民航意外調查機構

AAIA

Air Accident Investigation Authority

# Loss of Control – Inflight (LOC-I)

# Investigation Report

## Accident

## Ozone Rush 6 Paraglider,

## Pyramid Hill, Hong Kong

## 26 December 2022

**IVR-2025-04**

# AAIA Investigations

Pursuant to the Hong Kong Civil Aviation (Investigation of Accidents) Regulations (Cap. 448B), the sole objective of the investigation and the Investigation Report is the prevention of accidents and incidents. It is not the purpose of the investigation to apportion blame or liability.

The Chief Inspector instigated an inspector's investigation into the accident in accordance with the provisions in Cap. 448B.

This accident Investigation Report contains information of an occurrence involving a paragliding activity at Pyramid Hill in Hong Kong on 26 December 2022.

The Civil Aviation Department (CAD), Fire Services Department (FSD), Government Flying Service (GFS), Hong Kong Observatory (HKO), Hong Kong Police Force (HKPF), Lands Department, Hong Kong China Paragliding Association (HKPA), International Paragliding Association (IPA), and Ozone Gliders Limited (the paraglider manufacturer), provided assistance to the investigation team.

Unless otherwise indicated, recommendations in this report are addressed to the regulatory authorities of the State or Administration having responsibility for the matters with which the recommendation is concerned. It is for those authorities to decide what action is taken.

This Investigation Report supersedes the Preliminary Report concerning this accident investigation.

All times in this Investigation Report are in Hong Kong Local Times unless otherwise stated.

Hong Kong Local Time is Coordinated Universal Time (UTC) + 8 hours.

Chief Accident and Safety Investigator

Air Accident Investigation Authority

Transport and Logistics Bureau

Hong Kong

May 2025

# Synopsis

At about 1351 hours (hrs) on 26 December 2022, an Ozone Rush 6 paraglider took off from Ngong Ping, a paragliding area in Ma On Shan, and planned to top land at the take-off site.

At about 1401 hrs, the paraglider was found descending rapidly and became stranded at a bush area in the southeast of Pyramid Hill. The Pilot, who was flying solo, was seriously injured in the accident.

At about 1404 hrs, a witness called 999 for emergency help and reported that a paragliding pilot was stranded on the hillside. The FSD immediately launched a rescue operation in conjunction with the HKPF and the GFS.

At about 1442 hrs, the GFS located the Pilot and his paraglider on a hill slope of Pyramid Hill. The Pilot was immediately conveyed to the Pamela Youde Nethersole Eastern Hospital (PYNEH) for medical treatment by a Government Flying Service helicopter.

The investigation found that this accident was probably caused by the loss of control of the paraglider, resulting in an impact with the terrain that rendered multiple injuries to the Pilot.

The investigation team has made two safety recommendations.

# Contents

# 1. Factual Information

## 1.1. History of the Flight

(1) At about 1351 hours (hrs) on 26 December 2022, an Ozone Rush 6 paraglider took off from Ngong Ping, the paragliding area in Ma On Shan. The Pilot planned to top land at the take-off site.

(2) At about 1401 hrs, the paraglider was found descending rapidly. The paraglider impacted the bush and the Pilot was stranded at the southeast of Pyramid Hill.

(3) At about 1404 hrs, a witness called 999 for emergency help and reported that a paragliding pilot was stranded on the hillside.

(4) The FSD immediately launched a rescue operation in conjunction with the HKPF and the GFS.

(5) At about 1442 hrs, the GFS located the Pilot and his paraglider on a hill slope of Pyramid Hill.

(6) The Pilot was immediately conveyed to the Pamela Youde Nethersole Eastern Hospital (PYNEH) for medical treatment by a GFS helicopter.

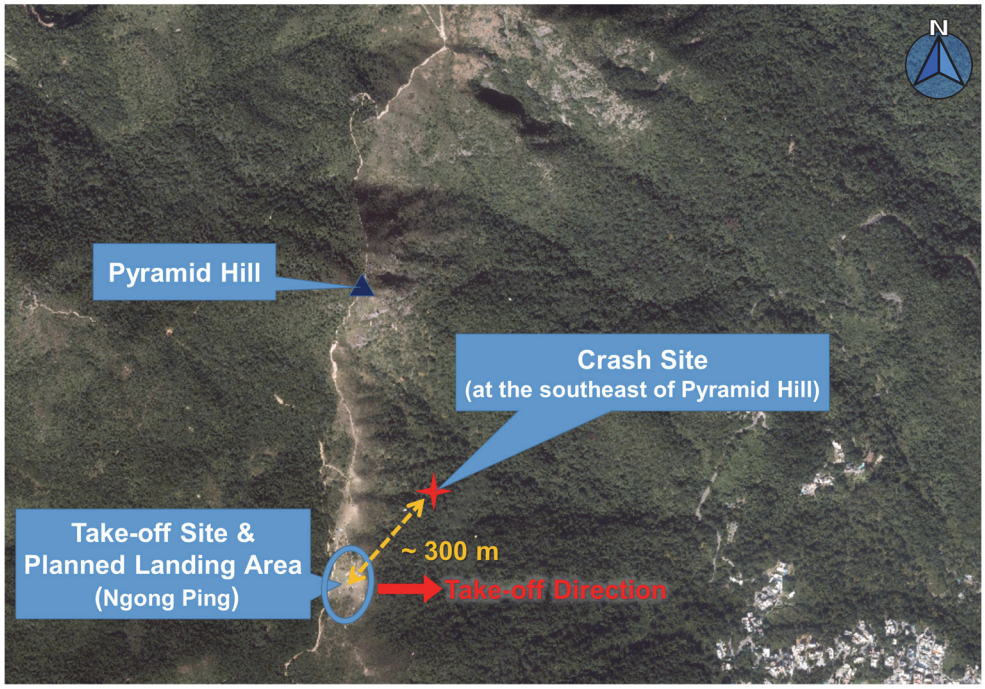


**Figure 1: Location of the Accident**

## 1.2. Injuries to Persons

The Pilot was seriously injured. There was no passenger on this flight.

| Injuries | Crew | Passengers | Others |
|---|---|---|---|
| Fatal | - | - | - |
| Serious | 1 | - | - |
| Minor / None | - | - | - |

**Table 1: Injuries to Persons**

## 1.3. Damage – Paraglider

There was no significant damage to the paraglider.

## 1.4. Other Damage

No other damage was caused.

## 1.5. Personnel Information

### 1.5.1. General

| | |
|---|---|
| Pilot | Male, aged 51 |
| Weight | 62 kg |
| Licence details: | United States Hang Gliding and Paragliding Association (USHPA)<br>Novice Pilot Paragliding Rating (P-2) |
| | Hong Kong China Paragliding Association (HKPA)<br>Club Pilot Paragliding Rating (HKPA 2) |
| Flying experience: | Approximately 100 hours |

**Table 2: Pilot Information**

### 1.5.2. Experience, Training and Qualification

(1) The Pilot attended a paragliding training in 2017 and obtained a Novice Pilot Paragliding Rating (P-2) from the USHPA in December 2018.

(2) He had accumulated about 100 flying hours from 2017 to 2022.

## 1.6. Paraglider Information

(1) A typical paraglider consists of a canopy which is inflated by wind to form an aerodynamic wing to which a pilot is suspended by a harness equipped with control lines. The inflated wing enables the paraglider to fly forward and downward. To gain height, it has to make use of rising air. It has rudimentary means of directional control.

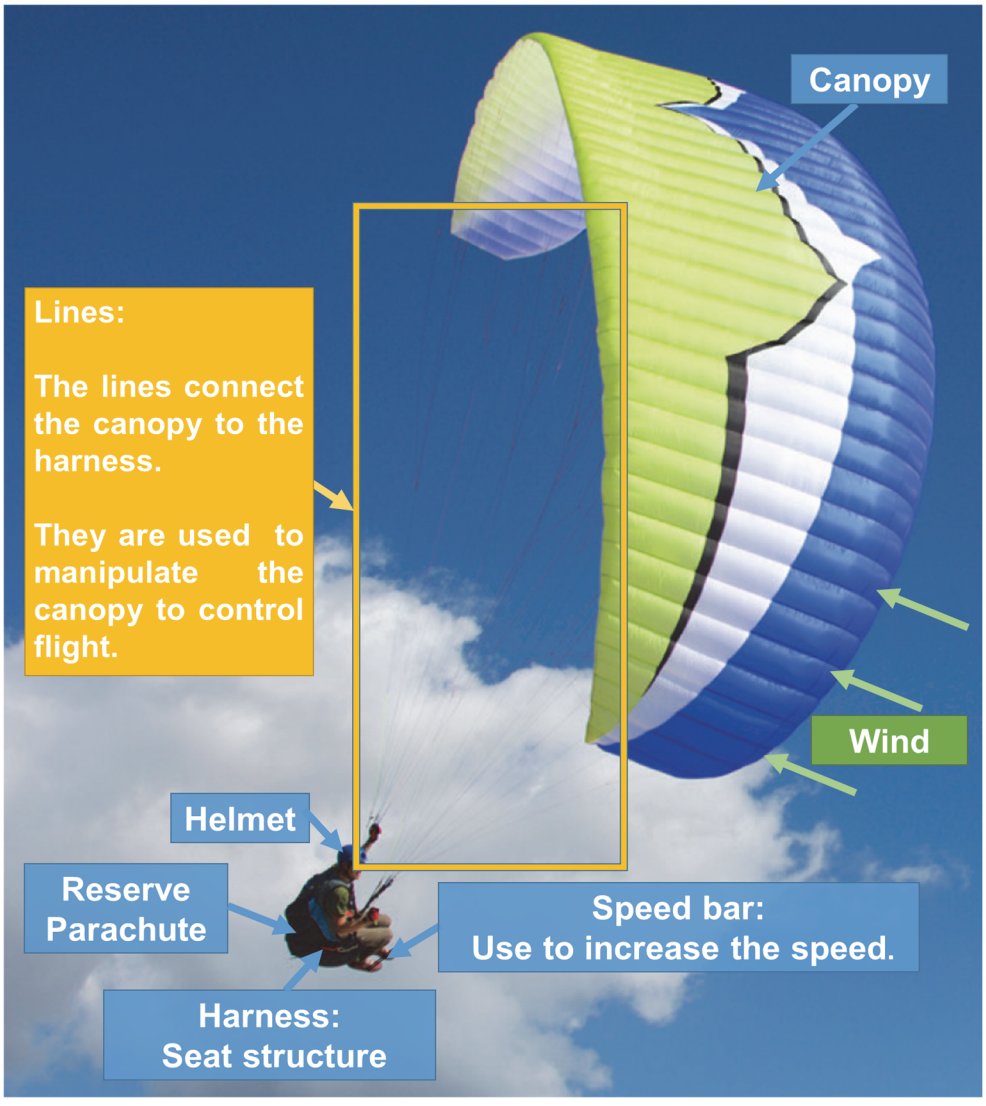


**Figure 2: A Typical Paraglider**

(2) The Pilot operated an EN-B certified “Ozone Rush 6” paraglider of S size, which was built in September 2022. It was fitted with an “Advance Easiness” harness of S size.

*Note: European Norm (EN) is a 4-level paraglider certification system (Levels A, B, C, & D). EN-A is the beginner glider while EN-D is for highly skilled pilots.*

**Photo 1: The Pilot’s “Ozone Rush 6” Paraglider Canopy**

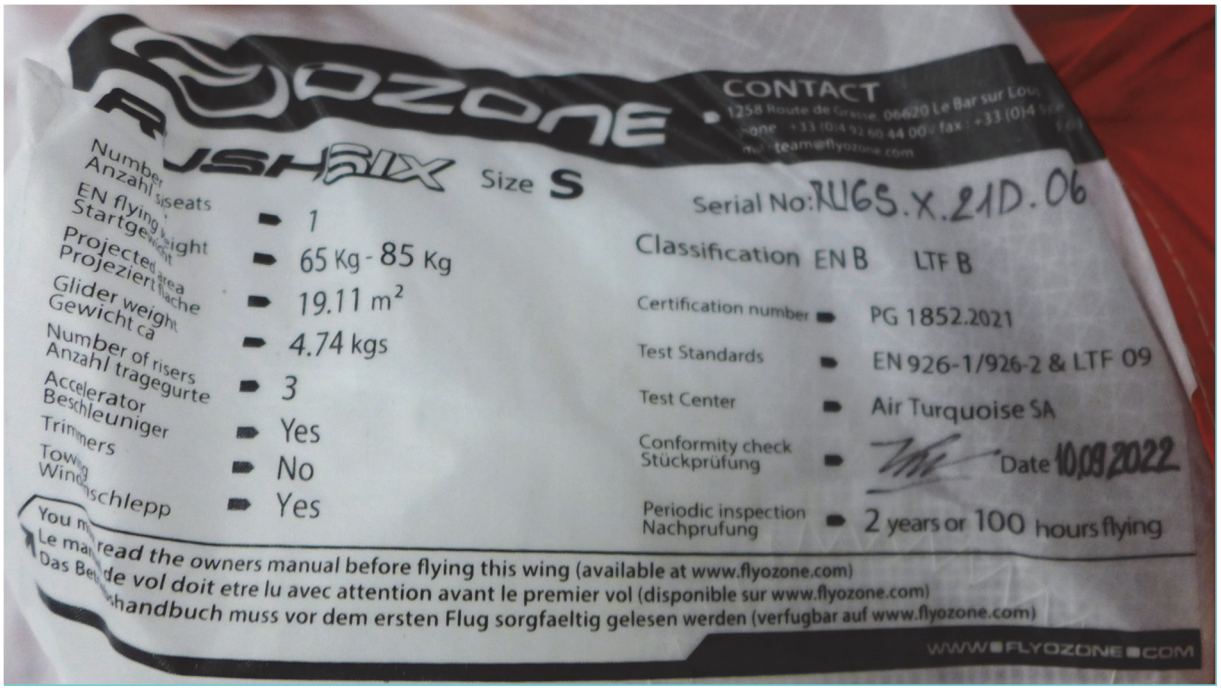


**Photo 2: The Model & Certification Label of the Paragliding Canopy**

**Figure 3: Typical "Advance Easiness" Paragliding Harness**

(3) According to the British Hang Gliding & Paragliding Association (BHPA), EN-B paragliders are designed for all pilots and suitable for experienced pilots who fly less than 50 hours a year.

| Class | Description of flight characteristics | Description of pilot skills required *(BHPA expanded version)* |
|---|---|---|
| A | Paragliders with maximum passive safety and extremely forgiving flying characteristics. Gliders with good resistance to departures from normal flight. | Designed for all pilots including pilots under all levels of training.<br><br>*(For all pilots especially those in their first year of flying and for experienced pilots with limited currency, for example those who fly less than 25 hours a year.)* |
| B | Paragliders with good passive safety and forgiving flying characteristics. Gliders with some resistance to departures from normal flight. | Designed for all pilots and may be suitable for pilots under training if recommended by the manufacturer.<br><br>*(There are a wide range of gliders produced in this category. Some are closer to 'A' class gliders. Others are for pilots who have gained more than 30 hours mixed flying (at least ten in thermic conditions) and hold a 'Pilot' rating. B class gliders are also suitable for experienced pilots who fly less than 50 hours a year.)* |
| C | Paragliders with moderate passive safety and with potentially dynamic reactions to turbulence and pilot errors. Recovery to normal flight may require precise pilot input. | Designed for pilots familiar with recovery techniques, who fly "actively" and regularly, and understand the implications of flying a glider with reduced passive safety.<br><br>*(For pilots who are Advanced Pilot rated, have several hundred hours logged (many of these in thermic conditions), have completed SIV courses, are flying 10 or more hours a month, and enjoy dealing with large asymmetric collapses etc.)* |
| D | Paragliders with demanding flying characteristics and potentially violent reactions to turbulence and pilot errors. Recovery to normal flight requires precise pilot input. | Designed for pilots well practised in recovery techniques, who fly very actively, have significant experience of flying in turbulent conditions, and who accept the implications of flying such a wing.<br><br>*(For pilots who have been flying for many years, fly more than two hundred hours a year often in strong thermic conditions and are masters of the various SIV skills.)* |

**Figure 4: EN Classes of Paragliders Published by the BHPA**

*Source: https://www.bhpa.co.uk/pdf/En_PG_Classes.pdf*

(4) The certified weight range for the S size paraglider is 65 to 85 kg as specified in the Pilots Manual of Ozone Rush 6.

(5) The weight of the harness with equipment was about 6.5 kg while the weight of the Pilot was 62 kg. Thus, the total in-flight weight was 68.5 kg, which was within the weight limit (65-85 kg) of the paraglider.

(6) A reserve parachute was properly installed in the harness of the Pilot.

**Figure 5: Typical Reserve Parachute in "Advance Easiness" Harness**

# 1.7. Meteorological Factors

## 1.7.1. Weather information from the Hong Kong Observatory

### 1.7.1.1. Weather Forecast for Local Aviation at 1230 hrs

(1) At 1230 hrs on 26 December 2022, the HKO issued a weather forecast for local aviation for the period from 1300 to 2300 hrs.

(2) The synopsis of the weather situation was "The northeast monsoon is affecting the south China coastal areas". The surface wind would be 10-15 knots (kt) from the 060 (around east-northeast) wind direction.

### 1.7.1.2. Special Weather Tips

There were no Special Weather Tips issued on the date of the occurrence.

### 1.7.1.3. Thunderstorm Warning

There was no Thunderstorm Warning in force on the date of the occurrence.

### 1.7.1.4. Rainfall Rate

(1) The HKO's weather radar image shows the rainfall rate at a height of 3 km Above Mean Sea Level (AMSL).

(2) The radar images with rainfall rates in the 64-km range at 1330 hrs, 1400 hrs and 1430 hrs are shown below. The colour scale on the right indicates the magnitude of the rainfall rate.

(3) According to the following images, there was no precipitation detected in Ma On Shan at a height of 3 km AMSL during the period from 1330 hrs to 1430 hrs.

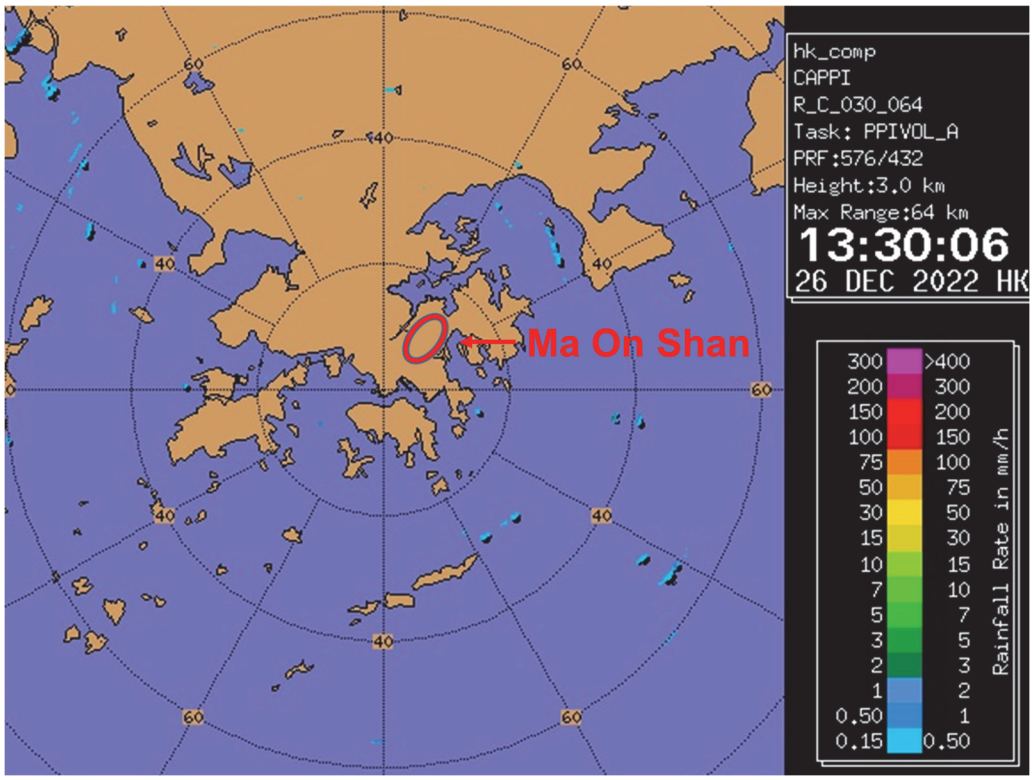


**Figure 6: Radar Image with Rainfall Rate in 64-km Range at 1330 Hrs**

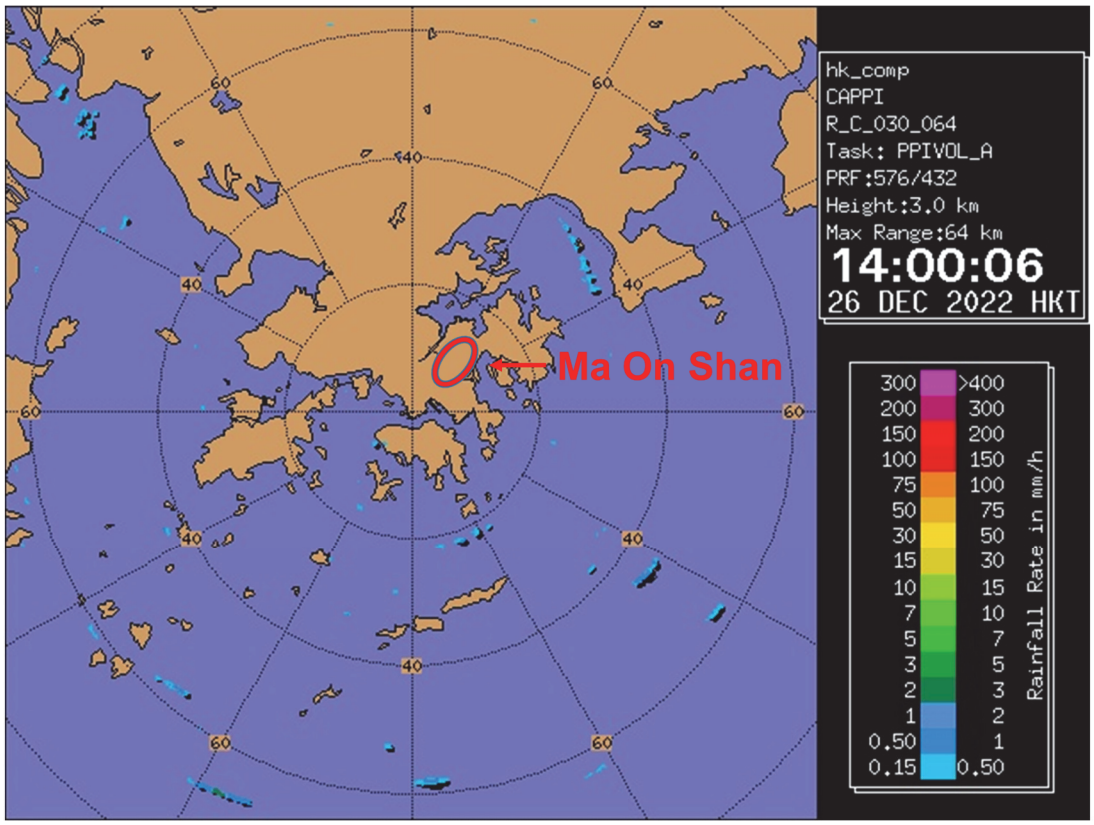


**Figure 7: Radar Image with Rainfall Rate in 64-km Range at 1400 Hrs**

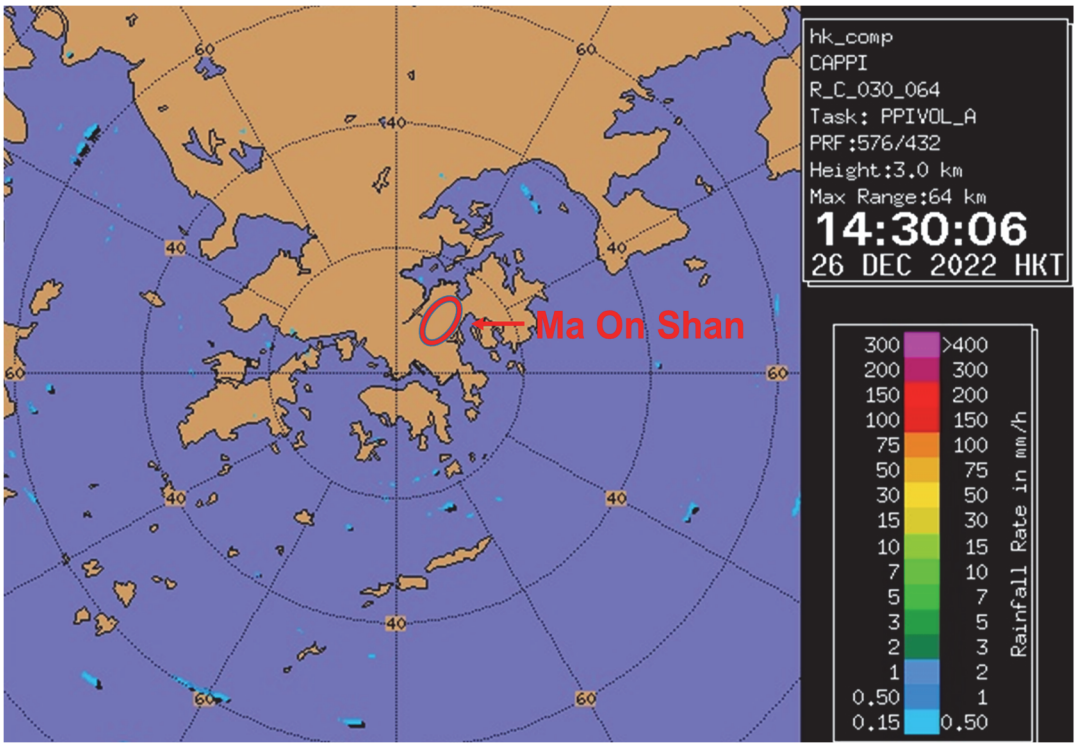


**Figure 8: Radar Image with Rainfall Rate in 64-km Range at 1430 Hrs**

### 1.7.1.5. Wind Data from Nearby Weather Stations

(1) The nearby HKO weather stations of the Ma On Shan paragliding area are at Sai Kung (SKG) and Tate's Cairn (TC). The data recorded at these two weather stations may not be identical to the conditions experienced by the accident flight. However, they may still serve as a reference for understanding the encountered wind condition.

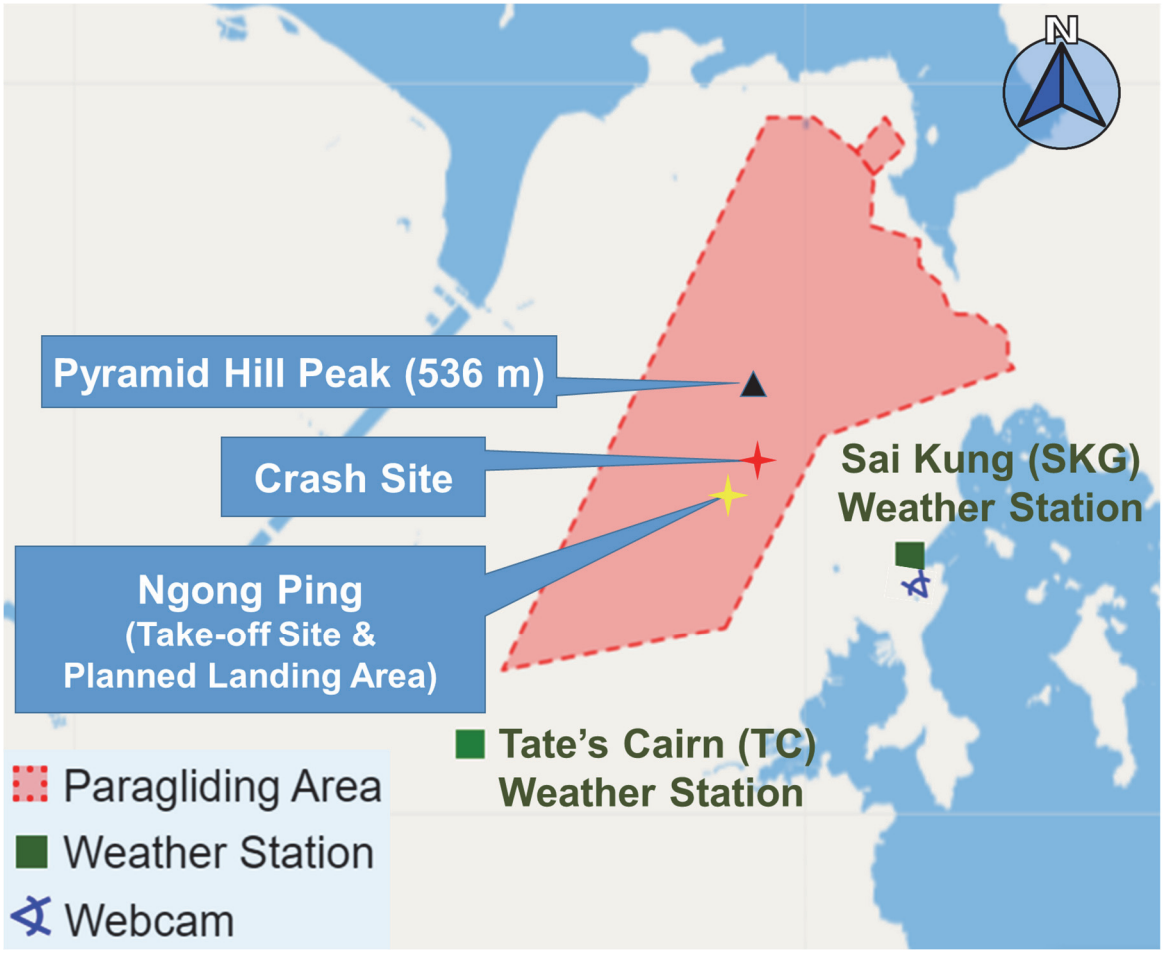


**Figure 9: Nearby Weather Stations of Ma On Shan Paragliding Area**

(2) "1-min gust" data during the period from 1350 hrs to 1402 hrs of 26 December 2022 was collected from these two weather stations. The data indicated that the wind gust in SKG was 13 to 19 kilometres per hour (equivalent to Wind Force 3, see Figure 10).

*Note: "1-min gust" is the maximum of 3-second averaged wind speeds within a 1-minute period.*

| Time (in HKT) | 1-minute maximum gust (km/hr) | |
|---|---|---|
| | SKG | TC |
| 1350 | 18 | 9 |
| 1351 | 17 | 6 |
| 1352 | 18 | 6 |
| 1353 | 19 | 12 |
| 1354 | 16 | 9 |
| 1355 | 16 | 9 |
| 1356 | 15 | 9 |
| 1357 | 15 | 6 |
| 1358 | 15 | 4 |
| 1359 | 14 | 3 |
| 1400 | 16 | 0 |
| 1401 | 13 | 0 |
| 1402 | 15 | 0 |

**Table 3: Wind Gust Data from Two Nearby Weather Stations**

(3) The HKPA website provides the following weather guides of the Ma On Shan paragliding area:

"Winds to look for on the HKO website are Tate's Cairn ENE to SE force 3-4 and Sai Kung E to SE force 2-3. Never take off a paraglider in force 5 and above wind condition."

| Beaufort Wind Force Scale Number | Description | Mean wind speed in knots | Mean wind speed in km/h | Illustration |
|---|---|---|---|---|
| 0 | Calm | <1 | < 2 |  |
| 1 | Light | 1-3 | 2 - 6 |  |
| 2 | | 4-6 | 7 - 12 |  |
| 3 | Moderate | 7-10 | 13 - 19 |  |
| 4 | | 11-16 | 20 - 30 |  |
| 5 | Fresh | 17-21 | 31 - 40 |  |
| 6 | Strong | 22-27 | 41 - 51 |  |
| 7 | | 28-33 | 52 - 62 |  |
| 8 | Gale | 34-40 | 63 - 75 |  |
| 9 | | 41-47 | 76 - 87 |  |
| 10 | Storm | 48-55 | 88 - 103 |  |
| 11 | | 56-63 | 104 - 117 |  |
| 12 | Hurricane | >=64 | >= 118 |  |



**Figure 10: Wind Force Information**

Note: Based on HKO Beaufort Wind Scale details on https://www.hko.gov.hk/en/education/beaufort.htm

### 1.7.1.6. Cloud Base and Visibility

(1) The HKO webcam from Sai Kung Marine East Station viewing northwest captured the general weather condition of Pyramid Hill during the daytime.


**Figure 11: Reference for Landmarks and Respective Visibility**

**(Viewed from the Northwest of Sai Kung Marine East Station)**

(2) Weather photos taken from Sai Kung Marine East Station viewing the northwest direction at 1350 hrs, 1359 hrs and 1410 hrs of 26 December 2022 are presented below.

*Note: The Pilot took off at around 1351 hrs and was stranded on the hillside at around 1401 hrs.*

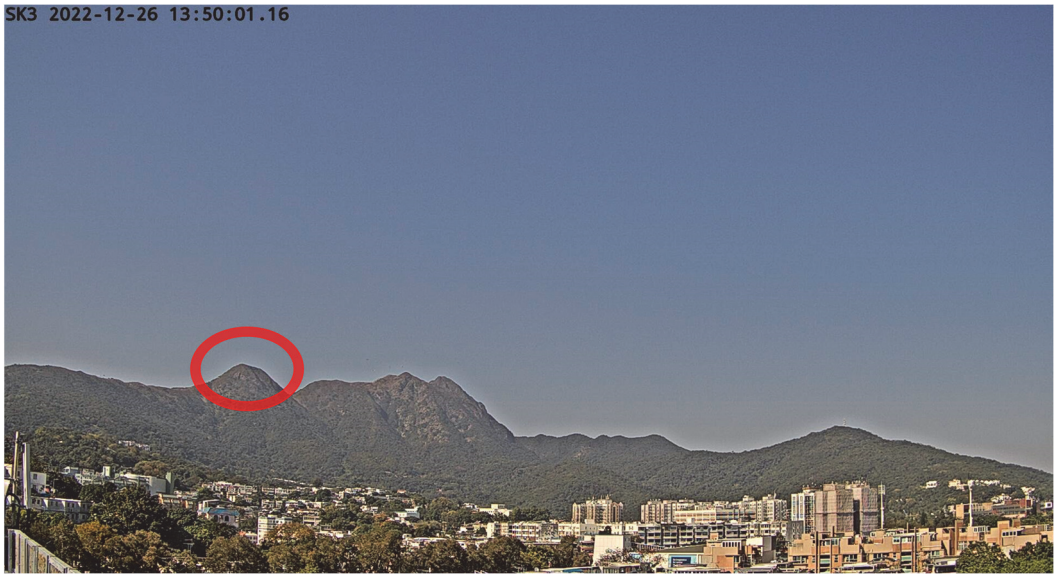


**Figure 12: Cloud Base Level at Pyramid Hill at 1350 Hrs**

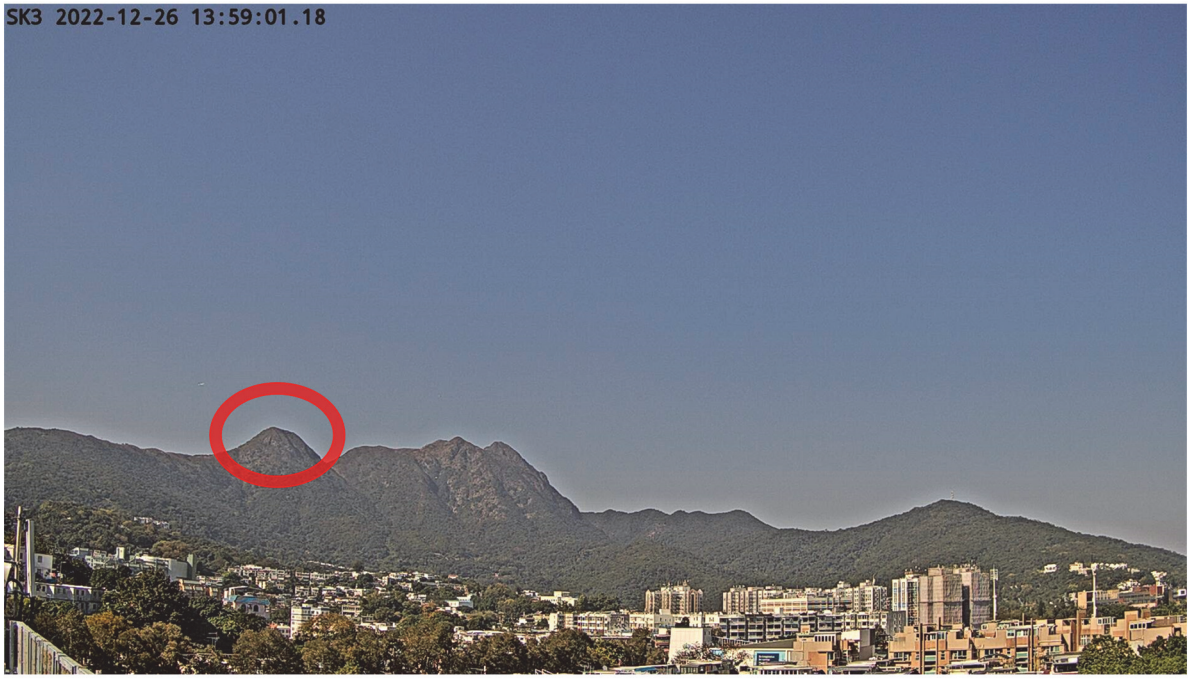


**Figure 13: Cloud Base Level at Pyramid Hill at 1359 Hrs**

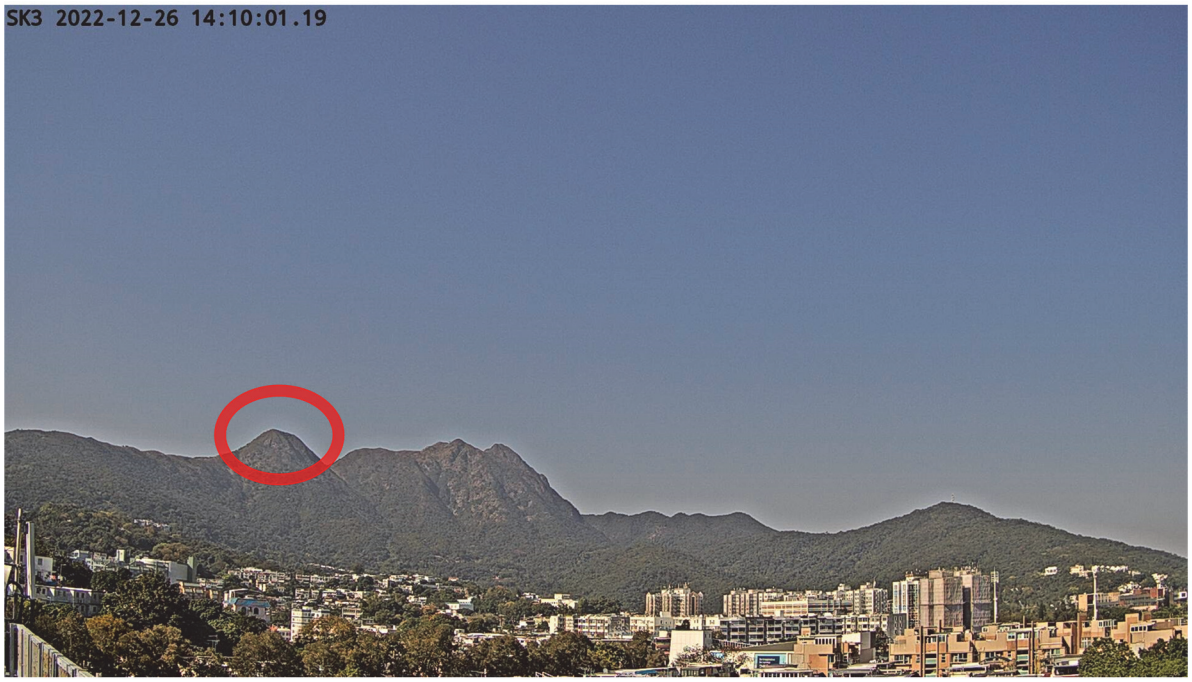


**Figure 14: Cloud Base Level at Pyramid Hill at 1410 Hrs**

(3) A review of the weather photos revealed that the top of Pyramid Hill (536 m AMSL) was not covered by clouds from 1350 hrs to 1410 hrs while the visibility was 5 km or above.

(4) All high ground areas of the Ngong Ping paragliding area (around 380 m to 400 m AMSL) were not covered by clouds during the accident flight.

## 1.8. Navigation Aids

Not applicable.

## 1.9. Communications

(1) The Pilot carried a two-way radio transceiver with frequencies set at 145.9875 MHz and 436.360 MHz.

(2) According to the radio usage guideline on the HKPA website, 145.9875 MHz was the radio frequency for emergency distress, urgency and safety priority calls while 436.360 MHz was the radio chatting frequency for general communication.

(3) During flight preparation, the Pilot conducted a transmission check of the radio transceiver. The transceiver was confirmed to be functioning properly.

## 1.10. Paragliding Take-off Area

(1) The Ngong Ping paragliding area is located within the Ma On Shan paragliding area. The boundary and operating altitude of this area are defined in Section ENR 5.5 of the Aeronautical Information Publication Hong Kong (AIP HK) published by the CAD.

(2) The operating altitude in the Ngong Ping paragliding area is from the ground surface (SFC) to 2500 feet (762 m) AMSL.

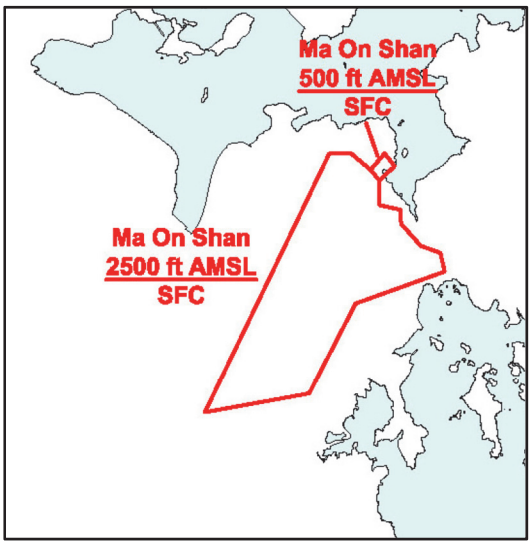


**Figure 15: Ma On Shan Paragliding Area Published in AIP HK**

(3) The take-off site of the accident flight was at Ngong Ping paragliding area with a height of about 380 m AMSL and within the boundaries of the Ma On Shan paragliding area.


**Figure 16: Take-off Site at Ngong Ping Paragliding Area**

## 1.11. Flight Recorders

### 1.11.1. Data from the Variometer

(1) The Pilot's variometer, Model "Flytec Element Track", was stored in the flight deck and turned on throughout the accident flight.

(2) The variometer was an integrated device with altimeter, compass and Global Positioning System (GPS) functions. It provided and recorded not only signals of rates of climb and descent, but also GPS positions and pressure altitudes for paragliding activities.

(3) Data stored in the International Gliding Community (IGC) file in the variometer was retrieved for flight track analysis.

*Note: The IGC file type is primarily associated with the Global Positioning System by the Fédération Aéronautique Internationale (FAI). "IGC" comes from "the International Gliding Commission". IGC-files provide a standard for exchanging data logs from GPS flight recorders.*


**Photo 3: Variometer Used by the Pilot**

(4) Data in an IGC file contains information on

(a) UTC time;
(b) GPS location in longitude/latitude; and
(c) Pressure altitude and GPS altitude (in metres).

(5) The data in the Pilot's variometer was downloaded successfully for flight track analysis.

(6) The data recorded 37 flights, including the accident flight, with a total of 35.5 flying hours between May 2022 and December 2022.

(7) Among the recorded flights, 16 flights were previously made within the Ngong Ping paragliding area, and the Pilot took off and landed uneventfully.

## 1.11.2. Flight Track

The accident flight track was generated by the "Logfly" application using the IGC File data retrieved from the Pilot's variometer.

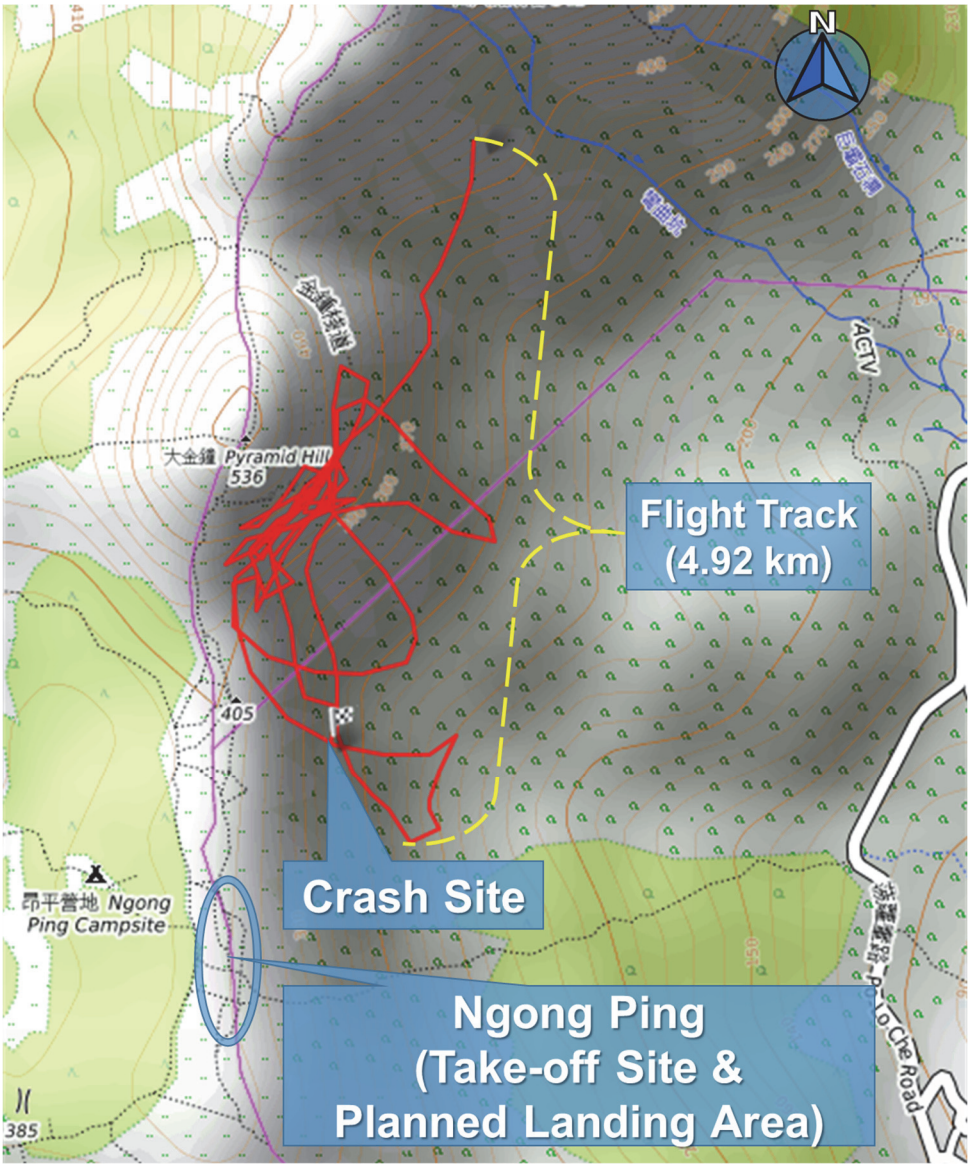


**Figure 17: Accident Flight Track**

### 1.11.3. Video Recordings

The video taken by a hiker captured the moment of the accident. The video recordings were collected for analysis. See Section 2.3 for details.

## 1.12. Wreckage and Impact

### 1.12.1. General

A detailed examination of the wreckage was conducted with the assistance of two paragliding experts at the Air Accident Investigation Centre on 17 February 2023.

## 1.12.2. Canopy

(1) The paragliding canopy, Model “Ozone Rush 6”, were examined and found in good conditions.

(2) All lines connecting the canopy to the harness remained intact.

## 1.12.3. Helmet

(1) The helmet of the Pilot was attached with a label stating that its model number was SHM-001 and it was certified to EN 1077 standard. However, Ozone advised the investigation team that the helmet was not its product.


**Photo 4: The Helmet of the Pilot**


**Photo 5: The Certification Label of the Helmet**

(2) The examination revealed only a slight dent on the backside of the helmet.


**Photo 6: A Slight Dent on the Backside of the Helmet**

## 1.12.4. Other Equipment

(1) Other than the variometer, a compass was also kept in the Pilot's flight deck.


**Photo 7: Compass and Variometer in the Flight Deck**

(2) The compass and the variometer were inspected and found operational.

## 1.13. Medical/Pathological Information

The medical report showed the Pilot sustained multiple fractures to body after paragliding injury in which he fell from the height and his head hit onto tree upon landing.

## 1.14. Smoke, Fire, and Fumes

Not applicable.

## 1.15. Survival Aspects

### 1.15.1. Safety Standards of the Helmet

(1) According to the CAD's Safety Guidance on Paragliding Activities, paraglider pilots are advised to wear a helmet which is certified to either EN966 (air sports), EN1077 A & B, ASTM2040 or SNELL rs98 (snow sports) to strengthen protection.

(2) According to the HKPA Operations Manual (Version 1 Feb 2022), Section 8.1 Mandatory Safety Equipment states that “All pilots and passengers must fly with a helmet certified to either EN966 (airsports), EN1077 A & B, ASTM2040 or SNELL rs98 (snow sports)”.

### 1.15.2. Using the Reserve Parachute

(1) According to the CAD's Safety Guidance on Paragliding Activities, paraglider pilots are advised to perform a pre-flight check on the reserve parachute to ensure that it is properly installed.

(2) According to the HKPA Operations Manual (Version 1 Feb 2022), Section 8.1 Mandatory Safety Equipment states “A reserve/emergency parachute attached appropriately to their harness”.

(3) The Pilot’s reserve parachute was not used in the emergency.

# 1.16. Tests and Research

## 1.16.1. Line Check of Paraglider

(1) With the assistance of HKPA Safety Officer, a line check of paraglider lines was carried out in accordance with the manufacturer's rigging diagram and line chart. The difference between the manufacturer's design length and the calibrated measured length should not be greater than 10 mm.

(2) The check revealed that the differences of all the lines were all less than 10 mm. There was no sign of significant aging or wear observed on the paraglider lines.

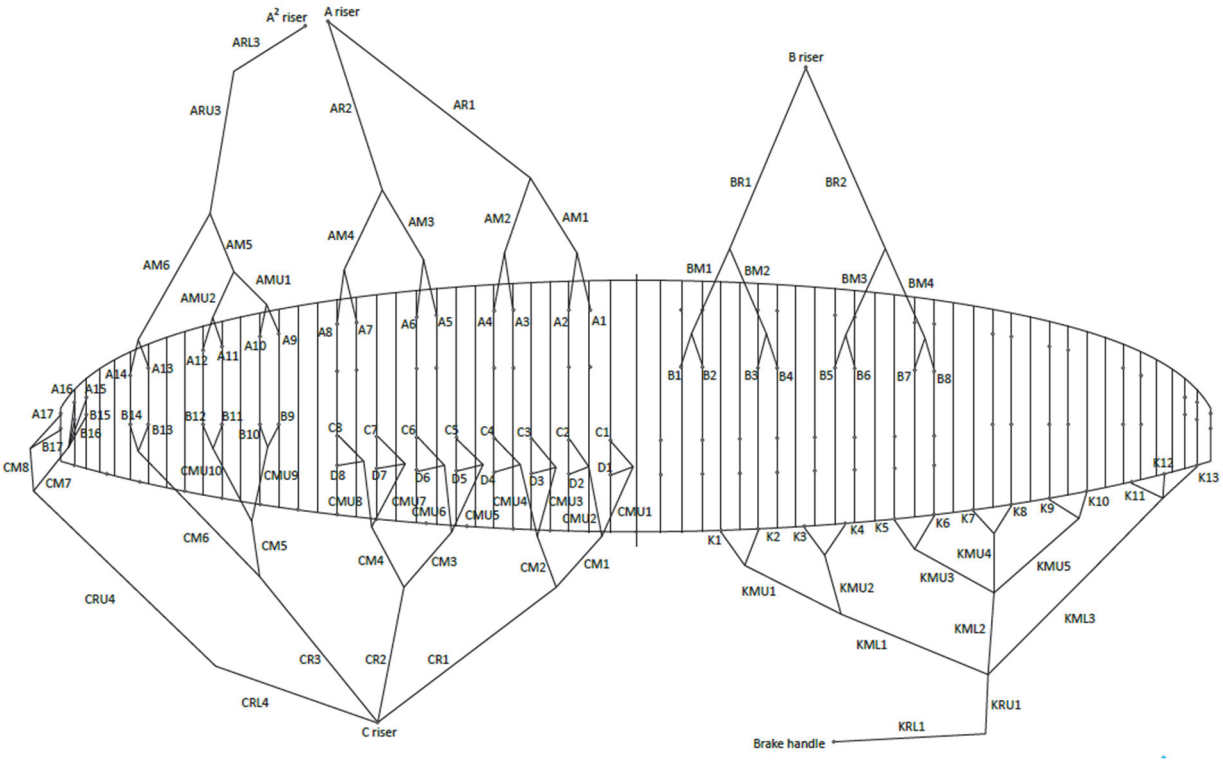


**Figure 18: "Rush 6" Rigging Diagram for Line Check**

# 1.17. Organisation, Management, System Safety

## 1.17.1. Civil Aviation Department

The CAD regulates civil aviation activities in Hong Kong. In view of the increasing popularity of paragliding activities in Hong Kong, the CAD has taken initiatives to enhance the safe operation of paragliding activities.

### 1.17.2. Hong Kong China Paragliding Association (HKPA)

The HKPA was established in 1990 to promote and encourage paragliding activities. The Association was recognised by the Sports Federation and Olympic Committee of Hong Kong as the National Sports Association for paragliding activities in Hong Kong. Operating under the provisions of the Societies Ordinance, the Association represents the interest of paraglider pilots and ensures the safe conduct of paragliding activities in Hong Kong.

### 1.17.3. International Paragliding Association (IPA)

The International Paragliding Association (IPA) was established as a non-profit organisation under Societies Ordinance in 2023. The Association promotes the sport of paragliding in Hong Kong and enhances members' knowledge on the use of paragliding equipment.

## 1.18. Additional Information

### 1.18.1. Information from the Pilot

The investigation team interviewed the Pilot on 17 February 2023. According to the Pilot, the paraglider was new and had just been used for three times before the accident. He was not very familiar with the specific handling features, performance, and flying characteristics of this new paraglider. He believed that he applied less braking than needed when he started to turn. The paraglider then began to rotate and eventually lost control, causing it to hit the terrain.

## 1.19. Useful or Effective Investigation Techniques

Not applicable.

# 2. Safety Analysis

*The Safety Analysis provides a detailed discussion of the safety factors identified during the investigation, providing the evidence required to establish the findings, causes, contributing factors and the safety recommendations.*

## 2.1. Pilot Experience

(1) The Pilot accumulated approximately 100 flying hours from 2017 to 2022. For the recency of flying, the total number of flying hours recorded between May 2022 and December 2022 was 35.5 hours.

(2) His experience would be sufficient to operate an EN-B paraglider which was designed for all pilots and suitable for experienced pilots who fly less than 50 hours a year.

(3) From May 2022 to December 2022, he previously launched 16 flights in the Ngong Ping paragliding area and landed uneventfully.

(4) Based on the Pilot's records, the investigation team considers his experience level was not a factor in this accident.

## 2.2. Weather

(1) During the period before and after the accident flight, there was no precipitation in the Ma On Shan paragliding area. Clouds did not cover any Ngong Ping paragliding area. With the good visibility and the gusts of force 3 from the south direction at Sai Kung Marine East automatic weather station, the weather was considered suitable for paragliding activities.

(2) The weather at the Ngong Ping paragliding area was not a factor in this accident.

## 2.3. Flight Track Analysis

(1) The flight track analysis was based on the data from the IGC file, the video recordings, the wind data from the HKO, and the statements from the Pilot.

(2) The flight path was within the Ma On Shan paragliding area defined in the AIP HK published by the CAD.

(3) The early section of the flight was uneventful. The analysis mainly focused on the last 19 seconds of the flight before the impact. The probable circumstances of the 19-second flight are set out in the following sections.

(4) The thumbnails of the video are presented in Appendix 8.1.

### 2.3.1. Flight Section A (Video Time 00:00.000-00:06.907)

(1) At 00:00.000 seconds in the video (HKT 14:01:14), the Pilot was exiting from the previous left turn.

**Figure 19: Video Image at 00:00.000 Seconds**

(2) At 00:01.402, the Pilot regained flight trajectory back to the horizon.


**Figure 20: Video Image at 00:01.402 Seconds**

(3) From 00:01.402 to 00:02.404, the Pilot leaned his body to the right. At the same time, the Pilot released the left brake and pulled the right brake. The paraglider then started to roll and yaw to the right, resulting in a right turn.


**Figure 21: Video Image at 00:02.404 Seconds**

(4) At 00:03.153, the Pilot regained his body position to the centre of the harness. He released both brakes at the same time. Therefore, the paraglider stopped rolling to the right.


**Figure 22: Video Image at 00:03.153 Seconds**

(5) From 00:03.153 to 00:05.080, the Pilot dived and followed the pendulum movement and started to dive and gain kinetic energy with his body weight due to the gravity.

(6) At 00:05.080, the Pilot dived to the lower point of the pendulum movement. The paraglider gained kinetic energy with the increasing apparent weight due to gravity. Then the Pilot started to lean his body to the left. At the same time, the Pilot released the right brake and pulled the left brake.


**Figure 23: Video Image at 00:05.080 Seconds**

(7) From 00:05.080 to 00:06.657, the Pilot kept leaning his body to the left and pulled the left brake. The paraglider then started to roll and yaw to the left, resulting in a left turn.

(8) At 00:06.657, the Pilot regained his body position to the centre of the harness. At the same time, he released the right brake and kept the left brake input, so that the paraglider kept rolling and yawing to the left.


**Figure 24: Video Image at 00:06.657 Seconds**

(9) From 00:06.657 to 00:06.907, due to the release of the right brake, the right side of the aerofoil accelerated and dived forward, resulting in a low angle of attack.


**Figure 25: Video Image at 00:06.907 Seconds**

## 2.3.2. Flight Section B (Video Time 00:07.657-00:10.159)

(1) At 00:07.657, due to low angle of attack, the relative wind could not get into the paraglider through the cell openings. The right side of the paraglider started to deflate and could not sustain the effective aerofoil shape. At the same moment, the Pilot started to follow the pendulum movement to dive. This indicated that he lost effective control of paraglider.


**Figure 26: Video Image at 00:07.657 Seconds**

(2) At 00:08.157, the right side of the paraglider was completely deflated. The Pilot still held the left brake, causing the paraglider to keep rolling and yawing to the left. The Pilot was still following the pendulum movement to dive.


**Figure 27: Video Image at 00:08.157 Seconds**

(3) At 00:08.845, the Pilot released the left brake. The paraglide stopped rolling and yaw to the left.

(4) From 00:08.845 to 00:09.523, the Pilot still followed the pendulum movement to dive.

(5) At 00:09.523, the Pilot dived to the lower point of the pendulum.

(6) From 00:09.523 to 00:10.159, due to the release of the left brake, the left side of the aerofoil accelerated forward and rolled to the right. Due to the apparent weight gained in the previous pendulum and the reduction of effective aerofoil area, the amount of acceleration and dive of the aerofoil was very aggressive.

(7) The paraglider ended up in a nose-down heading to the ground.

### 2.3.3. Flight Section C (Video Time 00:10.159-00:18.914)

(1) From 00:10.159 to 00:10.910, the paraglider aggressively rolled to the right at 373 m AMSL.

(2) At 00:10.910, both wingtips deflated and the paraglider entered a state of autorotation, that is, the paraglider flew forward and the Pilot flew backwards, and the centre of the rotation was between the Pilot and the paraglider.

(3) From 00:10.910 to 00:12.163, the paraglider kept rotating.

(4) At 00:12.163, the paraglider completed its first 360-degree rotation and continued to rotate, flying towards the ground.


**Figure 28: Video Image at 00:12.663 Seconds**

(5) From 00:12.163 to 00:15.162, the paraglider kept rotating.

(6) At 00:15.162, the paraglider completed a 720-degree rotation and continued to rotate at a rate of approximately 20 revolutions per minute (RPM), maintaining a downward movement.


**Figure 29: Video Image at 00:15.662 Seconds**

(7) From 00:15.162 to 00:17.918, the paraglider kept rotating.

(8) At 00:17.918, the paraglider completed a 1,080-degree rotation and continued to rotate at a rate of approximately 20 RPM, maintaining a downward movement.


**Figure 30: Video Image at 00:17.918 Seconds**

(9) At 00:18.914, the paraglider impacted the terrain at around 325m AMSL.

(10) The entire rotation lasted for 10 seconds with an average rate of descent of 5 m/s.


**Figure 31: Video Image at 00:18.914 Seconds**

## 2.4. Flying with New Equipment

(1) As a common practice, a paraglider pilot should avoid trying too many new combinations, such as new site, new paraglider, and new harness, in one go. The weather should be calm for the trials. The manoeuvres should not be too aggressive and should be normal as the pilot did with his old paraglider before.

(2) The Pilot's manoeuvres in the last 19-second of the flight were considered aggressive for flying a new paraglider.

(3) Paraglider pilots should familiarize progressively with the specific handling features, performance, and flying characteristics of any new paraglider.

## 2.5. Paraglider

### 2.5.1. Paraglider Conditions

(1) The canopy was examined and found in good conditions.

(2) The paraglider lines were examined and found within the limits.

(3) There was no evidence of failure of the paraglider.

### 2.5.2. Mass and Balance

(1) The weight of the harness with equipment was about 6.5 kg while the weight of the Pilot was 62 kg.

(2) The total in-flight weight was 68.5 kg which was within the weight limit (65-85 kg) of the S-size “Ozone Rush 6” paraglider as specified in the Pilots Manual.

## 2.6. Survivability

### 2.6.1. Analysis of Serious Injuries

Based on the medical report, the Pilot sustained multiple injuries after impacting the terrain.

### 2.6.2. Survival Aspects

#### 2.6.2.1. Safety Standards of the Helmet

Due to the advice from Ozone that the helmet was not its product and the original manufacturer could not be determined, the investigation team was unable to confirm if the helmet conformed to EN 1077 standard.

#### 2.6.2.2. Using the Reserve Parachute

(1) A reserve parachute was properly installed in the harness of the Pilot, but it was not used in this incident.

(2) When a paraglider pilot faces emergencies such as being unable to recover the shape of the aerofoil or from uncontrollable spins and autorotation, he should not hesitate to throw his reserve parachute. Even at low altitudes, modern reserve parachutes open so quickly and will slow a pilot’s fall enough to prevent or reduce serious injury.

# 3. Conclusions

## 3.1. Findings

*From the evidence available, the following findings are made with respect to this occurrence. These findings should not be read as apportioning blame or liability to any particular organisation or individual.*

(1) The Pilot had sufficient experience, training and qualification to fly the subject EN-B paraglider. (2.1)

(2) From May 2022 to December 2022, he previously launched 16 flights in the Ngong Ping paragliding area and landed uneventfully. [2.1 (3)]

(3) The weather at Ma On Shan during the period of the accident flight was considered suitable for paragliding activities. (2.2)

(4) The data in the Pilot's variometer was downloaded successfully for flight track analysis. (2.3)

(5) The video captured the moment of the accident was collected for flight track analysis. (2.3)

(6) According to the analysis of the IGC data, it is probable that the Pilot lost control of the paraglider, resulting in an impact with the terrain. (2.3)

(7) The take-off site at Ngong Ping was within the boundaries of the Ma On Shan paragliding area as stipulated in the AIP HK published by CAD. [2.3 (2)]

(8) At video time 00:07.657, the right side of the paraglider started to deflate and could not sustain the effective aerofoil shape. The Pilot started to follow the pendulum movement to dive and lost effective control of paraglider. [2.3.2 (1)]

(9) The Pilot's manoeuvres in the last 19-second of the flight were considered aggressive for flying a new paraglider. [2.4 (2)]

(10) Paraglider pilots should familiarize progressively with the specific handling features, performance, and flying characteristics of any new paraglider. [2.4 (3)]

(11) The paraglider was found to be serviceable and appropriate for the Pilot's weight. (2.5)

(12) Due to the advice from Ozone that the helmet was not its product and the original manufacturer could not be determined, the investigation team was unable to confirm if the helmet conformed to EN 1077 standard. (2.6.2.1)

(13) A reserve parachute was properly installed in the harness of the Pilot, but it was not used in the emergency. [2.6.2.2 (1)]

## 3.2. Cause

The accident was probably caused by the loss of control of the paraglider, resulting in an impact with the terrain. [3.1 (6) and 3.1 (8)]

# 4. Safety Recommendations

## 4.1. Safety Recommendation SR-2024-08

It is recommended that the Hong Kong China Paragliding Association (HKPA) and the International Paragliding Association (IPA) to enhance the guidance promulgated to the paragliding community, encouraging paragliding pilots to make use of their reserve parachute during emergency situations.

**Safety Recommendation Owner:** The Hong Kong China Paragliding Association; the International Paragliding Association

## 4.2. Safety Recommendation SR-2024-09

It is recommended that the Hong Kong China Paragliding Association (HKPA) and the International Paragliding Association (IPA) to encourage paragliding pilots to familiarize progressively with the specific handling features, performance, and flying characteristics of any new paraglider.

**Safety Recommendation Owner:** The Hong Kong China Paragliding Association; the International Paragliding Association

# 5. General Details

## 5.1. Occurrence Details

| | |
|---|---|
| Date and time: | 26 December 2022 at 1401 hours |
| Occurrence category: | Accident |
| Primary occurrence type: | Loss of Control - Inflight (LOC-I) |
| Location: | Pyramid Hill, Hong Kong |
| Position: | 22° 23' 37.6" N, 114° 15' 13.8" E |

## 5.2. Pilot Details

| | |
|---|---|
| Licence details: | United States Hang Gliding and Paragliding Association (USHPA)<br>Novice Pilot Paragliding Rating (P-2) |
| | Hong Kong Paragliding Association (HKPA)<br>Club Pilot Paragliding Rating (HKPA 2) |
| Flying experience: | Approximately 100 hours |

## 5.3. Aircraft Details

| | | |
|---|---|---|
| Manufacturer and model: | Ozone Rush 6 Paraglider | |
| Serial number: | RU6S.X.21D.063 | |
| Year of Manufacture: | 2022 | |
| Type of Operation: | Private | |
| Departure: | Ngong Ping, Ma On Shan, Hong Kong | |
| Destination: | Ngong Ping, Ma On Shan, Hong Kong | |
| Persons on board: | Crew – 1 | Passengers – 0 |
| Fatalities: | 0 | |
| Injuries: | 1 | |
| Aircraft damage: | Nil. | |

# 6. Abbreviations

| | |
|---|---|
| AAIA | Air Accident Investigation Authority |
| AIP HK | Aeronautical Information Publication Hong Kong |
| AMSL | Above Mean Sea Level |
| BHPA | British Hang Gliding & Paragliding Association |
| CAD | Civil Aviation Department |
| Cap. 448B | Hong Kong Civil Aviation (Investigation of Accidents) Regulations |
| EN | European Norm |
| FAI | Fédération Aéronautique Internationale |
| FSD | Fire Services Department |
| GFS | Government Flying Service |
| GPS | Global Positioning System |
| HKO | Hong Kong Observatory |
| HKPA | Hong Kong China Paragliding Association |
| HKPF | Hong Kong Police Force |
| hrs | Hours |
| IGC | International Gliding Community |
| IPA | International Paragliding Association |
| km | Kilometre |
| kt | Knot |
| m | Metre |
| m/s | Metre per second |
| MHz | Mega Hertz |
| min | Minute |

| | |
|---|---|
| RPM | Revolutions per Minute |
| sec | Second |
| SFC | Surface |
| UTC | Coordinated Universal Time |

# 7. Table of Figures, Photos, Tables

# 8. Appendix

## 8.1. Screen Captures from Witness' Video

*Note: The sequence of the photos is from left to right and then top to bottom.*


**Figure 32: Screen Captures of the Last 19 Seconds of the Incident Flight**