Accident

Aircraft Type and Registration:	Mini Nimbus C, G-CFHG	
No & Type of Engines:	None	
Year of Manufacture:	1981 (Serial no: 140)	
Date & Time (UTC):	5 June 2024 at 1013 hrs	
Location:	Barlavington, Sussex	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - 1 (Fatal)	Passengers - N/A
Nature of Damage:	Destroyed	
Commander's Licence:	BGA Bronze plus cross-country	
Commander's Age:	73 years	
Commander's Flying Experience:	100 hours (of which 19 hours 43 mins were on type) Last 90 days - 25 hours Last 28 days - 13 hours	
Information Source:	AAIB Field Investigation	

Synopsis

The pilot took off with the intention to conduct an endurance flight lasting five hours. In the early stages of the flight the pilot successfully gained height in two separate thermals. After approximately 30 minutes of flying, the pilot turned 180° to track back towards the airfield. Without any further significant height gains, the glider eventually descended through the height at which BGA guidance suggests a field landing should be initiated. The glider's flightpath suggests the pilot did not intend to commit to a landing and at low level an apparent attempt was made to gain height in a thermal. The glider gained a small amount of additional height, but during this manoeuvre two loss of control events occurred, both consistent with a stall and wing drop. The pilot appeared to recover controlled flight during both incidents but lost height and following the second recovery, the glider came into contact with the tops of trees. This resulted in significant damage to the glider, and it struck the ground causing fatal injuries to the pilot. The pilot was appropriately trained, experienced and qualified to conduct the flight and the weather was suitable, although described as challenging by other pilots who flew that day. Whilst not considered to be causal, a contributory medical factor could not be excluded. It was not possible to determine why the pilot elected not to follow the relevant training to conduct a field landing at the appropriate opportunity.

History of the flight

The pilot attended a local gliding club, where he was a member, on the morning of 5 June 2024 with the intention to complete an endurance flight of five hours. This was one of the requirements for obtaining his British Gliding Association (BGA) Silver badge, which was the next step in advancing his gliding qualifications.

A club member who arrived shortly after 0800 hrs recalled seeing the pilot's glider, G-CFHG, among the other gliders lined up for takeoff on Runway 04. A morning briefing was given at 0900 hrs by the duty instructor. Although no witness specifically recalled the pilot being present, it was normal practice to attend, and no evidence was identified to suggest the pilot had not attended[1]. Members of the gliding club stated that the day of the accident was expected to be the "the best of the year" in terms of favourable gliding conditions. While it was not anticipated there would be much lift derived from the ridges of the South Downs, owing to the westerly wind direction. It was expected there would be very good thermals[2] given the cool ambient air temperature, the sunlight, and a high cloud base over a wide local area.

Various club members reported that they spoke with the pilot at the launch site. They all reported that he seemed relaxed, his usual self and in good demeanour. One witness recalled assisting the pilot with the positive flying control check at the launch site, with no problems identified. More than one witness reported that he spoke to them of his plans to complete his endurance flight for his Silver badge. A couple of witnesses mentioned that rather than flying locally he intended to fly west towards Lasham and Petersfield. Another stated that the pilot had said that his intent was to fly cross-country since *"*soaring locally for five hours would become boring*"*.

Footnote

1 Attendance at the morning briefing was not mandatory if a pilot intended to go gliding, however pilots were expected to speak with the duty instructor if not attending. The duty instructor did not recall individually briefing the accident pilot.

2 Thermals are pockets of air which are warmer than the atmosphere around them, resulting in localised rising airflow.

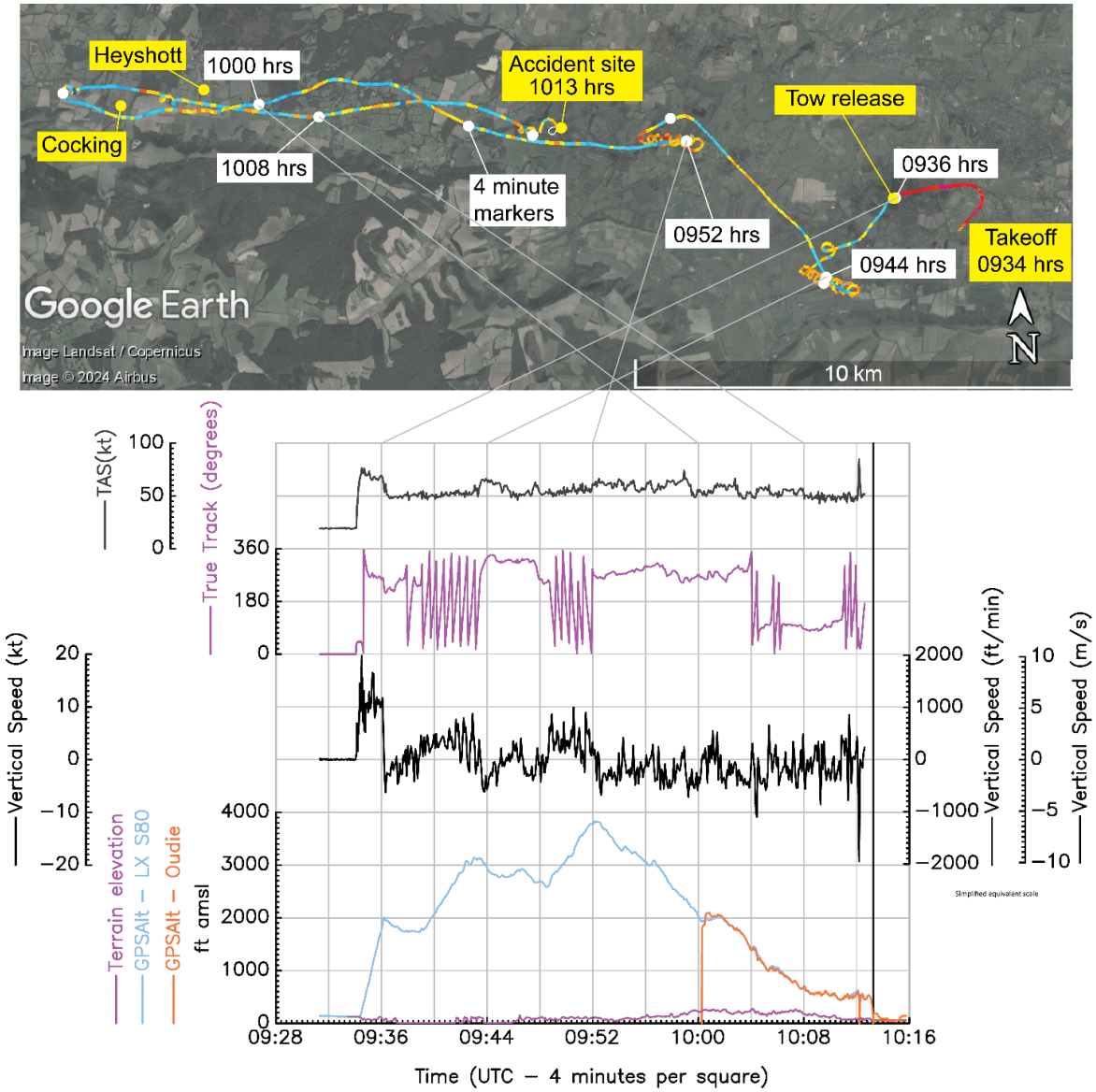

Figure 1

Flightpath of G-CFHG (colour coded to show climb and descent rate) and overview data plot

The top half of Figure 1 shows the flightpath of G-CFHG, coloured[3] to indicate the areas and degree of lift and sink[4] the pilot encountered. The bottom plot shows the various other parameters for the flight. The pilot launched using an aerotow at 0934 hrs. After being released from the aerotow at about 2,000 ft amsl, he then tracked south-west before entering a thermal. The pilot completed eight orbits to stay within the rising airflow, climbing from approximately 1,700 ft amsl to about 3,100 ft amsl. He then tracked north-west for about 4 minutes before entering a second thermal at about 2,600 ft amsl. The aircraft climbed to

Footnote

[3] Increasingly warm colours (yellow/orange/red) denote increasingly greater climb rates, increasingly cool colours (blue/dark blue) denote increasing rates of descent.

[4] Lift and sink are terms used by the gliding community to refer to rising and descending airflows, respectively.

its peak altitude of 3,800 ft amsl before continuing west. The pilot flew approximately west for a further 12 minutes. The average rate of descent encountered was slightly less than -2 kt (about -200 ft/min or -1 m/s). There were periods where the glider transitioned through areas of occasional lift, however, the pilot did not make any further orbits as he flew west.

The pilot turned back towards the east just beyond the village of Cocking, descending through about 1,200 ft agl. Shortly afterwards, the glider encountered slight lift and the pilot orbited once, before conducting a further two orbits about 2 km further east, after again briefly encountering lift. At this point he was at about 800 ft agl and less than 1 km south-west of Heyshott. The flight continued downwind to the east for 8 km before orbiting at about 400 ft agl, when a sequence of apparent loss of control incidents resulted in the glider coming into contact with trees before impact with the ground. The final manoeuvres are described in more detail in the Recorded Information section.

Overdue search

At about 1330 hrs a member of the gliding club, who was following the progress of the club's gliders remotely online, noticed that the flight track of the accident glider had stopped. He stated that he assumed the pilot had landed out and would be arranging his own recovery of the glider, as was normal practice. When the member arrived at the club's airfield later that afternoon, he asked about the accident pilot. Since the pilot was known to be attempting a five hour duration flight, it was only just approaching the time he was expected to return, so nobody at the club had checked on his status. After viewing the online tracking website again and confirming the glider was still stationary in the same location, the member called the pilot's phone. When there was no response after 15 minutes, and no-one else had heard from the pilot, the member and a pilot took off in the club's tug aircraft and began a search. They located the glider in a wooded area and declared a MAYDAY on the Distress and Diversion radio frequency at 1658 hrs.

At the time the gliding club member was ringing the accident pilot's phone, a dog walker was passing the accident site. He hadn't observed the glider from the road because it was shielded from view by trees. However, alerted by the phone ringing, he entered the woods and found the glider, with the pilot unresponsive in the cockpit. The dog walker called 999 and initiated the emergency services' response. The Police arrived on scene at 1706 hrs.

Reported actual gliding conditions for the area

A club member who launched shortly after the accident pilot, commented that the conditions were "challenging; with strong wind gusts, heavy sink in places and a strong westerly wind at height." Other members who flew in the same area commented that while there were some strong thermals, there was also some corresponding strong sink. Two members who were flying in the same area between the club and Lasham reported that two hours after the accident time they had 'landed out'[5] in fields near to the accident site, after encountering a broad area of sink. One club member who flew between the club airfield and Lasham later in the day described the conditions as "marginal" with areas of heavy sink.

Footnote

[5] Landing out also known as a field landing, refers to landing at a location other than an airfield, typically in a farm field.

Recorded information

Flightpath data was downloaded from three devices recovered from the glider. A Naviter Oudie 2 LITE recorded Global Navigation Satellite System (GNSS) based position data and pressure altitude every second. It did not record the first part of the flight but carried on recording until after the accident. An LXNAV S80 recorded additional parameters including TAS, pressure altitude, pitch and roll parameters but only once every five seconds (except at launch where once per second data was recorded). The recording recovered from the S80 included the launch but stopped approximately 30 seconds before the accident, likely due to power being lost in the accident before buffered data was written to the memory. An LXNAV FlarmMouse recorded GNSS and pressure altitude data every 4 seconds, ending at about 400 ft agl in the final descent. The pressure altitudes recorded by the FlarmMouse and S80 were offset to be consistent with GNSS altitudes during stable flight.

Accident flight

An overview of the flight profile is shown in Figure 1. Figure 2 provides more specific detail of the final manoeuvres before impact with the ground.

In the final phase of the flight, a sequence of turns was initiated at a height of 400 ft agl. After completing three turns, having gained approximately 200 ft in altitude, the data indicates a dynamic event occurred. Maximum values of 25° pitch and 70° right roll were recorded. However, the pitch and roll parameters were only sampled once every 5 seconds. As such, it was not possible to identify the relative sequence of these parameters nor is it likely that these were the absolute peak values achieved. The pressure altitude parameters recorded a drop of approximately 280 ft in four seconds, though again sample rate limitations indicate it's likely more altitude was lost. The next recorded value of TAS showed an increase from the initial 50 KTAS prior to the event to 85 KTAS. The recorded GNSS data was erratic, indicating the system had lost track of the satellite signals required to accurately calculate its location. This can typically be due to masking of the antenna when the fuselage reaches an extreme attitude. Prior to the dynamic event the glider was in a right orbit, afterwards the flightpath had abruptly changed to the left, which was inconsistent with normal flight manoeuvres. A high normal acceleration was also recorded, likely during an exchange of speed for height during the upset recovery.

The recovery manoeuvre from the event was followed by the glider flying a wide right hand turn that then tightened. There was no recorded pitch or roll data for this final turn but soon after the glider track passed through an easterly heading, the recorded GNSS track became erratic once more. The GNSS fix accuracy parameter, though not always a robust indicator of a problem, started degrading at 1013:07 hrs with the aircraft below 400 ft agl and descending (as recorded by the FlarmMouse pressure altitude). This was followed by anomalous GNSS data, a sign of the system having trouble fixing the aircraft location, again associated with dynamic manoeuvres such as the one experienced a minute earlier.

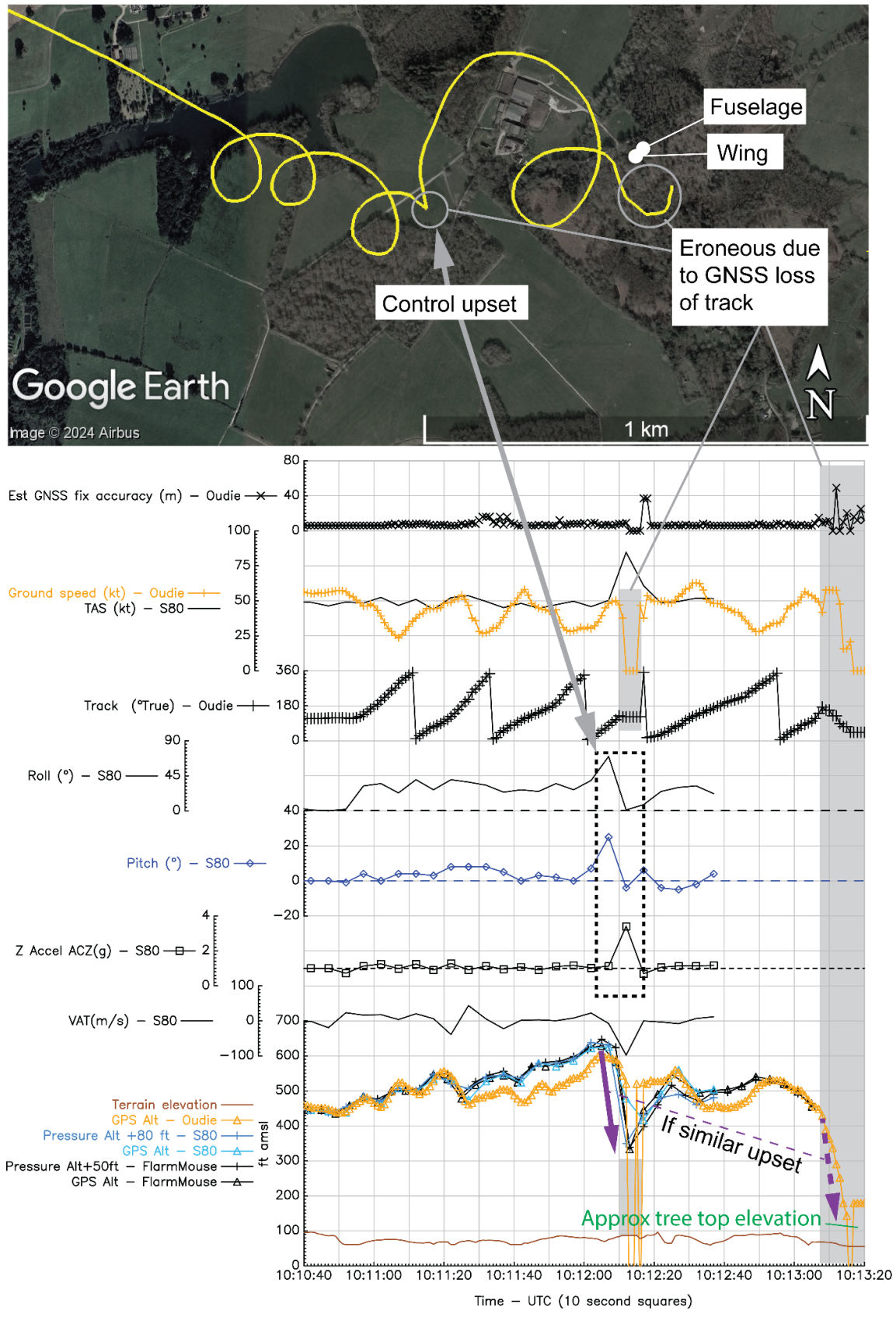

Figure 2

Flightpath of the end of the flight and associated data plot

All times are UTC

The GNSS track carried on recording a path that indicated the glider flew away from the direction of the accident site before a turn to the left. However, this was unreliable data, as demonstrated by the issues recorded during the earlier dynamic manoeuvre and the direction of travel after the recovery. A similar recovery flightpath to the previous dynamic manoeuvre, if also assumed for this manoeuvre, is consistent with the orientation of the wreckage and the direction of travel indicated by the location of the detached wing relative to the fuselage final location. The aircraft likely reached the accident site at approximately 1013:15 hrs, which is consistent with the GPS altitude approaching the terrain elevation.

Previous land out

The data recovered for a flight on 23 May 2024, involved a landing away from an airfield. This is shown in Figure 3. The flight profile prior to the landing has similarities to the accident flight profile prior to the upset events. The final phase of the flight from the last time the glider gained height in a thermal is highlighted in yellow. This is the sequence shown in detail in the data plot below.

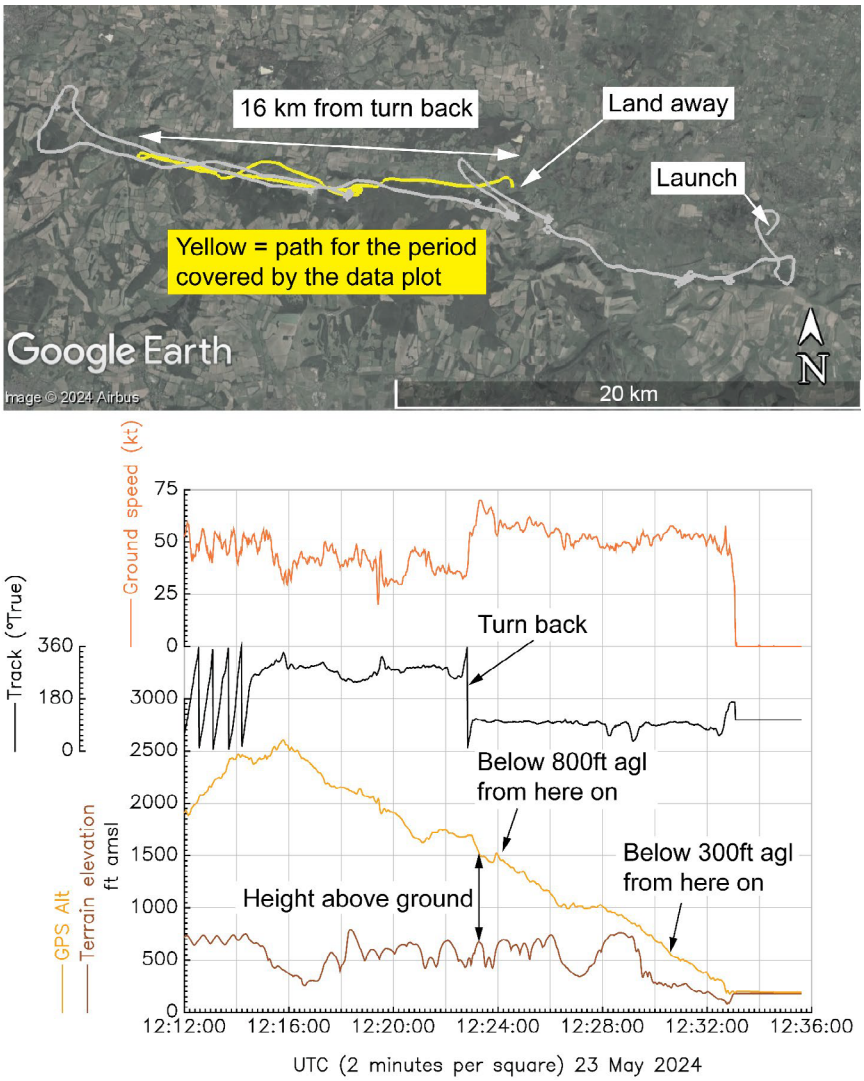

Figure 3

Previous land away flight (23 May 2024) and associated data plot

The final descent was from a height of more than 2,000 ft agl whilst heading in a westerly direction. At just above 1,000 ft agl, an orbit was flown and then an easterly flightpath back towards the launch site. Descending through approximately 150 ft agl, the glider turned south and landed in a field. The field was approximately 2 km west of the accident site.

Accident site and wreckage inspection

During the final stages of the accident flight, the glider descended into a wooded area and started to come into contact with the treetops. This was evidenced initially by broken branches and small pieces of debris from the glider's structure, which had fallen to lower levels in the trees or down to the ground. As the glider continued to descend, it came into contact with more substantial branches of the trees resulting in significant damage to both wings, with the right wing becoming completely detached close to its root and falling to the ground. The left wing broke in half, but the outer section remained attached by the flying control tube.

The fuselage of the glider continued to travel forward from the location of the right wing, until it hit the ground with significant force, leaving a ground mark, and then bouncing forward to its final position. There was impact damage from the trees on the right side of the vertical stabiliser, on the vertical tail and the rudder. The final impact with the ground had resulted in extensive damage to the forward fuselage structure under the cockpit, and the canopy had shattered.

The severe damage to all the flying control surfaces, meant it was not possible to confirm pre-impact control continuity or flap and airbrake positions. The landing gear wheel was partially deployed, and the gear doors had broken off. The gear lever in the cockpit was out of the 'gear up' detent, but both the lever and the detent had damage consistent with the lever being forced out of this position during the final impact sequence.

Aircraft information

The Mini Nimbus C is a single seat glider with a 15 m wingspan, and a large side hinged perspex canopy. It is constructed from carbon and glass fibre, with a maximum takeoff weight of 500 kg. Rather than conventional airbrakes which deploy from the middle of the top surface of the wing, the Mini Nimbus C has combined trailing edge spoilers and flaps. This system was designed to allow a steeper landing approach angle and better landing performance. The flaps have four position settings -7°, -4°, 0° and +8°. The -7° position is used to reduce drag in high-speed flight. Minimum sink flap position is +8°, this is the setting recommended by the Flight Manual for flying in thermals.

The flying controls have a positive engagement safety feature, which ensures they connect properly when the glider is rigged. The glider has a published maximum load factor of +5.3 with airbrakes closed or +3.5 with air brakes extended but was designed with a structural safety factor of 1.5 above these operating limits.

G-CFHG was manufactured in 1981 and was purchased by the pilot in November 2023 when it had 2,481 hours since new.

The glider's stall speeds in kt are shown in an extract from the Flight Manual below:

Takeoff weight	335 kg	500 kg
C.G. position	380 mm	320 mm
Stall Speed	knots	
Air brakes retracted, flap positions (degrees)		
+8	33	42
0	36	45
-7	42	49
Air brakes extended, flap position (degrees)		
+8	31	38

Table 1

Flight Manual extract showing stall speeds (kt)

In a banked turn the load factor on the glider increases. For a 45° banked turn this results in the load factor increasing to 1.41. Increased load factor has the effect of increasing stall speed by the square root of the load factor.[6] This would increase the stall speeds as shown in Table 2:

Takeoff weight	335 kg	500 kg
C.G. position	380 mm	320 mm
Stall Speed	knots	
Air brakes retracted, flap positions (degrees)		
+8	39	50
0	43	54
-7	50	58
Air brakes extended, flap position (degrees)		
+8	37	45

Table 2

Approximate increased stall speeds (kt) at 45° bank angle

The Flight Manual highlights control can be lost by the wing dropping during a stall.

Airfield information

The gliding club is based in a field to the west of Storrington. It is a grass field with a runway oriented 04/22. It has a hangar large enough to store gliders pre-rigged. The pilot kept the accident glider, G-CFHG, continuously rigged in the hangar rather than assembling it prior to each flight.

Footnote

[6] Figures quoted in the FAA Airplane Flying Handbook (FAA-H-8083-3C) Airplane Flying Handbook (3C) Chapter 10 [accessed 10 June 2025].

Meteorology

Aftercast

The Met Office provided an aftercast for the area of Storrington on the day of the accident.

The weather for the day was affected by a high pressure centred in the mid-Atlantic with low pressure to the northeast of the UK, resulting in a light unstable north westerly flow across the area. The area experienced westerly winds of 15-20 kt up to 5,000 ft at the time of the flight.

The area had good visibility with few or scattered[7], but occasionally[8] broken[9] cloud between 2,500 and 4,500 ft. The Shoreham METAR showed that visibility remained above 10 km throughout, with few or scattered cloud reported at 3,200 ft and above at the time of departure of the accident flight, lifting to 4,800 ft by 1020 hrs.

The satellite images showed convective cloud developing by 1000 hrs, increasing in both coverage and height through the remainder of the day, although the deeper convection remained mainly to the north and west of the area of interest.

The ballooning forecast for the ballooning site at Ebernoe, approximately 12 km to the northwest of Storrington indicated moderate thermals (+200 to +400 ft/min) would start to develop from 0700 hrs initially to a height of 2,000 ft increasing to 5,000 ft by 1000 hrs.

Regional Atmospheric Soaring Prediction (RASP)

The RASP website[10] provides a visual depiction of the predicted thermal activity, with high levels of activity shown in red through to low levels in blue. This website is one of the free sites for weather information provided as a link on the BGA website.

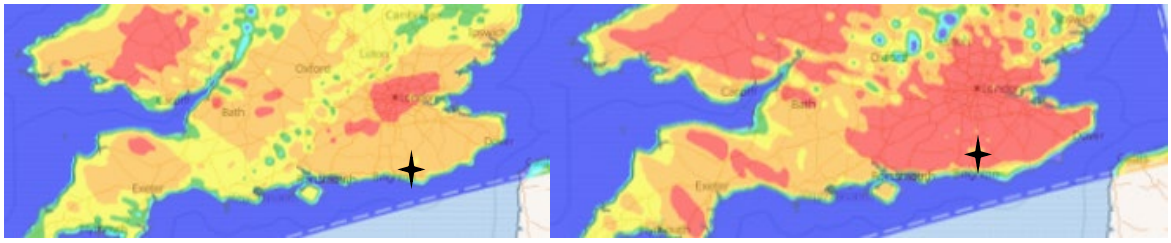

Figure 4

RASP forecast for convective activity (STAR Rating),
valid 5 June 2024 at 1000 hrs (left) and 1300 hrs (right)

Footnote

7 Few and scattered indicates that less than half the sky was obscured by cloud.
8 Occasional (OCNL) implies infrequent conditions which can be avoided. Used to describe convective and non-convective types. 25-50% of the area affected.
9 Broken (BKN) indicates that more than half the sky was obscured by cloud, but not completely.
10 https://rasp.stratus.org.uk/index.php/rasptable-desktop [accessed 10 June 2025].

Figure 4 shows a picture of the RASP forecast on the day of the accident. It could not be established which, if any, sources the pilot had used to review the weather forecast, but witnesses stated the RASP website was routinely used at the gliding club.

BGA guidance material[11]

The BGA field landing training syllabus[12] covers the following elements:

- Gliding range.
- Decision to land out.
- Determination of wind direction.
- Field selection, suitability and hazards.
- Circuit and approach judgement.
- Considerations for landing on slope.

The BGA provide access to several videos[13] that illustrate the planning and decision-making for landing out in a field. The BGA also publishes a '*Safety Briefing: Field landing*'[14]. It states to '*Plan Ahead - and Above All, Fly the Glider'*. It continues:

> *'Late field selection is a known cause of many field landing accidents. It's obvious why. Planning ahead helps any pilot reduce the pressure and reduce distractions.*
>
> - *Before flight, think what are the fields are like at the time of year and in your area. Is the wind likely to be light or strong during the flight? Light means longer landing areas and it's easier to get the direction wrong. Strong might mean challenging turbulence and wind gradients on approach.*
> - *Always fly a glider so that, if necessary, you can comfortably reach a suitably flat and unobstructed area that you can be confident of landing on safely. Remember that you will normally cover far more ground if you fly down wind.*
> - *Incorporate field landings into your soaring plan. Once you have surveyed the sky ahead, spare a thought for the terrain below – even if you are fairly high. When the signs are trying to tell you that you are not going to be airborne for much longer, it is important to accept that you will soon need somewhere to land. Denial or misplaced self-belief can result in dangerously late decisions.*
> - *Inadvertent stall/spin is a known cause of many life-changing injuries. At all times and above all else, FLY THE GLIDER.'*

Footnote

[11] The text for all quoted material was correct at the time of publication and was the relevant guidance at the time of the accident. For operational use the BGA website should be consulted for the latest revision.
[12] BGA Gliding Syllabus - Pilot & Club Info [accessed 10 June 2025].
[13] https://members.gliding.co.uk/field-landing/ [accessed 10 June 2025].
[14] https://members.gliding.co.uk/library/safety/field-landing/ [accessed 10 June 2025].

On field selection it states:

> *'Well before reaching circuit height, identify an area with 2 or 3 potentially suitable landing fields.'*

The BGA Student Pilot Manual uses the following diagram (Figure 5) to illustrate the field landing decision process based on height above the ground, which is referred to as the field landing decision-making funnel.

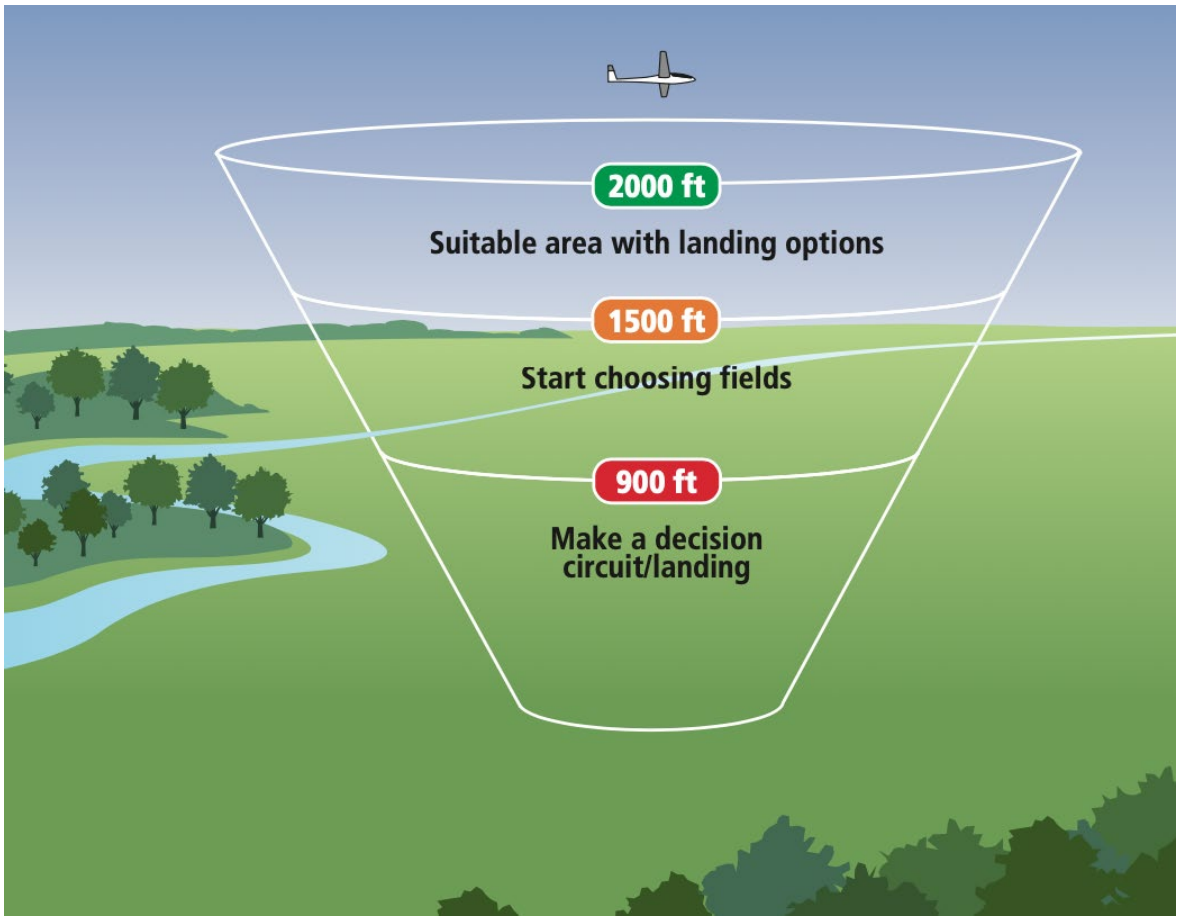

Figure 5

BGA student manual guidance on decision heights for field landings
(Courtesy of BGA)

The BGA Student Pilot Manual includes a useful checklist for pilots when selecting a landing site:

> *'Wind*
> *Pay close attention to the wind direction. Landing with a tailwind is strongly discouraged, because it leads to a greater landing distance.*

Size
Your field must be big enough for at least the last part of the descent, a normal landing and a ground run without braking. It is best to choose a field that is as long as possible. In a compact field you have very little room for mistakes. If necessary, consider a landing from corner to corner.

Surface
Potentially good landing surfaces are: mown grain fields, stubble fields, grass fields and fields with short crop. Try to avoid long crops, such as rapeseed fields; these make keeping the wings level very difficult during the landing and ground run and they might damage your glider. Good advice is: if you can see earth through the crop it is generally okay for landing.

Slope
Slope is best seen from the side, rather than from above. Even steep slopes are hard to see from above. Any visible downslope is unacceptable. A slight upslope is acceptable, but keep in mind you need a different landing technique for upsloping terrain.

Obstacles
There are many sorts of obstacles to take into account: trees, power cables, buildings and hills that might create turbulence. If you have the choice, then it is wise not to approach over busy roads or crowds as this may cause problems and unwanted attention. Obstacles reduce the usable field length by at least 10 times the height you clear them. Power cables are almost invisible from the air. Pay close attention to the towers and poles to which they are attached.

Stock
Just as you never want to land near people, you also want to land as far away from animals as possible. Horses can be startled, sheep tend to spread in a field, cows are curious and can damage your glider.'

The BGA Instructor Manual outlines the nominal circuit pattern for landing in any field. It defines the start of the downwind leg as the *'High Key'* position, commenced at 800-900 ft agl (Figure 6). The glider should be positioned to achieve an appropriate sight line angle to the landing reference point for the glider being flown. The manual states the final turn on to the straight in approach should be '*no lower than 300'…'* as *'Turns below 300' can be dangerous….'*

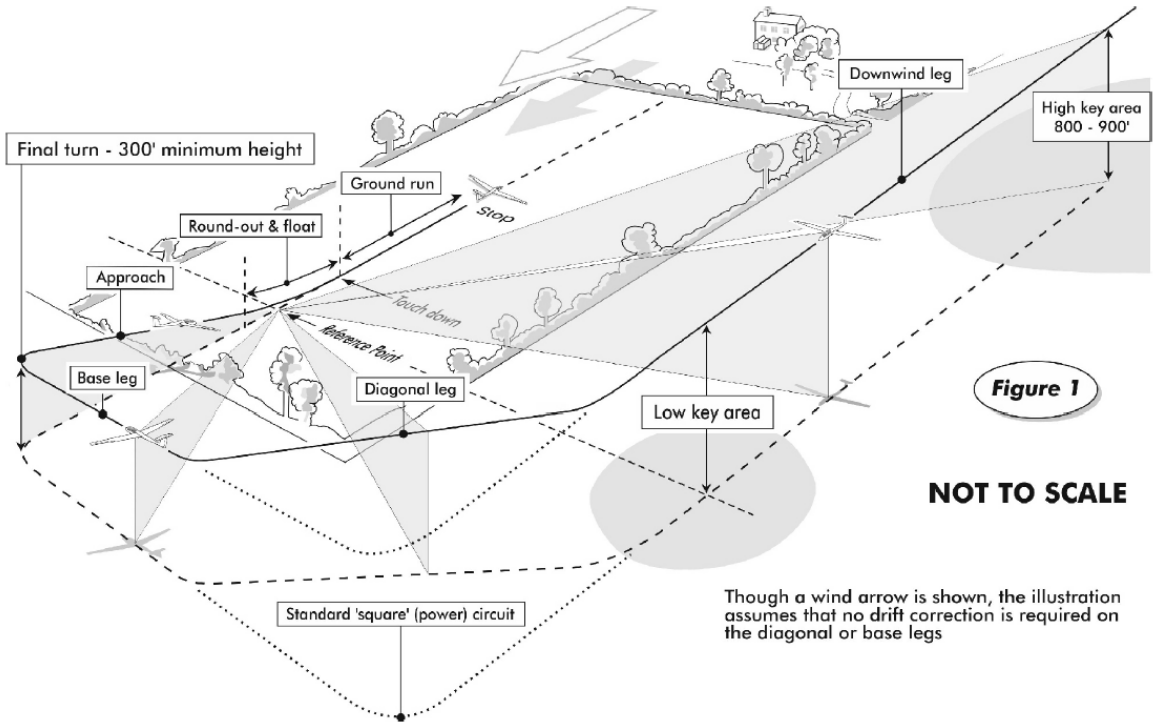

Figure 6

Circuit pattern for a field landing from the BGA Instructor's Manual
(*Courtesy of the BGA*)

Stall/Spin guidance

BGA guidance on stall/spin accidents states that:

> *'Together with winch launch related accidents and mid-air collisions, loss of control through inadvertent stalling and spinning accounts for approximately 80% of all fatal accidents in gliding.*
>
> *A key issue that comes from studying each individual stall/spin accident is that in almost all cases it appeared that the pilot was concentrating on something other than flying the glider at the time of the accident. In other words, in the majority of stall/spin accidents the pilot appears to have been distracted.'*

One of the issues that the BGA highlight as a possible cause of stall/spin is over-ruddered turns (skidding). Their guidance states:

> *'One common fault that is thought to lead to spinning off turns is the over-ruddered turn. Pilots under pressure, probably looking anywhere other than over the nose, can find themselves over-ruddering along with poor speed control. A possible cause of this fault is the visual effect of the lower wing which describes a forward track over the ground as we get lower, instead of backwards. This effect starts to occur around 200 feet, depending on all sorts of factors. Pilots looking into the turn may automatically apply more rudder to try to remedy the apparent*

problem. This leads to the nose being lower on the horizon (due to yaw) than normal for the speed, which may be why speed control also suffers. A slow, over-ruddered turn with apparently normal pitch attitude can result. Looking over the nose during the final turn to monitor attitude, indicated airspeed and balance helps pilots avoid these potential handling faults.'

BGA guidance on age

The BGA provide guidance on '*Managing Flying Risk – Ageing pilots.*'[15] This highlights that evidence of the effect of age on flying and safety is not definitive. It states:

'Relatively little information exists pertaining specifically to pilots over the age of 70…. The picture that seems to emerge from a range of studies is of a mild but measurable decrease in overall performance with age, offset to varying degrees by expertise and good health.'

However, on decision-making, it provides the following guidance:

- *'Although experience can have a real impact, ageing can also make it more challenging to handle decision-making tasks.'*

Guidance includes:

- *'Spend more time doing pre-flight and eventualities planning. Any "pre-thinking" you do will make things easier later.*
- *Fly when well-rested and make it a point to stay particularly alert to changes.*
- *Always have a solid "Plan B" ready to go ahead of time. Make sure it's realistic — something you're actually prepared to use.'*

Organisational information

BGA endorsements

The BGA requirements for a cross-country endorsement include:

1. A soaring flight.

2. A field selection test where the '*candidate must demonstrate satisfactorily their ability to select or reject fields as to their suitability for landing. This exercise must be undertaken from the air but can be flown in a glider, motor glider or light aircraft.'*

3. A field landings test, which is normally completed as part of the field selection test, where the candidate *'must make a minimum of two successful approaches in a motor glider towards a field landing area selected by the*

Footnote

[15] https://members.gliding.co.uk/safety/managing-flying-risk-index/ageing-pilots/ [accessed 10 June 2025].

candidate. The altimeter should be covered, or the scale offset for this exercise. To qualify for the endorsement, the approaches must be flown without any assistance or prompting from the instructor who must be satisfied that the candidate has demonstrated an adequate level of judgement and skill.'

4. A navigation flight.

This endorsement can be achieved once a pilot has gained the Bronze endorsement. Once a pilot has both the Bronze and cross-country endorsements, they are considered a qualified glider pilot under the BGA progress pathway guidance.[16]

The BGA requirements for the award of the Silver badge include:

1. A duration flight of not less than 5 hours from release to landing.

2. A height gain of at least 1,000 metres (3,281 feet).

3. A straight distance flight of at least 50 km.

The first two requirements can be fulfilled any time after going solo, and the third once a pilot has obtained the cross-country endorsement.

Gliding club supervision

The pilot's gliding club used a card system to identify the experience status of pilots. A yellow card identified that pilots were able to fly on any day without a check flight, as long as they remained current.

Pilot's experience

The pilot obtained some initial flying experience when attending the Air Training Corp at school. He started gliding in 2018 and learnt to fly at the same gliding club where he was a member, though he had also done some gliding at Lasham. The pilot gained his Bronze endorsement in May 2023 and completed the requirements for the cross-country endorsement in the June. He had completed the distance and height gain requirements for the Silver badge. He held a yellow card under the club's supervisory system used for qualified pilots.

The pilot had owned a Schleicher Ka 6 in early 2023 but sold it towards the end of the year before buying the Schempp-Hirth Mini Nimbus C. Records indicated that the pilot had flown this glider (G-CFHG) 21 times since March 2024.

Footnote

[16] This is the minimum requirement for a pilot to apply for a Sailplane Pilot Licence (SPL) in accordance with Part-FCL. This will become mandatory for glider pilots after September 2025.

The pilot's logbook was annotated with an entry by his instructor, detailing the stall and spin training which had been undertaken by the pilot in three flights on 22 May 2023. This included recovery from an underbanked, over-ruddered turn. The instructor commented that the pilot's recovery in each scenario had been satisfactory. A second entry on 29 June 2023 confirmed that the pilot had satisfactorily completed landing out field selection and landing training in a Super Dimona motor glider.

Previous land out

The pilot had landed out previously on 23 May 2024 in a similar area to where the accident occurred, west of the airfield[17]. The wind direction was recorded as westerly. Members that helped retrieve the glider reported that the pilot had explained that he was making an approach to a field just to the south of a primary school, which had suddenly become occupied by several school children. Consequently, at a late stage in the landing approach, at about 150 ft agl, he was forced to turn south and land in another field. A club member who was part of the retrieval team, reported that the pilot recognised in hindsight that he should have selected a field a mile or two earlier.

Medical

The pilot had a Civil Aviation Authority (CAA) Pilot Medical Declaration (PMD), based on fitness to drive and hold a UK driving licence. These declarations remain valid for 3 years. A new declaration is required once a pilot becomes 70 years of age. The pilot's PMD was valid until October 2026.

The pilot was taking prescription medication for hypertension (high blood pressure). One of the drugs prescribed was included in the CAA published guidance on potentially unsuitable medication for use by pilots required to hold a full CAA medical, though this category of medical is not a requirement for glider pilots. Dizziness and nausea are published common side-effects of the medication in question and can be exacerbated by other health related factors such as dehydration.

The pilot was a retired doctor and there was some anecdotal evidence that he may, on occasion, have been self-adjusting the dosage of the drugs to manage mild adverse side-effects, including dizziness. However, the medication was a long-term prescription and there was no evidence to suggest this had been a particular issue in the period prior to the accident flight.

Evidence from a number of witnesses who interacted with the pilot prior to the flight, offered nothing to suggest the pilot had felt unwell before he took off. The pilot's family stated that he took a very responsible attitude to flying and would not have set off on the flight had this been the case.

Footnote

[17] See 'Recorded information' section for a more detailed description.

Postmortem

The postmortem identified significant injuries to the pilot's head and pelvis, either of which was severe enough to have been fatal, but combined were considered to be the cause of death. The pathologist noted that the head injury was sufficiently severe to have caused immediate unconsciousness, rapidly followed by death.

The pathologist also considered the possibility of medical incapacitation in flight. His report concluded that:

> *'Whilst there was no positive pathological evidence of an acute medical episode, the possibility of medical incapacitation cannot be excluded. Dried vomitus or similar material found on the front of the deceased's clothing may indicate nausea related to an underlying medical event, but this may also be a terminal phenomenon or postmortem artifact.'*

The postmortem findings, the pilot's medication and medical history were reviewed with the CAA's medical expert. A similar conclusion was reached that whilst some of the evidence may support the possibility of a contributory inflight medical issue, there was insufficient evidence to reach a finding that this was the cause of the accident.

Analysis

Glider serviceability

The last record of the glider being de-rigged was to recover it from the field landing in May 2024. The glider had been successfully flown multiple times since this date and had the added safety feature of a positive engagement mechanism on the flying controls, to ensure they were properly connected during re-rigging. While flying control continuity could not be confirmed post-accident due to the impact damage, there was no evidence of a control issue or mechanical or structural failure of the glider in the earlier phases of the flight.

Medical issue

Based on the medical evidence recovered and the opinions of two medical experts, a contributory health issue could not be ruled out, but there was no evidence to support a conclusion that this was the cause of the accident. The recorded data, medical and accident site evidence support a finding that the pilot was conscious and positively controlling the aircraft up until contact with the trees. As such, a complete loss of consciousness can be excluded. However, if present, a medical issue may potentially have been a source of distraction to the pilot during a critical phase in the flight.

Training

The pilot had completed the necessary field landing training in a motor glider with the gliding club and his last field landing check had taken place in June 2023. He had also undertaken stall and spin training, including over-ruddered turns in May 2023. No concerns about the pilot's decision-making or handling performance prior to the accident had been recorded or were raised by instructors from the club.

Gliding club oversight

The pilot was appropriately qualified and experienced and was conducting a private flight in his own glider. Active welfare checks on the pilot by the club only started after the full five hour anticipated flight time had elapsed. Whilst earlier identification of a problem was possible and would have been preferable, it would not have changed the outcome for the pilot in this case.

Analysis of pilot's previous land out

The pilot's previous field landing on 23 May 2024 did not follow the BGA recommended guidance to fly a circuit pattern staying above 300 ft until the final approach to land into wind. At just above 1,000 ft agl, an orbit was flown followed by a downwind easterly flightpath back towards the launch site. The glider continued to descend downwind until approximately 150 ft agl, when the pilot was forced to turn south due to a hazard in his originally selected landing field. It appears likely that the pilot committed to the field landing relatively late in the flight and witness evidence suggests he was aware that an earlier decision to land may have been a better option.

Analysis of flight data for the final phase

The data shows that in the final phase of the accident flight, the glider was below 400 ft agl when it commenced circling to the right, likely an attempt by the pilot to gain altitude in a thermal. This was initially successful in gaining some height. However, shortly after completing a third orbit, the data indicates that there was a dynamic event that resulted in the loss of about 300 ft and caused a significant increase in speed. The pitch and roll data showed significant deviations, followed by a high g manoeuvre recovering to about 400 ft agl and stabilising the speed. While the event had started in a right turn, the resultant track was to the left of the entry track. During the control upset the GNSS data showed behaviour indicative of the system not being able to reliably track its position, which is commonly caused by the aircraft's fuselage being at an extreme attitude.

While the data wasn't conclusive, it suggested an upset or loss of control event that was consistent with a wing drop in a stall. This is highlighted as a characteristic of the glider in the Flight Manual. The data showed a loss of height and increase in speed, followed by a high g pull up and return to controlled flight. This was consistent with the required recovery manoeuvre following a stall at low altitude.

A wider right hand turn was then flown, which tightened again, and the glider started to descend. Reaching about 350 ft agl, the GNSS behaviour once again indicated problems tracking its position. The S80 attitude data was not available for this final manoeuvre but the tracking issues evident in the behaviour of the GNSS data, and the relative position of the accident site location, is consistent with the same loss of control having occurred. The accident site evidence shows the glider was approximately wings level at the point where it came into contact with the trees, suggesting the pilot had again recovered control, but had insufficient height remaining to complete the manoeuvre.

Analysis of circumstances leading to the accident

During the accident flight, the glider reached the BGA recommended land out circuit entry height of 800-900 ft agl at the point shown approximately by the red marker in Figure 7.

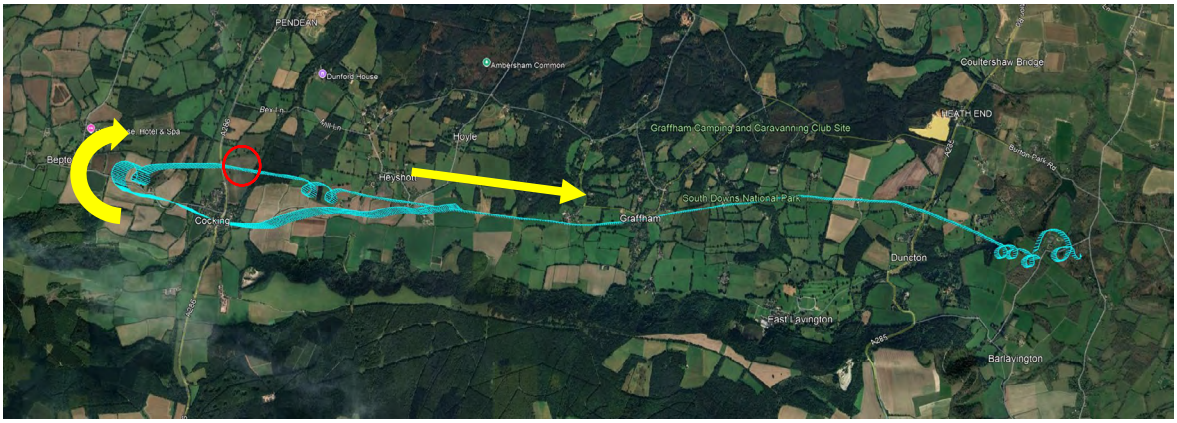

Figure 7

Image showing approximately where G-CFHG passed the BGA recommended 'High Key' point (red marker) and potential options for landing fields after this point. (Image courtesy of Google Maps)

The flight continued for a further eight minutes transiting over an area with a number of open fields, which in theory[18] would have been suitable for use as a landing site. To provide the highest likelihood of achieving a safe landing, the preference would be to land into the prevailing wind whenever possible. As the glider was flying downwind from west to east, if the pilot was intending to land, the expectation would be that a circuit pattern, as illustrated in Figure 6, would be flown to end up heading approximately west/south-west for the final approach to land. Acknowledging that this may need to be modified to take account of the geometry of any landing field selected and any low level hazards present, such as tall trees or power lines. The final track of the glider does not show any indication that the pilot was attempting to fly this profile or to follow the BGA guidance on decision heights for a field landing.

In the final phase of the flight, the data shows the pilot suffered a loss of control likely caused by the wing stalling and dropping. It's not possible to determine why the glider reached the point of stall. The data shows the glider's airspeed was less than 50 kt TAS, with a 45° bank angle immediately prior to the loss of control, but the sampling rate didn't give sufficient detail to determine the actual airspeed at departure from controlled flight. Some possible explanations are:

- Intended or unintended movement of the flaps, increasing the stall speed.
- Overuse of rudder during the turn.

Footnote

[18] The actual suitability of these field on the day of the accident with respect to possible hazards couldn't be determined from the evidence available.

Given the lack of any apparent intention to land, it's likely the pilot was primarily focused on the task of remaining within the thermal to gain height. However, it's likely that the low height above the ground and wooded areas were a significant potential distraction. In response to the control loss, the pilot pulled approximately 3.4 g to recover the glider to stable flight, which was also likely influenced by the limited height available. Following this recovery, there was no further evidence in the data to suggest the pilot was now attempting to land. This was supported by physical evidence indicating the landing gear was likely still retracted.

The second upset event took place at a lower height while the glider was over a wooded area, with trees up to 50 ft tall. The accident site evidence suggests the pilot had likely been able to recover from the stall and level the wings, but the glider then came into contact with the tops of the trees, leading to catastrophic damage.

Possible contributory factors

The investigation considered possible factors as to why the pilot elected to continue the flight rather than commit to a field landing. It was not possible to determine with any certainty the extent to which these factors contributed specifically to this accident, if at all, but common issues identified in similar events are:

- Late awareness of reducing options and/or task focus leading to loss of situational awareness.
    - The specific objective of achieving a Silver badge qualifying flight, combined with challenging flight conditions on the day may have led the pilot to overly focus on finding lift to gain height and remain airborne. This may have distracted from the wider need to consider alternative options, particularly at an early stage, to increase the likelihood of achieving a safe outcome.
- Previous adverse experiences.
    - Whilst successful in terms of outcome, the previous field landing conducted by the pilot had not gone entirely to plan. This may have influenced his decision about committing to another landing in the same area.
- Effects of ageing on capacity and decision-making.
    - While the accident pilot was at the higher end of the age spectrum for pilots, there is limited evidence that this has a uniformly detrimental effect on decision-making performance. There was no evidence identified by the investigation that this was a particular concern for the accident pilot.

BGA guidance

The BGA provides extensive guidance on the field landing decision-making funnel and the trigger heights for committing to landing. The guidance highlights how late decision-making with respect to committing to a landing, results in increased pressure on the pilot and often results in poor outcomes.

Conclusion

The pilot was appropriately trained and qualified to conduct the flight and the weather was suitable, although described as challenging by other pilots who flew that day. No evidence was identified of a causal or contributary technical issue with the glider.

In the final stages of the flight the pilot overflew a number of potential landing sites, after the glider transitioned through the height indicated by the BGA guidance, as the point at which flying a circuit pattern to land should be initiated. In the final stages of the flight the pilot appeared to still be attempting to gain height in a thermal despite the low height above the ground, which potentially acted as a distraction and may have contributed to the likely loss of control of the glider in a stall.

Although the pilot appeared to have been able to recover from the stall and level the wings, the glider lost further height and came into contact with the tops of high trees, resulting in catastrophic damage to the glider's wings and a severe impact of the fuselage with the ground. This resulted in injuries to the pilot which were likely to have been immediately or very quickly fatal.

Evidence shows the pilot was conscious and flying the glider in the final minutes of the flight. However, a contributory health issue acting as a distraction or impairment could not be ruled out.

It was not possible to determine why the pilot chose not to land at an earlier stage in the flight. The BGA guidance highlights that early decision-making with respect to field landings increases the likelihood of a positive outcome.

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