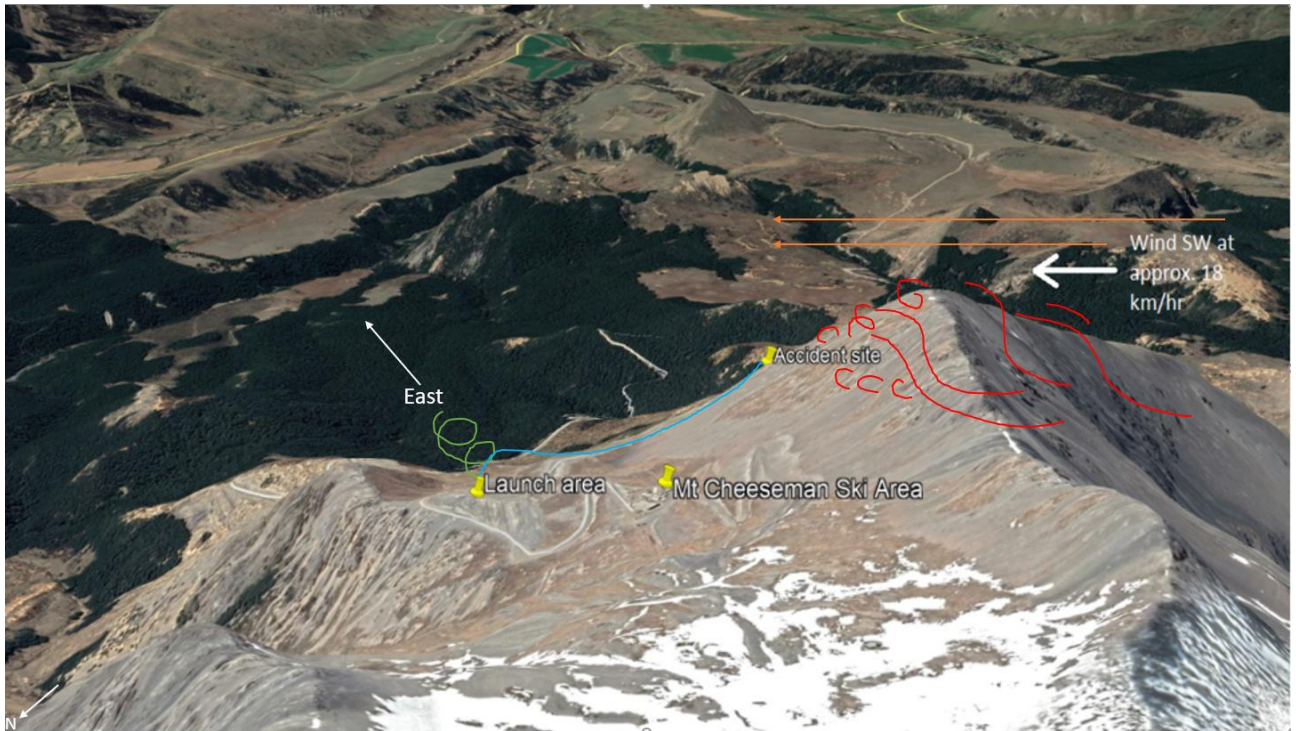


Figure 3: Depiction of flight path and likely areas of turbulence (diagram for illustration purposes). Adapted Google™ Earth image.

Key:

- Orange: Prevailing south-west wind
- Green: Thermal from valley floor dying out just above launch height, but strong enough to give the impression it is OK to launch facing to the east. Launch is leeside of strong prevailing south-west wind.
- Blue: Flight path out in the lee, initially still in the thermal.
- Red: Formation of lee side rotor just above the height of the thermal. Prevailing wind begins to dominate as thermal height peaks, creating turbulent air.

The pilot was flying above the maximum weight range for the equipment

The pilot was using her own Nova Mentor 5 wing, size XS. Post-accident inspection found no equipment issues that would have contributed to the accident.

The wing was certified for an all-up weight range of 70 to 90 kg. The combined weight of pilot and equipment on the day was 107 kg. The Nova Mentor 5 Manual states:

‘If the glider is flown outside the stipulated weight range it does not conform to the flying characteristics determined during the certification process’.

The CAA contacted Nova regarding the likely effect of flying 17 kg over the maximum stipulated weight range. They advised that this amount of additional weight would significantly change the flying characteristics of the wing and that, in the case of a wing collapse,

‘increasing the wing loading tends to increase the loss of height until recovery, as well as the sink speed and the amount of turning during recovery’.

Nova concluded that, while it was impossible to say whether the additional weight caused the accident, it would certainly have made the recovery from a wing collapse more demanding for the pilot.

Conclusions and recommendation

The accident occurred as a result of an unrecovered asymmetrical wing collapse in turbulent conditions from which there was insufficient height to recover.

Contributory factors to the accident:

- 1. The flight path on the lee side of the slope in a strong south-west wind meant the pilot would have encountered significant turbulence. It is probable that this turbulence caused both the initial frontal wing collapse and the subsequent asymmetric collapse.**

During the investigation process, the NZHGPA advised they had updated the Canterbury Sites Guide with additional information to alert pilots to the challenging conditions that can be experienced at Cheeseman Skifield. This includes a warning not to fly at the site in strong south-west, west, or north-west conditions, and additional comment that the dangers of mountain flying apply at this site. Refer to Appendix 1 for full changes included in the Canterbury Sites Guide.

As a result of this proactive action by the NZHGPA, no recommendation has been made by the CAA in relation to this contributory factor.

- 2. Flying above the manufacturer’s recommended maximum weight range likely contributed to the pilot’s inability to recover from the wing collapse.**

[CAA Safety Action 21A784](#) has been raised for the NZHGPA to remind paraglider pilots to be aware of their equipment weight range, ensure that they remain within the prescribed range, and have an understanding of the serious effects on handling characteristics if they operate outside the weight range.

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

Administrative information

Paraglider manufacturer and model		Nova Mentor 5 wing size XS
Registration		N/A
Location of incident		Mt Cheeseman, Canterbury, New Zealand
Date and time of incident		14 January 2020 13:30 NZDT
Civil Aviation Rules applying		Part 91 <i>Visual Flight Rules</i>
		Part 106 <i>Hang Gliders Operating Rules</i>
Occurrence number		20/153
Injuries	Crew	1 fatal
	Passengers	N/A
	Others	N/A

Pilot information

Age and gender		37 Female
Pilot licences		South Africa PG – Sport, NZHGPA temporary licence
Pilot ratings		N/A
Flying experience (hours)	Total paraglider	Approx. 600 flights and 250 flight hours
	Total other	N/A
	With Nova Mentor 5	Approx. 125 flight hours
	In last 7 days	Approx. 2 hours
	In last 90 days	Not known
	In last 12 months	Approx. 160 hours

Meteorological information and flight plan

Conditions at accident site	Wind	SW at approx. 18 km/h Gust factor unknown
	Visibility	More than 5 km
	Cloud	Unknown
	Pressure	Unknown
	Temperature	18°C
Departure point		Mt Cheeseman Ski Area
Destination		N/A

Wreckage and impact information

Paraglider damage	Moderate - from ground impact and rescue activities
ELT activated?	Yes <input checked="" type="checkbox"/> Personal locator beacon of witness
ELT signal received by Rescue Coordination Centre (RCCNZ)?	Yes <input checked="" type="checkbox"/>
Paraglider recovered?	Yes
Location	43°9.6290'S 171°40.2840'E

Appendix 1: Canterbury Hang Gliding and Paragliding Club Sites Guide 2020/2021

This information⁸ is provided to pilots by the Canterbury Hang Gliding and Paragliding Club for the Cheeseman Skifield site. PG = paraglider, HG = hang glider, LZ=landing zone.

Yellow highlighted areas indicate additional critical safety information added in 2021.

CHEESEMAN SKIFIELD 43°09'24"S 171°40'16"E

Wind Direction: LIGHT WINDS (Take-off faces east)

Minimum Pilot Rating: PG2 / HG Intermediate

Take-off: Either take-off from the main carpark or from the spur approximately 100 m south of the carpark. The initial slope down from the carpark is shallow and at times turbulent. In the summer dust devils/thermals will trigger from the car park so make sure you do not spend unnecessary time clipped in. The spur is generally cleaner and easier for paragliders to take-off from as the slope is steeper.

Landing: There are two bottom landing options. The closest (LZ1) is Texas Flat. This is the place you will probably have left a vehicle. PG's generally land between the track and the start of the Hogs Back Ridge. Texas Flat does have a shallow slope and the large tussocks can make landings technical for HG's. LZ2 is where the majority of HG's land as it has a better approach and is normally facing the thermic wind or NE if it has pushed into the plateau.

Flying: Cheeseman provides the easiest access to the Craigieburn ranges. This is a good starting point for XC flying within the local area or straight-line distance flights. Pilots have flown to Otira or in the opposite direction, Springfield. Cloud base can reach higher than the start of controlled airspace at 9500 ft. Sometimes it can be a struggle to get your first climb from Cheeseman. Your best bet is to turn right after take-off and follow the scree slope along the access track. This gives you some room to work initial thermals that will track up the scree slope until they release properly at the top of the ridge. This will put you in close proximity with terrain. If you are not comfortable with this, you can try your luck further out away from the mountain and try and find a thermal triggering off one of the lower slopes. This will give you much better terrain clearance.

Cheeseman is an alpine site and, in the summer, thermals and turbulence can be strong. Typical dangers of mountain flying in increasing strong wind day and effects of increasing turbulence whilst low flying over spines apply here. Make sure you are current and have all the necessary safety equipment. Personal locator beacons are highly recommended. Flying with others is a very good idea as the area is remote. Cell phone coverage is available from the transmitter located in Castle Hill village.

DO NOT FLY here in a strong SW, W or NW

Take-off is leeward and it may seem ok, but it will be very turbulent.

⁸ This excerpt excludes the personal contacts, access, and carpark information available to club members.

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 regulatory intervention tools may be required to attain CAA safety objectives.

About this safety investigation report

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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