The Gliding Federation of Australia Inc

Occurrence Summaries

01/01/2018 to 31/12/2018

Region(s): All

Club:

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Executive Manager, Operations
The Gliding Federation of Australia Inc.

17-Dec-2019

The Gliding Federation of Australia Inc
Accident and Incident Occurrences
General Statistics

Date From: 01/01/2018
Date to: 31/12/2018

Damage	VSA	WAGA	GQ	NSWGA	SAGA	Total
Nil	27	14	28	26	24	119
Write-off				3		3
Minor	7	6	9	17	2	41
Substan	4	2	3	2	1	12
Total	**38**	**22**	**40**	**48**	**27**	**175**

Injury	VSA	WAGA	GQ	NSWGA	SAGA	Total
Nil	38	21	38	46	27	170
Minor		1	2	1		4
Fatal				1		1
Total	**38**	**22**	**40**	**48**	**27**	**175**

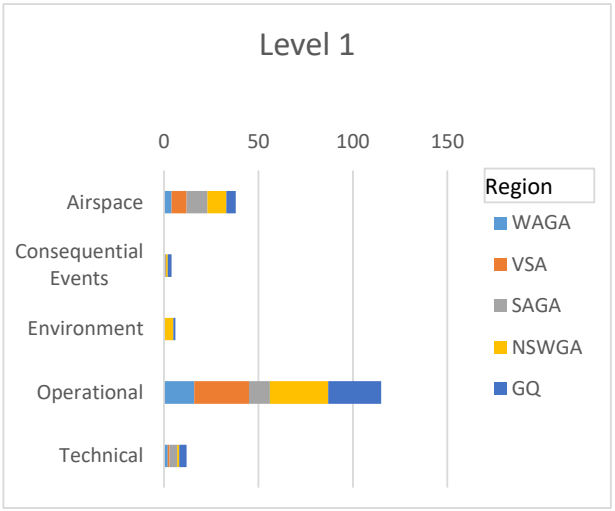
Phases	VSA	WAGA	GQ	NSWGA	SAGA	Total
Flight	8	4	8	14	10	44
g	9	10	16	18	3	56
Launch	16	6	8	5	5	40
ding	2		2	5	1	10
Groun	3	2	6	5	4	20
Therm				1	4	5

Type of	VSA	WAGA	GQ	NSWGA	SAGA	Total
Cross-C	4	4	6	10	4	28
Compet	4		3	5	3	15
AEF	1	3	3	1		8
Local	19	7	14	24	12	76
Ground	2	2	6	5	4	19
Training	8	6	8	3	4	29
Total	**38**	**22**	**40**	**48**	**27**	**175**

The Gliding Federation of Australia Inc
Accident and Incident Occurrences
Classification Level 1

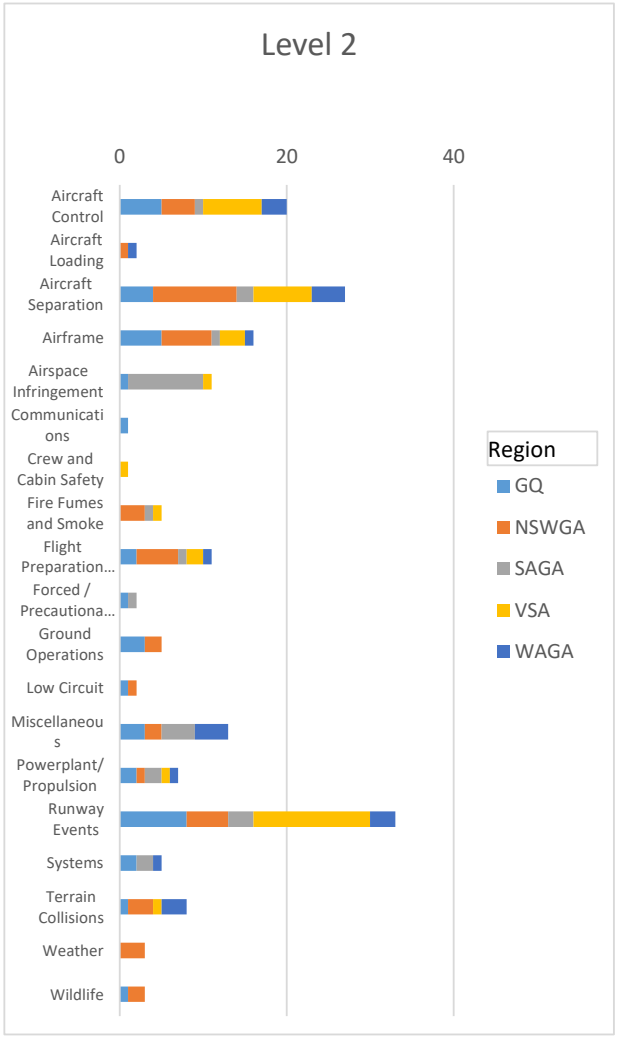
Date From: 01/01/2018
Date to: 31/12/2018

Level 1	WAGA	VSA	SAGA	NSWGA	GQ	Total
Airspace	4	8	11	10	5	38
Consequential Events		1		1	2	4
Environment				5	1	6
Operatic	16	29	11	31	28	115
Technica	2	1	4	1	4	12
Total	**22**	**38**	**27**	**48**	**40**	**175**



The Gliding Federation of Australia Inc
Accident and Incident Occurrences
Classification Level 2
From: 01/01/2018
Date to: 31/12/2018

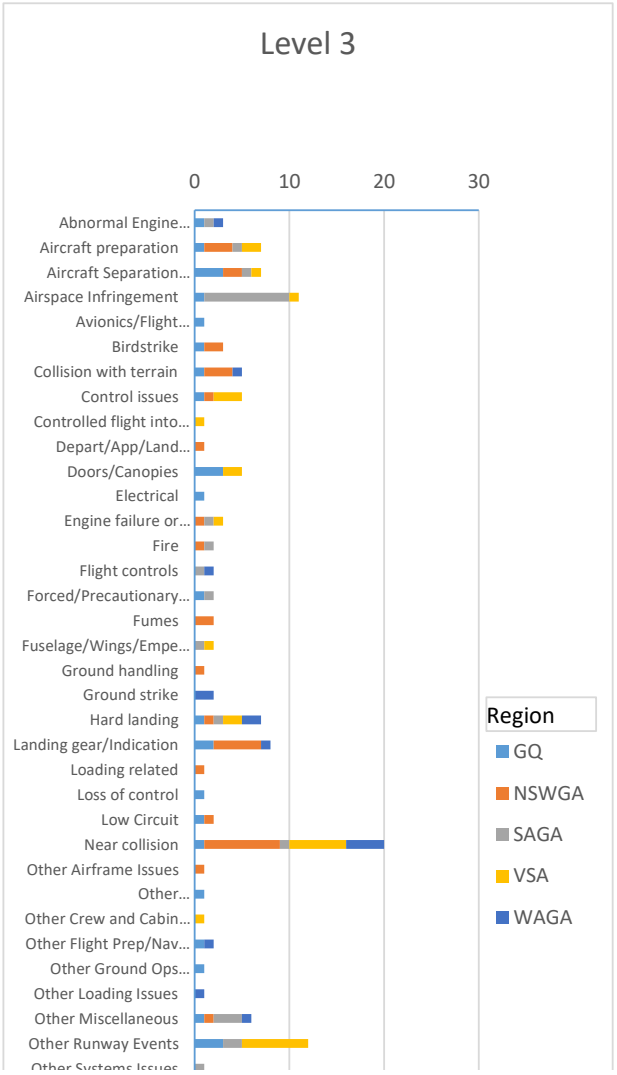
Level 2	GQ	NSWGA	SAGA	VSA	WAGA	Total
Aircraft (	5	4	1	7	3	20
Aircraft Loadin		1			1	2
Aircraft S	4	10	2	7	4	27
Airframe	5	6	1	3	1	16
Airspace	1		9	1		11
Commur	1					1
Crew and Cabin Safety				1		1
Fire Fumes and		3	1	1		5
Flight Pr	2	5	1	2	1	11
Forced /	1		1			2
Ground (	3	2				5
Low Circ	1	1				2
Miscellar	3	2	4		4	13
Powerpl	2	1	2	1	1	7
Runway	8	5	3	14	3	33
Systems	2		2		1	5
Terrain (	1	3		1	3	8
Weather		3				3
Wildlife	1	2				3
Total	**40**	**48**	**27**	**38**	**22**	**175**



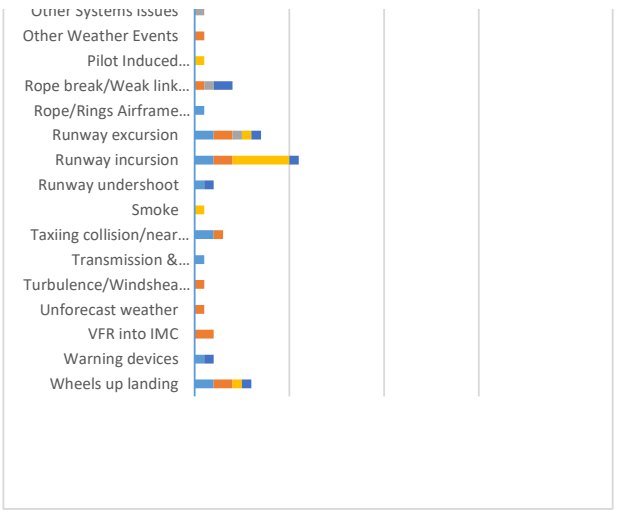
The Gliding Federation of Australia Inc
Accident and Incident Occurrences
Classification Level 3

Date From: 01/01/2018
Date to: 31/12/2018

Level 3						
	GQ	NSWGA	SAGA	VSA	WAGA	Total
Abnorma	1		1		1	3
Aircraft p	1	3	1	2		7
Aircraft S	3	2	1	1		7
Airspace	1		9	1		11
Avionics,	1					1
Birdstrik	1	2				3
Collision	1	3			1	5
Control i	1	1		3		5
Controlled flight into terrain				1		1
Depart/App/La		1				1
Doors/Ca	3			2		5
Electrica	1					1
Engine failure c		1	1	1		3
Fire		1	1			2
Flight controls			1		1	2
Forced/F	1		1			2
Fumes		2				2
Fuselage/Wings/Empenr			1	1		2
Ground handlir		1				1
Ground strike					2	2
Hard lan	1	1	1	2	2	7
Landing g	2	5			1	8
Loading relatec		1				1
Loss of c	1					1

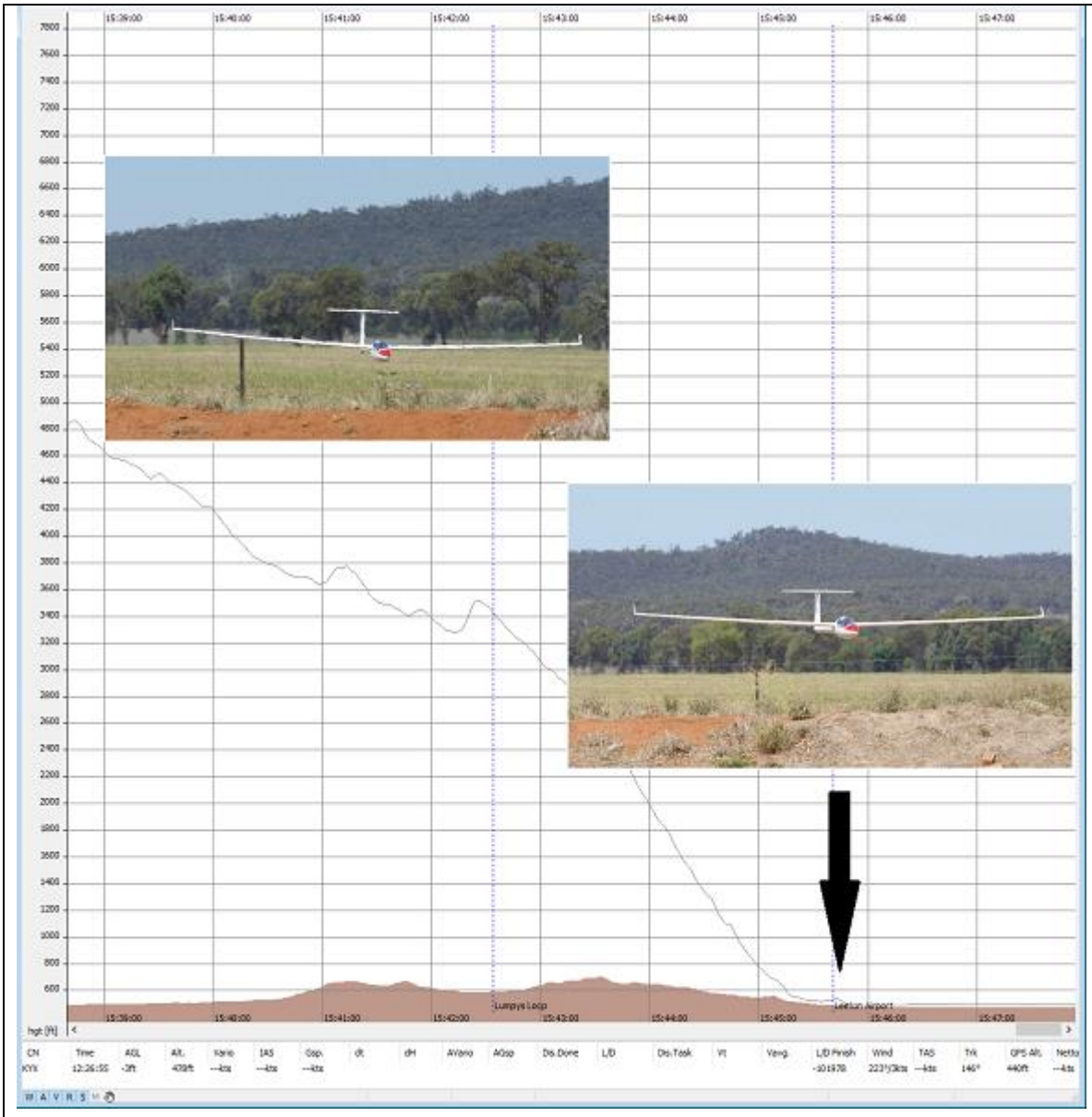


Low Circ	1	1				2
Near col	1	8	1	6	4	20
Other Airframe		1				1
Other Cc	1					1
Other Crew and Cabin Safety				1		1
Other Fli	1				1	2
Other Gr	1					1
Other Loading Issues					1	1
Other M	1	1	3		1	6
Other Ru	3		2	7		12
Other Systems Issues			1			1
Other Weather		1				1
Pilot Induced Oscillations				1		1
Rope break/We		1	1		2	4
Rope/Rir	1					1
Runway	2	2	1	1	1	7
Runway	2	2		6	1	11
Runway	1				1	2



Date	3-Jan-2018	Region	WAGA	SOAR Report Nbr	S-1138
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	Stemme S10	A/C Model 2	Unknown		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	59
While on a cross-country flight and at an altitude of 10,000ft, the glider's Powerflarm alerted the pilot to an aircraft 23 kms away. The glider pilot saw a Mining Air Charter aircraft climbing rapidly towards the glider on a collision course. The glider pilot turned on the glider's transponder, which was not being used due to it being out of calibration, and continued to monitor the other aircraft. When about 5 kms away the other aircraft veered away from the glider. The glider pilot noted that despite knowing exactly where the other aircraft was, it was necessary to maintain visual contact in order to determine exactly when to take avoiding action.					

Date	4-Jan-2018	Region	GQ	SOAR Report Nbr	S-1142
Level 1	Operational	Level 2	Runway Events	Level 3	Other Runway Events
A/C Model 1	SZD-41A Jantar Standard	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	29
While competing in the Formula 1.0 Gilding Grand Prix, the pilot conducted a low-level finish manoeuvre below 50ft AGL in contravention of the Regulations. The finish was observed by competition officials and the pilot was counselled. At briefing the following morning all pilots made aware of minimum heights, the correct finish line procedures, and approach and landing requirements.					



Date	5-Jan-2018	Region	VSA	SOAR Report Nbr		S-1166	
Level 1	Operational	Level 2	Runway Events	Level 3		Runway excursion	
A/C Model 1		Arcus M		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	69

The experienced pilot of the self-launching sailplane completed the engine checks and start up while the aircraft was parked on the western side gable marker line pointing east at 90 degrees to the operational runway (RWY 18). This was done to enable a clear view of the aircraft approach path prior to taxiing out. The pilot then taxied to the sealed section of the runway in a right-hand turning arc with the starboard into wind wing down so as to acquire the runway centreline, and with the throttle being progressively advanced. On acquiring the runway centreline, the throttle was advanced to full for take-off into a quartering crosswind from the right. Although the speed was increasing satisfactorily, the starboard wing

lifted and rolled onto the downwind port wingtip wheel. The pilot opened the throttle to increase speed to improve aileron response and level the wings. However, as throttle was applied the tail lifted and the glider weathercocked to the right. As the aircraft had good take-off acceleration, the pilot elected to continue the take-off despite being at an angle to the runway centreline and heading towards the grass verge. The pilot was able to align the glider along the centreline of the grass verge and the aircraft became airborne and climbed away normally. The pilot later discussed the incident with an instructor. The pilot stated:
"The Arcus has significant wing dihedral which makes cross winds an issue. The Arcus M under power has a high thrust line which unloads the tail wheel weight reducing steering via the rudder. The engine torque reaction tended to raise the starboard wing which did not help. The curving to the right on fast taxiing tended to throw the weight of the glider to the outside of the turn meaning a rolling influence starboard to port, because the centre of mass is above the tyre contact point by around roughly 0.6 to 0.8 metres. While the take-off was brought under control, there was a period during take-off where I was very vulnerable to something else happening which might make it catastrophic. Examples would be, port wing tip touching runway light at speed, car-glider combination on grass right, more severe deviation in direction due to thermal passing through, etc. One thing was done right, namely take-off from the bitumen centre given the cross-wind was from the right and any departure from the centre would tend to be into wind and have room on grass right. However full advantage of being on the runway centreline was not taken because I should have taxied out, lined up on the centreline, and stopped, prior to applying full throttle."
The pilot noted that the launch should have been abandoned when the wing rolled onto the port wingtip and the glider headed away from the runway centreline.

Date	6-Jan-2018	Region	GQ	SOAR Report Nbr		S-1147	
Level 1	Operational	Level 2	Miscellaneous	Level 3		Other Miscellaneous	
A/C Model 1		HK 36 TC		A/C Model 2	N/A		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	66
The pilot conducted an Air Experience Flight but did not hold a valid Medical Certificate as required by GFA Operational Regulation 3.2.3. Investigation revealed the pilot, who had previously held a Level 1 Instructor endorsement, had recently been isused with an AEI endorsement but mistakenly believed the GFA's Medical requirements only applied to Level 1 or higher rated instructors. The CFI, who was new to the role, did not confirm the pilot's medical status prior to issuing the endorsement. The pilot was counselled.							

Date	6-Jan-2018	Region	NSWGA	SOAR Report Nbr		S-1141	
Level 1	Operational	Level 2	Terrain Collisions	Level 3		Collision with terrain	
A/C Model 1		Jantar Standard 2		A/C Model 2			
Injury	Minor	Damage	Write-off	Phase	Outlanding	PIC Age	70
The glider crashed into a paddock at around 19:15 hours on 6 January 2018, approximately 12 kilometres NNE from Temora Aerodrome. The aircraft was severely damaged and has subsequently been written off by the insurer. The pilot sustained minor injuries and was very fortunate to not have been more severely injured or killed, given the nature of the crash. The pilot had launched from Narromine NSW not long before 3:00pm with the aim of returning to Temora NSW, from where the pilot departed the previous day. The pilot experienced some good climbs, but overall progress was relatively slow. The pilot achieved a high point of about 12,000ft AMSL at 17:33 hours, but this height was lost in straight glides where the pilot adopted airspeeds generally around 70 to 80 knots. According to the logger file, the glider was below 2,000ft AMSL at 18:09 and the pilot struggled to get above 3,000' from that time on. The pilot stated that they had selected an outlanding paddock when around 35 km from Temora (approximately 40 minutes before the crash), but was able to gain some height to continue the flight. Based on the pilot's account of the flight, they did not appear to give any further consideration to outlanding until about 30 seconds before the crash. This is despite the fact that the pilot had flown at a height of less than 800 feet above ground for the final 7 to 8 minutes of the flight. When later questioned about their understanding of the height at which							

they were flying at several points late in the flight, the pilot consistently over-estimated the height by up to 1,000ft. It was identified that during the final 3 minutes of the flight the glider was flying over paddocks that were unsuitable for landing due their surface condition and/or small size. More than 3 minutes prior to the crash, the glider was within reach of paddocks where a successful outlanding could have been achieved. However, the pilot did not make a decision to land at an appropriate time, nor did they realise the gravity of the situation until the final seconds. The pilot stated that they had taken several litres of drink and some snacks with them for the flight but had no recollection of how much was eaten/drunk during the flight. The pilot also stated that supplemental oxygen has been used at heights above 5000ft. After consideration of the pilot's statements and other available information, it was concluded that the pilot:

- continued to hold an overly optimistic view of the weather conditions late in the afternoon and the likelihood that they would find lift that would carry the aircraft to Temora Aerodrome;
- over-estimated their own abilities;
- admitted that they felt an urge to "press on" to the home airfield;
- suffered from poor situational awareness, exacerbated by poor judgement of height above ground; and
- exercised poor decision-making processes, or more likely simply failed to make required decisions until the last 30 seconds of the flight (at which time their ability to influence the outcome was severely restricted).

A primary cause of the accident was the pilot's decision to continue the flight at low altitude over unsuitable terrain, rather than plan and execute a controlled outlanding. Alternatively, the primary cause of the crash was the pilot's inability to make the necessary decisions. Pilot impairment due to fatigue and/or nutrition is a possible contributing factor, but neither cause was suggested by the pilot. Weather is not considered to be a contributing factor. As the pilot had a history of overconfidence, regression in flying skills and a degree of resistance to training, their flying privileges were withdrawn.

Date	6-Jan-2018	Region	NSWGA	SOAR Report Nbr		S-1140	
Level 1	Operational	Level 2	Runway Events	Level 3		Runway excursion	
A/C Model 1		ASW 20		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	61

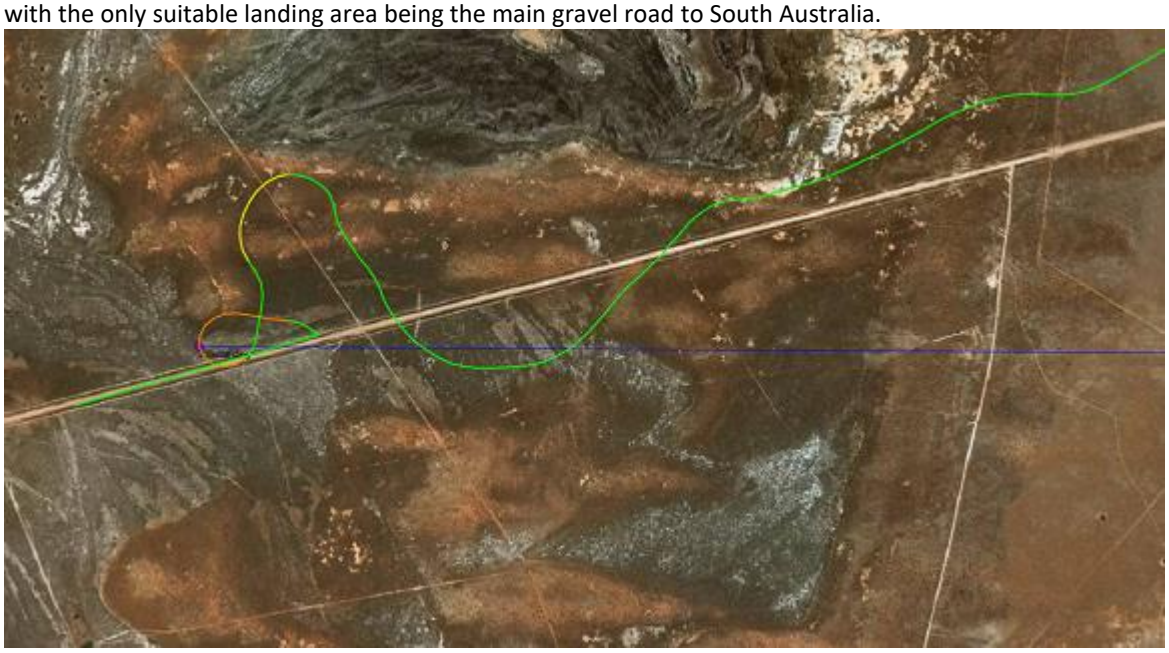
Upon returning to the airfield after a local flight of around 100 minutes, the pilot elected to land on RWY 30, which was an appropriate choice for the conditions (moderate wind from the northwest). The runway had recently been mown and the grass was reasonably short, but the grass alongside the runway was considerably longer. The pilot's approach and touchdown were normal, with the aircraft handling as expected up to this point. However, once on the ground the pilot experienced a sudden and unexpected loss of aileron authority and was unable to prevent the starboard wing from dropping to the ground. Although the wingtip initially came to ground in the short grass of the runway, the aircraft then veered to the right, off the runway and into the longer grass. This change in direction was likely caused by the yawing effect induced by the drag of the starboard wingtip running on the ground, with local air turbulence possibly being an added factor. The glider proceeded at speed into the long grass, resulting in a ground-loop and a damage aileron as the aircraft rotated through the grass. At the time of the accident, the pilot was in current flying practice and had flown that aircraft the previous week. Pilot currency/competency was not considered to be a factor in the incident. The ground surface was not considered to be a significant contributor to the outcome, as the runway surface was firm and the runway grass was short. The long grass off the runway was identified as instrumental in causing the actual damage to the aircraft, but this only came into play because the aircraft dropped a wing after landing and lost directional stability. The wind on the day was generally from the northwest with some gustiness. The most likely reason for the loss of effectiveness of the glide's ailerons is that the aircraft was affected by wind turbulence after touchdown, which resulted in a reduced or even reversed airflow over the wings. Subsequent inspection did not reveal any mechanical fault with the aircraft prior to the ground-loop that might have caused the ailerons to become ineffective.

Date	9-Jan-2018	Region	NSWGA	SOAR Report Nbr	S-1233

Level 1	Environment	Level 2	Weather	Level 3	Unforecast weather		
A/C Model 1	DG-300 Club Elan	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Ground Ops	PIC Age	70
A severe storm was approaching the airfield late in the afternoon and club members rushed to secure the gliders. In their haste, the person securing the DG-300 did not properly lock the canopy. When the storm hit the canopy flew open damaging the hinges and canopy.							

Date	11-Jan-2018	Region	GQ	SOAR Report Nbr	S-1149		
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing		
A/C Model 1	Jonkers Js3	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	72

The experienced pilot was competing in the 2018 Australian Multiclass National Championships being conducted out of Waikerie, SA and flying in the 15-metre class. On the day of the accident the pilot was flying a racing task around two remote turn points for a total distance of 488 kms. After rounding the second turn point (Wentworth, NSW), the pilot elected to go direct on track for the 173km return trip to Waikerie as they were familiar with the area; having regularly holidayed and flown helicopters there. The terrain over which the pilot was flying is low lying flood plains consisting mainly of grasslands, mallee, and shrub areas, with the only suitable landing area being the main gravel road to South Australia.



The pilot reported that dense shadow moved in quickly from upper level clouds and height was lost fairly quickly. Dust being raised from a couple of cars and caravans indicated the wind at ground level was about 5 to 10 kts from the north, almost at right angles to the main road with a crosswind from the right. The vehicles were travelling fairly fast, so the pilot knew the road must have been graded fairly recently. At around 1,000ft AGL the pilot attempted to start the jet engine to self-retrieve but was unable to raise the engine as they had inadvertently set the master switch to the circuit where the battery was not connected. The pilot stated: *"There are 8 electric switches. Four on a panel that I would call Master switches and four on an adjoining panel that selected Left, Right, or (unfitted) Centre batteries for different circuits. I had only a few flights in the glider and 2 engine starts previously. The jet "Master switch" was not an OFF/On switch (as I assumed subconsciously at the time) but an OFF/L/R switch. The up position being L = Left Battery which gave no power because I suspect it was not plugged in properly. The middle, Right, position did not occur to me and so I fiddled with the other 4 circuit, 3 position switches, to no avail."* With the ability to self-retrieve

gone, the pilot now focused on landing on the roadway. The pilot noticed there was a possible drain and cattle grid across the road where they were planning a right-hand circuit, so they reversed the turn to look further along the road and did a low orbit at about 700 ft AGL looking for signs, etc. The pilot turned onto a close base leg at about 350 to 400ft AGL, and the lined up on a final; approach at about 200 ft AGL. The pilot stated: *"I recall being a bit too aggressive on the airbrakes on finals as a result of my embittered state. However, I did notice on round-out that the ASI was saying 45 knots and that I would have liked to have been lower than the approximately 2 ft that I felt I had. I thought that the landing was at a higher rate of descent than my usual landings but not enough to be concerned with. I did not really feel a touch down only the fuselage going straight on to its belly."* The glider touched down heavily, collapsing the undercarriage, and slid along the road drifting slightly to the left where it went through a shallow drain and over a rise, hitting limestone rocks in the process.

The aircraft suffered significant damage to the lower fuselage, the undercarriage box and to the main frame immediately behind which carries the rear wing lift pins. The uncommanded retraction of the main gear also resulted in the tailwheel retracting as they are interconnected. The tailwheel retracted with vigor, over rotating the frame and punching two holes into the base plate of the tail tank. After the flight the pilot noted *"there is no question of my hydration state as I super hydrate prior to takeoff, connect myself to a catheter for flight, and pee about 1½ to 2 litres during the flight as a result of very regular drinking in flight. I also eat mixed nuts, and fruit in flight very regularly. I do believe that I was pretty peeved off with the glider – and to a lesser extent myself for letting it distract me during an unexpected out landing."* The pilot also noted that they spent the 2 weeks prior to the competition rectifying problems to get the glider ready, which eliminated planned practice and familiarity flying with the glider.

Date	11-Jan-2018	Region	NSWGA	SOAR Report Nbr	S-1143

Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication
A/C Model 1	Astir CS	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	62

Upon touchdown the undercarriage retracted, and the glider slid to a stop on its fuselage. Although the pilot lowered the undercarriage and checked it during the pre-landing checklist, the lever was not fully in the detent. As soon as the aircraft weight settled on the undercarriage the lever disengaged. The CFI believes the undercarriage lever did not fully engage the detent becuase the pilot's fingers were in the way.

Date	13-Jan-2018	Region	VSA	SOAR Report Nbr	S-1145
Level 1	Operational	Level 2	Airframe	Level 3	Doors/Canopies
A/C Model 1	SZD-50-3 "Puchacz"	A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	In-Flight	PIC Age	54

The pilot was conducting a private passenger flight that included some basic aerobatics comprising a spin, a loop, and a chandelle/wingover to the right. Just as a chandelle/wingover to the left was commenced, and at a height of about 2,000ft AGL, the canopy opened and the Perspex shattered. The pilot regained level flight, declared an emergency, and simultaneously headed back to the airfield. The pilot then checked on the well-being of the passenger and returned the canopy frame to the closed position. The incident occurred about 3.5 Kms south-west of the operational runway (RWY 27), and about 2 kms from RWY 01. The pilot joined downwind for RWY 27, but due to the increased drag and the high speed at which the aircraft was flying, a high sink rate ensued, and it became obvious to the pilot that a landing on the operational runway was not possible. Having flown beyond reach of RWY 01, the pilot conducted a safe outlanding in a paddock parallel to, and about 500 metres from the operational runway. No injuries were sustained.

Investigation revealed that the canopy locking mechanism had been stiffer to operate after the fitting of the new canopy some months earlier. However, pilots could visually confirm the locking mechanism was properly engaged. The pilot suspects the canopy was not fully locked before take-off and had worked open during flight. The club has since installed an electrical switch to the canopy that will illuminate a red warning light on the instrument panel if the canopy is not fully locked. The club has also introduced a "challenge" by the wing runner, who will ask the pilot to confirm the airbrakes and canopy are locked before the 'airspace clear for launch' command is given. It is likely the pilot did not elect to land on the closer runway (RWY 01) due to goal fixation, which often manifests in times of stress.

Date	13-Jan-2018	Region	GQ	SOAR Report Nbr	S-1148		
Level 1	Consequential Events	Level 2	Forced / Precautionary landing	Level 3	Forced/Precautionary Landing		
A/C Model 1	Discus B	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	65

The low experience pilot was conducting a local soaring flight, but conditions were not strong, and the wind was 13 knots from the West. During climb the towing combination flew through areas of strong lift and sink, and the glider pilot releaed from aerotow at around 2,000ft AGL about 5 minutes after launch. The glider pilot tried to climb in weak and broken lift but was unsuccessful and headed towards the airfield. When down to about 700ft AGL and about 3 kms from the airfield, the pilot contacted a thermal averaging 3 to 6knots and climbed back to release height, which was the top of convection. Losing contact with the lift, the pilot flew through strong sink and lost height rapidly. The pilot joined downwind for a left-hand circuit at a height of 600ft AGL and about 2 kms upwind of the runway threshold. The flight logger trace shows the pilot turned onto the base leg at around 200ft AGL and about 600 metres abeam the runway boundary. This was too low for the conditions and the pilot conducted a safe outlanding in a paddock just south of the runway boundary. During the post-flight debrief the pilot noted *"I should have made the decision to make a modified circuit earlier, but at that height I was concerned about flying over the hangers."* The CFI noted that the pilot should have made the decision to break-off the flight earlier while at an appropriate height for the conditions.

Date	18-Jan-2018	Region	SAGA	SOAR Report Nbr		S-1151	
Level 1	Airspace	Level 2	Airspace Infringement	Level 3		Airspace Infringement	
A/C Model 1		G102		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	44
During a cross-country flight the pilot inadvertently entered controlled airspace. The pilot was carrying appropriate maps and charts but misread the glider's position in relation to the airspace boundaries.							

Date	18-Jan-2018	Region	VSA	SOAR Report Nbr		S-1150	
Level 1	Airspace	Level 2	Aircraft Separation	Level 3		Near collision	
A/C Model 1		E-PA25		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	25

A tow plane on the downwind leg of the circuit to avoiding action to prevent a head-on collision with a glider that was travelling against the traffic. The low hours glider pilot, who was on their ninth solo flight, had sighted the tug but did not appreciate just how close two aircraft became. The glider pilot initially thought they were clear of the circuit, both laterally and vertically, but this was not the case. The glider pilot was debriefed by their instructor.

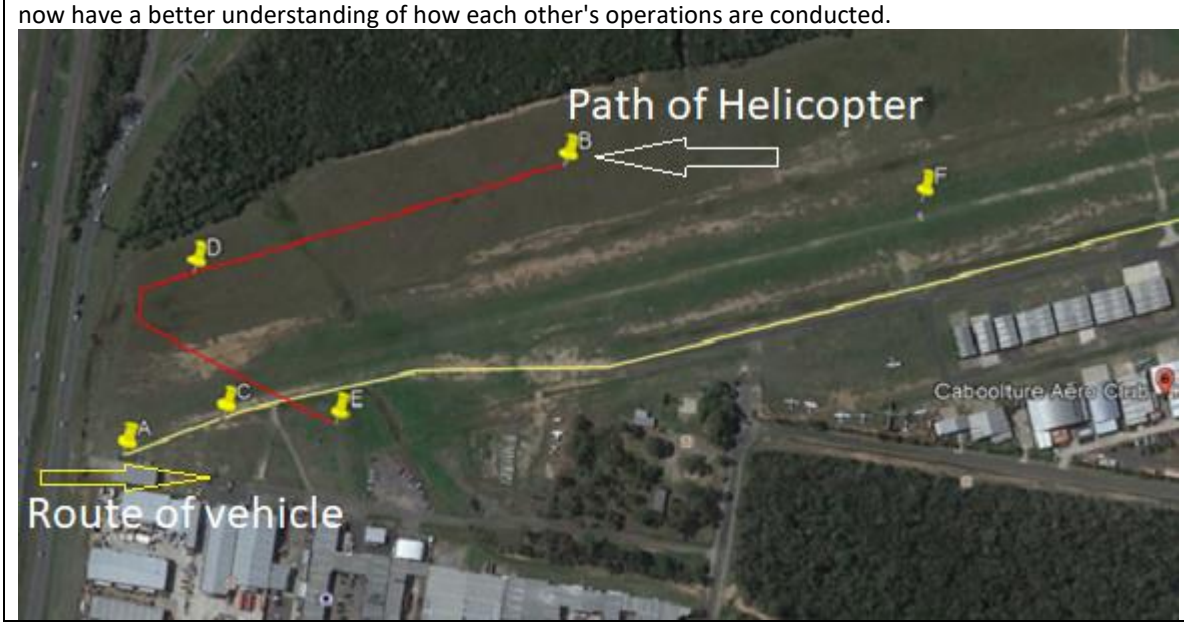
Date	18-Jan-2018	Region	NSWGA		SOAR Report Nbr		S-1156		
Level 1	Operational	Level 2	Airframe		Level 3	Landing gear/Indication			
A/C Model 1	PIK-20D				A/C Model 2				
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age			
During the early ground run of an aerotow launch, the glider's undercarriage collapsed and the fuselage fell onto the ground. The glider pilot immediately released from tow. The undercarriage operating lever inside the fuselage failed at the welded attachment to the forward pivot arm.									

Date	18-Jan-2018	Region	GQ		SOAR Report Nbr		S-1181		
Level 1	Operational	Level 2	Runway Events		Level 3	Runway excursion			
A/C Model 1	ASW 20B				A/C Model 2				
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	53		
The glider was situated on the far right of the competition launch grid. During the launch the starboard wing dropped to the ground immediately after being released by the wing runner. The pilot released from tow as the glider swung through 45 degrees to the right. The pilot went to apply full airbrake to engage the wheel brake but mistakenly actuated the flap lever instead. In the absence of wheel braking, the glider continued towards the runway boundary and the wings rolled in the opposite direction resulting in the port wingtip contacting a gable marker while the glider was still at walking pace. This yawed the aircraft 20 degrees to the left and it came to rest with the starboard wingtip in contact with a vehicle parked outside the gable markers.									

Date	19-Jan-2018	Region	SAGA		SOAR Report Nbr		S-1164		
Level 1	Operational	Level 2	Aircraft Control		Level 3	Hard landing			
A/C Model 1	Standard Libelle 201 B				A/C Model 2				
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	67		
The glider had just touched down on the grass runway when it contacted the raised taxiway that leads to the club hangars. The aircraft rebounded into the air while close to the stall and settled heavily. Subsequent inspection revelaed the wheel brake lining had broken. It is likely the tyre compressed sufficiently for the wheel brake lever to contact the ground and forcibly activate the brake to the point of destruction. No further damage was identified and a replacement wheel was fitted.									

Date	20-Jan-2018	Region	GQ		SOAR Report Nbr		S-1184		
Level 1	Operational	Level 2	Ground Operations		Level 3	Taxiing collision/near collision			
A/C Model 1					A/C Model 2	AMT OH-58A (Helicopter)			
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	65		
A helicopter overflew, at very low height, a glider retrieve vehicle that was travelling towards the Aero Club building along the perimeter road outside the runway markers. The helicopter was engaged in local crop spraying activities and was returning to the airfield to top up chemicals for spraying. The chemical supply									

was situated in an area outside the runway to the south-west of the airfield. The vehicle driver advised they were aware of the helicopter and kept it in view and was surprised when the pilot flew directly over the vehicle at very low height. The helicopter pilot advised they were aware of the proximity of the vehicle. In the time since, a better relationship was developed between the helicopter operator and the Club, and they now have a better understanding of how each other's operations are conducted.



Date	20-Jan-2018	Region	GQ	SOAR Report Nbr	S-1154
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication
A/C Model 1	SZD-55-1	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	66

On returning to the circuit the pilot was unable to lower the undercarriage and conducted a safe landing on the grass runway with the wheel retracted. After the flight the pilot found the cable in the undercarriage mechanism to have broken. The cable cannot be seen during the Daily Inspection. The cable was replaced and the aircraft returned to service.

Date	21-Jan-2018	Region	NSWGA	SOAR Report Nbr	S-1157
Level 1	Operational	Level 2	Fire Fumes and Smoke	Level 3	Fire
A/C Model 1	ASH - 25 M Jet	A/C Model 2			
Injury	Fatal	Damage	Write-off	Phase	In-Flight	PIC Age	75

What happened

At about 1250 Eastern Daylight Time on 21 January 2018, a Schleicher ASH-25E (AMT Jet) experimental powered glider, registered VH-GOA (GOA), was launched from the Bathurst Soaring Club facilities (Piper's Field) New South Wales. The experienced pilot intended to conduct a cross-country flight, and was the sole occupant. Eight minutes into the flight, the glider had climbed to about 2,200 ft in a thermal. Shortly after, it abruptly started to descend and track back towards the airfield. Witnesses saw smoke or liquid trailing from the glider and flames in the area behind the cockpit. At about 1300, when at about 1,100 ft AGL, the pilot jettisoned the front-seat canopy but did not exit the glider. Fire engulfed more of the rapidly descending aircraft's fuselage before it collided with the ground in a nose-down attitude. The pilot was fatally injured, and the aircraft was destroyed.

What the ATSB found

The glider caught fire in-flight, with flames seen near the engine housing. However, due to the severe post-impact fire damage, the ignition source of the fire could not be determined. The pilot was probably attempting to return the burning glider to the airfield when it departed controlled flight and collided with terrain. The loss of control was probably due to the effects of fire incapacitating the pilot and/or affecting the aircraft's flight controls. The ATSB found that the pilot had the necessary equipment to make an emergency egress from the glider to escape the effects of the fire. He jettisoned the glider's canopy but possibly due to incapacitation, did not exit. Finally, the glider's cockpit and engine housing were not separated by a firewall. That resulted in limited containment of smoke and fire, and reduced the available time to make an emergency exit.

What's been done as a result

Following the occurrence, the Gliding Federation of Australia published an Airworthiness Directive and Airworthiness Advice Notice, both entitled Engine Compartment Fire Containment and Retardation, which provide guidance regarding fire safety. The Airworthiness Directive requires all powered glider operators to inspect and repair fire retardant paint, fit 'in case of engine fire' cockpit placards, and ensure there is no flammable material on the cockpit side of any firewalls.

Safety message

Although not an airworthiness requirement, pilots of powered experimental gliders are strongly encouraged to install fire protection between themselves and the engine housing. The ability to exit a glider relies on avoiding incapacitation that can happen quickly in the event of in-flight fires.

The occurrence

At about 1250 Eastern Daylightsaving Time (Eastern Daylight-saving Time (EDT): Universal Coordinated Time (UTC) + 11 hours) on 21 January 2018, a Schleicher ASH-25E (AMT Jet) experimental powered glider, registered VH-GOA (GOA), launched from the Bathurst Soaring Club's facility at Piper's Field, New South Wales (Figure 1). The glider was launched by an aerotow aircraft from runway 21 with the pilot as the sole occupant. The purpose of the flight was for GOA and another glider to conduct a cross-country flight. The other glider launched about 5 minutes before GOA.

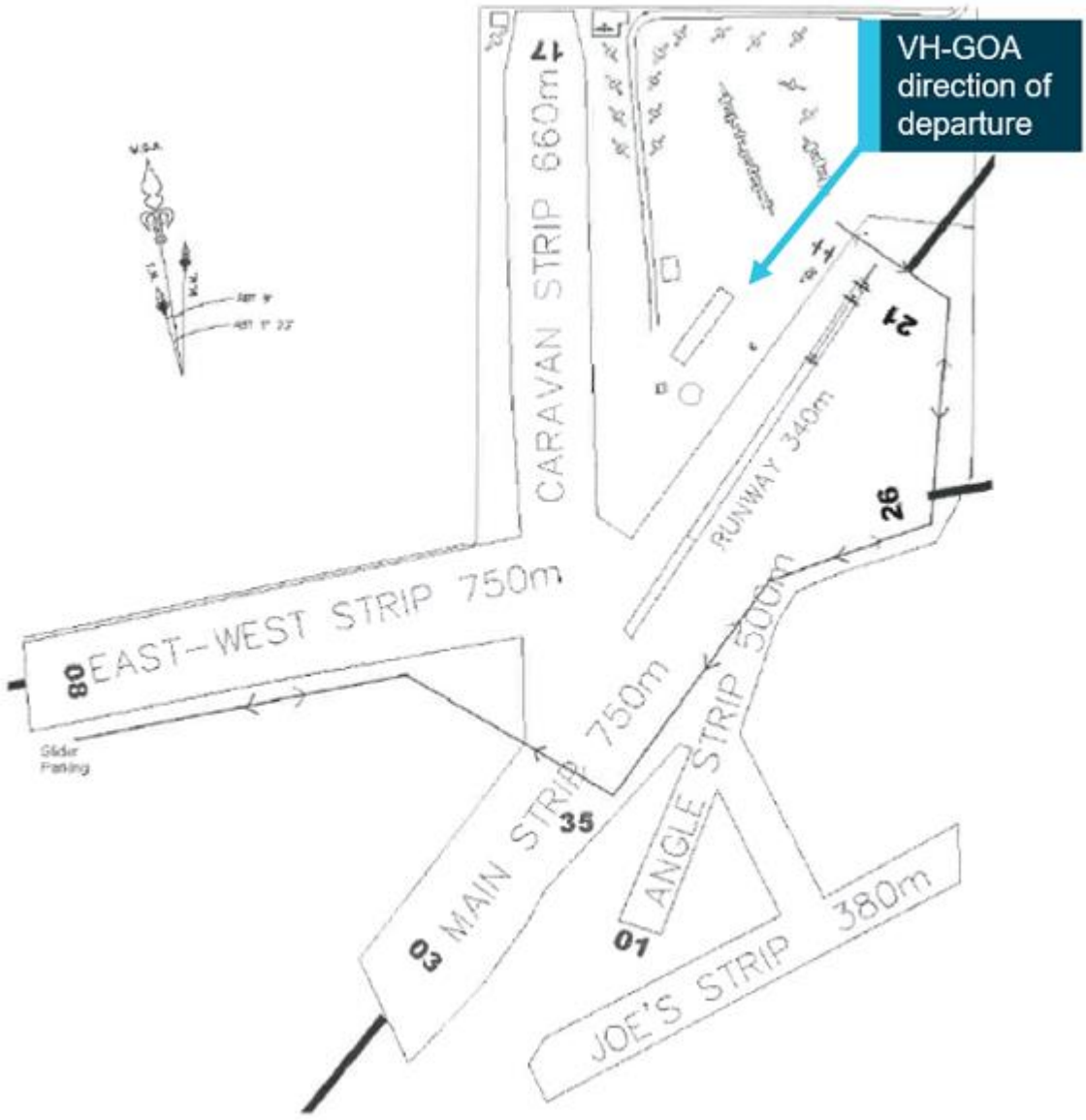


Figure 1: Bathurst Soaring Club facilities at Piper's Field. Source: Bathurst Soaring Club, with permission, modified by ATSB

Witnesses at the airfield reported that, after departing, (Figure 2, item 1), GOA tracked out for about 1.5 NM. The pilot released from the aero-tow aircraft at 800 ft above ground level (AGL) (Figure 2, item 2), made a radio call on the Soaring Club frequency that he had disengaged from the aero-tow. On-board GPS position and altitude information showed that by 1258:58 GOA had climbed to 2,205 ft AGL in a thermal situated to the south of the airfield. The glider then abruptly departed the thermal and started to descend and track back towards the northern end of the airfield (Figure 2, item 3). Witnesses reported seeing something trailing from GOA, which they thought was smoke or a liquid, while the glider was in a steep nose-down attitude. They then saw flames emanating from the top and bottom of the airframe, behind the cockpit (Figure 3). The pilot jettisoned the front seat canopy at 1259:52, at a height of about 1,100 ft AGL (Figure 2, item 4), but despite wearing a parachute, he did not exit the glider.

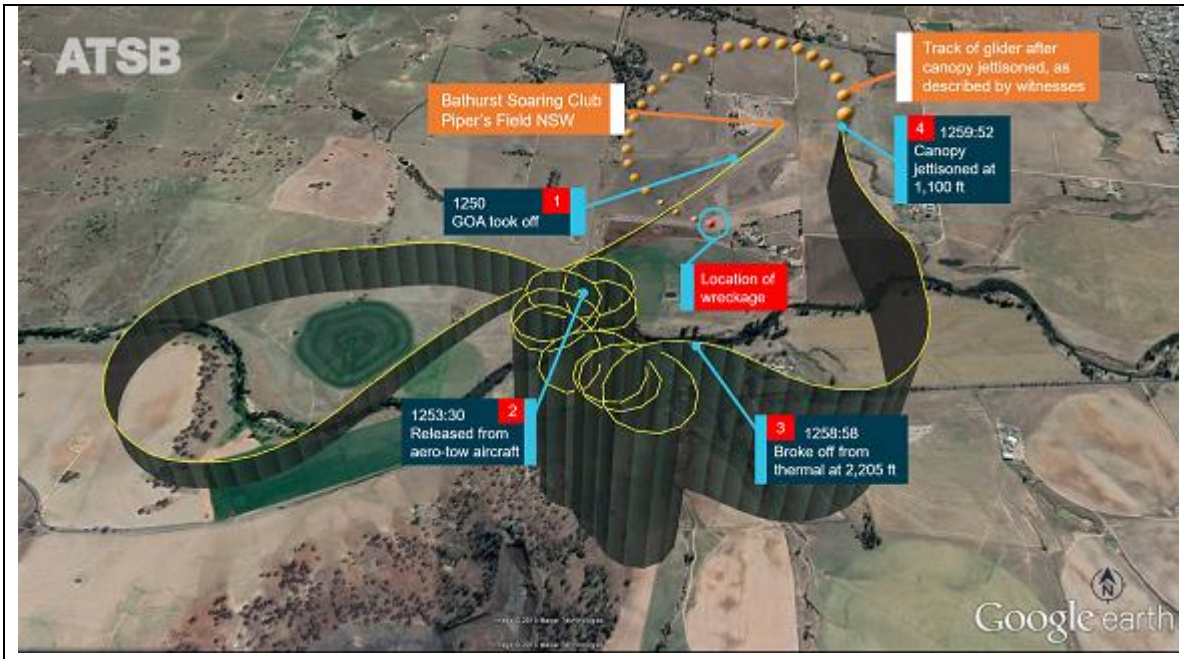


Figure 2: Aircraft track as recorded by the on-board GPS and as recalled by witnesses . Source: GPS data overlaid on Google earth, annotated by ATSB

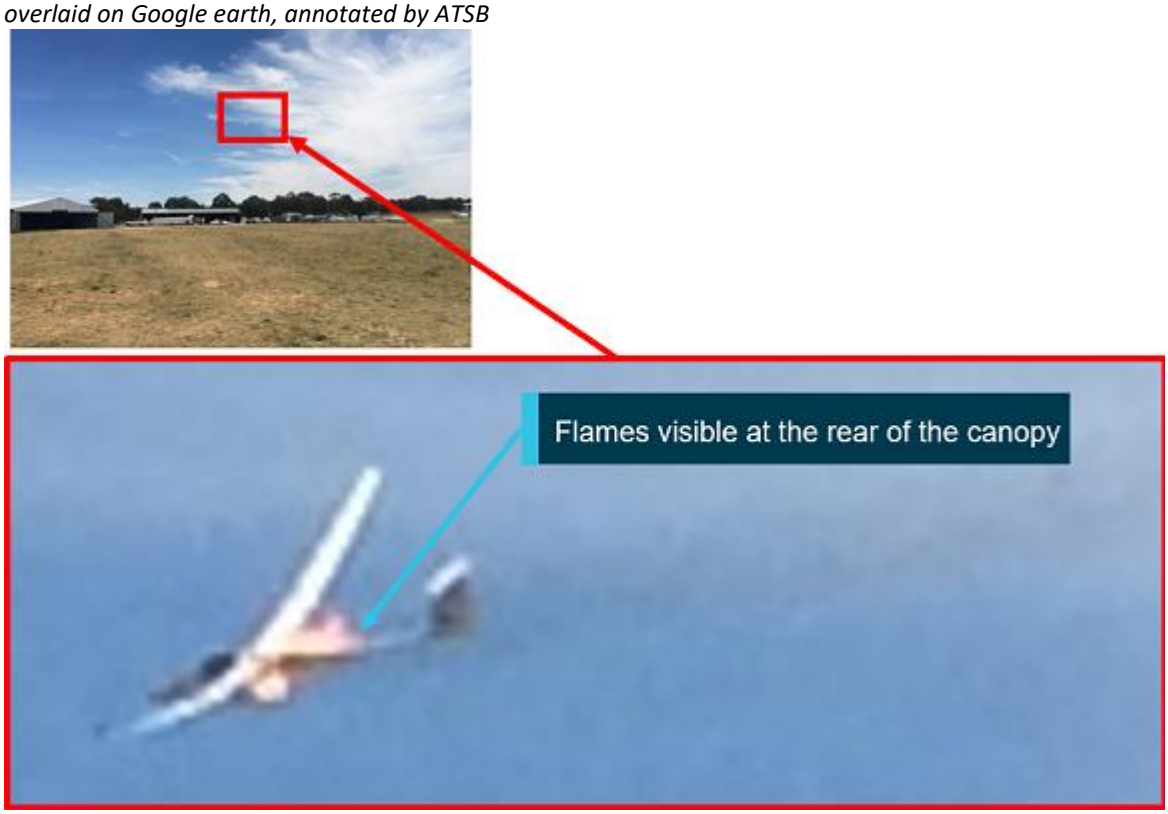


Figure 3: Photograph of GOA after the front canopy was jettisoned. Source: Witness photograph, modified by ATSB.

At this stage, GOA was seen maintaining a steep nose-down attitude and high speed with a bank angle of about 15°. Witnesses also recalled that there did not appear to be any discernible control inputs after the

canopy was jettisoned and by the time the glider descended to about 500 ft AGL, more of the fuselage was engulfed in fire. At about this time, at least one of them called emergency services. The soaring club's closed-circuit television camera recorded that the glider banked left just prior to impact (Figure 4). A witness similarly reported that the glider's left wing tip impacted the ground first, before it came to rest in an inverted position. The wreckage continued to burn after impact, and a fire spread to the surrounding grass. Some witnesses moved to the accident site with handheld fire extinguishers to control the fire. About 10 minutes later, fire services arrived on the scene and extinguished the fire before it spread to neighbouring properties. The pilot received fatal injuries and the aircraft was destroyed.

Figure 4: The glider immediately before impact. Source: CCTV camera still image, modified by ATSB

Context

Pilot information

The pilot held a valid Glider Pilot Certificate issued by the Gliding Federation of Australia (GFA) in October 2017. He also held a Private Pilot (Aeroplane) License that was issued in July 1977. In addition to holding all necessary qualifications for gliding operations, his endorsements included:

- carriage of private passengers;
- cross-country/touring (self-launching sailplane)'
- low level finish; and
- self-launching sailplane.At the time of the occurrence, the pilot had accrued between 8,000 and 11,000 hours of gliding experience over more than 2,000 flights. The pilot also held a maintenance authority to conduct specific powered glider and airframe maintenance. The pilot held a valid medical Certificate of Fitness issued by a Medical Practitioner as required by GFA. The criteria for issuing a Certificate of Fitness were based on the medical standards that Austroads set for issuing a

driver's license medical certificate for a private motor vehicle. He had previously held a class 2 aviation medical certificate, which expired in 2012. Evidence to assess the likelihood of the pilot experiencing fatigue was gathered, including available information on sleep obtained, any factors potentially affecting his ability to maintain adequate alertness during the flight, and other aspects that affects sleep opportunity. However, there was insufficient evidence to ascertain whether the pilot was likely to have been experiencing a level of fatigue known to affect performance.

Aircraft information

The Alexander Schleicher ASH-25E is a two-seat, mid-wing, powered sailplane with camber changing flaps, t-tail unit, retractable landing gear, and provision for water ballast. The aircraft also has a retractable engine pylon that accommodates a Rotax 275 engine, designed for selfsustaining flight. The engine pylon extension/retraction mechanism was powered by a 12 V lead-acid battery. The glider had front and rear canopies, each of which could be separately jettisoned in-flight by the pilot. The major construction materials for the ASH-25E airframe included carbon fibre-reinforced polymer rebar in the wings and winglets, carbon and aramid fibres in the fuselage, hard foam sandwich in the fin, wings and control surfaces, and fibreglass in the winglets. The flight control cables were steel ropes, the long push rods were aluminium alloy, and the shorter push rods were steel. VH-GOA was manufactured in Germany in 1988. In 2010, the pilot removed the Rotax engine and propeller and replaced them with two dieselfuelled Titan AMT gas turbine engines. Two 25 L collapsible fuel cells were installed into the wing root to supply the replacement engines. Information about the design standards, the cockpit and canopy, the engines, fire protection and maintenance is summarised below.

Design and airworthiness

Following the engine modification, the glider was re-classified as experimental, and listed as an ASH-25E (AMT Jet). This reclassification meant there was no regulatory requirement for GOA to comply with existing design standards. A special Certificate of Airworthiness (CoA) was issued in 2014 under the Civil Aviation Safety Regulations (CASR) Part 21.191 (i) Private Operation of a Prototype Aircraft for the purposes of research and development, showing compliance with regulations, exhibition and air racing. Under the CoA, the glider was expressly limited to using the jet engines for 'sustainer flight' (to sustain or extend the glider in flight including maintaining level flight or initiating a climb) only. Once the glider was listed as an experimental aircraft, the aircraft could be modified, but operated under the GFA under Civil Aviation Orders (CAO) 95.4 Power-assisted sailplanes, powered sailplanes and sailplanes. The Gliding Federation of Australia published the Manual of Standard Procedures (MOSP) Volume 3 Airworthiness Procedures and, under Section 2.6 Experimental Certificate, it outlined that:

"Flying in an aircraft under an [Experimental Certificate] is entirely on the basis of voluntary acceptance of risk by the persons who elect to do so [and that person] should ensure they have sufficient knowledge to understand the nature of the risk...GFA promotes innovation and some member's desire to build, modify and service their own aircraft. EC's may only be issued in accordance with CASR Part 21.191 to 21.195B. All ECs will clearly list the terms and limitations applicable to the allowed flight(s)…"

Cockpit and canopy

The cockpit of GOA contained two seats, one behind the other. The pilot operated the glider from the front seat on solo flights. In addition to the standard instruments, installed equipment included two engine control unit (ECU) displays, a rear-facing camera (to see the engines when operating) and an 'LxNav' flight recorder. A placarded canopy jettison release handle was positioned on the top right side of the instrument panel (Figure 5).

Figure 5: View from front seat in GOA's cockpit. Source: Flight Manual, amended by the ATSB

Engine start system

The two vertically-aligned Titan AMT Netherlands gas turbine engines were installed on the existing dual-sided pylon. The Titan was constructed from a single radial compressor and an axial flow turbine stage (Figure 6). Fuel attachments on the front cowl of the engine, with Teflon tubing and push-in Polytetrafluoroethylene (PFTE) fittings were used. The engines were housed in the engine bay when not in use, and were raised as part of the one-switch start sequence. The Titan engines' fuelling and operating speed were controlled by the two electronic control units (ECUs), which also regulated performance, and were each powered by a lithium polymer battery. The ECU displays were fitted inside the cockpit (Figure 5). The engines' ignition system was designed in a manner to prevent start-up when the pylon was lowered. In the event of an emergency, the flight manual recommended lowering the pylon, which would cause the fuel flow to stop immediately. The ignition system for the engines comprised a disposable propane gas bottle installed in the engine bay. The specially developed ASH-25J Flight Manual for GOA contained further information on the propane system:

*"A disposable canister of propane connects to two solenoid operated valves which are controlled by the ECU. These valves are open only during the start up phase. PFAN tubing is used to carry the propane gas...Since the valves are open only during the start phase of the engine, the risk of gas release through ruptured hoses is minimised."*The engines were started sequentially. An electric starter would spin up the turbine, a glow plug activated, and propane was then fed into the engine. If the propane ignited successfully, the EGT would start to increase and the fuel pump would switch on. The solenoid valve to the propane was then closed.

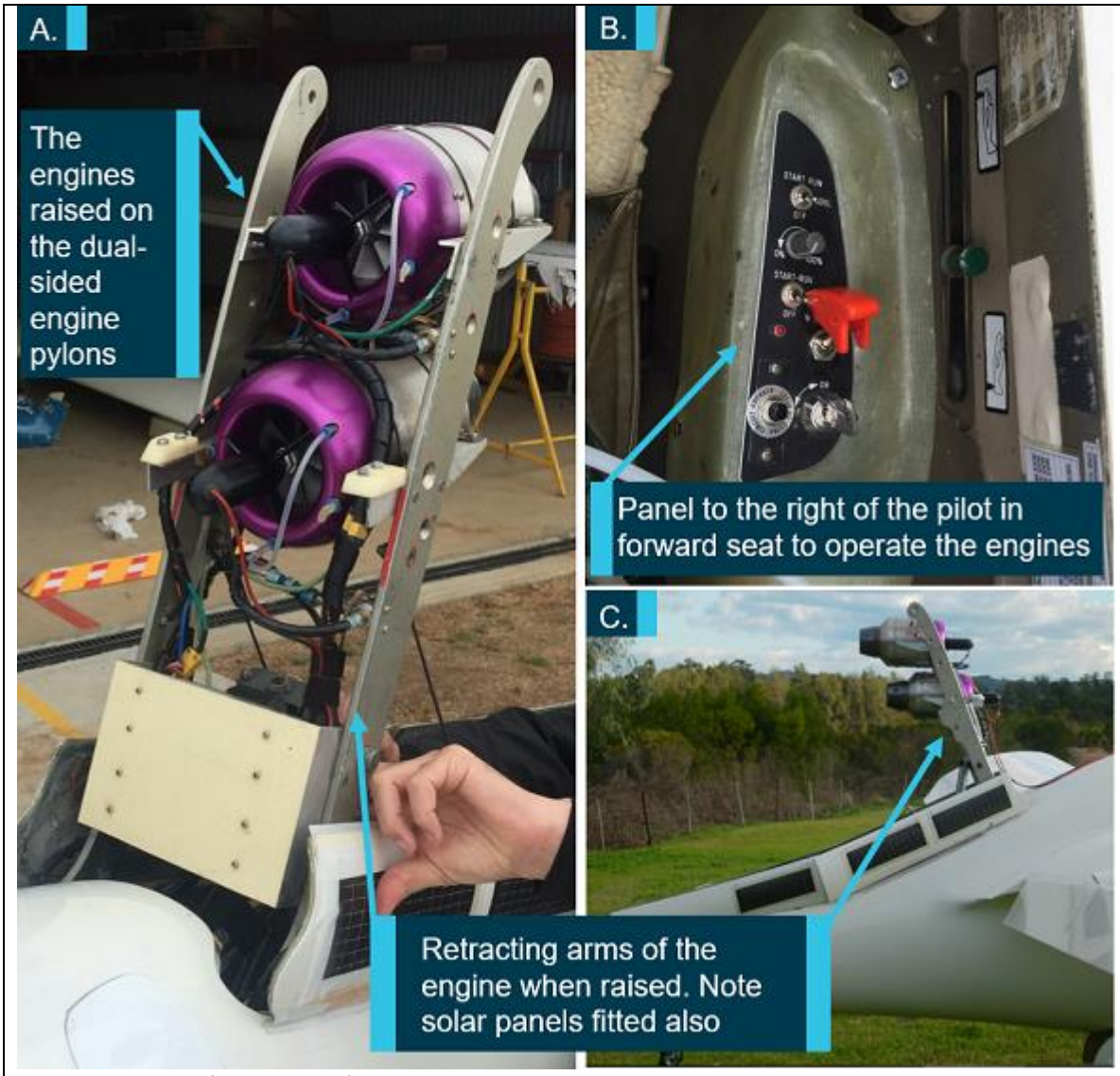


Figure 6: Images of the engines fitted to GOA. Source: ASH-215J Flight Manual

The ATSB conducted a bench test on the fuel system plumbing, constructed from plastic tubing to confirm the product was fire-resistant. The test results showed that the tubing had high temperature resistance and did not support combustion.

ECU batteries

A dedicated rechargeable lithium polymer (LiPo) battery powered each engine's running circuit. The batteries were situated at the rear of the cockpit along with the other ECU components, the leadacid battery, fuel lines, and other electrical leads and components (Item B in Figure 7). The fuel lines from the wing fuel cells were situated next to the batteries.

Thermal runaway describes an accelerating process whereby increased temperature releases energy that in turn further increases temperature. If defective, or handled improperly, some rechargeable batteries with sealed cells can explode during thermal runaway. The ASH-25J Flight Manual noted that 'LiPo batteries are potentially dangerous', and that it was important to ensure that they were protected from mechanical forces and the effects of heat due to their 'high energy density'. The GFA investigation report for this occurrence stated that:

"[LiPo batteries] can undergo thermal runaway…due to overcharge, over-discharge, over-temp, short circuit, mechanical damage… "Witnesses reported seeing the pilot removing the LiPo batteries after a flight the day before, and recharging them.

Fire protection

Sealed firewalls reduce the spread of fire and prevent the leakage of flammable substances, like propane gas or diesel, reaching the cockpit. When lowered, the engines were accommodated within the fuselage tail boom (Figure 7, item A). Regarding the aircraft design, Schleicher confirmed that the 'ASH-25E was not [originally] equipped with a forward firewall' and it appeared that during the subsequent modification, one was not added. Schleicher also confirmed that 'the factory-made engine compartment was primed with a fire protection paint'. Between the engine housing and the shelf in the cockpit, there was an unobstructed opening through to the timber particle shelf (Figure 7, item B and C). In their investigation report, GFA stated that "it is likely that when the two stroke engine removal [was done], the electronic shroud cover and carbon fibre electronics bay were removed from the aircraft and not refitted." An inspection of the images of the particle shelf, and remnants of fuel lines, indicated that there did not appear to be any heat protective sleeves used.

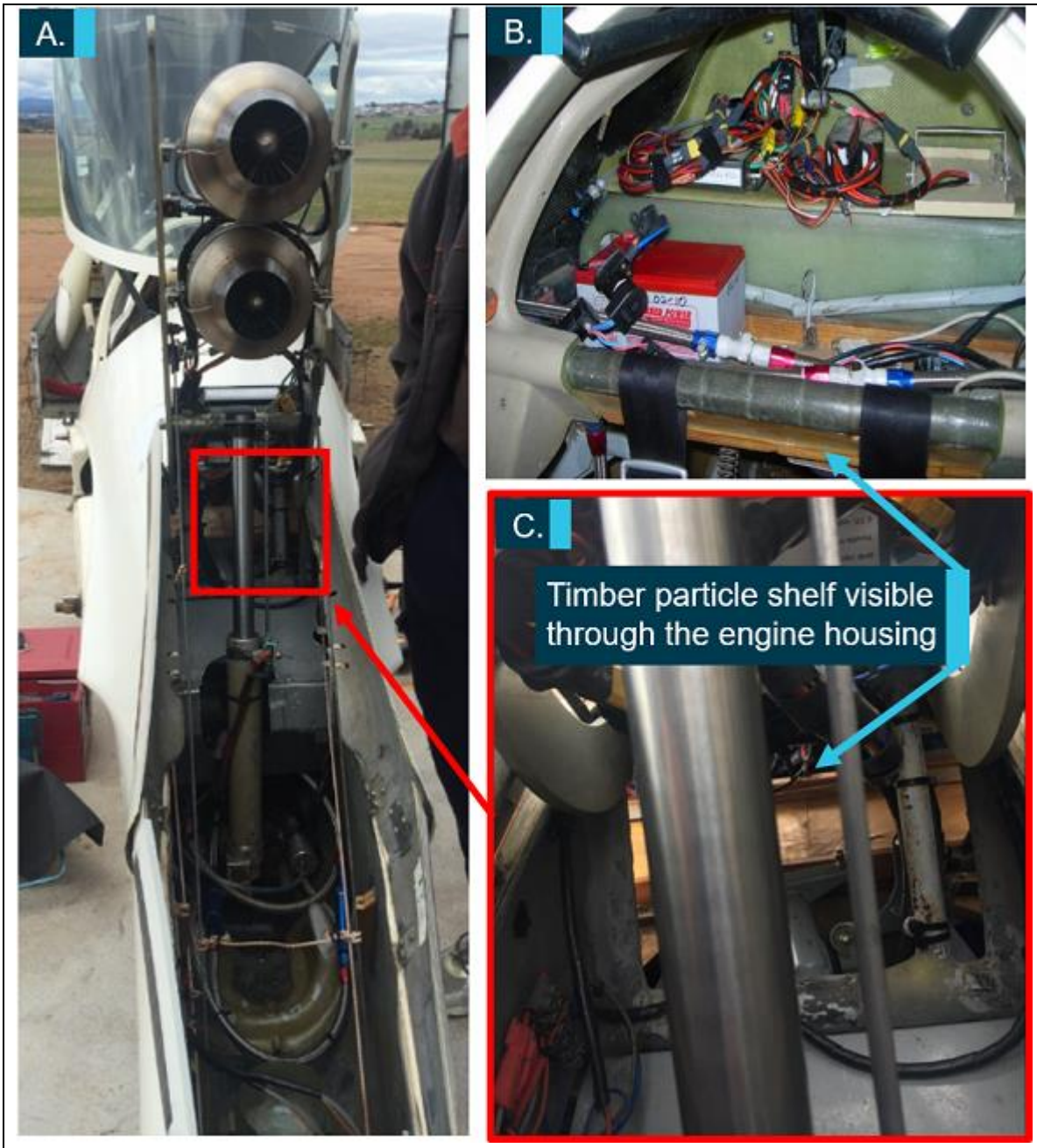


Figure 7: Engine housing and cockpit (A. Engines – rear view, B. Cockpit area – rear view, C. Area between engine housing and particle shelf). Source: Gliding Federation of Australia, with permission.

The European Aviation Safety Agency (EASA) Certification Specification CS-22 Sailplanes and Powered Sailplanes (introduced in 2003) set design specifications applicable to the manufacturing of Schleicher gliders. Under Power-Plant Fire Protection, it outlined that:
*"The engine must be isolated from the rest of the sailplane by a firewall, shroud or equivalent means. The firewall or shroud must be constructed so that no hazardous quantity of liquid, gas or flame can pass from the engine compartment to other parts of the sailplane…The firewall and shroud must be fireproof..."*The materials accepted as fireproof included stainless steel (0.38 mm thick), mild steel sheet (0.5 mm thick), and/or steel or copper-based alloy firewall fittings. The CASR 1988 Part 22 *Airworthiness*

standards for sailplanes and powered sailplanes stated that the standards set out in EASA CS-22 were in force. The engineering report to support the experimental CoA stated that there was little risk of fire in the engine bay, as the engines were only able to operate in a raised configuration. That report did not document any specific consideration of compliance with the firewall requirements outlined in CS-22, although due to its experimental classification there was no regulatory requirement to comply.

Aircraft maintenance

General information

The special CoA stipulated that glider maintenance was to be conducted in accordance with the manufacturer's recommendations, the requirements of the GFA Manual of Standard Procedures (MOSP) 3 and the M*aintenance Manual ASH 25-J Turbo Engine Project.* A review of the aircraft's maintenance documentation indicated that there was no history of issues associated with the fuel system, batteries or engines.

Pre-flight maintenance issues

On the day before the occurrence, the pilot was observed performing ground testing on the glider's engines. A video was also taken of the tests. Significant observations included:

- fuel pouring out of the lower engine on lowering (Figure 8, item A)
- significant engine flaming (Figure 8, item B)
- white smoke billowing from the lower engine (Figure 8, item C)After shutting down the engines, the pilot was heard on the video commenting that the exhaust gas temperature (EGT) read 906°C. The maintenance manual for the engines listed an EGT of 700°C as normal. Following the engine testing, the pilot took a passenger for a flight. The passenger reported that the pilot did not start the engines during the flight. After landing, the passenger helped the pilot with further engine testing. The ATSB considered how the recorded fuel leak from the lower engine may have occurred, and consulted with gliding experts and the manufacturer. They advised that there may have been a leak within the fuel lines, or at the connection point between the PFTE tubing and the engine cowling. It was the manufacturers' opinion that this can occur when the lines are roughly cut (for example using pliers). It was evident from the video taken that the radial compressor on the lower engine was not rotating. Therefore, another possible source of the leak may have been the way the fuel flow was initiated. The system was designed to engage the fuel pump only when the engine speed reached a certain level. Therefore, it should not have been possible for fuel to flow while the compressor was not rotating.

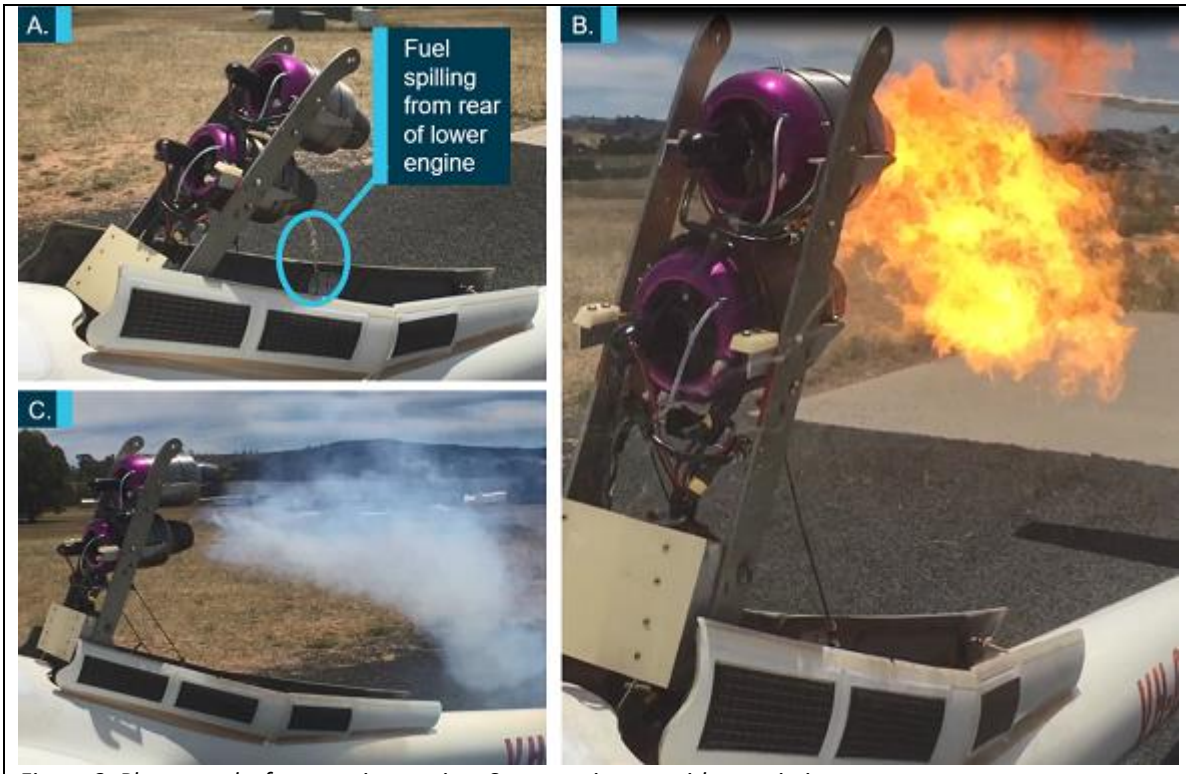


Figure 8: Photographs from engine testing. Source: witness, with permission

Operational information

The ASH-25E flight manual listed operating limitations, including a 'never exceed speed' (VNE) of 151 kt. The normal operating speed range for the glider was between 52-97 kt.

Pre-flight checks

According to the ASH-25J flight manual, a pre-flight inspection of the engines was required, including raising the engine pylon, inspecting all hoses for leaks, all electrical cables and connections for integrity, and checking the security of restraining wires and the engine bay floor for leaks. The GFA Inspector's handbook for powered sailplanes stated that a daily walk-around was required, which included an inspection of the battery installation, instruments and radio, oxygen bottle and systems and powerplant, and a 'check [that] there are no fuel or oil leaks'. Witnesses, and others who knew the pilot, reported that he would often perform an engine run prior to departure, but they did not see him do so on the day of the occurrence.

In-flight engine use

In order to deploy and operate one or both of the engines in-flight, the pilot needed to:

- turn on the key switch
- activate the master circuit breaker
- move the engine pylon switch forward and wait till it had raised (which the pilot could see via a rear-facing camera) then, after seeing START CLEARANCE on the ECU,
- move one or both of the engine control switches forward to START/RUN and then open up the throttle once the ECU displayed STARTED UP.The ASH-25J Maintenance Manual outlined that the engine's pylon circuit was powered from the glider's 12V battery, and triggered the START CLEARANCE on the ECU, without which the engines could not be started. Stopping the engines in flight was achieved by selection of a POWER DOWN switch. In an emergency, selection of the STOP/OFF position or movement of the pylon switch rearwards would instantly stop the fuel.

Recorded data

The ATSB recovered data from a flight recorder unit that the pilot had fitted to the canopy of GOA. The device was a LxNav Nano flight recorder, which is a 66-channel GPS receiver, altimeter and effective noise level sensor. The standard recording rate is once per second, and the unit was configured to automatically start recording once movement above 1 m/s was detected.

Medical and pathology

Post-mortem/toxicology reports and consultation with aviation medical experts identified that:

- With regard to possible smoke inhalation, examination results 'suggest that the deceased may not have had the chance to inhale the smoke related to the fire'.
- The pilot suffered from advanced stage coronary artery disease at the time of the occurrence but there was insufficient evidence to determine if that may have influenced the development of the accident.**Survivability**

Egress assist cushion

The pilot had designed his own egress assistance cushion to allow an easier inflight exit from the glider, particularly if the occupants needed to egress in the case of a mid-air collision. It consisted of two hermetically-sealed carbon dioxide cartridges from commercially-available life jackets that fed the gas through to an inflatable bag via a manifold and flexible hose (Figure 9). Using it required both hands – one to steady the pouch, and the other to manipulate a lanyard. In the case of an emergency that required abandoning the aircraft, the pilot would jettison the canopy first, undo the seat harness, open the flap of the pouch to reveal a lanyard attached to the actuators, and then pull the lanyard to activate the flow of gas. Due to the extent of fire damage, it could not be determined whether the pilot deployed the egress assistance cushion.

Figure 9: The components of the egress assist cushion. Source: ATSB

Pilot parachute

Glider pilots typically wear a parachute to exit a glider in an emergency. The passenger that the pilot had taken flying the day before recalled that they both wore a parachute, and the egress assistance cushions (described above) were in both the front and rear seats on the glider. Images from the wreckage indicated the pilot was wearing a parachute. The most common minimum deployment height of parachutes typically worn by glider pilots was 500 ft AGL.

Site and wreckage

Wreckage location

The aircraft wreckage was located in a large burnt patch of grass on the property of Bathurst Soaring Club, about 445m away from the threshold of airstrip runway 03. The wreckage trail was spread across about 125m. Ground scars and evidence from the wreckage indicated that GOA impacted the ground in a nose-down, left wing configuration in a northerly direction, then rolled or tumbled after the initial impact and came to rest inverted. It was determined that the impact sequence was likely not survivable. The in-flight

fire continued and spread to the surrounding area (Figure 10). The shattered components of the canopy, as well as the GPS unit and flight recorder, were found on private property adjacent to Piper's Field, about 440 m away from the fuselage.

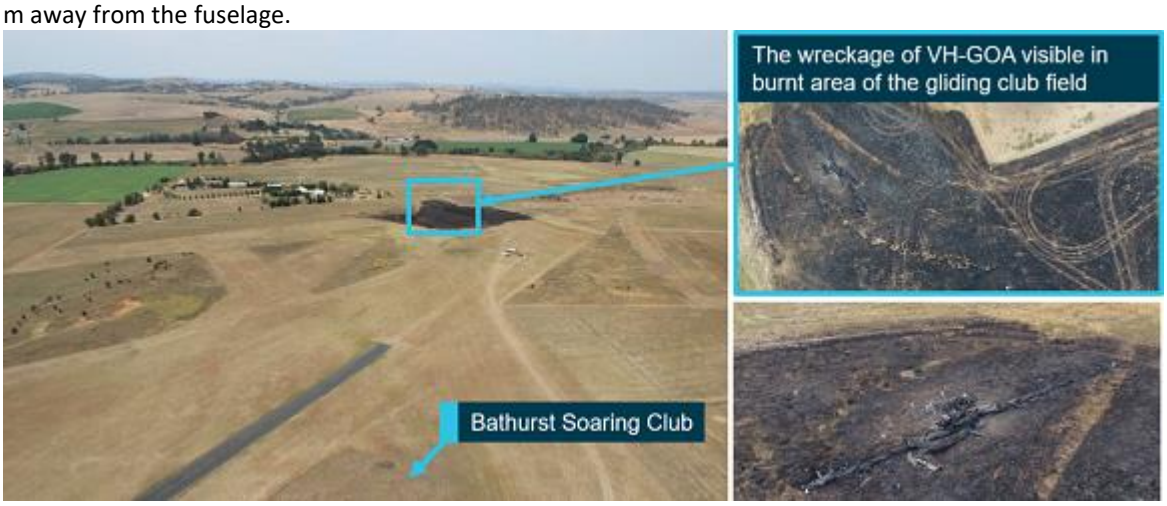


Figure 10: Location of the wreckage on the Bathurst Soaring Club property. Source: ATSB

On-site examination

On-site examination of the severely fire and impact-damaged fuselage, wings (Figure 11) and engines did not identify any obvious pre-existing faults that could have contributed to the accident. The wings, although destroyed in the post-impact fire, had all carbon fibre structures accounted for. The flap position at time of impact could not be determined. The engine pylon appeared to have been lowered at the time. A propane canister was found, but damage from the fire meant that it was not possible to determine whether it had contained any gas. The landing gear mechanism was found in the extended position, suggesting it had been lowered prior to the impact. The pilot was located within the wreckage around the area of the cockpit, although it could not be determined if he was secured in his seat. A small number of components were retained for further examination and testing. The shattered components of the canopy's Perspex were also examined. There was evidence of smoke residue on some of the shards (Figure 12) on the internal side of the canopy. There was also some residue on the forward third on the external side of the canopy's 'clearview' hatch. These indicated that there was some smoke inside the cockpit, and it had passed through that hatch.

Figure 11: Wreckage of VH-GOA. Source: NSW Police

Figure 12: Canopy in-situ (in a field adjacent to the Bathurst Soaring Club). Source: ATSB

Related occurrences

The pilot and the same glider were involved in a previous occurrence reported to GFA. On that occasion, during the launch of the glider, the pilot 'noticed abnormal engine readings and saw flames coming from the jet engine via the monitor.' In response, the pilot shut down and then lowered the engine and continued the flight.

Other related occurrences

In 2007, GFA completed its investigation into an occurrence involving a Stemme model powered glider S-10, registration VH-ZVT involved in in-flight fire, which resulted in two fatalities. The investigation identified that at some stage before impact, the pilot jettisoned the canopy. The GFA also determined that the complex nature of the fuel systems on board, and the use of fuel lines that were not fireproof, would have allowed any leaking fuel to come into contact with engine-related heat sources. The United States National Transport Safety Board investigated an accident involving a Stemme S10-VT in Wisconsin on 14 July 2001. The pilot took off using the engine in its self-launching capacity. Shortly after, the engine began running rough and smoke entered the cockpit. The pilot shut down the engine, initiated an emergency landing and exited the glider. Within five minutes of the engine failure, the aircraft was engulfed in flames. The fire originated in or around the engine compartment. Following that occurrence, it was recommended that certification standards require the evaluation of the engine compartment such that liquids, smoke and gases cannot pass freely between it and the cockpit, and for extinguishing systems be installed. In 2017, the Air Accident Investigation Branch in the United Kingdom issued a special bulletin relating to a battery fire on board an HPH Glasflugel 304 eS powered sailplane. It was determined that there was insufficient warning to the pilot of a fire in the front electric sustainer (FES) battery compartment, and that fires behind the pilot are difficult to see. This reduced the time available for a pilot to make a decision about abandoning the aircraft by parachute. One of the recommendations was for the European Aviation Safety Agency to require manufacturers to install a FES warning system in all powered sailplanes to alert the pilot to fire or smoke.

Safety analysis

In-flight fire

From the available information, in-flight flames were first seen near the engine housing, at the rear of the cockpit. Therefore, the ATSB considered potential ignition sources associated with the engines and the lithium polymer (LiPo) batteries.

Engine-related ignition source

Normal operation of the engines only provided an ignition source during the start sequence or when operating. The design of the engine systems prevented the engines from starting while lowered and stowed. Specifically, the START CLEARANCE on the ECU was not displayed until the pylon was fully raised, and an interlock prevented engine start in the lowered position. While a malfunction that bypassed these mechanisms could not be ruled out, it was considered unlikely that the start sequence initiated while the engines were housed inside the fuselage. The pilot had experienced an in-flight engine fire on VHGOA (GOA) in the past, and had reportedly lowered the engine into the housing to extinguish it. While it was therefore likely that he would have performed the same action if faced with another inflight fire, the ATSB could not find any supporting evidence that the pilot attempted to start the engines in flight. Specifically:

The pilot did not run the engines on the ground before the occurrence flight. Given his reported past practice, this indicated that he was not intending to use them. Witnesses reported that they did not hear the distinctive sound of the engines either before or after the departure of GOA. It was also not possible to discern from the witness photos whether the engines were raised. The rate of climb that GOA achieved in the thermal was possible without the engines. The engines were likely lowered at the time of the impact (although it was not possible to determine what their position was at all times during the flight). The ATSB was therefore unable to determine if the source of the fire was related to an attempt (successful or not) to raise and start the engines. However, given the recorded engine operation the previous day - fuel leakage and excessive flaming, similar in-flight behaviour during the accident flight could have resulted in an airborne fire. Additionally, as propane ignites at lower temperature than the diesel fuel, a propane leak could also have plausibly ignited. Prior to the installation of the jet engines in 2010, the ASH-25E had a forward shroud and fire protection paint within the engine housing, but it appears the shroud was removed

with the original engine. Based on several sources of evidence, there was no effective fire protection between the engine housing and the cockpit on GOA.

Thermal runaway

The pilot had charged the batteries on the evening before the occurrence. If a battery experienced thermal runaway, the resulting heat would be sufficient to ignite any diesel or propane nearby, as well as causing the fuselage to combust. However, due to the intense postimpact fire, the battery was not identifiable within the wreckage so it was not possible to assess the likelihood that it was the source of ignition.

Summary

The investigation found that the in-flight fire probably started near the aircraft's engine housing. However, the extent of fire damage precluded identification of the specific ignition source. Despite that, the circumstances of this accident (and previous occurrences) clearly illustrate the importance of having a sealed firewall to prevent, or at least delay, the effects of fire reaching the cockpit area. In that context, the ATSB recommends that any modifications to powered gliders are conducted with reference to the European Aviation Safety Agency Certification Specification CS22 Sailplanes and Powered Sailplanes.

Loss of control and collision with terrain

After disengaging from the aero tow aircraft, the glider started to climb in a thermal. The other glider that departed a few minutes before GOA climbed to about 10,000 ft in the same thermal, indicating that it would likely have supported the continuation of a positive climb for GOA. Therefore, when the pilot of GOA broke off from the thermal, this was probably a result of identifying the fire behind the cockpit. The glider then tracked back towards the direction of the airfield. The subsequent high rate of descent indicated that the pilot probably deployed the glider's airbrakes to expedite the descent. The glider passed by the threshold of runway 21 when in the continuous nose-down, left-bank attitude, a configuration that could indicate the pilot was no longer in control. It collided with terrain in this same configuration at a relatively high speed.

The ATSB assessed that the control loss was probably due to the effects of fire incapacitating the pilot and/or affecting control of the glider. It is possible that the pilot became incapacitated, for the following reasons:

- exposure to smoke, fumes or fire (there was evidence that smoke entered the cockpit)
- a medical event, possibly linked to the stress of the inflight fire and/or his coronary heart disease
- the canopy or associated airflow may have impacted the pilot as it was jettisoned.Based on the available evidence, the ATSB was not able to determine whether the pilot became incapacitated prior to the impact with terrain. However, as discussed further below, the apparent partial completion of the egress sequence could support that conclusion. Images of GOA just prior to impact indicated that the glider was structurally intact prior to impact however, it is possible that the flight control cables and/or pushrods were damaged by the inflight fire. Due to the severity of the post-impact fire, it was not possible to ascertain if the flight controls were firedamaged before the ground impact.

Glider egress

The ATSB established that the pilot was wearing a parachute, which probably had a minimum deployment height of 500 ft, and that he was probably sitting on his egress assist cushion. He therefore had the necessary equipment to be able to exit the glider. The time between the pilot breaking off from the thermal and then jettisoning the canopy was about 54 seconds, and it appeared as though the glider was under control. However, witnesses reported the fire visibly became more intense over that time. There was smoke residue on the inside of the canopy, which indicated that the pilot was exposed to at least one incapacitating factor before jettisoning the canopy. Fire smoke contains a mixture of narcotic and irritant gases, and incapacitation results from exposure to this combination, where 'incapacitation' encompasses a range of possible conditions, including unconsciousness, severe physical distress, or inability to determine how to escape (Gann, 2004). Jettisoning the canopy required the pilot to pull a handle in the cockpit. This indicated that he was not incapacitated up to that moment. However, it is possible that after jettisoning the canopy, the pilot was not able to exit due to incapacitation. Alternatively, he may have assessed that he was now too low to exit the aircraft, or made a conscious decision to land the glider.

Findings

From the evidence available, the following findings are made with respect to the collision with terrain on the experimental ASH-25E glider, registered VH-GOA that occurred 13 km westnorthwest of Bathurst Airport (Piper's Field) on 21 January 2018. These findings should not be read as apportioning blame or liability to any particular organisation or individual.

Contributing factors

- Shortly after launch, an in-flight fire commenced near the engine housing. The ignition source of the fire could not be determined due to severe post-impact fire damage.
- The pilot was probably attempting to return the burning glider to the airfield when it departed controlled flight and collided with terrain.
- The pilot had the necessary equipment to make an emergency exit from the glider and escape the effects of the fire. He jettisoned the glider's canopy but possibly due to incapacitation, did not exit.***Other factors that increased risk***
- The glider's cockpit and engine housing were not separated by a firewall. This limited containment of the in-flight fire, resulting in greater exposure of the pilot to fire/smoke and reduced egress time.**Safety action**

Whether or not the ATSB identifies safety issues in the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The ATSB has been advised of the following proactive safety action in response to this occurrence.

The Gliding Federation of Australia

As a result of this occurrence, and others throughout the gliding and recreational aviation sectors, GFA advised the ATSB that on 11 March 2019, GFA published an Airworthiness Advice Notice (AAN), and on 15 March 2019 published an Airworthiness Directive (AD), both entitled Engine Fire Containment and Retardation. The affected aircraft types included all self-launching and power-assisted sailplanes, including those fitted with jet engines. The AAN stated that:

*"…many instances have been found of potential fire hazards in the form of fuel leaks, oil leaks and deficient exhaust systems. Instances found of fires starting, then self-exhausting. Adding to the mix are some powered sailplane types that may not fully meet the fire protection standards…"*The AAN outlined the fire protection standards from EASA publication CS-22 (summarised in the Context section of this report), the engine installations of key concern (including the 'fully buried' engine such as GOAs), and the risks of defects in any fire retarding paint. Intumescent paint was suggested for use, which is 'a paint cover which, when heated, expands [to shelter] the material it is covering, from heat and combustion...' Glider pilots were also encouraged to consider the effects of airflow on fire propagation, and used a diagram of the ASH 25E (Figure 13). Lastly, the AAN covered pilot actions in the case of an engine fire, with the key advice being to shut off the fuel supply and contain the fire.

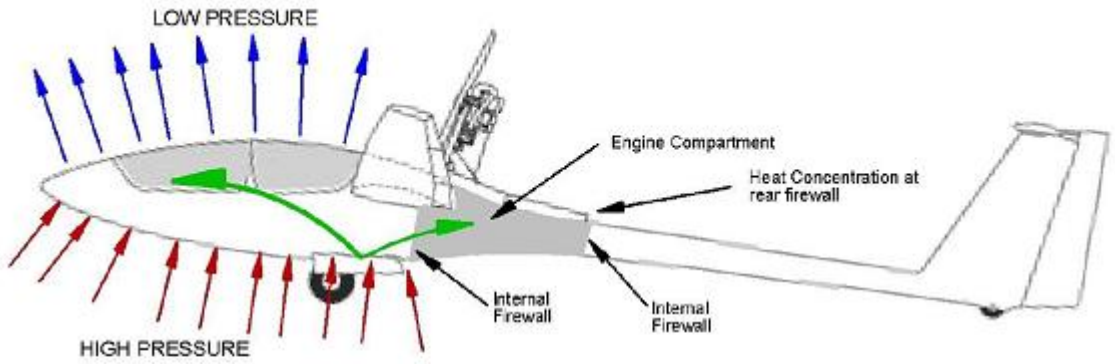


Figure 13: ASH 25E diagram displaying pressure, airflow in and out of the airframe. Source: Gliding Federation of Australia

The AD provided pilots with inspection guidelines and procedures to meet a minimum standard for fire containment and retardant. Before 30 June 2019, all glider operators and inspectors needed to complete a Form 2 inspection, inspect the condition of fire retardant paint, determine the configuration of the firewall(s), and provide the Inspection Schedule to GFA. By 30 November 2019, all paint deficiencies were required to be rectified. All subsequent inspections then needed to include a paint inspection, and also an assurance that no flammable material is attached to the cockpit side of the firewall. If the glider cannot be fitted with a firewall, a 'strong case for non compliance' must be made to GFA.

Date	21-Jan-2018	Region	SAGA	SOAR Report Nbr		S-1159	
Level 1	Operational	Level 2	Miscellaneous	Level 3		Rope break/Weak link failure	
A/C Model 1		Janus B		A/C Model 2		Piper PA-25-235	
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	37

During and aerotow launch and at a height of about 250ft AGL, the command pilot noticed a low airspeed reading and made a radio call to the tow pilot seeking an increase in the towing speed. Due to a combination of turbulence and the tow pilot lowering the nose of the tow plane to increase speed, the towrope became slack and bowed. The command pilot yawed the glider to manage the slack, but the rope broke just forward of the glider's nose release as it come under tension. The command pilot immediately turned the glider through 180 degrees and landed on the reciprocal runway. After landing the broken rope was inspected and found to be worn/frayed and along the last 1/3rd of its length. The rope was replaced for new. The command pilot also checked the pitot static system on the glider but could not find any issues that would account for the low airspeed reading. However, the airspeed was again reading low on the next flight. As the command pilot was inexperienced on type, they were unaware that low airspeed readings are commonplace. On this glider the pitot tube is located immediately above the front release cage, and therefore gets shielded by the rope and rings.

Date	26-Jan-2018	Region	GQ	SOAR Report Nbr	S-1176
Level 1	Operational	Level 2	Aircraft Control	Level 3	Control issues
A/C Model 1	Blanik L13	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	74

The pilot was conducting a private passenger flight in the Club's Blanik and was flying from the rear seat. The pilot turned final slightly higher than normal and employed full airbrake to manage the glide slope. When the pilot attempted to reduce the airbrake to maintain the aiming point, they found the lever to be immovable. The glider continued its steep approach to land and passed *"uncomfortably close over a glider which was lined up for take-off"* that was positioned just outside the runway markers. A witness, who was standing at the nose of the glider awaiting launch, said *"the port wing of the Blanik passed over the* (glider awaiting launch) *clearing it by about 3 to 4 metres,"* and touched down about 10 metres ahead of the glider awaiting launch. It was noted that the pilot of the Blanik had the option of landing on the main runway or the right-hand grass verge. The Blanik's airbrakes were subsequently inspected and found to be working correctly. It was concluded that the pilot did not exert sufficient pressure to the airbrake lever to overcome the aerodynamic forces holding the brakes fully open during descent. The pilot had only flown from the rear seat of the Blanik on 10 occasions prior. The pilot stated that their tall stature meant *"my elbow is very cranked when the airbrake is fully open, giving very little leverage"*. The pilot was informed they should have altered heading to avoid overflying the glider awaiting a launch. The pilot's CFI noted that target fixation ('piecart-itis') were factors in this incident.

Date	28-Jan-2018	Region	VSA	SOAR Report Nbr	S-1162
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing
A/C Model 1	Twin-Astir	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	73

During aerotow and at a height of about 100ft the student accidentally pulled the tow-release. The instructor assumed control and landed on the cross-strip. During the landing roll the one wing contacted high grass resulting in the glider turning through 90 degrees and skidding sideways. The wingtip skid tore free. The glider was otherwise undamaged and returned to service after a new wing skid was fitted.

Date	30-Jan-2018	Region	NSWGA	SOAR Report Nbr	S-1165
Level 1	Environment	Level 2	Wildlife	Level 3	Birdstrike
A/C Model 1	Discus-2b	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	26
During a cross-country flight, and while leaving a thermal to track for the turnpoint, the pilot noticed a bird dart over the top of the glider and felt it strike the tailplane. Control of the glider was not affceted but the pilot elected to return to the home airfield. Post-flight inspection revealed the glider was undamaged.					

Date	1-Feb-2018	Region	VSA	SOAR Report Nbr	S-1238
Level 1	Technical	Level 2	Powerplant/Propulsion	Level 3	Engine failure or malfunction
A/C Model 1	JS1 B	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	In-Flight	PIC Age	72
Shortly after release from tow the pilot carried out a start on the glider's jet 'sustainer' engine. It was the pilot's usual practice to test for proper engine operation, and also to rehearse the routine in order to ensure familiarity with the procedure in the event of a need to use the engine to avoid an outlanding. The jet engine was deployed at around 1800' AGL and the automatic start-up process commenced as normal. The engine was then gradually accelerated to 92,000rpm where it ran for approximately 2½ minutes, at which time it experienced what the pilot believed to be a flame-out followed by a shut down. The pilot reported that this was unusual, as a flameout during stable running at full power had not previously occurred. The pilot also stated that there was no strange sound associated with the event and no vibration or other physical effect detected in the handling of the aircraft. After checking the switches and fuel tap, the pilot attempted another start but received an error message on the Jet Display Unit 'Insufficient Start-up Current', whereupon the system was closed and the engine retracted. The pilot then completed a cross country flight of several hours. On returning to the aerodrome and during the tow back to the tiedown area, the pilot was approached by the local club CFI who enquired whether the pilot had experienced any engine trouble. As it transpired, during the engine failure the engine exhaust cone was blown off and was found by the owner of the farm property adjacent to the aerodrome who had returned it. Subsequent airframe inspection after the flight did not reveal any damage, consequential or otherwise. The engine was later removed and sent to the local service agent, to investigate the cause of the failure and make the necessary repairs under warranty. The engine run log from the event was downloaded from the ECU and provided with the engine. Subsequent inspection revealed that the engine suffered a rear bearing failure, probably due to particulate contamination in the fuel supply. The exact contaminant was not identified. As the bearing failed, the turbine wheel tips ran around the enclosing ring, and the tips screwed the ring forwards, breaking the 16 rear assembly bolts. This sudden and energetic movement locked everything up, resulting in damage to just about every internal part. The exhaust nozzle (retained by those bolts) fell away without damage to anything else. There were no high energy parts that were not contained. Engine development continues to be a high priority for the manufacturer, and tolerances are continually being improved to enhance reliability and efficiency. As the ingress of foreign debris is suspected to be causing failures, a newly engineered fuel filter will be placed downstream from point where the system is broken for engine removal.					

Date	1-Feb-2018	Region	VSA	SOAR Report Nbr	S-1167
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Controlled flight into terrain
A/C Model 1	ASW19B	A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Outlanding	PIC Age	50
The inexperienced pilot, who was participating on a Regional coaching course, was returning from a cross-country task. The pilot believed they had final glide, but the glide path was marginal and into a strong and					

gusting headwind. Conditions at the boundary layer were turbulent. The pilot became fixated on landing on the aerodrome and continued in the hope that some lift would be encountered to improve the glide path. Unfortunately, the glide path did not improve, and at low height the pilot configured the aircraft for landing in a paddock immediately ahead. During final approach the glider descended into gusty conditions close to the ground and ballooned. The pilot misjudged the recovery from the balloon and the glider impacted the ground nose and mainwheel first. The undercarriage was pushed into the fuselage and bulkheads were displaced. The aircraft came to rest about 500 metres short of the airfield boundary. The pilot was debriefed on the importance of breaking off the flight with sufficient height to assess outlanding options. Potential causal factors including optimism error, poor situational awareness and flight management, late break-off decision, and runway fixation.

Date	4-Feb-2018	Region	NSWGA	SOAR Report Nbr	S-1169
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	Nimbus 2	A/C Model 2	ASW-27-18E		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	56

During a cross-country flight a foreign registered ASW-27-18E glider passed within 100 metres horizontally and 250 feet vertically of a thermalling Nimbus 2 glider near popular turn point 'The Rock' township in NSW. The pilot of the Nimbus 2, flying from Temora, received a Flarm alert and took slight avoiding action by tightening the turn and observed the other glider fly above and to the east. Attempts to contact the other pilot were unsuccessful. The ASW-27-18E glider was later identified via OLC and was flown by a British pilot flying out of Benalla. A statement was not obtained from the foreign pilot. In areas outside controlled airspace, it is the pilot's responsibility to maintain separation with other aircraft. For this, it is important that pilots utilise both alerted and unalerted see-and-avoid principles. Pilots should never assume that an absence of Flarm broadcasts means an absence of traffic.

Date	5-Feb-2018	Region	VSA	SOAR Report Nbr	S-1168
Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion
A/C Model 1	Janus B	A/C Model 2	Twin Commander		
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	60

A glider under tow was taxied onto the far end of the operational runway just after the pilot of a powered aircraft called final. The vehicle occupants did not hear any radio transmissions from the powered aircraft, nor did they sight any aircraft on final approach. The glider's taxying call was heard from a ground station that broadcast a warning of a potential incursion but that also went unheard by the vehicle occupants. The taxying glider exited the runway before the powered aircraft crossed the airfield boundary, and the landing was not aborted. The vehicle occupants were using a hand-held radio, and it is possible low radio volume or shielding by the vehicle prevented the radio calls from being heard. It was also noted that the powered aircraft would have been difficult to see, as it was on a long shallow approach and its landing lights were not illuminated. GFA recommends that the drivers of vehicles using hand-held radios should, before entering an operational runway, exit the vehicle and have a good look around. The radio call should also be made while outside the vehicle to eliminate the possibility of shielding. CASA guidance in CAAP 166-1, under the heading 'Related safety actions at non-controlled aerodromes' at paragraph 2.2 states: *"Pilots are encouraged to turn on external aircraft lights, where fitted, when in the vicinity of a non-controlled aerodrome. These lights should be kept on until the aircraft has landed and is clear of all runways."*

Date	5-Feb-2018	Region	VSA	SOAR Report Nbr	S-1172
Level 1	Operational	Level 2	Aircraft Control	Level 3	Control issues

A/C Model 1		PIK-20B		A/C Model 2		AMERICAN CHAMPION AIRCRAFT CORP 8GCBC SCOUT	
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	
The pilot was undertaking a competition launch in gusty crosswind conditions, with a slight tailwind component. During the take-off roll the starboard wing dropped to the ground. Application of opposite rudder and aileron deflection could not restore a wings level attitude and the pilot released from tow. The glider departed the runway to the right, coming to rest near the boundary fence. It is likley the glider was struck by a gust, as none of the other 31 gliders experienced difficulty with launching.							

Date	7-Feb-2018	Region	VSA	SOAR Report Nbr	S-1170
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	Piper PA-25-235		A/C Model 2	Callair A9A	
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	65
Two tow planes nearly collided during competition towing operations. At about 1500ft AGL the pilot of the Piper Pawnee that was towing a glider sighted a Callair heading towards the combination from the right and heading towards the circuit. The pilot of the Callair then sighted the towing combination and banked to the left to avoid collision. The Competition Safety Officer and tow pilots later met and developed a towing pattern that minimised the risk of conflict for the remainder of the contest.					

Date	7-Feb-2018	Region	VSA	SOAR Report Nbr	S-1171
Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion
A/C Model 1	ASW 28-18		A/C Model 2	DG-300 Elan	
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	51
At the end of a competition flight, the pilot of a DG-200 gave a radio call advising they were landing long on the main runway. The pilot of an ASW 28-18 glider finishing slightly behind gave a call advising they were landing long on the grass to the right of the runway. On late final, and just as the pilot of the ASW 28-18 commenced the landing flare, the pilot of the DG200 taxied off the runway across the path of the landing ASW28-18. The pilot of the ASW28-18 was able to use braking to land short of the other glider without further incident. It is noted that all pilots competing in the competition had been briefed on how to conduct landings, which included the instructions in MOSP2 at paragraph 8.1.8, which states: *"Sailplanes should make a straight approach and landing run parallel to the runway and must not taxi clear of the runway unless operationally required and only if no other aircraft can land alongside in the direction of taxi."* The incident was brought to the attention of the Competition Safety Officer, who referred to it during a runway safety briefing to all competing pilots the following morning.					

Date	10-Feb-2018	Region	WAGA	SOAR Report Nbr	S-1285
Level 1	Technical	Level 2	Systems	Level 3	Flight controls
A/C Model 1	DG-400		A/C Model 2		
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	72
During the pre-flight inspection, and while checking the controls for freedom of movement, the pilot noticed that movement of the control column was restricted when the flaps were put in landing configuration. Investigation revealed that a fuel line had entered the control actuator area when the engine was down. The fuel line had been recently replaced with a thicker and longer tubing. The offending fuel line was then secured to the bulkhead to keep it clear of the control circuit. The safety of the fuel line will be checked at each Daily Inspection and prior to flight.					

Date	10-Feb-2018	Region	VSA	SOAR Report Nbr	S-1174
Level 1	Operational	Level 2	Runway Events	Level 3	Other Runway Events
A/C Model 1				A/C Model 2	
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	

Three powered aircraft commenced their take-off roll behind the glider operations in contravention of local operating rules. The ERSA for the aerodrome requires all take-offs and landings to commence from the permanently displaced threshold while gliding operations are in progress. This is for the protection of the gliding operations conducted at least 60 metres before the threshold from an aircraft experiencing a runway excursion during the initial ground roll. The local operating procedures require pilots wishing to use the full length for operational reason to give prior notice to the gliding operation so that aircraft and people can be removed from harm's way. As glider runway is within a single runway using a common circuit direction, the runway is deemed to be occupied when a glider or tow aircraft is using the runway and other aircraft using the runway must commence their take-off run from a position ahead of a stationary glider or tug aircraft. CAR 162 'Rules for prevention of collision' also requires *"An aircraft that is about to take-off shall not attempt to do so until there is no apparent risk of collision with other aircraft."* The aerodorme operations panel addressed the isue with the resident operators.

Date	11-Feb-2018	Region	VSA	SOAR Report Nbr	S-1173
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	DG-1000S			A/C Model 2	CIRRUS DESIGN CORPORATION SR22
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	55

The glider joined downwind for the operational runway at 900 ft AGL. As the glider reached the midfield downwind position, the second pilot alerted the pilot flying to a powered aircraft closing on the glider from starboard at less 500 m separation. The powered aircraft passed about 150ft higher than the glider on an easterly heading towards Melbourne. A review of Flight Radar 24 revealed the aircraft to be a Cirrus SR22 at 1100 feet AGL, travelling at 160 knots. The incident was reported to the ATSB and an ATSB investigator contacted the owner of the aircraft. The owner acknowledged that it was most probably them that flashed through the YBSS circuit at the time. The pilot was flying their brand-new Cirrus and was relying solely on TCAS to alert them of other traffic. The Cirrus pilot never saw the glider and admitted that appropriate radio broadcasts on the CTAF were not made. The pilot stated they were trying to fly hemispherical flight levels, i.e. with an easterly component the VFR cruising altitudes are 1500 and 3500 feet when below 5000 feet. The ATSB investigator counselled the pilot on the dangers of flying through the circuit of an aerodrome and the importance of radio alerted see-and-avoid. The pilot was also reminded that not all aircraft are transponder equipped in Class G airspace.

Date	12-Feb-2018	Region	NSWGA	SOAR Report Nbr	S-1180
Level 1	Environment	Level 2	Weather	Level 3	Turbulence/Windshear /Microburst
A/C Model 1	LS 7-WL			A/C Model 2	
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	54

The low experience pilot was flying in windy conditions. While landing crosswind, the aircraft flew through rollover turbulence from trees lining the windward side of the runway. The pilot was unable to maintain directional control and the glider ground-looped, resulting in the nose contacting the ground and suffering damage. To increase safety during a crosswind landing, pilots should:

- Understand the crosswind limitations of their aircraft;

- Use flying techniques and skills designed for crosswind landings (a wings-level touchdown is usually safer than a steady-sideslip touchdown with an excessive bank angle);
- land on a more favourable runway if the prevailing runway conditions and crosswind are unfavourable for a safe landing; and
- Understand small-scale local effects associated with strong winds: such as updrafts and downdrafts; and vortices created by buildings, trees or terrain.

Note: Gliders with their CG well behind the wheel have a much stronger tendency to weather-cock into wind. If a swing does develop it will worsen, sometimes very quickly, and the rudder may be incapable of stopping it. Take special care with these machines. Unless full opposite rudder is applied immediately, the glider starts to swing and will almost certainly ground loop, perhaps with serious consequences.

Date	17-Feb-2018	Region	NSWGA	SOAR Report Nbr	S-1182
Level 1	Operational	Level 2	Miscellaneous	Level 3	Rope break/Weak link failure
A/C Model 1	Pilatus B4-PC11	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	67

On launch, the weak link broke with the glider at approximately 600 ft. The glider executed a normal modified circuit and landed without incident. The winch driver was about to reel the rope in after observing the parachute and rope fall from the glider. However, the launch controller rang the 'emergency bell' on observing the break, and the winch driver immediately stopped the winch as required. The parachute and rope drifted down and crosswind, and fell into tall trees lining either side of the road adjacent to the airstrip. Part of the rope contacted the top wire of the powerline at the side of the road. As the rope did not fall to the road but remained suspended in the air, it presented no danger to passing traffic. The 'emergency bell' is used by the launch controller to signal an immediate stop to the winch driver in the case of an emergency, such as an aircraft flying towards the cable and/or glider being launched. It is also used to stop the launch if the cable breaks or the pilot releases below 200ft. This is because the runway strip is curved, and the winch driver has no visibility of the launch point or the glider until it reaches a height of 200ft. The 'emergency bell' is not intended to be used to stop the launch for a cable break that occurs above 200ft, as this is the responsibility of the winch driver to manage. On this occasion the person ringing the emergency bell was mistaken that this is what they should have done. The gliding club contacted the power company, which sent a crew out to check for any possible damage and retrieve the rope. Flying was terminated for the day. The CFI conducted briefing for the launch controllers reinforcing the appropriate conditions for initiating an emergency stop.

Date	18-Feb-2018	Region	NSWGA	SOAR Report Nbr	S-1183
Level 1	Consequential Events	Level 2	Low Circuit	Level 3	Low Circuit
A/C Model 1	KR-03A Puchatek	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	

After a winch launch, the pilot attempted to work a weak thermal longer than desirable and joined circuit at a lower than normal height. During the initial downwind leg the pilot flew through descending air but became fixated on landing at the launch point and did not modify the circuit. The low base turn was followed by a lower final approach, where the glider passed about 10ft over trees. The pilot's CFI noted that the experienced pilot has, on several occasions, *"stretched the margins to the limits of safety".* The CFI identified the following contributing factors:

- overconfidence in their own ability, leading to finer margins for safety;
- goal fixation;
- the slope of the runway and adjoining property, which is downhill when flying on the downwind leg, can lead the pilot to believe they are higher than they are; and .

- the pilot was more accustomed to flying higher performance aircraft.The pilot has been counselled.

Date	24-Feb-2018	Region	NSWGA	SOAR Report Nbr		S-1185	
Level 1	Airspace	Level 2	Aircraft Separation	Level 3		Near collision	
A/C Model 1		Apis M		A/C Model 2		SZD-50-3 "Puchacz"	
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	70

The pilot flying the Puchacz was having a check flight to revalidate their lapsed Level 2 Instructor rating. As the towing combination departed the runway, the pilot of the self-launching glider commenced take-off. During the aerotow launch and at a height of about 500ft AGL the instructor pulled the release to simulate a cable break. The pilot flying initiated a turnback towards the reciprocal runway. Another pilot sitting in their glider awaiting a launch saw a potential conflict between the two gliders and made a radio broadcast on the CTAF. This alerted the pilots of the other gliders to the impending conflict. The pilots in the Puchacz, which was now about 100ft AGL, sighted the self-launching glider turn away from the airstrip and continue to climb. The pilot flying the Puchacz completed a successful landing. Investigation determined that:

- the pilot of the self-launching glider mistakenly believed there was adequate space to launch; and
- the gliding instructor had not communicated with anyone other than the tow pilot that there was going to be a simulated cable break.Pilots must always be situationally aware and maintain 'alerted see-and-avoid'. That requires a thorough lookout aided by efficient monitoring and use of the radio. Before any take off, pilots need to establish that the airspace is clear. Even more so when conducting low-level emergency exercises, pilots must positively ensure that there is no conflicting traffic and remain alert and aware throughout the exercise. The pilot of the self-launching sailplane was counselled on their decision making and of the need to allow more room between aircraft when taking off. The Club's instructors were advised to communicate their intentions to conduct emergency procedures with others other airfield users when feasible.

Date	27-Feb-2018	Region	NSWGA	SOAR Report Nbr		S-1186	
Level 1	Operational	Level 2	Airframe	Level 3		Landing gear/Indication	
A/C Model 1		LS 8-18		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	72

During the long ground roll following a competition finish, the glider's undercarriage collapsed. With this model glider, the undercarriage mechanism may yield due to oscillation when the glider is travelling over rough ground. This then results in either the undercarriage lever becoming disengaged if not properly locked down, or the overcentre being released leading to undercarriage collapse and bent drive lever. On this glider, the owner had fitted a pad bolt to enable the undercarriage handle to remain locked (refer photo of similar fitment below). The pilot, who was unfamiliar with this particular glider, failed to properly engage the pad bolt.

Date	3-Mar-2018	Region	NSWGA	SOAR Report Nbr	S-1237		
Level 1	Technical	Level 2	Powerplant/Propulsion	Level 3	Engine failure or malfunction		
A/C Model 1	JS1 C 18/21	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Outlanding	PIC Age	42

During the course of a cross-country flight the pilot elected to start the jet sustainer to self-retrieve. The engine started normally, and the pilot tracked for the home airfield. The engine then failed catastrophically at a height of 830ft AGL and a safe outlanding was conducted. The pilot reported that they started the engine from within the circuit of a rural airstrip and, as was their custom, the pilot maintained the ability to execute a safe approach and landing at all times to that airfield. After starting the engine, the pilot conducted a climbing turn over this airfield and, confident the engine was running normally and developing full power, the pilot departed for the home airfield. Whilst on track the pilot continued to assess their landing options, but when the engine failed the rural airstrip was behind. The pilot selected a suitable paddock within glide range and completed a successful landing. Subsequent investigation revealed that the engine had suffered a rear bearing failure while running at full speed, probably due to particulate contamination of the fuel supply. The failure occurred relatively soon after maintenance work involving the replacement of the main enclosure sealing O Ring. This work had required the removal of the engine from the glider, and removal of the enclosure to access the O Ring. The engine was refitted, and ground tested satisfactorily but had only run about 8 minutes (in 3 runs) before the bearing failure. As the bearing failed the armature moved forward, causing the compressor to contact the rear face of the inlet housing. This led to a relatively gentle deceleration of the armature, and damage was limited to the armature and nearby parts, including the turbine ring, the guide vane stator and the inlet housing. Other than the rolling elements of the rear bearing (ceramic balls), no parts were significantly displaced. No parts were uncontained. The engine was rebuilt with new parts from stock, slightly modified and returned to service.

Date	3-Mar-2018	Region	VSA	SOAR Report Nbr	S-1190

Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing		
A/C Model 1	DG-300 Elan	A/C Model 2					
Injury	Nil	Damage	Substantial	Phase	Outlanding	PIC Age	65

While returning from a 300km cross-country flight, and when about 17kms from the home airfield, the pilot landed in a paddock with the undercarriage retracted. Although the pilot was unhurt, the aircraft suffered substantial damage to the fuselage due to small rocks. The flight trace showed the pilot joined a downwind leg for a low and tight circuit into the paddock at about 500ft AGL. Despite going mentally through the pre-landing check, the pilot did not physically check the position of the undercarriage lever. The pilot stated: *"I identified the wheel lever early on but decided to leave the wheel up …to keep performance up a bit longer. When I did my (pre-landing) checks I identified the wheel lever again but thought I had lowered it already."* The pilot's failure to extend the undercarriage was consequent of a high workload following a late decision to select a suitable landing area due to task fixation. It was also noted that despite the pilot's aim to finish the task at the minimum height for a safe circuit, investigation revealed the pilot had been using a '0' McReady setting and had not properly set-up their navigation device or added a margin for circuit (arrival) height. Review of the flight log also revealed the navigation device had been indicating the glider was close to a final glide for some time, and that the pilot passed through weak lift and did not avail themselves the opportunity to take advantage of the tailwind home.

Date	3-Mar-2018	Region	NSWGA	SOAR Report Nbr	S-1196		
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision		
A/C Model 1	LS 3-a	A/C Model 2	Duo Discus T				
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	52

Two gliders on a cross-country task nearly collided head-on near the turnpoint. One glider was heading in as the other was heading out. The pilot heading into the turnpoint observed the other aircraft and took avoiding action. The other pilot, who had turned and was heading into the sun, was alerted to the impending collision by the Flarm and also took avoiding action. The aircraft passed within 30 metres of each other at a similar altitide. Clearly, the high closing speed and small target area of head-to-head conflicts make such conflicts more difficult to see than other conflicts. Pilots should avoid such circumstances and where this is not possible, they should take special care by manitaining a vigilent lookout scan (Refer OSB 02/12 - Lookout for Glider Pilots).

Date	4-Mar-2018	Region	GQ	SOAR Report Nbr		S-1187	
Level 1	Consequential Events	Level 2	Low Circuit	Level 3		Low Circuit	
A/C Model 1		Puchacz		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	75

The experienced pilot reported finishing an aerobatics flight with a low pass that resulted in a very low turn onto final approach. The pilot had not regained wings-level attitude at touch down and was fortunate that a ground loop did not ensue. It appears the pilot may have become fixated on arriving at the usual landing place and failed to turn-in earlier. Situational awareness must precede decision-making because the pilot has to perceive a situation in order to have an outcome. Situational awareness also allows the pilot to stay ahead of the aircraft. To prevent the loss of situational awareness, pilots must implement proven best practices (circuit joining, radio procedures, lookout, etc.) and know the Rules and Regulations.

Date	4-Mar-2018	Region	NSWGA	SOAR Report Nbr		S-1222	
Level 1	Operational	Level 2	Flight Preparation/Navigation	Level 3		VFR into IMC	
A/C Model 1		Mosquito		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	57

The pilot failed to maintain flight in VMC and flew near and through cloud in contravention of the Visual Flight Rules. The incident was identified via the pilot's posts to social media. the pilot was counselled by their CFI.

Date	6-Mar-2018	Region	VSA	SOAR Report Nbr	S-1188
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision

A/C Model 1		ASK 21		A/C Model 2	Aerocommander		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	47

Following a training flight, the student pilot of an ASK-21 glider entered downwind for the operational runway (RWY 08) and the command pilot (instructor) gave a radio call on the CTAF. On late downwind the command pilot heard the pilot of an Aero Commander give a call on the CTAF advising they were entering and backtracking RWY 26. The student pilot of the ASK-21 turned onto the base leg for RWY 08 and the command pilot again made a radio call on the CTAF. At this time the command pilot of the ASK-21 glider had sighted the Aero Commander at the threshold of RWY26 and assumed it was holding to allow the glider to land. After turning onto final approach, the command pilot noticed the Aero Commander taking off towards them and made another call on the CTAF. The Aero Commanded continued its take-off and the glider pilots kept as far left of track as possible. The Aero Commander passed within 150 to 200 metres to the right of the landing glider at the same height. The glider pilots made a safe landing and the Aero Commander departed the circuit. It is not clear whether the Aero Commander pilot heard the glider pilot's radio calls. The Aero Commander pilot was taking-off downwind and into the sun and may not have seen the glider. The reason for using RWY 26 was convenience, as the take-off path aligned with the pilot's next destination. The Club CFI spoke with the Aero Commander operator and company guidelines have been amended to reinforce pilots must conform to established runway direction when operating at this aerodrome.

Date	10-Mar-2018	Region	SAGA	SOAR Report Nbr	S-1279
Level 1	Technical	Level 2	Powerplant/Propulsion	Level 3	Abnormal Engine Indications

A/C Model 1		SF 25 D Falke		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	57

During a training flight the command pilot flew an engine-on approach at idle power setting to familiarise the student with a normal glide approach. At around 300 feet AGL the command pilot gently applied power to conduct a planned 'go around'. During the climb-out, and at a height of about 500 ft AGL, the engine began to run roughly associated with a reduction of power. The command pilot aborted the climb and, using the remaining engine power positioned the glider for a glide approach to the operational runway. A normal landing followed with no damage or injury. During a post-fight test run of the engine, it started and ran, and no abnormalities were found. It was considered that the glider experienced a loss of engine power due to carburettor ice that had accumulated during the period of flight at idle before the throttle was opened for the planned 'go around'.

Date	10-Mar-2018	Region	SAGA	SOAR Report Nbr	S-1192
Level 1	Airspace	Level 2	Airspace Infringement	Level 3	Airspace Infringement

A/C Model 1		Discus b		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Thermalling	PIC Age	67

The pilot was participating in the State Championships. While thermalling in vicinity of the aerodrome awaiting the start, the pilot inadvertently drifted 180 metres into controlled airspace. The pilot was using an 'Oudie' flight computer to assist maintain separation from the airspace and believes at the critical time the display had been inadvertently changed to a dialog box. The pilot noted:
"I believe that there were a number of factors that contributed to this infringement. Firstly, Entering a thermal upwind of an airspace boundary carries the risk of inadvertently crossing that boundary. This risk can be managed by good knowledge of boundary markers, maintaining good situational awareness and then leaving the thermal with a suitable safety margin before the boundary is reached. The problem was: I failed to maintain good awareness of my position with respect to the boundary.Secondly. I misinterpreted the display on the Oudie and allowed it to give me a false sense of security regarding my distance from the boundary. The particular display I had inadvertently selected is not intended to show aircraft position. More

familiarity with this device might have helped. My primary source of positional information should have been an adequate look at the ground to confirm my actual position. Lessons for me:

- *Always ensure that positional situation is supported by knowledge of the terrain and confirmed by a good look at the terrain.*
- *Be more familiar with the different displays on the Oudie.*
- *Use the Oudie as a helpful tool but look out to confirm position.*
- *Be even more alert when thermalling upwind of a boundary.*
- *Note: At the morning briefing the next day, at the request of the competition organisers, I gave a brief presentation of the nature of this airspace infringement and my impression of the contributing factors."*

NOTE: When flying near airspace boundaries pilots must ensure they use sensible tolerances to airspace. AIP ENR 1.1, paragraph 19.12 states: *"For aircraft operating in close proximity to an airspace boundary where there is a risk of an airspace infringement, the pilot in command should consider obtaining a clearance to enter the airspace or altering track to remain well clear."* Pilots should always navigate using CASA approved data and charts. Airspace files provided by competition organisers or downloadable from the internet are unapproved and should not be relied upon.

Date	11-Mar-2018	Region	NSWGA		SOAR Report Nbr		S-1212		
Level 1	Environment		Level 2	Wildlife		Level 3	Birdstrike		
A/C Model 1		DG-808 C			A/C Model 2				
Injury	Nil	Damage	Minor	Phase	In-Flight		PIC Age	68	

During the cruise on a cross-country flight, and at a height of about 6500', the pilot saw a flock of around 25 large birds ahead that were identified as Black Kites (a medium-sized raptor). The birds began to scatter but one impacted the port wing about mid-span, making a loud noise and startling the pilot. The pilot made broadcast warning other glider pilots to the hazard, and then conducted a handling check. The aircraft appeared to be undamaged, so the pilot elected to continue flying the task. An post-flight inspection revealed minor cracking of the gelcoat on the port wing leading edge at point of impact. The Black Kite is found in a variety of habitats, from timbered watercourses to open plains, and is often observed in and around outback towns. Although it is more normally seen in small groups, the Black Kite may form huge flocks of many thousands of birds, especially during grasshopper plagues. No other Australian bird of prey is seen in such large flocks.

Date	11-Mar-2018	Region	GQ	SOAR Report Nbr		S-1191	
Level 1	Operational	Level 2	Runway Events	Level 3		Runway undershoot	
A/C Model 1	SZD-50-3 "Puchacz"			A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	71

The flight was part of a training regime to provide an aspiring tow pilot with gliding experience. Following an uneventful aerotow launch, the glider was climbed in a weak thermal. The student flew the glider downwind towards a cloud in anticipation of finding lift, but substantial sink was encountered. At approximately 4 kms from the airfield and at a height of about 900 ft above ground, the pilots elected to return towards the field and joined a long final approach onto the operational runway. The command pilot noted the wind strength to have increased and the student successfully landed short of the runway in a harvested paddock. The glider was easily retrieved as there were no fences on the runway boundary. The incident provided a valuable lesson to the prospective tow pilot on glider performance in windy conditions.

Date	12-Mar-2018	Region	VSA	SOAR Report Nbr		S-1263	
Level 1	Airspace	Level 2	Airspace Infringement	Level 3		Airspace Infringement	
A/C Model 1	ASK-21Mi			A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	

The pilot flew into Class ‘D’ controlled airspace without a clearance. The pilot stated that they had made a radio call to ATC requesting a clearance to enter but had not received a response. The pilot was issued with a counselling letter by their CFI. Pilots who enter a controlled airspace (excluding Class E) without the proper requirements such as an ATC clearance and a transponder (unless exempted), commit an airspace violation. Each infringement represents the potential for a "single catastrophic event” which, at its worst, carries with it the significant risk of loss of life. Pilots should never enter airspace without a clearance where required

and should apply navigational tolerances to avoid infringing airspace. Pilots should always navigate using CASA approved data and charts. Airspace files provided by competition organisers or downloadable from the internet are unapproved and should not be relied upon.

Date	12-Mar-2018	Region	SAGA	SOAR Report Nbr	S-1194
Level 1	Airspace	Level 2	Airspace Infringement	Level 3	Airspace Infringement
A/C Model 1	Discus b	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Thermalling	PIC Age	55

The inexperienced competition pilot did not maintain adequate situational awareness and allowed the glider to drift into controlled airspace while thermalling close the boundary. A penalty was applied by the competition organisers and the pilot was counselled. Violations of controlled airspace can be avoided by remaining situationally aware, ensuring you have current airspace charts, and by thoroughly familiarising yourself with local airspace and other aeronautical issues.

Date	12-Mar-2018	Region	SAGA	SOAR Report Nbr	S-1195
Level 1	Airspace	Level 2	Airspace Infringement	Level 3	Airspace Infringement
A/C Model 1	LS 4-a	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	57

The inexperienced competition pilot did not maintain adequate situational awareness and flew into restricted airspace. A penalty was applied by the competition organisers and the pilot was counselled. Violations of controlled airspace can be avoided by remaining situationally aware, ensuring you have current airspace charts, and by thoroughly familiarising yourself with local airspace and other aeronautical issues.

Date	16-Mar-2018	Region	GQ	SOAR Report Nbr	S-1208
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Aircraft Separation Issues
A/C Model 1	Piper PA-25-235	A/C Model 2	Aeroprakt Foxbat		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	79

A glider and tow plane combination launched from the non-duty runway (06) and passed close behind a Foxbat conducting a 'touch and go' landing on the operational runway (12). The Foxbat was conducting circuit training on RWY 12 with a student and was positioned on final behind a gyrocopter. The Foxbat Instructor heard an initial radio transmission from the Tow Pilot who asked whether the Gyroplane was the only traffic, and then a second transmission from the gliding operation warning the tow pilot that an aircraft was established on short final. The Foxbat Instructor observed the tow plane and glider combination approaching from the right and about 100ft lower. The tow pilot advised that while preparing to apply full power to launch a glider on RWY 06 and across active RWY 12, they became aware of a Foxbat on base leg for RWY 12. As the Tow Pilot applied full power they made a radio call announcing take-off, the Foxbat simultaneously transmitted a call on turning final. The tow pilot stated: *"I then said something to the effect (that) we're on take-off, I'll beat you, meaning I'd be past any point of conflict before the Foxbat. Such proved incorrect and after becoming airborne at about a hundred feet, (I) saw the Foxbat on climb out posing a potential conflict with my flight path. I immediately turned left to pass behind the Foxbat avoiding a worsening situation and continued the launch."* The airfield is a busy training location for power and gliding, and the club hangar is located at the far south-west corner in the undershoot of RWY 06. It was a routine procedure to launch club gliders from RWY 06 at the start of the day, while slotting between power traffic on RWY 12/30 when that is the runway favoured by wind, to save towing them the 1.5kms to the threshold of the operational runway. The Club CFI stated that *"there were a lot of suggestions and ideas around this one including forward signallers with radios and flags. At the end of the day though, this is a convenience*

accident waiting to happen. So, in conference with the Tugmaster, the conclusion was not to do it at all as a general rule, if the duty runway has been established by other traffic other than RWY 06."

Date	17-Mar-2018	Region	WAGA	SOAR Report Nbr	S-1205
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication
A/C Model 1	JS3	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	56

The pilot reported the tailwheel retracted during landing, resulting in minor damage to the rear fuselage and rudder. Investigation revealed retraction resulted from incorrect assembly, rigging and setting of the swages in the retraction system leading to failure of the actuating cable. The local agent, in conjunction with the manufacturer, redesigned the cabling to the tail wheel and increased the overcentre on the tail wheel.

Date	18-Mar-2018	Region	SAGA	SOAR Report Nbr	S-1213
Level 1	Operational	Level 2	Runway Events	Level 3	Other Runway Events
A/C Model 1	DG-1000S	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Ground Ops	PIC Age	29

While manoeuvring the glider to park it outside the active runway, the port wing impacted the open door of a bus parked nearby. The accident was the result of a miscommunication between the person controlling the wingtip and the person pushing the glider. As the person pushing the glider stated: *"I was pushing the glider (and) I asked (the person holding the wingtip) to turn the glider around, thinking in my head that (they) would turn it anti-clockwise …(and) would walk towards the bus with the wing. (The person holding the*

wingtip) turned it clockwise. As I turned to (them) the Port wing of the (glider) knocked the edge of the (bus) door shattering the glass. I should have been more clear and we really needed to have 3 people handling the glider. Also, as this is the only place we can put the gliders off the line, we should have had the bus moved somewhere further from the operations."

Date	24-Mar-2018	Region	WAGA	SOAR Report Nbr	S-1209
Level 1	Operational	Level 2	Flight Preparation/Navigation	Level 3	Other Flight Prep/Nav Issues
A/C Model 1			A/C Model 2		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	57
While checking the controls for full and free movement during the pre take-off checklist, the 'B' Certificate pilot under check slammed the contol column around the quadrant with sufficient force against the control stops as to concern the instructor. The pilot was re-briefed about the purpose of the check and the need to always manipulate controls gently.					

Date	24-Mar-2018	Region	SAGA	SOAR Report Nbr	S-1210
Level 1	Airspace	Level 2	Airspace Infringement	Level 3	Airspace Infringement
A/C Model 1	PIK-20D		A/C Model 2		
Injury	Nil	Damage	Nil	Phase	Thermalling	PIC Age	18
The low hours pilot, who had recently converted to the glider, reported breaching controlled airspace while thermalling in close proximity to the airspace boundary. The pilot's CFI noted that the wind was very strong at altitude, around 30 knots, which led to the pilot losing awareness of the airspace boundary. The pilot was debriefed by their instructor and the need to maintain situational awareness and a buffer from airspace boundaries was reinforced.					

Date	25-Mar-2018	Region	NSWGA	SOAR Report Nbr	S-1211
Level 1	Operational	Level 2	Airframe	Level 3	Other Airframe Issues
A/C Model 1	DG-1000M		A/C Model 2		
Injury	Nil	Damage	Minor	Phase	Ground Ops	PIC Age	
A crack was found in the engine mount during the daily inspection. The cause of the crack was identified as material failure resulting from fatigue. The owner reported that this was the second engine mount and is of a modified design to the original. The manufacturer released TN 1000/37 on this issue with an approved repair method that included reinforcing. The owner ordered a new frame from the manufacturer. This issue of repeated cracking of the engine frame is subject of an EASA Airworthiness Directive.					

Date	30-Mar-2018	Region	GQ	SOAR Report Nbr	S-1219

Level 1	Technical	Level 2	Powerplant/Propulsion		Level 3	Transmission & Gearboxes	
A/C Model 1	Piper PA-25			A/C Model 2	ASW 20BL		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	49
During aerotow and at a height of about 400 ft, the tow pilot signalled a wave-off to the glider due to engine vibrations. The glider pilot immediately released and successfully completed a modified circuit and landing. The tow plane also landed safely. This tow plane is fitted with an automotive engine with a belt-driven propeller. A new drive belt had been fitted and tensioned, but it became loose through stretching during operation which caused vibration of the engine. The belt was again tensioned, and the vibration did not recur. The Club's Tugmaster advised that this was a different belt from the original and they are trying source another one.							

Date	2-Apr-2018	Region	NSWGA		SOAR Report Nbr	S-1218	
Level 1	Operational	Level 2	Airframe		Level 3	Landing gear/Indication	
A/C Model 1	DG-300 Club Elan			A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	71
Following a normal touchdown and a short roll, the undercarriage collapsed. It was determined that the low hours pilot had not fully engaged the undercarriage lever in the locking detent, thereby allowing the undercarriage to retract as soon as the aircraft weight was applied to the wheel. The Club's CFI noted that the pilot's hand can get caught between lever handle and cockpit wall resulting in the lever not fully engaging the detent.							

Date	2-Apr-2018	Region	GQ		SOAR Report Nbr	S-1220	
Level 1	Operational	Level 2	Aircraft Control		Level 3	Wheels up landing	
A/C Model 1	Discus CS			A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	54
The glider landed with the undercarriage retracted and suffered minor damage. The pilot became distracted during the downwind leg and forgot to conduct their pre-landing checks. The pilot had not lowered the undercarriage prior to joining circuit (refer OSB 01/14 'Circuit and Landing Advice).							

Date	5-Apr-2018	Region	GQ		SOAR Report Nbr	S-1224	
Level 1	Operational	Level 2	Airframe		Level 3	Doors/Canopies	
A/C Model 1	Whisper Motorglider			A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	In-Flight	PIC Age	69
After a 30-minute local flight the pilot entered circuit and made a radio call. The rear hinged canopy suddenly blew open without warning and the pilot's head set was ripped off in the wind. Part of the canopy remaining attached, hanging over the starboard side of the fuselage. The aircraft's controls remained unaffected and the pilot conducted a modified circuit and made a normal landing. Investigation revealed that the left-hand canopy locking mechanism had disengaged due to vibration/flex. The matter was reported to the aircraft designer who proposed to issue a Service Bulletin with an approved repair scheme. GFA issued an Airworthiness Alert to all owners and operators of this type.							

Date	6-Apr-2018	Region	GQ	SOAR Report Nbr	S-1225
Level 1	Airspace	Level 2	Airspace Infringement	Level 3	Airspace Infringement
A/C Model 1	ASW 20C	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	73

The pilot reported inadvertently breaching restricted military airspace. After releasing from tow the pilot tracked towards a thermal marked by a cloud. As the pilot entered the thermal the glider crossed the airspace boundary and infringed by 250 metres. The pilot immediately recognised the error by reference to ground features and aborted the flight. Upon landing the pilot reported the incident to the Duty Instructor who, in turn, contacted the military controllers. The infringement had not been identified by the controllers. The pilot was counselled.

Date	7-Apr-2018	Region	GQ	SOAR Report Nbr	S-1236
Level 1	Operational	Level 2	Airframe	Level 3	Doors/Canopies
A/C Model 1	ASK-21	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	61

The instructor and student had completed the pre-flight checks for a winch launch but had delayed launching while waiting for a powered aircraft that was in circuit to land. The instructor informed the student that they had left the rear canopy open for ventilation while they awaited the launch. The student also unlocked their canopy, but this went unnoticed by the instructor who was watching the powered aircraft in the circuit. Once the powered aircraft landed the instructor closed and locked their canopy and then saw the student pushing against the canopy, which was interpreted as the student confirming the

canopy was locked. Unfortunately, the canopy was unlocked. The cable was attached, and the launch proceeded normally. Some 30 minutes into the training flight the instructor introduced the student to a spin demonstration. As the aircraft entered the spin the forward-hinged front canopy opened about 300mm at the rear. The student pulled the canopy closed and was able to lock it once normal flight was resumed. The flight was terminated and the glider made an uneventful landing. The canopy and locking mechanism was inspected and no damage was found. However, the canopy locking system that prevents the front canopy from locking until the rear canopy is locked was worn, and the nylon block/rocker mechanism damaged by the canopy being closed forcefully. The nylon rocker blocks were replaced with aluminium rockers, and the canopy fit was adjusted to reduce sticking.

Date	7-Apr-2018	Region	VSA	SOAR Report Nbr	S-1228
Level 1	Operational	Level 2	Runway Events	Level 3	Other Runway Events
A/C Model 1	Cessna 152	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	

A locally-based powered aircraft commenced its take-off roll behind the glider operations in contravention of local operating rules. At this regional aerodrome, gliding operations are conducted from a position 60 metres behind a permanently displaced threshold in accordance with the CASA approved guidelines in MOSP 2, Sections 18.5 and 18.8.2. This arrangement enables the gliders to grid prior to launch without occupying the runway, which effectively commences at the threshold. Local rules and an entry in ERSA require all take-offs and landings to commence from the permanently displaced threshold while gliding operations are in progress. This is to protect the gliding operation from an aircraft experiencing a runway excursion during the initial ground roll. The local operating procedures require pilots wishing to use the full length for operational reason to give prior notice to the gliding operation so that aircraft and people can be removed from harm's way. This is consistent with CAR 162 'Rules for prevention of collision', which states *"An aircraft that is about to take-off shall not attempt to do so until there is no apparent risk of collision with other aircraft."* The pilot was made aware of the local requirements.

Date	7-Apr-2018	Region	WAGA	SOAR Report Nbr	S-1231
Level 1	Operational	Level 2	Miscellaneous	Level 3	Rope break/Weak link failure
A/C Model 1	Piper PA-25-235	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	58

A new tow pilot under training was being shown the TOST weak link on the tow rope when it was noticed that two equal weak link inserts had been used, effectively doubling the breaking load. The error was rectified and the CFI raised awareness with Club members. The TOST reserve insert and sleeved weak link system uses two weak links in parallel protected by a steel sleeve. Both weak links have attachment holes at each end. The reserve has oval attachment holes and carries no load in normal operations. If the load exceeds the rating, the weak link will fail and the reserve link will take up the load. If the load is more than a momentary jolt both weak links will fail. The weak link sleeves have an inspection hole so that the correct weak link (colour) and inserts have been used, and that they are still intact. It is essential the tow pilot inspects the weak link and tow rope for serviceability before the day's operation and also after being subjected to a high jolt or load. When the weak link fails, the reserve link must also be replaced. For more information, refer to OAN 01/13 'Weak Links'.

Date	7-Apr-2018	Region	GQ	SOAR Report Nbr	S-1226
Level 1	Environment	Level 2	Wildlife	Level 3	Birdstrike
A/C Model 1	ASK-21Mi	A/C Model 2			

Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	66
While the glider was on short final and about to round-out, a flock of Black Kites took flight and one impacted the leading edge of the glider's port wing. The experienced pilot was unfazed and landed the aircraft safely. The aircraft was not damaged but the bird did not survive.							

Date	7-Apr-2018	Region	VSA	SOAR Report Nbr	S-1227
Level 1	Operational	Level 2	Runway Events	Level 3	Other Runway Events
A/C Model 1	Piper PA-31T	A/C Model 2			

Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	
A locally-based powered aircraft commenced its take-off roll behind the glider operations in contravention of local operating rules. At this regional aerodrome, gliding operations are conducted from a position 60 metres behind a permanently displaced threshold in accordance with the CASA approved guidelines in MOSP 2, Sections 18.5 and 18.8.2. This arrangement enables the gliders to grid prior to launch without occupying the runway, which effectively commences at the threshold. Local rules and an entry in ERSA require all take-offs and landings to commence from the permanently displaced threshold while gliding operations are in progress. This is to protect the gliding operation from an aircraft experiencing a runway excursion during the initial ground roll. The local operating procedures require pilots wishing to use the full length for operational reason to give prior notice to the gliding operation so that aircraft and people can be removed from harm's way. This is consistent with CAR 162 'Rules for prevention of collision', which states *"An aircraft that is about to take-off shall not attempt to do so until there is no apparent risk of collision with other aircraft."* The pilot was made aware of the local requirements.							

Date	8-Apr-2018	Region	GQ	SOAR Report Nbr	S-1229
Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion
A/C Model 1	Discus a	A/C Model 2			

Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	57
A ground crew person, who had just run the wing of a glider being launched, turned and walked across the runway towards some parked cars. The crew person did not check to see the approach was clear, and so did not notice a glider was established on short final. The glider pilot had to take evasive action to avoid the pedestrian. ICAO defines a runway incursion to be *"Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft."* Runway incursions are an ongoing safety concern in gliding operations, so reducing the number of runway incursions is paramount to improving runway safety. Ground crew and vehicle drivers must always maintain situational awareness, follow established procedures and never assume when on any movement area.							

Date	8-Apr-2018	Region	VSA	SOAR Report Nbr	S-1230
Level 1	Operational	Level 2	Runway Events	Level 3	Other Runway Events
A/C Model 1	Piper PA-28R-201	A/C Model 2			

Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	
A locally-based powered aircraft commenced its take-off roll behind the glider operations in contravention of local operating rules. At this regional aerodrome, gliding operations are conducted from a position 60 metres behind a permanently displaced threshold in accordance with the CASA approved guidelines in MOSP 2, Sections 18.5 and 18.8.2. This arrangement enables the gliders to grid prior to launch without occupying the runway, which effectively commences at the threshold. Local rules and an entry in ERSA require all take-offs and landings to commence from the permanently displaced threshold while gliding operations are in progress. This is to protect the gliding operation from an aircraft experiencing a runway							

excursion during the initial ground roll. The local operating procedures require pilots wishing to use the full length for operational reason to give prior notice to the gliding operation so that aircraft and people can be removed from harm's way. This is consistent with CAR 162 'Rules for prevention of collision', which states *"An aircraft that is about to take-off shall not attempt to do so until there is no apparent risk of collision with other aircraft."* The pilot was made aware of the local requirements.

Date	8-Apr-2018	Region	VSA	SOAR Report Nbr	S-1232
Level 1	Operational	Level 2	Runway Events	Level 3	Other Runway Events
A/C Model 1	PIPER PA-28-181	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	

A locally-based powered aircraft commenced its take-off roll behind the glider operations in contravention of local operating rules. At this regional aerodrome, gliding operations are conducted from a position 60 metres behind a permanently displaced threshold in accordance with the CASA approved guidelines in MOSP 2, Sections 18.5 and 18.8.2. This arrangement enables the gliders to grid prior to launch without occupying the runway, which effectively commences at the threshold. Local rules and an entry in ERSA require all take-offs and landings to commence from the permanently displaced threshold while gliding operations are in progress. This is to protect the gliding operation from an aircraft experiencing a runway excursion during the initial ground roll. The local operating procedures require pilots wishing to use the full length for operational reason to give prior notice to the gliding operation so that aircraft and people can be removed from harm's way. This is consistent with CAR 162 'Rules for prevention of collision', which states *"An aircraft that is about to take-off shall not attempt to do so until there is no apparent risk of collision with other aircraft."* The pilot was made aware of the local requirements.

Date	8-Apr-2018	Region	WAGA	SOAR Report Nbr	S-1234
Level 1	Operational	Level 2	Aircraft Loading	Level 3	Other Loading Issues
A/C Model 1	Piper PA-25-235	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	

During the tow plane's final approach, the trailing tow rope struck the airfield boundary fence resulting in the weak link breaking (as it is designed to do). The tow pilot noted that the approach was conducted with a tailwind that resulted in a shallower approach profile and a landing further down the runway. A causal factor was the failure to change the operational runway after the wind changed direction.

Date	8-Apr-2018	Region	NSWGA	SOAR Report Nbr	S-1248
Level 1	Operational	Level 2	Aircraft Control	Level 3	Control issues
A/C Model 1	DG-1000M	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	58

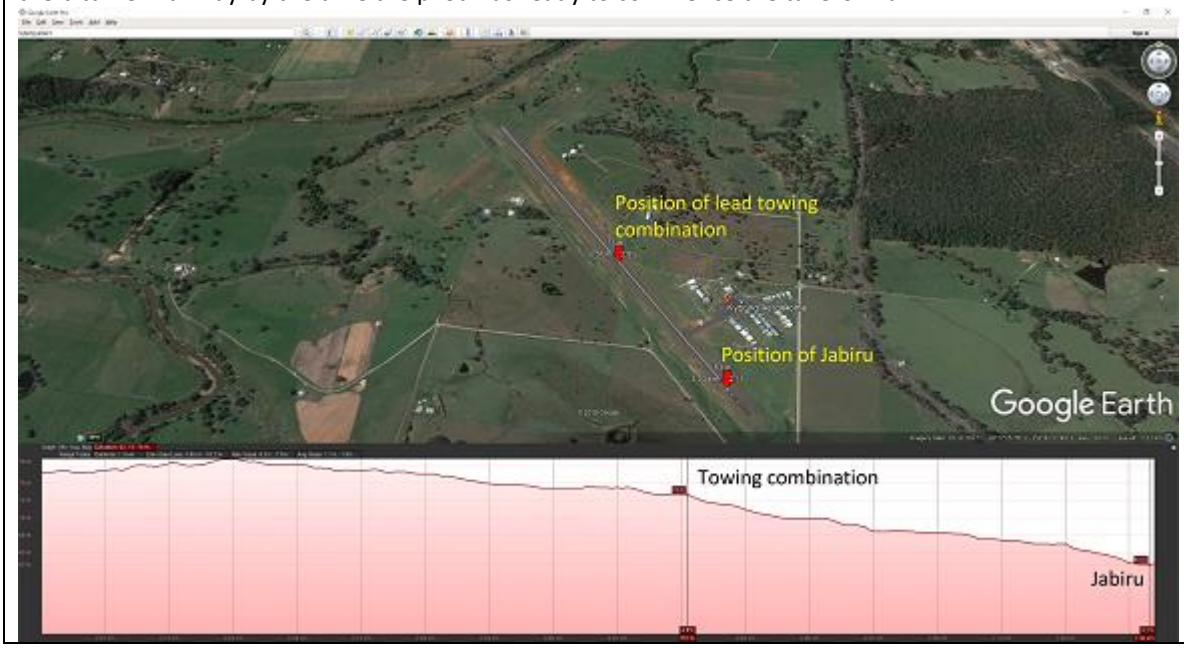
The command pilot reported insufficient elevator authority and significant back-stick pressure during flight. The command pilot stated that the aerotow was normal, with some back-stick pressure evident. However, upon release from tow the command pilot noticed significant pressure retarding rearward movement of the stick, and when the stick was released the glider pitched forward and accelerated rapidly despite a rearward trim setting. At this point the command pilot became concerned that the issue was weight and balance related, as the powered sailplane's engine had recently been removed (this was despite doing a thorough weight and balance assessment prior to the flight). The command pilot decided to abort the flight and joined the circuit for a landing. The command pilot flew a normal half-airbrake approach and made a safe landing. Post-flight investigation of the weight and balance configuration for the flight showed the CG was near the middle of the allowable range, and therefore could not have contributed to the control issues experienced. Further examination identified that the front-seat cushion had dislodged from its Velcro fastener, enabling it

to move forward against the control stick. It was concluded that the front-seat cushion had moved forward against the control stick either prior to, or as, the student boarded the aircraft. The cushion then impeded rearward movement of the control column resulting in significant back-stick pressure to maintain elevator control in flight. This incident highlights the importance of conducting the final check of the post-boarding checklist that the controls have full and free movement. The controls should be worked gently against the stops to confirm full travel, and to ensure no unusual force is needed for movement (this means either abnormal pressure or looseness).

Date	14-Apr-2018	Region	GQ	SOAR Report Nbr	S-1240		
Level 1	Operational	Level 2	Runway Events	Level 3	Other Runway Events		
A/C Model 1	Jantar + ASK21 + Cirrus			A/C Model 2	Jabiru		
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	54

Just after the last of two powered aircraft had landed, three glider and car combinations announced their intention on the CTAF to enter and backtrack runway 32. The three combinations then entered the bitumen runway at a point adjacent the club hangars and just south of the cross strip. A short time afterwards, and just after the last powered aircraft had reported exiting the runway, the pilot of a Jabiru announced their intention on the CTAF to enter and backtrack runway 32 from the southern taxiway. The driver of the lead combination gave a call on the CTAF to advise the Jabiru pilot they were backtracking the runway. Shortly after the Jabiru gave a 'lining-up' call on the CTAF. The driver of the lead combination gave another call to the Jabiru pilot advising there were gliders occupying the runway and the three combinations made a hurried exit from the bitumen. As the Jabiru became airborne the driver of the lead combination made further radio call to its pilot, who responded that they had not heard the previous calls. The Club CFI spoke with the Jabiru pilot who again confirmed they had not heard the earlier radio calls and was unaware of the combination occupying the runway. This airfield slopes uphill from the RWY 32 threshold and plateaus at the cross strip (refer diagram). This restricts visibility of aircraft operating at either end, and has also been known to prevent radio transmission from being heard by aircraft on opposite ends of the runway at this particular site. It is not clear whether this is the reason for the Jabiru pilot not hearing the calls, or whether it was due to inattention as the pilot completed last minute checks before take-off. The Jabiru pilot may not have seen the combination when initially entering the runway due to the slope. As the Jabiru was taxying away from the combination, the pilot would only then have had the opportunity to sight the towing combinations once lined-up for take-off. It is also not clear why the pilot did not see the towing combinations when lining-up for take-off; It may have been because the towing combinations had cleared

the bitumen runway by the time the pilot was ready to commence the take-off run.



Date	17-Apr-2018	Region	NSWGA	SOAR Report Nbr	S-1241
Level 1	Operational	Level 2	Fire Fumes and Smoke	Level 3	Fumes
A/C Model 1	Piper PA-25-235	A/C Model 2	N/A		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	33
The tow pilot reported suffering from headaches while flying and engine exhaust marks were identified on the floor of the aircraft. A detailed inspection revealed a cracked muffler and short exhaust tail pipe allowed engine exhaust to enter the cockpit. CASA AD/PA-25/43 '*Exhaust System and Related Areas - Inspection*' (12/2008) mandates the periodic inspection specified in USA AD 67-14-07 and Piper SB No. 241A.					

Date	18-Apr-2018	Region	SAGA	SOAR Report Nbr	S-1239
Level 1	Technical	Level 2	Systems	Level 3	Flight controls
A/C Model 1	ASW20Fp	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	59
The sortie was a post-maintenance evaluation flight. During the recovery from a spin to the left, the command pilot was unable to get full rudder authority. The glider recovered to normal flight and a safe landing ensued. During maintenance mylar rudder seals had been fitted in accordance with a Technical Note, and the limits of control deflection was confirmed as within specification. Post-flight investigation revealed that repeated full-scale deflections during ground checks caused the adhesive from the double-sided tape applied to edge of fin to migrate into the control gap and onto the rub strip. This produced increasing adherence between rub strip and mylar with increasing stiffness as more adhesive transferred. During the spin, the airflow caused the edge of fin gap seal to cut into (or contact) the rub strip, causing the rub strip to peel back and obstruct left rudder movement. The mylar seal and rub strip were removed and normal rudder control was restored. The subsequent test flight was normal, and the glider was returned to service.					

Date	21-Apr-2018	Region	VSA	SOAR Report Nbr	S-1261

Level 1	Operational	Level 2	Flight Preparation/Navigation	Level 3	Aircraft preparation

A/C Model 1	Discus a	A/C Model 2	

Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	65

Just prior to the launch the pilot became distracted by launch-point chatter and did not lock the airbrakes before hooking on the winch cable. During the winch launch the airbrakes partially opened, which was noticed by some of the ground crew. The airbrakes then closed, which the ground crew interpreted as being from pilot inputs. Just as the pilot released at the top of the launch and during the nose-over to flying attitude, the airbrakes fully opened resulting in a high sink rate. The pilot realised the error and locked the airbrakes. Due to the height loss, the pilot joined circuit and conducted a safe outlanding. This incident highlights the need for a dedicated level of focus when conducting the pre-flight checks, without interruption. The concept of a sterile environment should be adopted during all critical duties or activities, such as the completion of check lists. The Club has initiated a sterile launch area policy.

Date	22-Apr-2018	Region	NSWGA	SOAR Report Nbr	S-1242

Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion

A/C Model 1	Apis M	A/C Model 2	

Injury	Nil	Damage	Substantial	Phase	Outlanding	PIC Age	70

The pilot reported ground-looping the glider during an outlanding when the engine failed to start. The pilot had been on a cross country flight was returning to the home airfield. At a height of around 1700' AGL some 5kms from the destination, the pilot realised they were below glide slope unlikely to make it back, and so attempted to start the engine. Although the engine started it would not continue to run. The pilot kept trying to start the engine to no avail, during which time the glider flew past the only suitable landing paddocks. Running out of height and with no landing options ahead, the pilot turned through 180 degrees and landed downwind in the nearest landable paddock with the engine still extended. During the ground roll the pilot initiated a ground loop to the left to avoid running into the end fence. The glider slid sideways for about 20 meters before coming to rest about 10 meters from the fence and facing 90 degrees to the direction of landing. The glider was substantially damaged, with cracks in at least three places on the fuselage just aft of the port wing trailing edge. The CFI reported that the pilot had not conducted an outlanding for over 10 years and that this lack of currency, coupled with the late decision to start the engine and lack of an identified landing options were contributory factors.

A common reason for powered sailplane outlandings going wrong is the pilot's mindset of expecting the engine to start first time and not having any other plan. GFA training requires all glider pilots to remain

within glide range of suitable landing options, and to make the decision to break-off the flight at a sensible height above ground. For pilots of powered sailplanes, including sustainer types, the decision to break off the flight will usually be higher than that for pure gliders. The actual height will be governed by the complexity of the engine starting process and availability of suitable landing options should the engine fail to start.

Date	22-Apr-2018	Region	VSA	SOAR Report Nbr		S-1245	
Level 1	Operational	Level 2	Runway Events	Level 3		Runway incursion	
A/C Model 1		Duo Discus T		A/C Model 2		Piper PA-25-260	
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	70
The command pilot of the glider was conducting an Air Experience flight. Following a normal landing on the left-hand side of the operational runway, the pilot and passenger disembarked. Without warning, the passenger ran across the operational runway to the launch point. A radio call was made from the gliding control van to alert the pilot of a tow plane on late final approach, who noticed the person on the runway and conducted a missed-approach. The Club subsequently revised its operational procedures to ensure all passengers are briefed on runway hazards and the importance of staying with the aircraft upon landing.							

Date	22-Apr-2018	Region	NSWGA	SOAR Report Nbr		S-1244	
Level 1	Airspace	Level 2	Aircraft Separation	Level 3		Near collision	
A/C Model 1		Piper PA-25-235		A/C Model 2		Piper PA-28-181	
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	38

During aerotow gliding operations a Piper Archer was observed backtracking the operational runway. As the Archer lined up for take-off, the gliding operation reported hearing a radio carrier wave on the CTAF. The gliding operation made a radio call on the CTAF advising the Archer pilot that their transmission was unreadable. Further carrier wave transmissions were heard on the CTAF before the Archer left the circuit. Later that day, the same Archer was on short final approach for a landing while the glider tow plane was conducting a left-hand circuit onto the operational runway. The tow plane's pilot had made the usual downwind and base leg calls and had not heard any broadcasts from the Archer pilot. The tow pilot did not sight the Archer until both aircraft were on short final and conducted a 'go-around' to ensure separation. Witnesses observed the Baron pass about 100 metres in front of, and 20 ft above, the tow plane. The Archer pilot, who was flying recreationally, was spoken to by the tow pilot. The Archer pilot reported that they had been making all the required radio calls and that they did not recognise that they had experienced a radio malfunction until it was brought to their attention. Operating at busy uncontrolled airports requires pilots to utilise alerted see-and-avoid procedures wherever possible in order to decrease the risk of collisions with other aircraft. Pilots, therefore, need to conduct an effective radio serviceability test and be able to recognise a possible radio failure. GFA is of the view that pilots should not assume that radio communication equipment is serviceable until two-way communications have been established. A radio serviceability check can be conducted as part of the Daily Inspection.

Date	24-Apr-2018	Region	NSWGA		SOAR Report Nbr		S-1243		
Level 1	Operational		Level 2	Flight Preparation/Navigation		Level 3	Aircraft preparation		
A/C Model 1		DG-1000S			A/C Model 2	N/A			
Injury	Nil	Damage	Nil	Phase	Launch		PIC Age	57	

Shortly after the glider became airborne behind the tow plane, the instructor observed the airbrakes were slightly proud of the wings and the top surface was chattering in the airflow. The instructor locked the airbrakes and the sortie was continued without further incident. The operation was launching off a narrow runway, which necessitated the gliders being marshalled just outside the gable markers. The flight crew had completed their pre take-off checks before being pushed out on the runway for launch. At some point during this ground handling, the student extended the airbrakes to apply wheel brake to stop the glider, and when the student closed the airbrakes they didn't ensure the lever was locked. The unlocked state of the airbrakes went unnoticed by the Instructor. When the glider became airborne, the airbrake lever moved slightly aft but was retained by notches on the cockpit wall. This resulted in the airbrakes slightly protruding above the wing, which resulted in the top cap of the airbrakes chattering in the airflow. The instructor immediately identified the problem and locked the airbrakes. In the case of this incident, the pre take-off configuration was changed by the operation of the airbrakes, and the pilots should have confirmed the aircraft was correctly configured for take-off by repeating the pre take-off check list. The club CFI noted that *"Improper use, or non-use, of cockpit checks is often cited as a contributing factor to incidents and accidents. Cockpit checks need to be followed and more importantly followed in sequence, step by step with a challenge and response ethos when instructing ab-initio students. Examples of items that can erode effective checks, can be, but not limited to workload, schedule pressures, external items such as ATC, stress, culture or deliberate short-cutting. It doesn't matter how many hours, experience on type, or the fact that a check list repeats itself, the cockpit checks need to be followed in sequence uncorrupted by the crew. Things go wrong even in simple aircraft such as gliders. The check list is designed to achieve a standard foundation for verifying aircraft configuration that will attempt to defeat any reduction in the flight crew's psychological and physical condition, and provides a sequential framework to meet internal and external cockpit operational requirements."*

Date	27-Apr-2018	Region	WAGA	SOAR Report Nbr	S-1250

Level 1	Technical	Level 2	Powerplant/Propulsion	Level 3	Abnormal Engine Indications
A/C Model 1	Piper PA-25-235	A/C Model 2	DG-1000S		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	63

Shortly after the towing combination became airborne and began climbing away, the tow pilot received a radio call from the base station advising of smoke coming from the tow plane's engine. The tow pilot had already noticed a sub-optimal climb rate and had discounted issues with the magnetos, mixture, carburettor heat and possible extended dive brakes on the glider behind. The pilot chose to decrease power to reduce the climb rate, and after communicating with the glider pilot commenced a shallow turn to the left to position the combination in reach of safe landing options. When safe to do so, the glider pilot released from tow and, both the glider and tow plane completed safe landings on the cross strip. Subsequent testing of the tow plane engine revealed an intermittent fault with the fuel mixture control resulting in an overly rich mixture. The problem was remedied by the workshop.

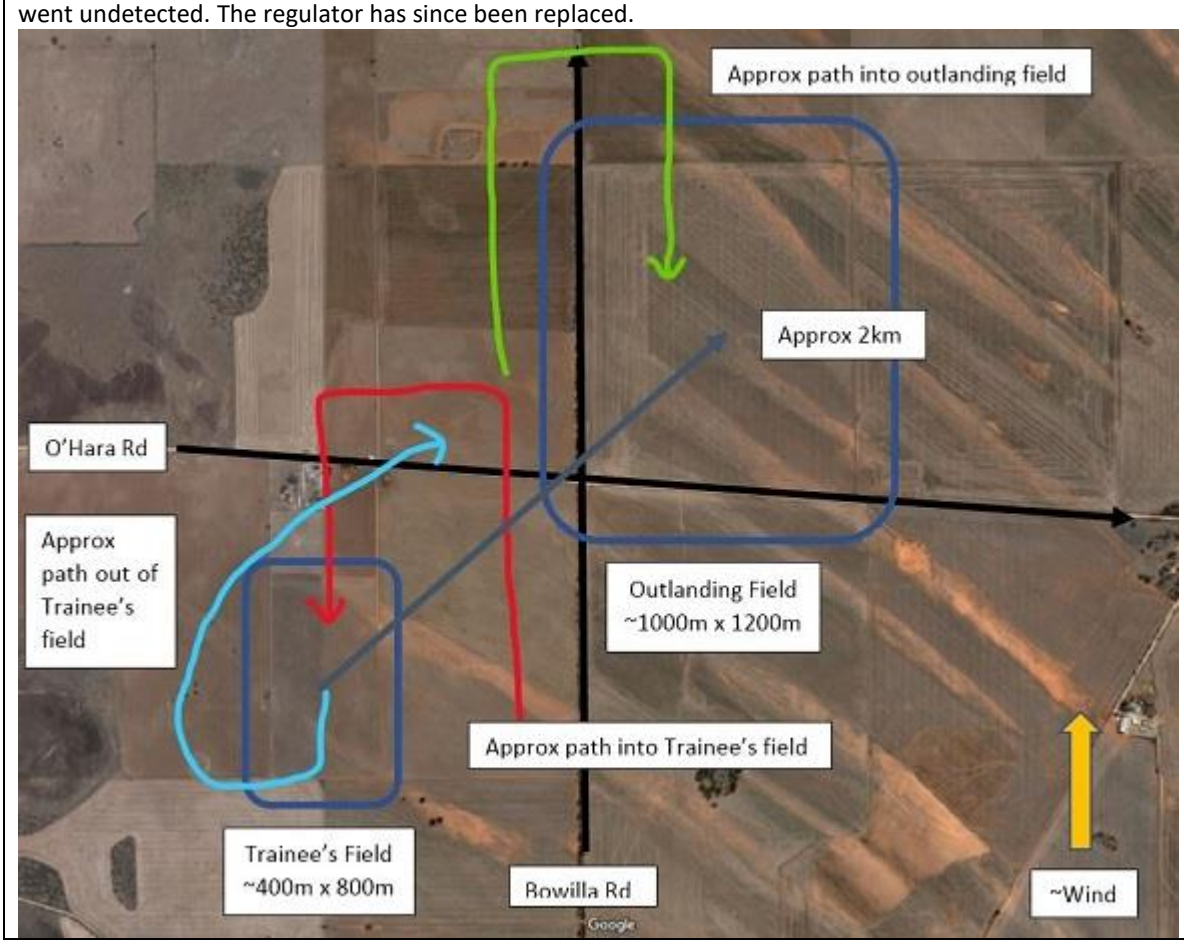
Date	27-Apr-2018	Region	NSWGA	SOAR Report Nbr	S-1260
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	DG-1000S	A/C Model 2	Cessna 182T		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	15

The pilot was conducting their first solo flight. After breaking off the flight, the pilot made a radio call on joining the downwind leg for runway 08. Around the same time, the pilot of a Cessna 182 broadcast that they were taxiing for runway 35. Upon hearing the Cessna pilot broadcast they were "*...entering and backtracking 35*", the glider base advised the Cessna pilot that there was a "*...first solo glider flight shortly turning base for Runway 08*". This broadcast was acknowledged by the Cessna pilot with a response "*Roger*". Several seconds later the glider was observed turning onto a left base for runway 08 as the pilot broadcast "*...turning left base runway 08*". Just as the glider turned on to the final approach, the Cessna pilot broadcast that they were rolling on runway 35. Simultaneously, the glider base crew, who could not sight the Cessna at threshold of runway 35 due to rising terrain, heard the application of full power. The gliding Duty Instructor recognised the potential conflict between the Cessna and landing glider and made a radio broadcast to the pilot of the Cessna to abort their take-off due to a glider on final approach for runway 08. When it appeared likely the Cessna would enter the runway intersection, the Duty Pilot made a radio broadcast to the pilot of the Cessna to stop before the intersection. The Cessna pilot complied. It was later determined that the Cessna pilot did not sight the glider until it was on short final, and well after the Cessna pilot had aborted the take-off. Contributing Factors included gliding operations being conducted on the cross runway, and a lack of situational awareness by the pilot of the Cessna 182. Investigation revealed that the gliding club had been operating on the cross runway as the usual gliding strip parallel to the main operational runway was too short for the low powered tow plane. The Club is no longer using the cross runway unless it is the more into wind.

Date	28-Apr-2018	Region	SAGA	SOAR Report Nbr	S-1253
Level 1	Technical	Level 2	Powerplant/Propulsion	Level 3	Engine failure or malfunction
A/C Model 1	ASK-21Mi	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Outlanding	PIC Age	45

While conducting power-on outlanding checks in a powered sailplane, and while at circuit height climbing away from the student's selected paddock, the engine stopped. The command pilot took control and conducted a safe outlanding in a paddock the command pilot had earlier identified as suitable. Investigation revealed the voltage regulator had failed, which led to the battery voltage dropping, the ECU shutting down and the engine stopping. The battery is a LiFePO4 which has a very flat discharge curve. The system is

designed to illuminate a LED on the ILEC display when the battery voltage drops below a predetermined level. However, as the time from when the LED illuminated to engine shutdown was less than 1 minute, it went undetected. The regulator has since been replaced.



Date	29-Apr-2018	Region	NSWGA	SOAR Report Nbr	S-1249
Level 1	Operational	Level 2	Flight Preparation/Navigation	Level 3	Aircraft preparation
A/C Model 1	DG-300 Club Elan	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	43

The pilot forgot to retract the undercarriage after release from tow and also failed to conduct their usual post-release checklist (the pilot uses the post-release checklist **F**laps, **U**ndercarriage, **S**peed and **T**rim). After a local flight with the undercarriage down, the pilot retracted the undercarriage when completing the pre-landing checklist. When the airbrakes were opened during the final approach the undercarriage warning went off. The pilot cycled the undercarriage a number of times, but the warning continued after each attempt. It wasn't until he glider was nearing round-out height that the pilot actually checked the placards and noticed the undercarriage was still retracted. The pilot lowered the undercarriage at a height of about 20 feet, and in so doing caused the glider to balloon. The pilot managed to stabilise the round-out and a normal landing ensued. The pilot noted that the undercarriage lever in this glider worked opposite to that in the LS6 glider the pilot normally flew. To prevent landing mishaps it is important to get some of the tasks, like lowering the undercarriage, out of the way early, such as when making the deciosn to break-off the flight and join circuit. Also, the pre-landing checklist should be a 'check' and not an 'action' list. The

undercarriage check should verify the undercarriage lever is matched to the lowered position on the placard. For further information refer to OSB 01/14 'Circuit & Landing Advice'.
NOTE: *Lowering the undercarriage at low level on final approach is fraught with danger. It has been identified as a factor in at least two fatal low-level stall/spin events in the past few years, and to gliders striking the ground hard and being substantially damaged with the pilot suffering injury. It is far safer to land properly with the undercarriage retracted than to potentially lose control while lowering it.*

Date	29-Apr-2018	Region	SAGA	SOAR Report Nbr	S-1252		
Level 1	Operational	Level 2	Fire Fumes and Smoke	Level 3	Fire		
A/C Model 1	G 102 Club Astir IIIb			A/C Model 2	Discus b		
Injury	Nil	Damage	Substantial	Phase	Ground Ops	PIC Age	
A Jabiru aircraft parked in the Club's hangar caught fire. The Jabiru was totally destroyed, two gliders substantially damaged and the hangar suffered some structural damage. Two other Jabiru aircraft were safely removed by club members responding to the fire and were undamaged. It is suspected that the Jabiru's battery charging system was the source of the fire.							

Date	11-May-2018	Region	WAGA	SOAR Report Nbr	S-1264		
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing		
A/C Model 1	DG-1000S			A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	67
The instructor, who was relatively new to the role, was flying with a relatively inexperienced pilot who had recently been signed off for annual checks. The pilot under check had flown more than 25 solo flights and had more than 115 flights total. The flight was generally well flown but the pilot crowded the circuit. The pilot turned onto the base leg too early and commenced a high approach resulting in a long landing. Although the approach speed was maintained accurately with full dive brake, the flare was commenced too high above the ground. The rate of descent increased markedly during the flare, but the pilot did not recognise this and did not ease the airbrakes in to arrest the rate of descent. The instructor was late in taking control, which resulted in a firm landing and noticeable tail wheel strike. A post-flight inspection of the aircraft revealed a deflated tail wheel tyre and damage to the plastic tail wheel. No further damage was detected. The most common instructing accident is 'instructor failed to take-over in time'. These accidents usually involve the trainee responding in an unforeseen way or failing to respond at all (e.g. not rounding out). Given that the overall idea is to let the trainee do as much as possible within their level of skill the instructor should never wait until the last moment - which can rapidly become 'too late' - before responding to a situation that is going awry. This is particularly true of any manoeuvres close to the ground. Rounding out too late is usually due to the pilot not looking far enough ahead or becoming 'target fixated' on the Aiming Point.								

Date	17-May-2018	Region	NSWGA	SOAR Report Nbr	S-1277		
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Aircraft Separation Issues		
A/C Model 1	Piper PA-28			A/C Model 2	Astir CS		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	
The club's ASK13 glider was readying for a winch launch when a Piper Warrior II appeared over trees tracking from the northeast towards the southeast at an estimated height of 250 feet AGL. The aircraft overflew the glider and its registration was clearly visible. About five minutes later another Piper Warrior was sighted as it flew above trees at low level through the upwind circuit area of the active runway. Only minutes earlier the Club's Astir had joined circuit to land. Attempts to contact both pilots on the CTAF were							

unsuccessful. The Club CFI contacted the CFI of the registered operator of the first aircraft two days later. The operator's CFI confirmed that the two aircraft were theirs and established that they certainly had been tracking over the gliding airfield at that time. It was agreed that the incident did not reflect well on the two Warrior pilots concerned, and the operator's CFI agreed to alert its pilots to the issue. The Gliding Club CFI later received a call from one of the pilots involved, who explained that they were planning to do practice enroute force landings using the gliding airstrip and had been maintaining a listening watch on the CTAF but did not make any calls. The Warrior pilot explained that when they saw a glider they turned away but still did not call. It was not explained why the pilot did not hear or reply to the calls made by the Gliding Operation. The Gliding Club CFI and the pilot discussed the procedures for transiting CTAFs, and the pilot agreed that they had been careless in this regard but that a valuable lesson was learned.

Date	17-May-2018	Region	NSWGA	SOAR Report Nbr	S-1274
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Aircraft Separation Issues
A/C Model 1	Piper PA-28-161	A/C Model 2	AS-K 13		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	

The club's ASK13 glider was readying for a winch launch when a Piper Warrior II appeared over trees tracking from the northeast towards the southeast at an estimated height of 250 feet AGL. The aircraft overflew the glider and its registration was clearly visible. About five minutes later another Piper Warrior was sighted as it flew above trees at low level through the upwind circuit area of the active runway. Only minutes earlier the Club's Astir had joined circuit to land. Attempts to contact both pilots on the CTAF were unsuccessful. The Club CFI contacted the CFI of the registered operator of the first aircraft two days later. The operator's CFI confirmed that the two aircraft were theirs and established that they certainly had been tracking over the gliding airfield at that time. It was agreed that the incident did not reflect well on the two Warrior pilots concerned, and the operator's CFI agreed to alert its pilots to the issue. The Gliding Club CFI later received a call from one of the pilots involved, who explained that they were planning to do practice enroute force landings using the gliding airstrip and had been maintaining a listening watch on the CTAF but did not make any calls. The Warrior pilot explained that when they saw a glider they turned away but still did not call. It was not explained why the pilot did not hear or reply to the calls made by the Gliding Operation. The Gliding Club CFI and the pilot discussed the procedures for transiting CTAFs, and the pilot agreed that they had been careless in this regard but that a valuable lesson was learned.

Date	19-May-2018	Region	NSWGA	SOAR Report Nbr	S-1271
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication
A/C Model 1	LAK-19	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	71

The pilot did not fully engage the undercarriage lever in the detent and the undercarriage collapsed on landing. The pilot's CFI noted that the pilot had satisfactorily completed their Annual Flight Review but that they do not fly regularly and lacked currency in the glider. While the pilot lowered the undercarriage during their pre-landing check, a visual inspection to confirm the undercarriage was in the down position was not made. OSB 01/14 'Circuit & Landing Advice' confirms that the pre-landing checklist is a 'check' and not an 'action' list. The undercarriage check should not only verify the undercarriage lever is matched to the lowered position on the placard, but that it is engaged in its locking mechanism.

Date	19-May-2018	Region	GQ	SOAR Report Nbr	S-1268
Level 1	Operational	Level 2	Ground Operations	Level 3	Other Ground Ops Issues
A/C Model 1	CESSNA 150M	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	48

Following flying operations and while completing stowage and cleaning of the club tow plane in the hangar, the tow pilot struck their head on a corner of the trailing edge of an aileron inflicting a three-corner wound to their scalp above the hair line. The tow pilot proceeded to the club house while applying pressure to the wound and was treated at the club house by fellow club members, one of whom was a medical practitioner. A club member then took the tow pilot to hospital where the wound was stitched. Incidents around the hangar and on the airfield are commonplace and Club committees should ensure they periodically review and minimise the risks of injury in accordance with their Safety management System. This type of accident often occurs when a person's upward vision is obstructed by a hat.

Date	19-May-2018	Region	NSWGA	SOAR Report Nbr	S-1266
Level 1	Operational	Level 2	Flight Preparation/Navigation	Level 3	Aircraft preparation
A/C Model 1	Piper PA-25-235	A/C Model 2	SZD-50-3 "Puchacz"		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	65

After about 3 hours in the tug, the tow pilot decided take a break and also refuel the aircraft. One of the recently solo student pilots offered to assist the tow pilot refuel. As the student pilot was inexperienced with the refuelling operation, the tow pilot needed to provide an additional level of supervision and assistance with the equipment. Upon completion of the refuel, the tow pilot became focused on the supervision and the safe handling of the fuelling equipment, and neglected to follow their post-refuelling routine. As a consequence, the tow pilot failed to properly secure the fuel cap. The tow pilot managed to take a short meal break but found himself under pressure to resume operations as he was the only tow pilot available. Due to time pressures being applied and because the tow plane had not been disturbed since he left it, the tow pilot conducted a minimal pre-flight inspection and boarded the aircraft. The engine started normally, and the tow pilot taxied onto the flight line where a glider was attached. On applying full power for the launch the tow pilot noticed that the fuel cap was not secured and immediately reduced power to idle. The glider was released, and the tow pilot turned left to clear the runway. The tow pilot shut down the engine, disembarked, and refitted the fuel cap; noting that there were no faults with that fitting. Launching was resumed without further incident. While pilots have a general awareness of the inherent risks associated with distractions in the flying environment. Like all humans, however, pilots are susceptible to becoming preoccupied and distracted with one task to the detriment of another task. Furthermore, distractions can arise unexpectedly, during periods of high or low workload, or during any phase of flight. In essence, no pilot is immune to distraction. To avoid the sort of distraction reported here, pilots should exercise discretion in engaging in conversation with other people when conducting critical tasks, such as refuelling. There was also pressure being applied to the tow pilot by the gliding operation that contributed to the pilot rushing his checks. Glider pilots must respect the tow pilot's need for a break, and clubs can help by ensuring sufficient tow pilots are rostered to meet demand.

Date	20-May-2018	Region	GQ	SOAR Report Nbr	S-1265		
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication		
A/C Model 1	Discus B	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	54
During the latter stages of the landing ground roll the undercarriage collapsed and the glider came to a halt on its fuselage. A thorough inspection of the aircraft's undercarriage mechanism was carried out by a qualified airworthiness inspector and found to be serviceable. It is likely the low hours pilot did not fully engage the undercarriage lever in the locking detent. The Club's CFI noted that pilots should ensure the undercarriage lever is fully home on every landing where a retractable landing gear is fitted.							

Date	20-May-2018	Region	WAGA	SOAR Report Nbr	S-1270		
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision		
A/C Model 1	IS-28B2	A/C Model 2	Cessna				
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	43
While conducting an Air Experience Flight, and just after release from aerotow, the instructor observed a powered aircraft about 1000 meters away slightly lower and on a converging course. The pilots of both aircraft changed heading to avoid conflict. The instructor attempted to contact the powered aircraft via a hand-held radio (the panel-mounted radio had been removed for repair) but received no response. Upon landing the radio was found to be working correctly. The tow pilot who launched the air experience flight confirmed that the powered aircraft had made a call on entering the CTAF and had also heard the instructor's broadcast. Hand-held radios are not always reliable and transmission/reception can be affected by orientation of the aerial and proximity to the aircraft structure. This incident highlights that the importance of effective lookout in collision avoidance.							

Date	26-May-2018	Region	VSA	SOAR Report Nbr	S-1272
Level 1	Operational	Level 2	Fire Fumes and Smoke	Level 3	Smoke
A/C Model 1	HORNET STOL	A/C Model 2	Janus B		
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	66

At approximately 14:45 EST the tow pilot commenced the second glider launch, and fourth flight for the day, in an experimental tow plane. The previous three flights had been without incident. Shortly after take-off the tow pilot became aware of a faint smell of smoke and haze in the cockpit. There was no indication from the instruments that there was a problem and the tow plane was performing as well as the previous flights. The tow pilot was aware that farmers were burning off in the area creating some smoke and haze and looked around thinking this may have been the source. The pilot continued the launch as the problem remained stable, if not reduced. On turning cross-wind during the climb, the pilot suspected that it was not smoke from an external source but more likely a drop of oil that had made contact with the exhaust pipe, which the pilot had experienced on an earlier occasion. The tow pilot continued to climb above the aerodrome while monitoring the situation and at approximately 2,000 feet AGL decided to err on the side of caution and wave the glider off. The glider released immediately, and the tow plot made a left turn while radioing their intention to join the circuit at a high mid-field cross-wind, and that they would expedite the landing due to some smoke in the cabin. The tow pilot followed a glider on the downwind leg and landed on the duty grass runway away from the launch point, whereupon the tow plane was manoeuvered well upwind and to the side of the grass strip clear of operations the engine was shut down. The cause of the cabin haze was identified as a minor oil leak from the oil cooler dripping onto the exhaust pipe. This was noted in the aircraft Maintenance Release and the aircraft grounded pending further examination. It was later determined that the leak occurred in the oil heat exchanger when vibrations caused some welded joints to fail. Review of maintenance records show the oil heat exchanger had being relocated to allow better airflow through the fins. The new location made it more susceptible to engine vibration. A new oil heat exchanger was souced and positioned in the original position. A stiffening compression bracket was added relieve any stress on the assembly of the cooler. The aircraft has since completed several engine runs satisfactorily and was returned to towing.

Date	3-Jun-2018	Region	GQ	SOAR Report Nbr	S-1273

Level 1	Operational	Level 2	Communications	Level 3	Other Communications Issues
A/C Model 1	SZD-55-1	A/C Model 2	Cessna Caravan		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	50

It was reported that a skydiving company was using the GFA frequency 122.9 for its operations. The GFA Regional 'Airfields, Airspace & Avionics' Officer visited the skydiving operation and explained to the senior instructor that the frequency the company was using was allocated to gliding as per the Radiocommunications Class Licence 2016. Although the instructor agreed to raise the matter with the company's operations team, the frequency continued to be used. The matter was elevated to the Australian Parachute Federation, following which the company confirmed they would immediately change to the allocated parachuting frequency of 119.1 and update their operations manual.

Date	9-Jun-2018	Region	WAGA	SOAR Report Nbr	S-1280
Level 1	Operational	Level 2	Miscellaneous	Level 3	Warning devices
A/C Model 1	DG-1000S	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	71

The sortie involved an Instructor, occupying the rear seat of this tandem glider, observing the flying by a low hour's solo pilot. After an uneventful flight the pilot under observation joined circuit as number 2 to the club's tow plane. The tow plane landed well ahead of the glider and had commenced backtracking to the side of the operational runway as the glider was turned from the base leg to final approach. At this time the flight crew heard an audible alarm, which increased in volume as the glider got closer to the runway and backtracking tow plane. The Flarm display is located in the front cockpit, and the instructor's view of it was obstructed by the head of the pilot under observation. The instructor noted that the shrill alarm from the Flarm was potentially distracting and made communication between the pilots uncertain. Nevertheless, the pilot under observation conducted a successful landing and the alarm stopped when the tow plane turned off the runway towards its holding bay. Flarm is an instrument that alerts the flight crew to a potential collision. Collision warnings are issued depending on the time remaining to a potential collision, not the geometric distance between the aircraft. The first warning is typically issued between 19 and 25 seconds before the calculated potential collision with an aircraft or obstacle (time to impact). The second warning is issued 14 to 18 seconds in advance and the third warning 6 to 8 seconds in advance. Warnings are sustained as long as the threat remains. Depending on changes in the prediction, the threat may also be downgraded or cease. Warnings are selective, i.e. they are only issued if the calculation detects a high probability of a collision within the next 19-25 seconds. Dedicated FLARM displays normally have their own sound generator, which needs to be loud enough to be heard in a high-noise environment. When the Flarm is activated by a perceived threat, the flight crew need to identify the threat and take appropriate avoiding action. However, in the case of this incident the threat was identified, and it did not pose any risk. In such cases where the noise of the Flarm is becoming a distraction and the threat has been identified, the Instructor needs to assess whether assuming control of the glider is the safest option.

Date	21-Jun-2018	Region	GQ	SOAR Report Nbr	S-1278
Level 1	Technical	Level 2	Systems	Level 3	Electrical
A/C Model 1	HK 36 TC	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Outlanding	PIC Age	67

During a local flight and at a height of around 2,000ft AGL, soaring conditions deteriorated and the pilot elected to restart the engine to self-retrieve. After unfeathering the propeller, the pilot was unable to start the engine with the battery. The pilot immediately turned the aircraft around and diverted to a field that had been overflown some minutes earlier, which had been identified as a potential landing site. An air start was initiated by diving the glider to the recommended speed of 97+ knots but the pilot discontinued this due

to the excessive loss of height. The pilot identified that the field had been recently slashed, with the furrows running along the length of the field and fortuitously aligned with the wind. The final approach was flown over a farmhouse that also had poles and wires, so a steep approach using airbrake was chosen to ensure as much of the field as possible was available for the flare and landing. The pilot focused on maintaining the correct airspeed and made a normal flare and landing, during which the nosewheel was held off the ground for as long as possible in the long grass. The aircraft came to a stop quite quickly in the middle of the field and suffered no damage. The pilot contacted the club and a crew was dispatched to the field. A new battery was fitted to the aircraft and the engine ran faultlessly on the ground. After inspecting the field and noting powerlines at both ends, the pilot decided not to attempt to fly the aircraft out. The glider was retrieved by trailer the following day. The pilot commented later that an air start may have been possible had they attempted to start the engine at a greater height. The glider syndicate members decided they will:

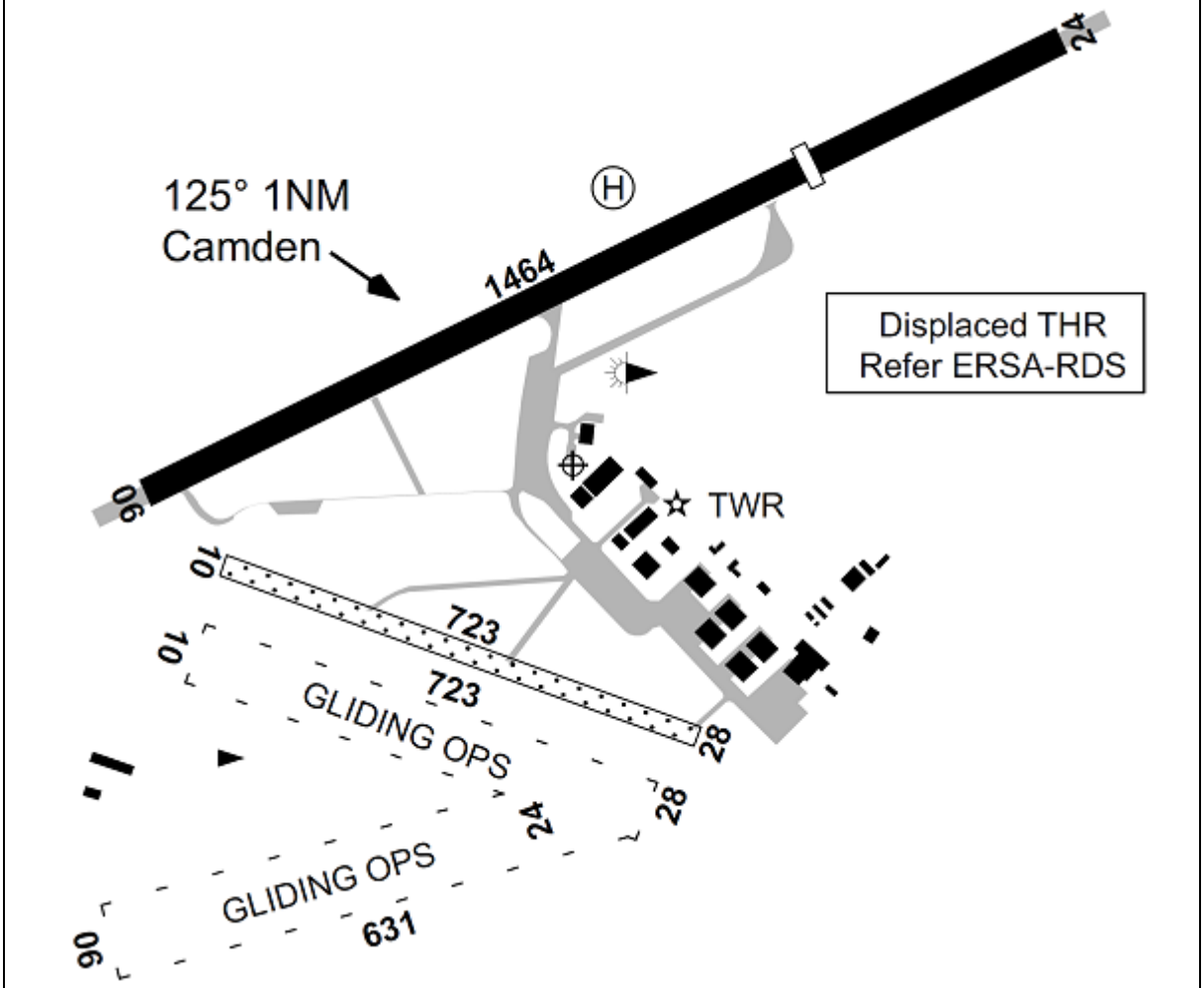
- train more often for outlandings, with particular focus on field selection and outlanding approach, circuit and landing - all engine on but at idle.
- consider a restart at higher heights to enable more time for decision making and allow a 97+ knot air-start in case of a non-start.
- where possible, have a suitable outlanding field in sight and in range when a restart is attempted allowing for the reduction in glide ratio when the propeller is unfeathered.
- review their battery monitoring parameters.

Date	23-Jun-2018	Region	VSA	SOAR Report Nbr	S-1276
Level 1	Operational	Level 2	Flight Preparation/Navigation	Level 3	Aircraft preparation
A/C Model 1	SZD-51-1 Junior	A/C Model 2			

Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	61
The tow pilot stopped operations to notify the glider pilot to remove the tail dolly from the glider. Three witnesses observed the pilot board the aircraft while the tail dolly was still fitted and commence the pre take-off checklist. It was apparent to them the pilot had not completed the pre-boarding checks. The tow pilot, who was one of the witnesses, alerted the pilot to the tail dolly being fitted. The glider pilot, somewhat embarrassed, unfastened their seat harness and exited the glider to remove the tail dolly. All pilots understand they are supposed to perform the pre-boarding and pre-flight checklists before every flight, but eventually it just becomes repetitive to the point that it means slipping or forgetting to perform every action. There is a good reason behind this checklist, despite the repetition: it works. Skipping the checklist means you can accidentally miss a major step, turning carelessness into a full-blown in-flight emergency.							

Date	24-Jun-2018	Region	NSWGA	SOAR Report Nbr	S-1275
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	SZD-48-1 "Jantar Standard 2"	A/C Model 2	K21 and DG1000		

Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	
The gliding operation at this controlled aerodrome is conducted in accordance with a Letter of Agreement (LOA) between the Club and AirServices. The CTR is divided into two sections, one for powered aircraft and one for gliders. The boundary between the two sections is a line drawn across the CTR, along the line of the southern edge of the duty (main) runway 06/24. The Powered Section lies to the north of the boundary line, and the Glider Section lies to the south of the boundary line. All aircraft, powered and gliders, must confine their operations to their respective sections of the CTR unless cleared by Tower. Gliding operations are conducted on gliding runways 06/24 or 10/28. The duty runway determines the direction of the glider operations. A runway change can be initiated by the Gliding Operation seeking permission from ATC, or by ATC announcing a change in runway. As the random nature of glider operations in the Glider Section limits the provision of a normal ATC traffic alerting service, traffic information on aircraft involved in glider operations is not normally provided to other aircraft involved in glider operations.							



The pilot of a Jantar was flying locally when he heard ATC advise the gliding operation that powered aircraft operations were moving from RWY 24 to RWY 06. About 10 minutes later the glider pilot observed powered traffic landing on RWY 06 and so joined a downwind leg for the glider RWY 06. Just prior to making the downwind radio call the pilot observed a glider heading towards him on a downwind leg for RWY 24. The Jantar pilot moved closer to the runway to avoid the collision, and the other glider passed below and to the right. To avoid a potential conflict with the other landing glider, the Jantar pilot conducted a modified approach onto a different runway (RWY 28). The Club has reviewed its procedures to ensure a change of runway is better coordinated to avoid misunderstandings.

Date	8-Jul-2018	Region	GQ	SOAR Report Nbr	S-1283		
Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion		
A/C Model 1	IS-28B2	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	66
While the glider was on close final a Jabiru entered the RWY 24 at the threshold. The glider pilot landed beyond the threshold and clear of the Jabiru. The Jabiru pilot's view of the glider on approach would have been obstructed by the aircraft's wing. Investigation revealed the glider's 'push-to-talk' switch had malfunctioned, so no radio calls were transmitted to alert the Jabiru pilot of the glider in the circuit. The malfunction was rectified and the glider returned to service.							

Date	8-Jul-2018	Region	GQ	SOAR Report Nbr	S-1284
Level 1	Operational	Level 2	Flight Preparation/Navigation	Level 3	Other Flight Prep/Nav Issues
A/C Model 1	Club Libelle 205	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	58

It was reported that the pilot flew with a parachute that had a recently expired packing slip. The reporter also suspects the parachute buckles to be corroded and possibly not fit for purpose. The pilot stated they were aware of the risk of using an out of service parachute and was only using it as a cushion. The reporter believed this attitude reflected poor airmanship. Parachute manufacturers stipulate a maintenance interval and non-compliance will usually invalidate the manufacturer's warranty. However, there is no regulation that mandates a specific timeframe between repacks for persons operating outside the Australian Parachute Federation. Pilots flying with their own parachute merely need to ensure the chute is fit for use and this will very much depend on how it is stored, how often it is worn, and whether it has been subjected to moisture. However, it is a different matter when the owner makes the parachute available to third parties, such as clubs. This then leads to a Duty of Care issue that needs to be managed. In the interest of aviation safety, the GFA asserts that it is best-practice for its members to maintain their emergency parachutes in accordance with the manufacturer's modifications and equipment bulletins (e.g. Technical Service Bulletins, Service Bulletins, Technical Bulletins, Product Service Bulletins or Information Bulletins).

Date	9-Jul-2018	Region	NSWGA	SOAR Report Nbr	S-1383
Level 1	Operational	Level 2	Fire Fumes and Smoke	Level 3	Fumes
A/C Model 1	Piper PA-25-235	A/C Model 2	N/A		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	42

After conducting 22 aerotow launches the tow pilot reported suffering from headaches, nausea and vomiting. A strong smell of engine exhaust was evident in the cockpit. The pilot was released from duty and fully recovered after 12 hours of self-treatment. This is the second incident involving fumes in this aircraft in three months (refer SOAR report 1241). In the previous incident, the owner corrected a cracked muffler and believed the problem had been resolved. Inspection on this occasion by the owner identified exhaust stains to the underside of aircraft beneath cockpit. The engine exhaust pipe was extended to direct flow over the top of the wing into slipstream, and the wheel strut flange seals were replaced. The owner also installed an electronic carbon monoxide detector in the cockpit. No further detections of CO have since occurred. Pilots need to be aware of the signs or symptoms of carbon monoxide poisoning, which include headache, dizziness, nausea, shortness of breath, weakness and confusion. If a pilot believes they are suffering the effects of CO poisoning, they should immediately get access to fresh air and land at the earliest opportunity. In severe cases, call 000 and seek medical advice. Breathing pure oxygen will assist recovery.

Date	14-Jul-2018	Region	GQ	SOAR Report Nbr	S-1297
Level 1	Operational	Level 2	Airframe	Level 3	Doors/Canopies
A/C Model 1	HK 36 TC	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	22

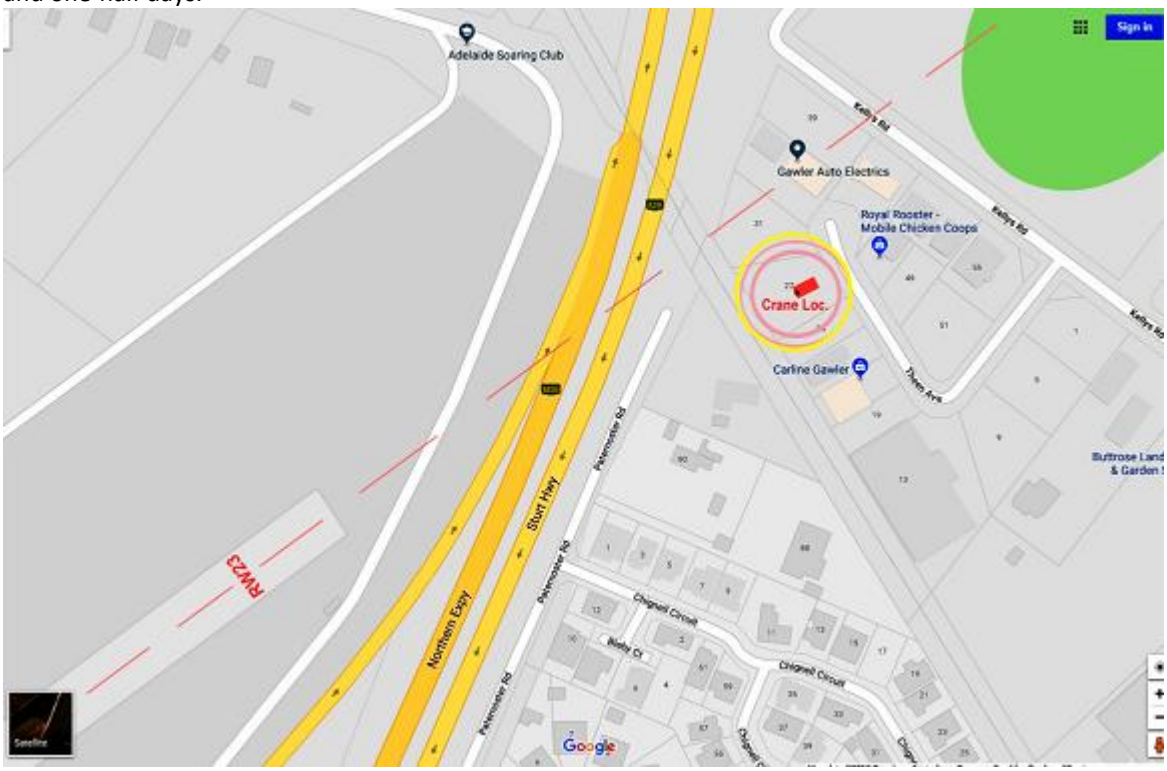
The low hours pilot prepared for the flight as usual and completed the pre take-off checks by closing and locking the canopy of the Touring Motor Glider. The engine was then started and the pilot taxied to the launch point, whereupon he disembarked the aircraft to confer with the Duty Instructor. Upon re-entering the aircraft, the pilot closed the canopy but did not lock it. The pilot then condcuted the pre take-off checks once again, but because the canopy was already closed the pilot assumed that it was locked. The pilot restarted the engine and taxied to the runway for take-off. Upon the application of full power the canopy

opened, so the pilot shut-down the engine and taxied clear of the runway. Inspection revealed the canopy hinge mechanism was sufficiently damaged to prevent the canopy from closing and rendered the aircraft unserviceable. The aircraft was towed to the hangar. Causal factors include inexperience and failure to properly check the canopy was locked.

Date	19-Jul-2018	Region	SAGA	SOAR Report Nbr	S-1307		
Level 1	Operational	Level 2	Runway Events	Level 3	Other Runway Events		
A/C Model 1				A/C Model 2	N/A		
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	

At Gawler aerodrome a mobile slewing crane was observed operating up to a 30-metre height within 100 metres of the runway 23 threshold and displaced 20 meters to the south east of runway 23/05 centre-line.

As the operation of the crane posed a hazard to aircraft landing and taking off, the aerodrome manager met with the construction team and crane operator. Despite voicing concerns and being given undertakings that the operating height would be reduced, the crane continued to be operated at 30-metres for the next two- and one-half days.



The aerodrome operator (Gliding club) conducted a limited review of the rules governing the operation of a crane in the proximity to the airfield and consulted with the following regulators and documents:

- Safe Work SA;
- CASA Airports Inspection;
- The Airports Act 1996;
- The Airports Regulations 1997; and
- CASR 139.265 Registered aerodromes.It was determined that there were no rules or regulations preventing the operation of the crane in that location. Two weeks later the crane operator returned but this time spoke with the aerodrome manager beforehand and some risk management measures were put in place. After some pushback because Gawler was not a certified aerodrome, the aerodrome Manager arranged with CASA to issue a FIR NOTAM advising of the hazard.

Date	21-Jul-2018	Region	GQ		SOAR Report Nbr		S-1291		
Level 1	Technical		Level 2	Powerplant/Propulsion		Level 3	Abnormal Engine Indications		
A/C Model 1		Piper PA-25-235			A/C Model 2				
Injury	Nil	Damage	Nil	Phase	Ground Ops		PIC Age	55	

During the morning pre-flight it was observed there was a slight smearing of oil inside the cowling of the tow plane, but this was said to be common on this aircraft depending on cleaning undertaken by previous crew. The oil was topped-up and the action recorded in the Maintenance Release. The aircraft operated normally during morning operations, with the pilot performing regular engine bay checks. A further inspection mid-afternoon revealed further oil deposits, but an on-field inspection could not locate the

source. The aircraft was retired to the hangar, and the next day a detailed inspection by a LAME identified a crack in the number 2 cylinder casing. The pilots who flew the tug noted that despite the crack the engine did not operate outside normal parameters. At the time of writing a replacement engine was being sourced.

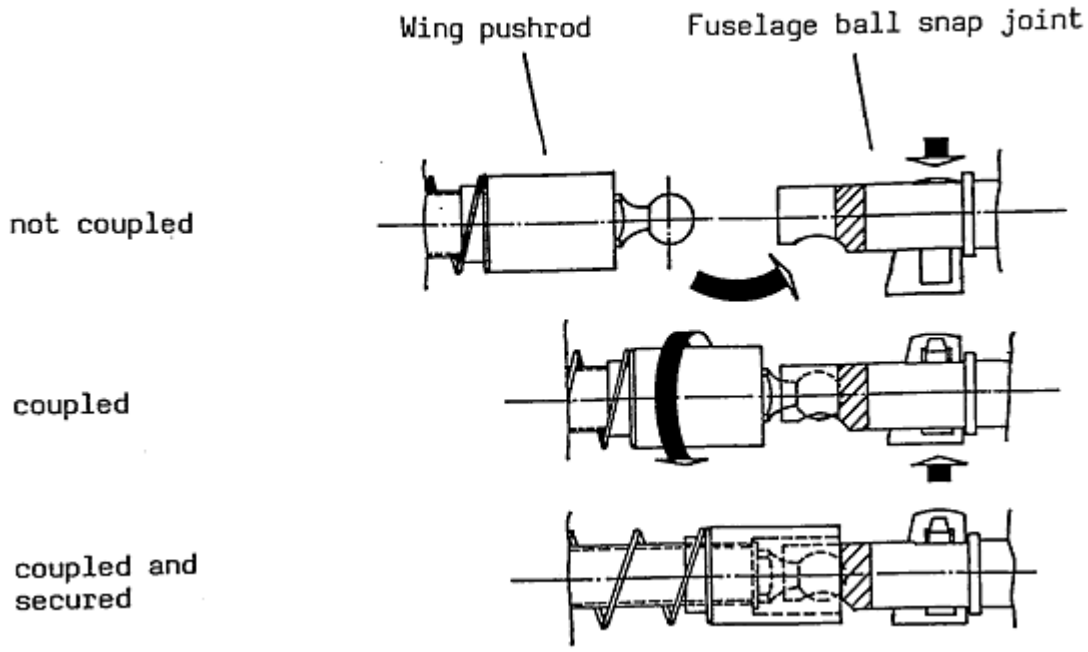
Date	22-Jul-2018	Region	SAGA	SOAR Report Nbr	S-1303
Level 1	Operational	Level 2	Flight Preparation/Navigation	Level 3	Aircraft preparation
A/C Model 1	G 102 Club Astir IIIb	A/C Model 2	N/A		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	

The glider was flown without a valid maintenance release. The low hours pilot completed the daily inspection and towed the glider to the launch point with the intention of taking it for a flight once he had completed a successful check flight in the club's two-seater. After successfully completing the check flight, the pilot took the glider for a flight. When the Maintenance Release was checked at the end of the day to confirm flight times had been recorded, it was noted that it had not been signed. The reason the pilot forgot to sign the Maintenance Release was not determined but distraction is a possible factor. As the pilot had undertaken the Daily Inspection and this was its first flight for the day, he did not check the Maintenance Release before flight.

Date	28-Jul-2018	Region	GQ	SOAR Report Nbr	S-1292
Level 1	Operational	Level 2	Aircraft Control	Level 3	Loss of control
A/C Model 1	LS 6	A/C Model 2	Piper PA-25-235		
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	48

During take-off the pilot had trouble maintaining wings level and aborted the launch. The aircraft came to rest after a moderate ground-loop. Investigation revealed that:

- one of the aileron ball snap joints was not properly secured and had disconnected; and
- a dual-check post rigging was not undertaken.The aircraft owner had completed the Daily inspection that morning but neglected to have the L'Hotellier couplings independently inspected. The lack of a dual certification in the aircraft Maintenance Release went unnoticed by the pilot. The ball snap joints of the aileron system are secured by turning the LS-sleeve over the joint as far as possible (see the drawing below).



Over many years there have been a steady run of incidents arising from the disconnection of l'Hotellier couplings on gliders, many of which occurred due to incorrect assembly during rigging. This incident highlights the importance of conducting a thorough Dual Inspection before releasing the aircraft to service, and it also confirms the vital role a thorough Daily Inspection plays in our risk management system.

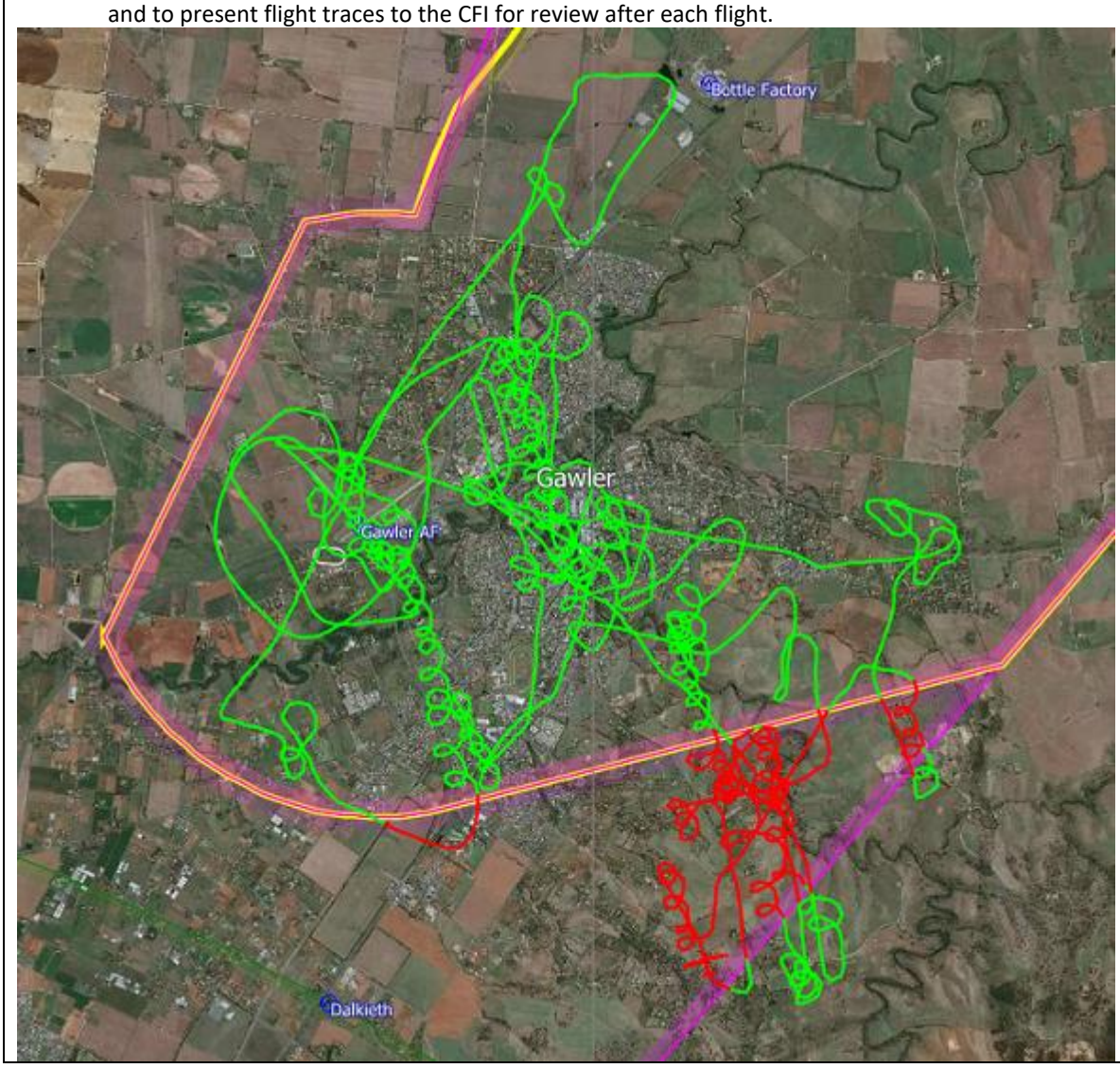
Date	5-Aug-2018	Region	VSA	SOAR Report Nbr	S-1302		
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision		
A/C Model 1	Piper PA-25-235/A1			A/C Model 2	Beech B200C Super King Air		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	71

A tow plane on mid to late downwind took evasive action to avoid an Air Ambulance that had joined a mid-crosswind for a left-hand circuit contrary to published procedures for the aerodrome. Contra circuits are employed at this Regional airport to separate the gliding operation from the power traffic. The tow pilot descended to maintain separation and informed the pilot of the Air Ambulance that they should be South of the airfield as per published procedures. The Air Ambulance pilot responded that they were flying IFR. The Club CFI spoke with the Chief Pilot of the Air Ambulance operator and was advised that the pilot had been counselled and removed from their roster due to this and other flying issues.

Date	9-Aug-2018	Region	SAGA	SOAR Report Nbr	S-1306		
Level 1	Airspace	Level 2	Airspace Infringement	Level 3	Airspace Infringement		
A/C Model 1	Discus b			A/C Model 2	N/A		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	67

During a 2½ hour local flight the pilot inadvertently breached Restricted Airspace to the East of the home aerodrome. The pilot advised that they had checked the NOTAMs before the flight and noted that the Military CTR and Restricted Airspace areas were active on the day of the flight (Thursaday). The restricted airspace and military CTR are active during the week but are normally inactive or released to gliding on the weekends. The pilot believes that the incident occurred due to a lapse in attention while chasing thermals near the boundary, and because they were accustomed to flying in the area on weekends when the airspace was inactive/released. The pilot suggested:

- *In future, I need to ensure my risk assessment with respect to airspace is thorough and that I have a clear understanding of the airspace as it applies on that day.*
- *Be aware that when I have been doing less recent flying, I need to be even more thorough about reviewing all risks, including airspace.*
- *Ensure wind direction, particularly, if strong is included as a risk factor with respect to boundary infringement.*This was the pilot's second airspace infringement in five months. The pilot was counselled and was required attend a briefing with the Duty Instructor before flight on each day, and to present flight traces to the CFI for review after each flight.



Date	12-Aug-2018	Region	NSWGA	SOAR Report Nbr	S-1312		
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing		
A/C Model 1	PIK-20	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	57
On final approach at a height of about 150 feet AGL, the experienced pilot noticed the windsock flick from a south-westerly direction to a Southerly direction. The pilot then saw a with cloud of dust marking a thermal rotating directly in the glider's flight path. In the knowledge that the aircraft would fly into the thermal							

during the flare, the pilot anticipated the glider would balloon. However, just as the pilot transitioned to the flare the glider was dumped heavily onto the ground. The glider rebounded, and the pilot made a safe recovery and landing. The aircraft suffered only minor damage to one of the undercarriage doors.

Date	18-Aug-2018	Region	NSWGA	SOAR Report Nbr		S-1313	
Level 1	Operational	Level 2	Ground Operations	Level 3		Ground handling	
A/C Model 1		Grob G 103 Twin II		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Ground Ops	PIC Age	75
The glider was being towed back to the hangar at the end of the day by the trainee pilot with a quad bike using a tow bar and wing walker. The glider's right wing hit a tap standpipe, damaging the right aileron. The supervising instructor stated they should have more attentive. When taxying gliders, drivers need to pay particular attention to obstacle clearance, remain situationally aware and take things slowly.							

Date	19-Aug-2018	Region	WAGA	SOAR Report Nbr		S-1308	
Level 1	Airspace	Level 2	Aircraft Separation	Level 3		Near collision	
A/C Model 1		Pawnee PA-25-235		A/C Model 2	Cessna		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	
After the glider pilot released from aerotow at 4,500ft, the tow pilot initiated a sideslip manoeuvre away from the glider to quickly lose height while watching the glider. When the tow pilot eventually looked in the direction the tow plane was travelling, they noticed a Cessna aircraft approaching head-on at the same level (~4,000ft). The tow pilot took immediate evasive action by climbing abruptly and the Cessna passed 100ft below. The tow pilot did not recall hearing any calls from the Cessna pilot, and it is believed the Cessna pilot may not have seen the tow plane as it was flying into the sun. The tow pilot is responsible for collision avoidance if they are initiating a high rate of descent. In this case the Cessna pilot would have had little opportunity to see and avoid an aircraft rapidly descending sideways from above. Such a manoeuvre also demands the tow pilot clear the airspace they are flying into, and not be looking elsewhere. Sections 8.4 and 8.5 of the GFA aerotowing manual require tow pilots to ensure airspace below the tow aircraft is clear to commence descent, and to then select a descent pattern appropriate to the topography, airfield circuit requirements, wind velocity, sun and other traffic. Long continuous sideslipping in a low winged tow plane should be avoided, since the forward wing blocks the view of anything below and ahead. The tow pilot was counselled.							

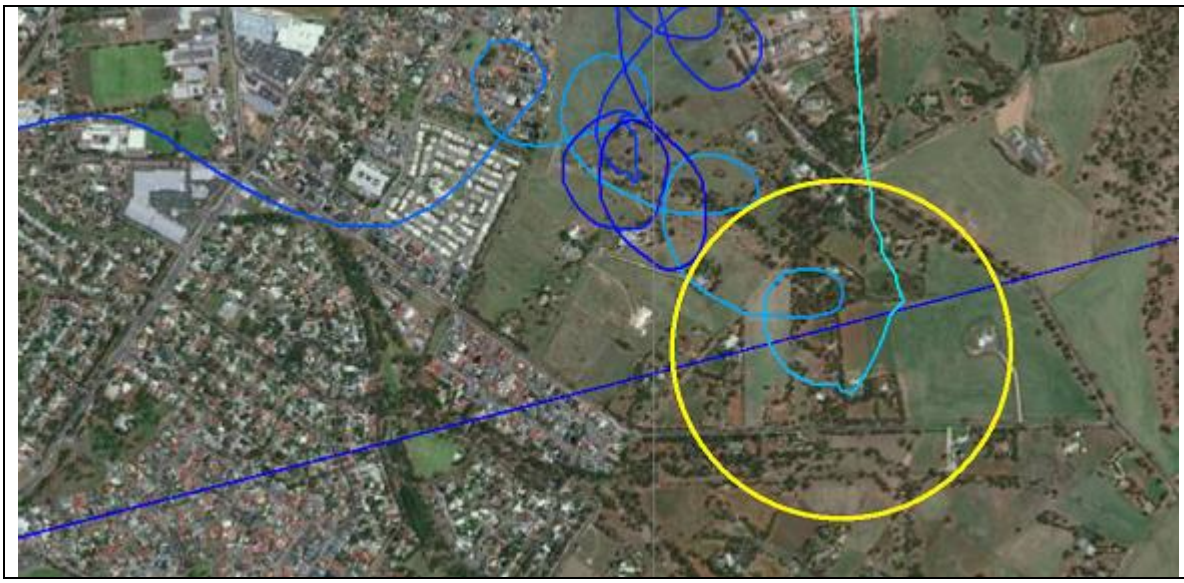
Date	19-Aug-2018	Region	WAGA	SOAR Report Nbr		S-1317	
Level 1	Airspace	Level 2	Aircraft Separation	Level 3		Near collision	
A/C Model 1		Piper PA-25-235/A6		A/C Model 2	H 36 Dimona		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	65

A tow plane and glider combination was departing from RWY 10 at the same time as a motor glider departed from RWY 36. At a height of about 300 ft AGL the tow pilot saw the motor glider converging from his 2 o'clock position, and immediately turned left to create separation and to show a larger profile to the motor glider pilot. The pilot of the motor glider also turned left and flew behind the towing combination. Neither pilot in the glider under tow saw the conflict as their attention was towards the tow plane and direction of turn. Neither command pilots heard any radio calls. Investigation identified the following casual factors:

- Due to the topography of the airfield it is not possible for aircraft preparing to take-off from runway 10 to have visual contact with aircraft operating off runway 18/36 due to the presence of rising ground between the two runways (refer diagram). Visibility is not achieved until one or both aircraft are airborne above 100' AGL.

- This topography also impeded radio reception, as VHF works on line of sight propagation. Radio waves in the VHF band propagate mainly by line-of-sight and ground-bounce paths. They do not follow the contour of the Earth as ground waves and so are blocked by hills and mountainsThe club is investigating ways to improve VHF radio signal propagation by experimenting with a passive repeater system and if that is not successful, other methods for signal improvement between the unsighted parts of the airfield. In the meantime, the Club published some guidance for its members in its monthly newsletter.

Date	22-Aug-2018	Region	SAGA	SOAR Report Nbr		S-1309	
Level 1	Airspace	Level 2	Airspace Infringement	Level 3		Airspace Infringement	
A/C Model 1		G 102 Club Astir IIIb		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Thermalling	PIC Age	47
The pilot reported that the glider drifted 300 metres into restricted airspace while thermalling close to a known airspace boundary due to inattention. The pilot was unaware of the breach until after the flight when they were reviewing the flight logger trace and self-reported. The pilot will undergo some remedial training in airspace procedures.							



Date	22-Sep-2018	Region	SAGA	SOAR Report Nbr		S-1324	
Level 1	Operational	Level 2	Miscellaneous	Level 3		Other Miscellaneous	
A/C Model 1		ASK-21		A/C Model 2	N/A		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	20

Following an aerobatic routine during an ab-initio instructional flight, the glider recovered below the minimum 1,000ft above terrain. The command pilot was counselled by their CFI. GFA Operational Regulation 6.4 states: *"A sailplane shall not be flown in aerobatic manoeuvres without the prior written approval of CASA when it is: (a) Below 2,000 feet above the level of a certified or registered aerodrome within two nautical miles of that aerodrome; or (b) More than 2 nautical miles from a certified or registered aerodrome and below 1,000 feet above the highest terrain or obstacle within a 600 metre radius of the sailplane (Exemption CAR 155 (3)(a))."*

Date	22-Sep-2018	Region	GQ	SOAR Report Nbr		S-1336	
Level 1	Operational	Level 2	Flight Preparation/Navigation	Level 3		Aircraft preparation	
A/C Model 1		Twin Astir		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	55

During an instructional flight the instructor, who had earned their rating less than 12 months prior, became focussed on remedying the student's lack of speed control. This continued into the circuit and the instructor did not complete the pre-landing checks. As a consequence, the instructor did not recognise the undercarriage was not lowered. While on final approach and about 300 metres from the aerodrome boundary, the command pilot heard a broadcast from the base station alerting to the undercarriage being retracted. The command pilot lowered the undercarriage and a safe landing ensued. Instructors, especially newly qualified ones, often became preoccupied with explaining aeronautical concepts or monitoring or guiding the performance of their students. This can lead to distraction or task fixation. When time is limited such as in the circuit, instructors must remain situationally aware and not persist with exercises where the student is clearly not coping. Awareness of falling into the fixation trap is the number one key to breaking the accident chain. Above all else all pilots must never forget the golden rule of aviation, first and foremost fly the aircraft. ***NOTE:*** *Over the years there have been many accidents, including fatal, caused by the pilot changing hands to lower the undercarriage at low height. On the other hand, most gliders only suffer minor*

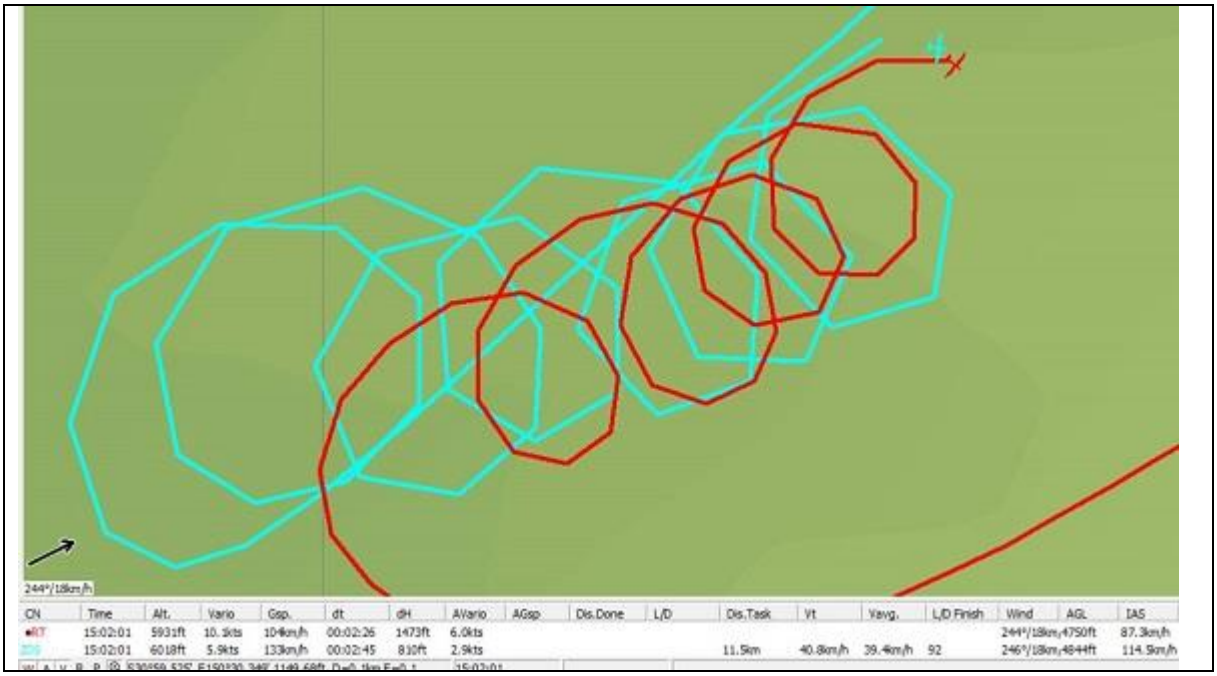
scratches from a well-conducted 'wheel-up;' landing. Ground crew should consider this before alerting a pilot on final approach to a retracted undercarriage.

Date	23-Sep-2018	Region	VSA	SOAR Report Nbr	S-1319
Level 1	Operational	Level 2	Aircraft Control	Level 3	Control issues
A/C Model 1	H401 Kestrel 17m		A/C Model 2	Bellanca Scout	
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	

The glider pilot reported a temporary reduction in airspeed just after lift-off, coincident with the tow plane pitching up rather steeply before resuming a normal climb attitude. The glider pilot initially had trouble in following the tow plane due to reduced elevator authority. Wind speed on the day were 15 knots and gusting higher. Investigation suggested that it was most likely the tug encountered a gust which caused it to pitch up for a short period resulting in slower airspeed. The glider which was closer to the ground, due to the wind gradient was not as affected by the wind gust. The Club Tugmaster noted that it is usual practice for tow pilots to hold the tow plane around 2 metres above the ground while accelerating, and only transition into the climb once the glider was airborne and desired glider speed was achieved.

Date	29-Sep-2018	Region	NSWGA	SOAR Report Nbr	S-1328
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	JS1 B		A/C Model 2	ASW 27	
Injury	Nil	Damage	Nil	Phase	Thermalling	PIC Age	78

Two gliders got close in a thermal while competing in a Club cross-country regatta. Approximately 13kms south of the start point, the pilot of a ballasted JS1 entered a thermal at a height of 4,900ft and commenced a right-hand turn. About 6 to 8 other gliders entered the thermal shortly thereafter. After completing two turns in the thermal the pilot of the JS1 saw the unballasted ASW 27 join about 400ft lower. The ASW 27 maintained a roughly concentric circle with the JS1 and was, for most of the time, turning below and slightly behind it. Being unballasted, the ASW 27 was turning a tighter radius and gaining height on the JS1. The other gliders in the same thermal were mostly either below or on opposite sides of the thermal to the JS1. After three or four turns the JS1 pilot became somewhat anxious about the proximity of the ASW 27, which was now only slightly below and just behind, and inside the JS1's turn radius. The pilot of the JS1 noted: *"I didn't voice that concern on the radio and continued turning. I have flown many tight gaggles in competition and felt there was no problem. I just had to monitor proximity and maintain separation."* The ASW 27 pilot was turning a tighter circle that the JS1 and gradually drew ahead; turning below and inside and continuing to gain height on the JS1. After about four turns the ASW 27 was slightly ahead, turning inside the JS1, whose pilot was suddenly confronted with the left-hand upper wing climbing up in front of the JS1. Fearing a collision, the JS1 pilot applied full aileron deflection away from the other glider and rolled away, narrowly avoiding contact. The pilot of the JS1 left the thermal and continued task. Post flight analysis suggests the two gliders got within 10 metres of each other. The pilot of the ASW 27 advised that they don't recall seeing the JS1 after entering the thermal. The traces show the two gliders were flying concentric (i.e they both shared the same centre), which indicates they may have been following another glider. The difference in climb rates was mainly due to the smaller radius of turn of the unballasted ASW 27, which put it closer to the core. As with most near miss events and mid-air collisions, at least one pilot should have seen the other. In this case the pilot of the ASW 27 did not see the JS1, possibly due to blind arc limitations and possibly because they were focussing on another glider that they perceived as a potential threat. On the other hand, the JS1 pilot had the other glider sighted for most of the time but elected to persist with the climb even when they became concerned about the potential risk of a collision. It is not uncommon for pilots who are accustomed to flying regularly in close proximity with other gliders to become inured to the risk, and place too much faith in both their own abilities and that of other pilots. Pilots who think this might apply to them should look at raising their personal minima to avoid such close encounters.



Date	30-Sep-2018	Region	NSWGA	SOAR Report Nbr	S-1365
Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing
A/C Model 1	Hornet	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	66

The experienced pilot reported they became distracted while conducting the pre-landing check and did not lower the undercarriage. The pilot believes they may have mistakenly perceived the undercarriage was down without confirming same to the placards, as they usually flew an aircraft with a retraction mechanism that worked in the opposite direction. It is also possible that the pilot's recent experience flying a fixed undercarriage two-seat glider could have led to a perfunctory check. Circuit and landing are high workload environments, even for experienced pilots. Workload can be lessened by configuring the aircraft for landing once the decision to break-off the flight and head for the circuit joining area. GFA training is to lower the undercarriage once the decision to land has been made, and to verify the undercarriage is down and locked during the pre-landing check on the downwind leg. OSB 01/14 'Circuit & Landing Advice' confirms that the pre-landing checklist is a 'check' and not an 'action' list. The undercarriage check should verify the undercarriage lever is matched to the lowered position on the placard.

Date	1-Oct-2018	Region	NSWGA	SOAR Report Nbr	S-1331
Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing
A/C Model 1	DG-300 Elan Acro	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	54

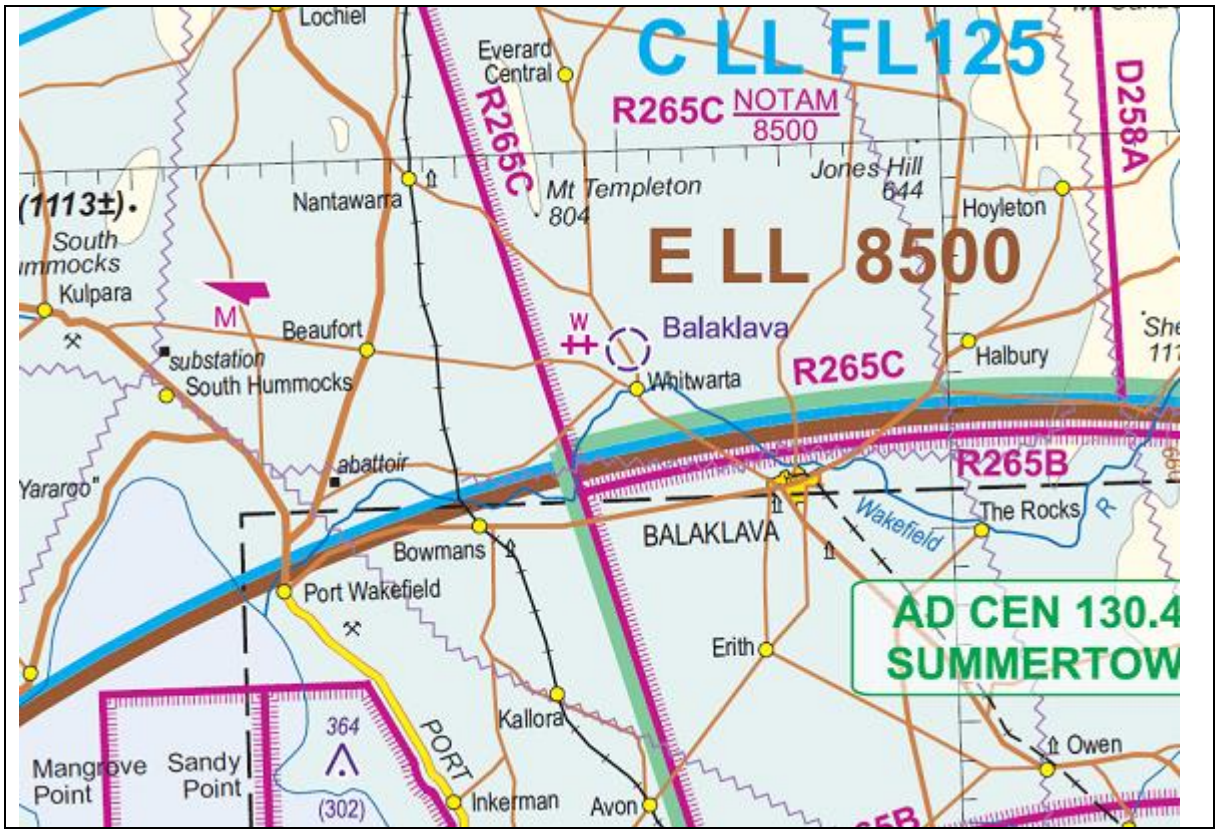
The low hours pilot reported that they broke off the flight at around 1,500ft AGL and headed for the circuit joining area for a landing on RWY 27. Just after the glider entered the circuit at around 1,000ft AGL the pilot heard the pilot of the Club's tow plane make a radio call advising they were landing on RWY 09. The glider pilot assessed the best option was to land on RWY 33, which was currently occupied by a glider that had just landed but was about to be moved clear. While reassessing the options, the glider continued to lose height and the pilot was starting to feel a little stressed. This led to the pre-landing check being rushed and the pilot did not lower the undercarriage. The aircraft landed safely but suffered some minor scratches to the

fuselage. The pilot had only 7 flights in a retractable undercarriage glider and noted: *"It appears that as a result of flying almost exclusively in fixed wheel aircraft the F and the U have become associated in my mind with no action, and the result of rushing the check was to revert to an automatic box ticking exercise, in which I repeated 'undercarriage' without putting the wheel down (although speed and trim were set). Following this I did not realise the wheel was not down until I contacted the ground."* This incident highlights the importance of configuring the aircraft for landing as soon as the decision to break-off the flight is made (i.e during the transition from 'soaring pilot' to 'landing pilot'). Since landing mishaps usually occur due to poor workload management, it is important to get some of the tasks out of the way early and prepare for landing by:

- Making sure the straps are tight.
- In gliders so equipped, dumping any water ballast, **lowering the undercarriage**, setting the flaps, and trimming to an appropriate speed for the downwind leg.
- Make sure the radio is on the correct frequency, that volume and squelch are correctly set, and that the microphone is positioned for best performance.This is covered in more detail in Operational Safety Bulletin (OSB) 01/14.

Date	7-Oct-2018	Region		VSA		SOAR Report Nbr		S-1320	
Level 1	Operational		Level 2	Runway Events		Level 3		Runway incursion	
A/C Model 1						A/C Model 2		N/A	
Injury	Nil	Damage		Nil	Phase	Ground Ops		PIC Age	
During a change of runways, multiple glider-car combinations backtracked onto the new active runway, preventing powered traffic from landing because the runway was occupied. An alternative route that involved crossing the active runway and then using a taxiway outside the gable markers was available but not used. The Duty instructors in charge of the operations were counselled.									

Date	10-Oct-2018	Region		SAGA		SOAR Report Nbr		S-1326	
Level 1	Airspace		Level 2	Aircraft Separation		Level 3		Aircraft Separation Issues	
A/C Model 1		Piper Malibu/Matrix				A/C Model 2			
Injury	Nil	Damage		Nil	Phase	In-Flight		PIC Age	
A low wing, retractable undercarriage, single engine light aircraft identified as a Piper Malibu or Matrix type over flew winch launch operations between 500-800ft AGL. Fortunately, a launch was not in progress at the time. The pilot of the aircraft was contacted by the glider operations over the radio and informed of the risk. The pilot apologised but did not provide his registration when asked. The incident was reported to the ATSB. The airfield is marked as a gliding winch site on the aviation charts.									



Date	14-Oct-2018	Region	NSWGA	SOAR Report Nbr	S-1329
Level 1	Operational	Level 2	Aircraft Loading	Level 3	Loading related
A/C Model 1	DG-1000S	A/C Model 2	N/A		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	15

A lightweight student was conducting a first solo flight. In support of the ballast fitted, the instructor`s parachute was secured by the harness in the rear seat to move the CG further forward. Moderate turbulence was experienced during the flight and the PIC reported they heard movement in the rear cockpit. Fortunately, the parachute did move enough to interfere with the controls. While it is not a bad strategy to increase the cockpit load for first solos by light pilots, harnesses are designed to secure humans and the use of a parachute in this manner was inappropriate. The weight of the pilot, parachute and fixed ballast must be sufficient to reach the minimum front seat load of the aircraft, otherwise the centre of gravity will be outside the acceptable range and it may be impossible for the pilot to maintain proper control. Lightweight pilots may need to carry additional ballast that is appropriately fixed for safety.

Date	17-Oct-2018	Region	GQ	SOAR Report Nbr	S-1330
Level 1	Operational	Level 2	Miscellaneous	Level 3	Warning devices
A/C Model 1	Duo Discus T	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	59

The pilot reported that the Flarm was not working while flying with other Flarm equipped gliders on a cross-country task. Upon landing it was determined that the Flarm firmware had expired the month previously. The Firmware was updated to the latest version. Every FLARM device must be updated with the latest firmware version at least every 12 months to avoid firmware expiration, and to ensure interoperability with

all other FLARM devices. Registered Operators should ensure a record of the update is entered into the applicable maintenance documentation for the aircraft. FLARM Firmware Release Notes can be obtained from the FLARM website at this link:
https://flarm.com/wp-content/uploads/man/FTD-037-FLARM-Firmware-release-notes.pdf

Date	20-Oct-2018	Region	GQ	SOAR Report Nbr	S-1334
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	Twin Astir	A/C Model 2	Cessna 150M		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	47

The glider was returning to the circuit joining area following a training sortie when an audible Flarm warning alerted the command pilot to a potential hazard in front and to the left. The command pilot initiated a scan for the other aircraft and saw a towing combination on a converging heading that had been obscured from view by the student pilot's head. The command pilot took avoiding action by turning to the right and away from the threat. The tow pilot sighted the glider approaching high and to their left but did not need to take avoiding action as the glider changed heading away from the towing combination. The tow pilot reported that they did not hear any radio calls from the glider, and the glider did not show on the Flarm fitted to the tow plane. Investigation revealed the Flarm firmware in both aircraft had recently expired and so the units were not working optimally. This incident highlights the importance of good Lookout and working Flarm to facilitate alerted see-and-avoid. FLARM devices must be updated with the latest firmware version at least every 12 months to avoid firmware expiration, and to ensure interoperability with all other FLARM devices. Registered Operators should ensure a record of the update is entered into the applicable maintenance documentation for the aircraft.

Date	21-Oct-2018	Region	VSA	SOAR Report Nbr	S-1333
Level 1	Operational	Level 2	Airframe	Level 3	Doors/Canopies
A/C Model 1	Hornet	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	80

At the top of the launch about 3,200ft AGL the left-hand cockpit door flew open. The door became twisted in the airflow and was unable to be locked. The pilot completed a safe circuit and landing. The tow pilot advised that while climbing the combination in lift he had to use a lot of rudder input with his knee in close proximity to the door handle. The door flew open as the pilot twisted in his seat to look behind and to his left in order to confirm the glider had released. Investigation suggests the door handle was progressively worked loose by the pilot's knee each time rudder was applied, and then became fully open as the pilot's left knee pushed against the door when they looked to his left at the top of the launch. A contributing factor was the pilot's inexperience on type (5 flights), and the pilot's seat was too far forward for their stature (the pilot was unaware there was further rearward adjustment to the seat). The cockpit door was repaired, and the pilot now knows how to adjust the seating position.

Date	21-Oct-2018	Region	VSA	SOAR Report Nbr	S-1332
Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion
A/C Model 1	AMERICAN CHAMPION AIRCRAFT CORP 8GCBC SCOUT	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	64

A car and glider combination crossed the active runway at the same time as an aerotow combination commenced the launch. The tow pilot identified the hazard as the tow plane tail wheel lifted and the view over the cowling improved, and immediately released the glider and reduced power. Investigation revealed the vehicle driver's visibility of the launch point was obscured by the crown of the runway. The Club has

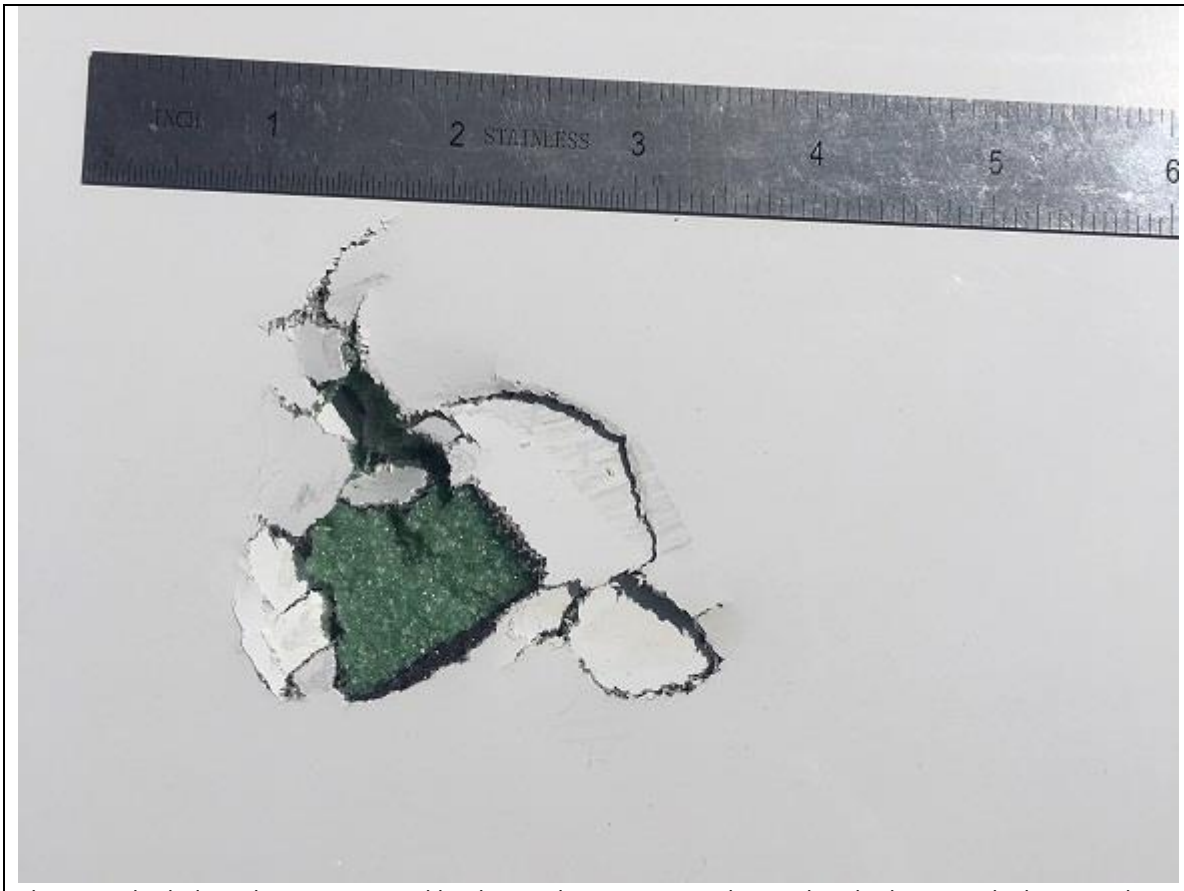
implemented changed procedures for taxying aircraft to prevent a recurrence and has also invested in rebroadcasting the CTAF on FM radio as an aid to alerted see-and-avoid.

Date	29-Oct-2018	Region	SAGA	SOAR Report Nbr	S-1350
Level 1	Operational	Level 2	Runway Events	Level 3	Runway excursion
A/C Model 1	G 102 Club Astir IIIb	A/C Model 2	Piper PA25-235		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	63

While taking up the slack for an aerotow launch the tow pilot, who was getting back into towing after a long break and who was somewhat tired after a long day of towing, taxied forward too fast. This resulted in the rope becoming taught with enough force that the wing runner was unable to prevent the aircraft swinging to the left around him. The glider pilot released, and the glider turned through 180 degrees. Most pilots will be aware that personal performance degrades when tired. Towing is a demanding exercise both physically and mentally so tow pilots must be well rested, and they should take regular breaks during rostered periods for refreshment to avoid dehydration and fatigue.

Date	3-Nov-2018	Region	VSA	SOAR Report Nbr	S-1339
Level 1	Operational	Level 2	Runway Events	Level 3	Other Runway Events
A/C Model 1	DG-500 Elan Orion	A/C Model 2	Eurofox 2K		
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	56

A grid of approximately ten gliders were lined up on the left-hand side of RWY 18, and the tow planes and glider relights were landing on the right-hand side of RWY 18. The runway is 120 metres wide and is routinely used in this manner. The wind had been south-westerly at about 8-10 knots but had increased to about 12 knots at the time of the incident. The glider was at the front of the launch grid with the port wingtip on the ground, and the flight crew were conducting the pre-take-off checks. At the same time, the Eurofox tow plane was on final approach for a landing on the right-hand side of the runway and gridded gliders. As the landing tow plane flew past the glider, the flight crew heard a loud bang similar to the airbrakes being forcibly closed. The command pilot looked to their right and noticed some foam protruding from the leading edge of the starboard wing, about 1.5 meters from the cockpit. The ground crew advised the pilots that the tow rope from the landing tow plane had struck the glider's starboard wing. The flight crew exited the glider and it was removed from the flight line. Subsequent inspection revealed the rope caught the trailing edge of the starboard wing, and because the wing was in the air the rope wrapped around it resulting in the rings punching a hole in the top surface of the leading edge. The rings rebounded, and the rope was dragged clear as the tow plane landed down the runway.



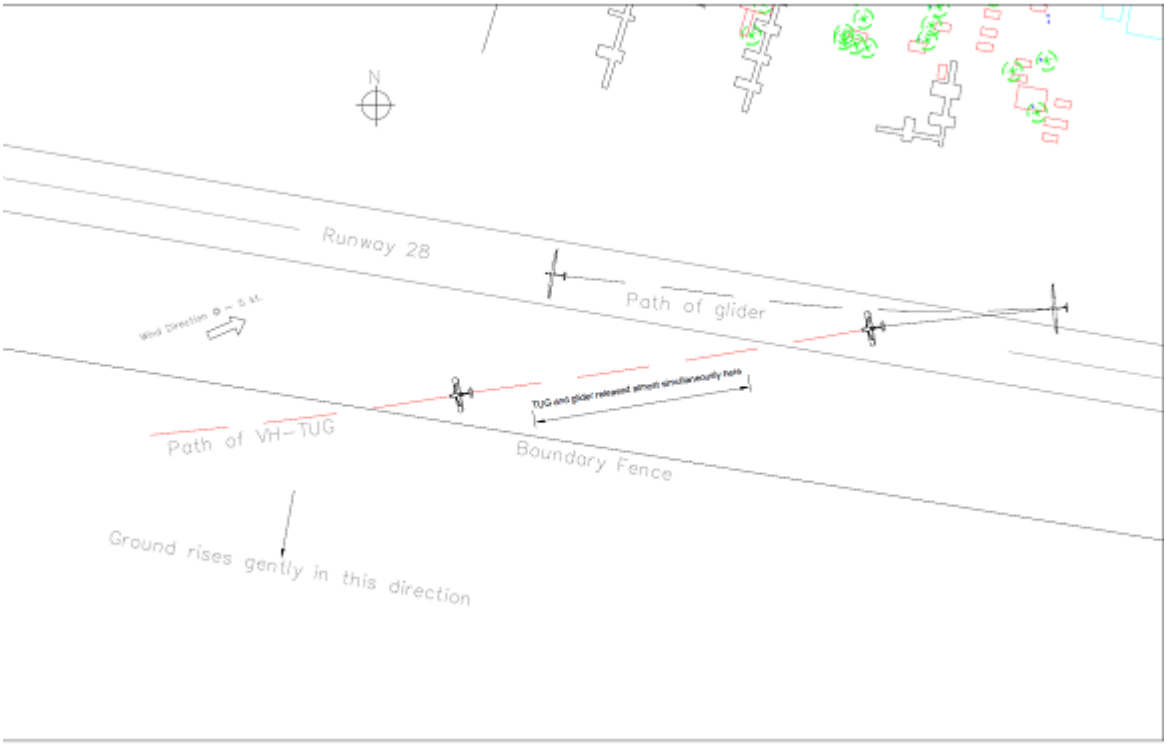
The tow pilot believed it was a normal landing and was unaware the incident had occurred. The tow pilot stated that they were landing on the right-hand side of RWY 18, as they had done on all prior launches. However, on this landing the tow pilot was aiming to move to the centre of the runway by the time the tow plane touched down to provide clearance from a glider further down the runway that had landed for a relight. The tow pilot had no sense that the approach had drifted to the extent that allowed the incident to occur and believed they had adequate clearance on the strip ahead. Causal factors included the increased crosswind from the left that caused the trailing rope to drift towards the gliders, the tow pilot's misjudgement in manoeuvring to provide clearance from the glider ahead, and the pilot's decision to continue with the landing when a 'go around' could have been initiated. The tow pilot was counselled by the Club Tugmaster and returned to duty.

Date	8-Nov-2018	Region	WAGA		SOAR Report Nbr		S-1342		
Level 1	Operational	Level 2	Runway Events		Level 3		Runway excursion		
A/C Model 1	Piper PA25-235			A/C Model 2	Ventus b				
Injury	Nil	Damage	Nil	Phase	Launch		PIC Age	75	

Operations were being conducted on RWY 28 with a 5 knot south-westerly (230 degrees) crosswind. The glider was situated on the gravel runoff area at the normal launch point, which is situated about 325 metres upwind of the threshold, and to the right of the bitumen runway. The tow pilot elected to line-up on the bitumen on the right-hand side of RWY 28 on a heading of about 250 degrees (30 degrees left of the runway heading) to execute a curved take-off path onto the runway heading as the combination gained speed. Unfortunately, the tow pilot ran out of rudder authority and was unable to turn onto the runway heading as planned. The tow plane ran off the left edge of the bitumen runway heading towards to airfield's southern boundary fence. Both the tow pilot and glider pilot simultaneously released the rope. The tow plane became

airborne and crossed the boundary fence at low level, and the glider pilot taxied to a stop along the runway centreline. The tow pilot conducted a modified circuit and landed safely onto the operational runway. Investigation identified the following factors contributed to the tow plane's lack of directional control during the take-off run:

- The two rope was line-astern with the tow plane, resisting the effects of any rudder application.
- The wind, from the SW, was tending to weathercock the tow plane to the left.
- The "asymmetric blade effect" (P factor) would have been tending to yaw the tow plane to the left.
- The angle of the combination to the normal take off path was more obtuse than normal. Witnesses described the tow plane's position as being well out onto the bitumen when the launch commenced.The tow pilot was counselled about the correct procedure for lining-up in such conditions.



Date	10-Nov-2018	Region	VSA		SOAR Report Nbr		S-1348
Level 1	Operational		Level 2	Runway Events		Level 3	Other Runway Events
A/C Model 1		Bristell			A/C Model 2		
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	

A locally-based powered aircraft commenced its take-off roll behind the glider operations in contravention of local operating rules. At this regional aerodrome, gliding operations are conducted from a position 60 metres behind a permanently displaced threshold in accordance with the CASA approved guidelines in MOSP 2, Sections 18.5 and 18.8.2. This arrangement enables the gliders to grid prior to launch without occupying the runway, which effectively commences at the threshold. Local rules and an entry in ERSA require all take-offs and landings to commence from the permanently displaced threshold while gliding operations are in progress. This is to protect the gliding operation from an aircraft experiencing a runway excursion during the initial ground roll. The local operating procedures require pilots wishing to use the full length for operational reasons to give prior notice to the gliding operation, and for the gliding operation to remove aircraft and people outside the runway markers out harm's way. This is consistent with CAR 162

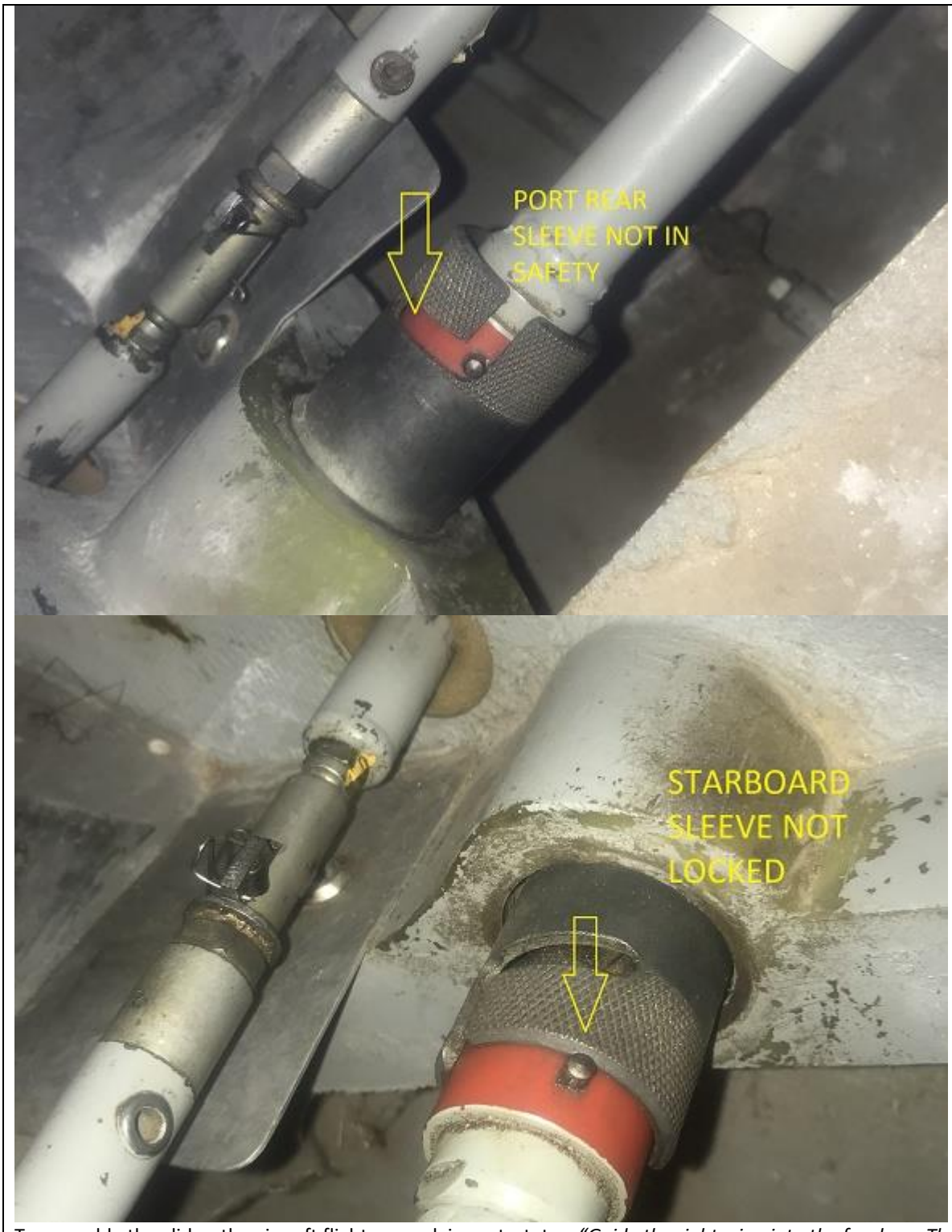
'Rules for prevention of collision', which states "An aircraft that is about to take-off shall not attempt to do so until there is no apparent risk of collision with other aircraft." On this occasion the pilot of the powered aircraft and the gliding operation mutually agreed to disregard the established procedures for convenience.

Date	10-Nov-2018	Region	GQ	SOAR Report Nbr	S-1346
Level 1	Operational	Level 2	Runway Events	Level 3	Other Runway Events
A/C Model 1	SZD-50-3 "Puchacz"	A/C Model 2	Piper PA25-235		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	65

During launch for an instructional flight, the tow plane had taxied into position and the rope was attached to the glider. The tow pilot continued to taxi slowly forward taking up the excess slack. When the instructor and student were ready for launch and had received the "Airspace clear for launch" acknowledgement, the wing runner walked towards the left wingtip. Just before the wing runner reached the wingtip, and while the wingtip was still on the ground, the tow pilot applied full power. No launch signals had yet been conveyed. As the glider moved forward the left wingtip clipped the wing runner at ankle level and caused him to stumble away from the wingtip. The instructor in the glider was about to release from tow but chose not to, as the student had raised the wing and the launch was proceeding normally. The experienced and current tow pilot reported that he taxied slowly to a position where the slack had been removed from the rope in order to prepare for take-off, and when he observed the wing runner walk to the wingtip he assumed the glider was ready for launch and commenced take-off. The tow pilot cannot explain why he commenced the launch without receiving the launch command. The CFI noted that the club was conducting a busy operation, and that may have influenced the tow pilot's decision to expedite the launch. The tow pilot had also been involved in an airprox event earlier in the day (refer report S-1344), which may have affected his concentration. This incident highlights the value of clubs employing a 'forward' signaller for aerotow operations as recommended by the GFA (refer MOSP2, paragraph 16.2.7). The use of a forward signaller enhances the tow pilot's situational awareness by providing a better view of the signaller than is available from the tow plane's mirrors during the initial stages of the launch, and the forward signaller offers a second set of eyes that ensures the maximum monitoring of airspace during the launch sequence. Tow pilots must never commence a launch before receiving the appropriate signals.

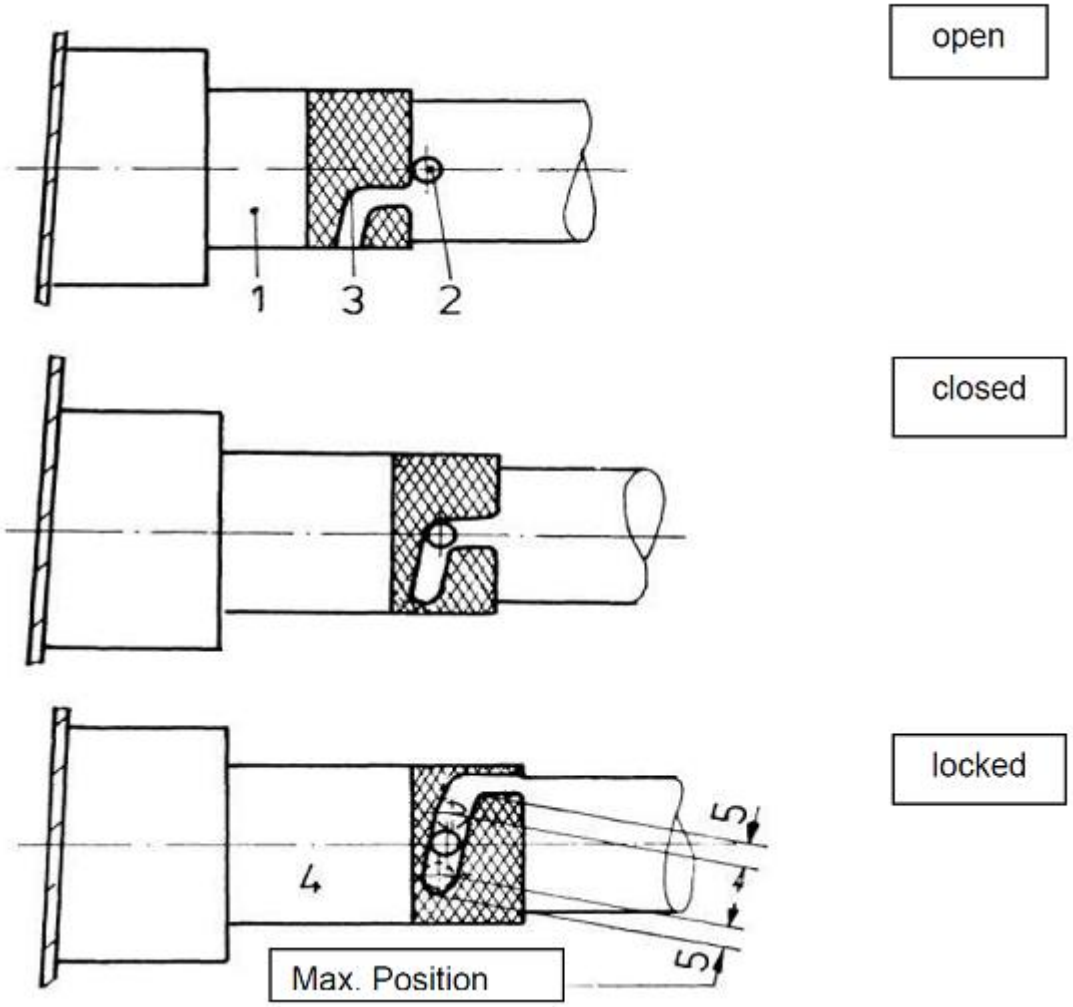
Date	10-Nov-2018	Region	SAGA	SOAR Report Nbr	S-1352
Level 1	Operational	Level 2	Airframe	Level 3	Fuselage/Wings/Empennage
A/C Model 1	Astir CS 77	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	

During the daily inspection the access hatch in the top of the fuselage behind the wing spars was removed in order to confirm the control connections and wing attachments were secure. The inspector identified that the three of the safety catches on the four main wing fittings in the fuselage were locked but not secured, and one was unlocked. The aircraft had been flown on three occasions in this configuration.



To assemble the glider, the aircraft flight manual, in part, states: *"Guide the right wing into the fuselage. The safety catches on the fuselage sockets will be released, and on gently moving the wing to and fro will be heard to snap into place. Next guide the left wing into the fuselage. Move the wing tips up and down so that the pin on each spar stub is located in the appropriate hole in the opposite wing root. Next the catches on the*

left-hand fuselage sockets should be released, and by moving the wing back-wards and forwards they too can be made to snap into place. To ensure that the wing-fuselage joint is safely secured, turn the socket catches towards the bayonets until they drop into place. The red circles on the fuselage sides must be covered by the rotated sockets…. After rigging the following check must be carried out to check the connections are secure:"



"After connecting the quick lock couplings make a visual check that the collar is extended forward over the bearing far enough for the safety pin to engage."

Investigation revealed some inspectors lacked familiarity with the rigging requirements in the Aircraft Flight Manual, and one inspector may have suffered a memory lapse (this inspector has since relinquished their authority). It was also identified that inspectors would seal the access hatch with tape once the post rigging inspection had been completed to remove the need to inspect inside once an initial inspection had been performed and signed off, and it would also hold the cover on during all kinds of flight. While taping the hatch down is necessary to prevent loss on some aircraft, the hatch must be removed to facilitate the Daily Inspection. In the case of Grob Astir types, it is also common for the locking collars to move out of safety during flight or ground handling, so periodical inspection is needed to return them to safety.

Incorrect rigging of the principle structure or flight control and trim systems can lead to in-flight emergencies, accidents, and even deaths. Anyone can make a mistake, which is why the GFA requires an

independent duplicate check of the structure and control system by Daily Inspector following rigging. However, the check relies on the person completing it to be familiar with the aircraft, which appears not to have been the case in this instance. Similarly, unfamiliarity or inadequate attention to detail by subsequent Daily Inspectors also led to the error going undetected. Pilots and inspectors should ensure that rigging is directed by a person experienced on the type, in accordance with the flight manual and without interruption or distraction. The Daily Inspection must also be conducted by a person experienced on the type and without interruption or distraction. It is worth remembering that well-meaning, motivated, experienced people can make mistakes: fatigue, distraction, stress, complacency, and pressure to get the job done are some common factors that can lead to human errors. Pilots and inspectors can minimise the risks by adhering to sound risk management practices.

Date	10-Nov-2018	Region	GQ	SOAR Report Nbr	S-1344
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Aircraft Separation Issues
A/C Model 1	Piper PA25-235	A/C Model 2	Astir CS Jeans		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	76

On turning final, the tow pilot saw a glider 50 metres on their right and in front. The tow pilot turned through 360 degrees to the left and re-joined final approach. The tow pilot noted the tow plane and glider were flying parallel at the time and not on a collision course. The recently solo glider pilot advised that they made radio calls on entering both the crosswind and downwind legs due to intense gliding activity at the time. The glider pilot stated: *"Once I was established on final, I could see the tug turning base perpendicular to my flight path. The tug then turned final and was flying slightly behind my left wingtip with a separation that appeared to be of safe distance whilst in the air. Throughout this incident occurring, I maintained a visual of the tug however I assumed that he was going to land on the runway next to me."* The glider pilot did not recall noticing a Flarm alert, possibly because his attention was on the tow plane, and did not believe a collision was likely. Although the glider pilot could have made a radio call to help deconflict the situation, this course of action was not considered due to the high workload. The experienced and current tow pilot reported making all appropriate circuit calls but did not sight the glider until he turned onto final. The tow pilot stated: *"I saw the glider 50 metres on my right in front of me. I then turned left and did a 360 to come back and land. We were not on a collision course but were flying in formation."* This incident highlights the importance of lookout for collision avoidance and serves as a reminder that use of radio as an aid situational awareness is not always affective.

Date	10-Nov-2018	Region	WAGA	SOAR Report Nbr	S-1345
Level 1	Operational	Level 2	Miscellaneous	Level 3	Rope break/Weak link failure
A/C Model 1	Piper PA25-235	A/C Model 2	DG-1000S		
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	72

At about 2800ft and near the top of the launch, the tow pilot felt the glider pulling at the rope and upon looking in the mirror saw that the glider was out of station, both vertically and horizontally. The tow rope load increased and the weak-link failed. The tow plane landed normally but the tow pilot had trouble taxying. The command pilot in the glider advised that the low hours and low currency student got displaced during the tow due to turbulence. The command pilot assumed control and attempted to fly the slack out of the rope utilising sideslip. The weak link broke as the rope became taught and the rope passed under the nose of the glider. The glider returned to the airfield and its pilot was able to successfully release the rope prior to landing. Investigation revealed that sufficient force was exerted on the tow release to cause the mounting tang to bend downwards, resulting in the tow release impeding the tailwheel when on the ground. Inspection of the tang discovered old cracks at the weld points, which suggests the fitting had been progressively weakened over time until final bending failure due to the loads from the rope break. Pilots are

reminded that the rope should be released just before the slack is fully taken up in situations involving a large bow in the rope.

Date	10-Nov-2018	Region	SAGA	SOAR Report Nbr	S-1343		
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision		
A/C Model 1	G 102 Club Astir IIIb	A/C Model 2	Jabiru J170				
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	55

While the glider was established on the downwind leg for the duty runway (RWY 31), a Jabiru joined the circuit crosswind for the cross strip (RWY 23). The two aircraft passed at the same height, travelling in opposite directions 2-300 m apart. The normal operating procedure for runway selection by all aircraft using the aerodrome is to comply with the runway set by the Gliding Duty Instructor. A broadcast to this effect is made by the Duty Instructor, on the CTAF to this effect, prior to commencing gliding operations. All pilots returning to the airfield from cross country flights are required to ascertain the operational runway via radio before entering the circuit area. In the case of training flights involving forced landings / engine failures on takeoff etc., the pilot is required to signal their intentions to use another runway via radio. The Jabiru pilot was counselled by their CFI. The CASA "Be Heard, Be Seen, Be Safe", radio procedures in non-controlled airspace was presented and discussed at a recent Member Forum, and the Club will raise awareness of this issue through its newsletter.

Date	11-Nov-2018	Region	WAGA	SOAR Report Nbr	S-1362

Level 1	Operational	Level 2	Terrain Collisions	Level 3	Ground strike		
A/C Model 1	SZD-48 "Jantar Standard 2"	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	48

The pilot was attempting their first cross-country flight; an out and return of about 100kms in an east/west direction. Conditions were fine, with the wind 193 degrees at 10 knots from and moderate climbs up to 5,000ft AGL. During the return flight the pilot struggled to find good climbs and when about 25kms from home an outlanding became inevitable. While at height of about 1500 feet AGL the pilot decided to outland. The pilot selected a paddock that allowed for a safe landing into the 15 knots wind, configured the aircraft for landing and conducted a 270 degree turn to the right to line up on the approach heading. The final approach was flown at about 50 knots, resulting in a ground speed of 35 knots and little margin to counter the effects of any windshear. The pilot initially established the glider in an overshoot but decided to land short in the selected paddock close to boundary fence to allow as much room ahead for an aerotow retrieve. This necessitated steepening the approach with airbrakes. During the final approach the aircraft lost height quickly and the pilot realised they were undershooting the aiming point. The pilot closed the airbrakes, but this did not improve the situation and the aircraft touched down in a wheat crop about 200 metres short of the boundary fence of the selected paddock. The pilot noted they became fixated as events unfolded and took no positive action to prevent collision with the fence. The pilot stated: “Ultimately my left wing touched wheat, causing a ground loop of about 70 degrees and a sudden stop.” The aircraft came to rest within 10 metres of the fence. The pilot exited the aircraft and conducted an inspection of the airframe. No damage was identified, and the pilot found that the fence had a wide mesh gate that the glider could fit through. The pilot contacted the gliding operation and arranged for an aerotow retrieve. The pilot noted the following potential causal factors:

- the strength of the wind;
- landing into a slightly uphill slope (the pilot’s approach commenced over terrain that was about 30 metres lower than the landing paddocks);
- the absence of a proper circuit;
- overconfidence in their ability to conduct a straight-in approach.

A common reason for outlanding accidents is the pilot not accepting soon enough that an outlanding is likely, and not prioritising the available height to allow them to fly to a good safe area. Pressing on with the flight in the hope that that all will be well is fraught with danger. Unlike landing at the home airfield where the runway layout, ground features and hazards are usually well known, when landing in a strange paddock the pilot is faced with the unknown. Such a situation demands the pilot take additional precautions to ensure a proper survey is undertaken of the landing area so as to identify all hazards and ensure a safe landing can be accomplished. In power flying this is called a 'precautionary search' and is commenced from no lower than 500ft AGL, although in gliding one must obviously start a lot higher. When flying cross-country it is important that pilots plan and think ahead so that they are always in a position to make a safe landing. At low levels a pilot's priority will change from searching for lift to finding a suitable area in which to land. This requires good flight management and discipline because flying at low level is unsafe:

- there are more obstacles to avoid, many of which are hard to see until it is too late (e.g. power lines, fences, slope and stock);
- there may be turbulence and wind shear that pilots do not encounter at higher levels; and
- there is very little time to recover control of the aircraft if something goes wrong (e.g. consider a low-level spin). Not conducting a circuit to assess and check an available landing paddock is a high-risk situation that must be avoided.

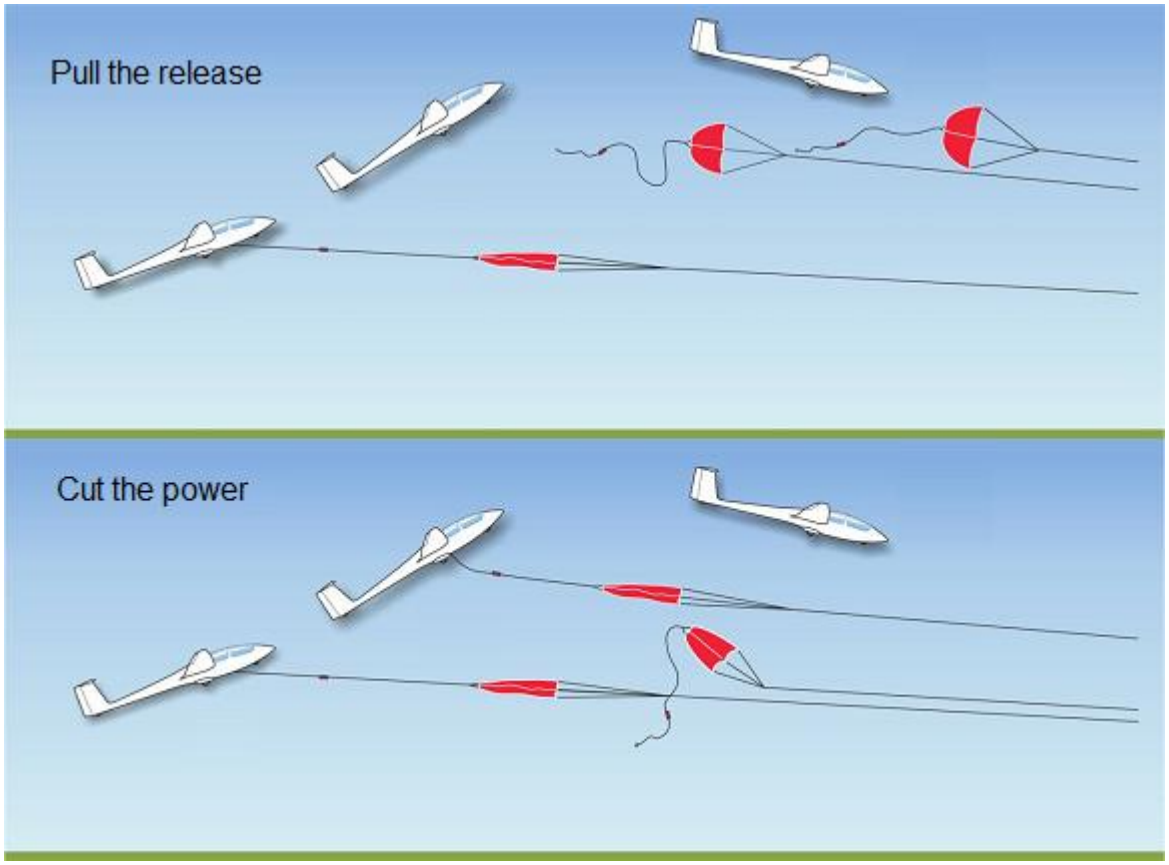
An upsloping runway can create the illusion that the aircraft is higher than it actually is, leading to a lower approach and potential undershoot. It is much more difficult to detect a shift in the aiming point in the undershoot case than it is in the overshoot case. A glider overshooting only has to go a little way above the approach path in order to detect that it will in fact overshoot. On the other hand, a glider undershooting has to go a long way below the approach path before it becomes obvious to the pilot that the aiming point has shifted and that the glider is in an undershoot situation. The undershoot situation is potentially dangerous, because, once it has been detected it may not be possible for the glider to regain the previous approach path. A flatter approach is therefore inevitable, and if obstacle clearance was previously limited it may now become impossible to achieve. It is also noted that the pilot did not establish an appropriate approach speed. The unaccelerated stalling speed of the Jantar 2 is around 35 knots. The approach speed should have been flown at 60 knots (1.5Vs plus ½ wind Speed). Although not a contributing factor in this accident, the pilot had insufficient speed to protect him from a wind-shear or low-level loss of control event.

Note: the pilot's decision to conduct an aerotow retrieve was risky, as a severe ground loop like this warranted a thorough inspection by a qualified inspector. It is noted that the pilot did not hold airworthiness authorities and was unqualified to make the assessment. The pilot was counselled and will undergo some remedial training before venturing cross country again.

Date	11-Nov-2018	Region		GQ		SOAR Report Nbr		S-1538	
Level 1	Operational		Level 2	Miscellaneous		Level 3	Rope/Rings Airframe Strike		
A/C Model 1		Grob G103A Twin II Acro			A/C Model 2				
Injury	Nil	Damage	Nil	Phase	Launch		PIC Age	35	

The student pilot was undergoing a series of simulated emergency procedures on the winch. On the incident flight the instructor exposed the student to a simulated power failure. The winch driver had been briefed to drop the power between 250' and 400' AGL. As the winch driver reduced power, the student pilot lowered the nose in response to reducing airspeed. The power continued reducing so the student lowered the nose below the horizon and released the cable. The winch driver immediately cut the power but not before the glider impacted the billowing drogue parachute. The parachute fully encapsulated the front cockpit leaving the student with no forward visibility (Refer recreation below).

The instructor immediately took control and, with limited vision out of the canopy, successfully landed the glider. Simulated launch failure exercises should only be done as a winch power failure. Simulated launch failures involving the gradual reduction in power are not recommended, as the risk of the glider flying into the parachute is high. The GFA winch launching manual, at section 3.4.7 'Simulating launch failures', states that when practising simulated launch failures by arranging for the winch driver to reduce power, the winch driver should cut the power BEFORE the glider pilot releases in order to allow the cable and chute fall to the ground and not pose as great a hazard. Where the pilot releases before the power is cut, there is a high risk that the drogue chute will open in front of the glider, and that the glider will become entangles as in the case of this incident.



Date	11-Nov-2018	Region	WAGA	SOAR Report Nbr	S-1353
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Ground strike

A/C Model 1		Piper PA25-235		A/C Model 2			
Injury	Minor	Damage	Substantial	Phase	Landing	PIC Age	60

Following a successful glider tow, and as the tow plane was slowing down in the landing roll, a gust of wind lifted the right wing and the aircraft began to skip sideways along the runway. The port mainwheel collapsed, and the aircraft suffered a prop strike as the port wingtip contacted the ground. The aircraft was substantially damaged. At the time of the accident the wind was 9 knots from the South-west, gusting to 13 knots. Investigation revealed that the tow plane, landing from an uneventful glider tow operation, performed a normal 3-point touchdown on the threshold of RWY 16. The runway surface on the threshold is aged with a mixture of bitumen, loose blue metal and gravel. While still travelling at high speed and rolling along the runway with the tail high, the pilot reported experiencing a wind gust from the West that caused the starboard wing to lift and the port wing to strike the ground. The pilot reported being unable to lower the right wing despite the application of full opposite aileron. Tyre and crushed gravel markings on the runway revealed that as the starboard wing lifted, only aircraft's port mainwheel was in contact with the runway and the aircraft was drifting sideways to the east. The aircraft continued in an arc and deviating to the right by an estimated 50 degrees of the runway centreline, heading towards the glider gridding area and ground crew. The width of the ground scars increased indicating a rapidly increasing sideways load on the port mainwheel. It was also evident that the aircraft bounced during the runway excursion and that the left mainwheel rim made contact with the runway. At this point ground scars evidence the point where the port wheel axle broke causing the wheel to depart the aircraft. This was then followed by the undercarriage leg contacting the ground and folding up. The aircraft then fell onto its port wingtip and came to rest with the propeller striking the ground while the engine was still producing power. Investigation revealed the pilot was qualified for the flight and had held a towing endorsement for 12 months.

Date	11-Nov-2018	Region	WAGA	SOAR Report Nbr	S-1360
Level 1	Operational	Level 2	Miscellaneous	Level 3	Other Miscellaneous

A/C Model 1		Piper PA-25-180/S		A/C Model 2	IS-28B2		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	33

During the climb on aerotow, the glider got displaced in a thermal and the tow pilot mistakenly thought the glider had released. The tow pilot checked the mirrors and did not see the glider, and then initiated a 45 degree turn to the left and commenced descent. The tail of the tow plane was then pulled to the right as the rope became taut, and the command pilot in the glider released from tow. The tow pilot was debriefed by the Tugmaster and reminded not to rely on feel alone to determine that a glider has released, but to confirm glider release by the use of mirrors and by physically turning around in seat to view the glider directly when possible. A contributing factor was the limited experience aerotowing on rough thermal days of both the tow pilot and glider pilot.

Date	11-Nov-2018	Region	VSA	SOAR Report Nbr	S-1361
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Aircraft Separation Issues

A/C Model 1		SZD-50-3 "Puchacz"		A/C Model 2	Piper PA-28-161		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	66

The pilot of Piper Cherokee reported observing a glider tracking head-on at the same altitude while they were climbing out on the crosswind leg of the circuit. The Cherokee pilot stated they were about to take evasive action when the glider turned left, passing less than half a nautical mile to the right of the Cherokee, and then join downwind for the operational runway (RWY 09). The Cherokee pilot was concerned that the glider joined the live side of the circuit heading into the RWY 09 crosswind traffic, that the glider turned left contrary to the requirements of CAR 162 'Rules for prevention of collision', and that the glider crew did not make the required radio calls in the circuit as specified in the ERSA entry for the aerodrome. The command pilot in the glider stated that they entered the downwind leg of the left-hand circuit for RWY 09 from the active side, and observed the Cherokee climbing out on the crosswind leg heading towards but displaced to the right of the glider. Although the glider has right of way pursuant to CAR 162(1)(a), in the absence of any avoiding action by the powered aircraft, the command pilot of the glider turned left to provide more separation, as they believed turning right may have increased the risk of collision. This decision by the glider pilot is consistent with CAR 161(2), which states: *"The pilot in command of an aircraft that has the right of way must maintain its heading and speed, but nothing in the rules in this Division shall relieve the pilot in command of an aircraft from the responsibility of* ***taking such action as will best avert collision.****"* The command pilot of the glider was aware of their obligations to see and avoid other aircraft (CAAP 166-2(1)) in the vicinity of a non-controlled aerodrome, regardless of any circuit procedure (AIP ENR 1.1 – 75 paragraph 10.2.1.1), maintained a good lookout in this potentially high traffic area, and safely avoided potential conflict despite the limitations of gliding flight. The command pilot of the glider further stated that they made radio calls on joining downwind and turning onto base but only carrier wave with no voice modulation was heard by the listening stations. Subsequent investigation of the radio in the glider revealed that the front microphone transmitted satisfactorily but a problem existed with the microphone lead in the rear cockpit. The standard aerodrome traffic circuit facilitates the orderly flow of traffic and is normally a left-hand circuit pattern with all turns to the left (Regulation 166A of CAR). When arriving at an aerodrome to land, the pilot will normally join the circuit on upwind, crosswind (midfield), or at or before mid-downwind. Aircraft joining on the active side at circuit altitude should enter midfield at approximately 45 degrees to the downwind leg, giving way to, or following, aircraft already established in the circuit. However, at training aerodromes and gliding sites, pilots using these aerodromes should be alert to non-standard operations by training aircraft and gliders in the vicinity, some of which may be piloted by low-hours and student pilots (refer CAAP 166-1). This particular aerodrome is uncertified and situated in Class G airspace. It lies immediately beneath Class C airspace, with three CTA boundaries in proximity. Due to the low base of the CTA, gliders do not usually operate to the East of the aerodrome, so when operations are on RWY 09 the gliders will operate upwind and close to the aerodrome to the West (on an arc between south and north depending on the actual wind strength and direction), and occasionally will be compelled to join the downwind leg on the active side of the

standard circuit. The gliding club CFIs and the Safety Officer from the powered flight training operation are members of the Aerodrome Operations Panel and are working together to mitigate the operational risks.

Date	12-Nov-2018	Region	WAGA	SOAR Report Nbr		S-1351	
Level 1	Operational	Level 2	Aircraft Control	Level 3		Wheels up landing	
A/C Model 1		Standard Cirrus		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	66
The pilot aborted the aerotow launch at 1000ft AGL due to a noisy inspection hatch and landed with the wheel retracted. The pilot advised that they inadvertently retracted the undercarriage during the pre-landing check list. A visual inspection to confirm the undercarriage was in the down position was not made. OSB 01/14 'Circuit & Landing Advice' confirms that the pre-landing checklist is a 'check' and not an 'action' list. The undercarriage check should verify the undercarriage lever is matched to the lowered position on the placard.							

Date	17-Nov-2018	Region	VSA	SOAR Report Nbr		S-1370	
Level 1	Operational	Level 2	Runway Events	Level 3		Runway incursion	
A/C Model 1		AMERICAN CHAMPION AIRCRAFT CORP 8GCBC		A/C Model 2		Standard Libelle 201 B	
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	44
The tow plane was established on final approach to runway 17R at about 100ft AGL when the pilot noticed a vehicle and glider combination enter the runway. The tow pilot initiated a go-around procedure. Although the tow plane's landing light was illuminated, the vehicle driver did not see it.							

The vehicle driver was towing their glider to the flight line along the taxiway from the hangars. The driver had a radio in the vehicle and had sighted the tow plane on late downwind. The driver advised that when they arrived at the intersection of the taxiway and runway 17/35 they stopped and looked for aircraft using the runway, but did not sight any and presumed the tow plane had already landed. As the vehicle commenced crossing runway 17R, the driver heard the tow plane engine increase power as the pilot initiated the 'go around' procedure. The driver stated that their view of the approach to their left from the vehicle's right-hand seat was not optimal and they did not hear the tow pilot's radio call on turning final. The Club CFI noted that they had recently issued a memo to all members highlighting the risks when crossing the runways consequent of a similar incident several weeks earlier. This incident highlights there are visibility limitations when driving vehicles, and the importance of drivers exiting the vehicle to conduct a more diligent lookout.

Date	17-Nov-2018	Region	WAGA	SOAR Report Nbr		S-1368	
Level 1	Operational	Level 2	Runway Events	Level 3		Runway incursion	
A/C Model 1		DG-1000S		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	65

While the glider was on final approach for RWY 26, two vehicles crossed the operational runway in opposing directions about 50 metres upwind of the runway threshold. The command pilot instructed the student flying to close the airbrakes in order to overfly and land well clear of the hazard. The driver of one vehicle stated that they had stopped at the intersection of the runways and conducted a lookout, noting that *"…the sky was a cloudy white grey colour"*. Believing the airspace was clear, the driver proceeded to move across the intersecting runways while continuing to monitor the airspace. The driver then noticed the glider relatively low but continued as they believed there was little risk of collision. The driver saw another vehicle heading towards them from the opposite direction and gestured to the other driver to stop. The other vehicle driver then saw the 'glider on approach, stopped and reversed clear of the runway. The CFI investigated the incident and reported that operations the day were quite difficult. Launching was on runway 16 but the strong westerly necessitated landing on the shorter runway 26. When landing on runway 26 the gliders generally land past the main threshold to avoid turbulence at the cross strip from the trees. The club has signs posted each side of the runway at the cross trip to alert drivers to air traffic, and the club also has a FM repeater rebroadcasting the Airband VHF. On this day neither driver was monitoring the radio frequency.

Date	18-Nov-2018	Region	VSA	SOAR Report Nbr		S-1364	
Level 1	Operational	Level 2	Aircraft Control	Level 3		Control issues	
A/C Model 1		LS 3-a		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	62

During the ground run on aerotow, the glider was observed to become airborne and then pitch forward rapidly, striking the ground hard and collapsing the undercarriage. The tow rope broke, and the glider became airborne again before touching down on the fuselage and came to rest with the wings level. The pilot had not previously flown the LS3 but has about 30 hrs in LS4 and LS7 aircraft. The pilot was briefed on the glider the previous day. On the day of the accident, the pilot took some time to familiarise themselves with the cockpit layout and noted that the trim was difficult to adjust. During the take-off roll when the pilot applied some back pressure to the stick, the spring-loaded trim lever moved aft resulting in the glider pitching up and becoming airborne. In response, the pilot over-corrected with forward movement of the stick and the glider struck the ground hard and collapsed the undercarriage. The rope was broken around this time and the glider then settled onto the ground damaging the main gear doors and the lower fuselage. Investigation identified that the pilot was lacking in recent practice, having only flown 3 hours in the preceding 90 days. The pilot was also unfamiliar with both the trim system and undercarriage mechanism and did not notice that the trim was not set, and that the undercarriage lever was not properly locked. The accident occurred when the glider pitched-up due to uncommanded rearward movement of the spring trim system and the pilot's over-control of the elevator in response. A contributing factor was that the undercarriage wasn't adequately locked down. This accident highlights the importance of being in current practice and having a thorough pre-flight briefing when converting to new types.

Date	19-Nov-2018	Region	SAGA	SOAR Report Nbr		S-1367	
Level 1	Operational	Level 2	Miscellaneous	Level 3		Other Miscellaneous	
A/C Model 1		Piper PA-25-235		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	54

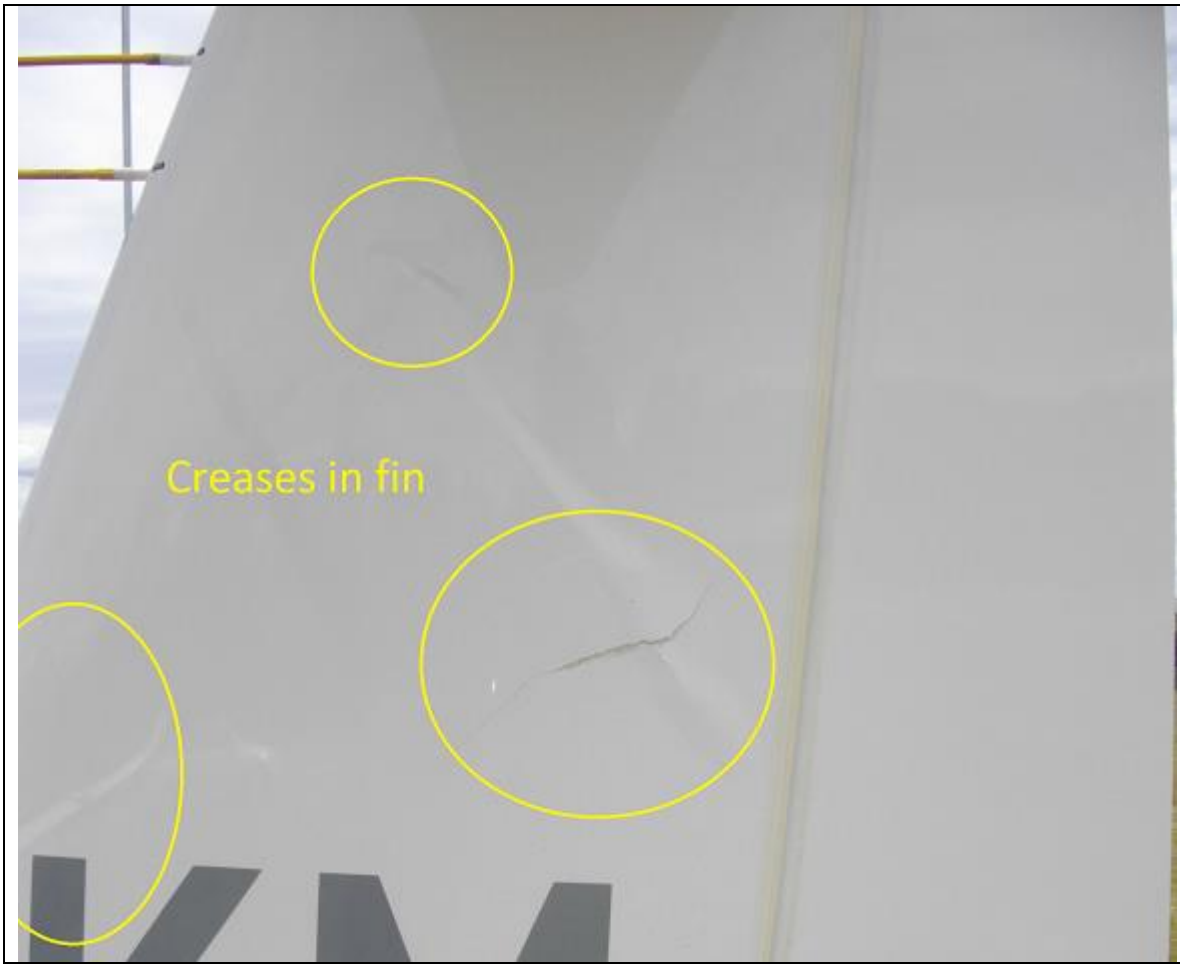
The tow pilot was conducting a positioning flight from Stonefield aerodorme to Parafield aerodrome. The tow plane took off on Stonefield RWY 34 and, after climbing to 500' ft, levelled out and headed SSW for the destination aerodrome. The tow plane overflew a residence abutting the airfield. The occupants, who had recently purchased the property, made a complaint to the Club about the aircraft passing over the house at 'low altitude'. The Club President contacted the homeowner and explained the nuances of aircraft operations, and undertook to make contact early next year when towing operations were to resume. The local CASA Safety Advisor was also informed.

Date	21-Nov-2018	Region	VSA	SOAR Report Nbr	S-1369
Level 1	Operational	Level 2	Aircraft Control	Level 3	Pilot Induced Oscillations
A/C Model 1	LS 4-a	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	58

The recently solo pilot reported flying a low and flat approach, and during the flare the airbrakes were closed. The glider continued to float down the runway at a height of about 10 ft and misapplication of the elevator control led to a series of "pilot induced oscillations". At a height of about 3 ft the glider stalled and landed heavily. The pilot induced oscillations were not severe and no damage was done to the glider. It was identified that the pilot's low experience and lack of currency were contributing factors. The pilot underwent further training.

Date	25-Nov-2018	Region	NSWGA	SOAR Report Nbr	S-1372
Level 1	Operational	Level 2	Ground Operations	Level 3	Taxiing collision/near collision
A/C Model 1	Duo Discus	A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Ground Ops	PIC Age	82

The aircraft had been rigged near the main hangar and was being towed to the flight line. As a launch was about to proceed, the vehicle driver moved off the airstrip with the intention of driving between the windsock and a shed. When the driver moved off, the glider's right wingtip struck the windsock pole causing the aircraft to pivot and the left elevator tip contacted the rear window of the tow vehicle. The driver stopped, but not before the rear window of the towing vehicle was broken and the glider substantially damaged. The glider damage included: creases in the fin running from the leading edge diagonally down towards the tailwheel; scratches and punctures to the left tip of the elevator, and minor damage to the right wingtip. Contributing factors included inattention by the vehicle driver and not seeking external assistance when manoeuvring in a tight space. When taxying gliders, drivers need to pay particular attention to obstacle clearance.



Date	25-Nov-2018	Region	VSA	SOAR Report Nbr	S-1371		
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision		
A/C Model 1	DG-500 Elan Orion	A/C Model 2	Piper PA-28-161				
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	60

Following a local training flight, the glider joined a standard circuit for RWY 19. The command pilot made a radio call as the glider turned onto the base leg, and then scanned along the final approach path but did not sight a Piper PA-28 that was established on a long final approach. Soon after turning onto final approach, the command pilot of the glider "saw an aircraft behind to right banking sharply away to the right." The command pilot of the glider pulled back on the stick and veered slightly to the left to provide clearance. The pilot of the Piper was flying standard circuits for practice following standard procedures and making radio calls as required. The pilot of the Piper noticed the glider as it turned in front of the Piper, and immediately initiated a turn to the right and conducted a go-around. The incident occurred at about 300ft AGL and the pilot of the Piper estimated the two aircraft got within 20 metres of each other. Neither pilots heard any radio calls. The following guidance from CAAP 166-1 is relevant:

- Most collisions occur on downwind or on final approach. There are many distractions during this time, including configuring the aircraft, completing checklists, setting equipment and communicating. Early completion of checklists and configuration changes will help to minimise distractions at this critical time (CAAP 166-1, paragraph 4.5.3).

- Ideally, pilots should make circuit broadcasts prior to making a turn because banking aircraft are easier to see. A simple strategy to remember when flying in the circuit is 'Look, Talk and Turn' (CAAP 166-1, paragraph 6.5.2).
- Pilots may vary the size of the circuit depending on: the performance of the aircraft; AFM/Pilot's Operating Handbook requirements; company SOPs; or other safety reasons (CAAP 166-1, paragraph 5.3.2).

The glider circuit is similar to the powered circuit; however, the glider pilot must consider other environmental factors that affect the landing. Strong crosswinds, tailwinds, or high sink rates that are encountered in the circuit require the pilot to modify the individual circuit leg (downwind, base, or final) by widening out or moving closer, and to adjust the approach speed as appropriate. The ERSA entry for this aerodrome states: *"Gliders and tugs normally operate Inside and below standard 1,000FT circuit."*

Date	1-Dec-2018	Region	GQ	SOAR Report Nbr	S-1390
Level 1	Technical	Level 2	Systems	Level 3	Avionics/Flight instruments
A/C Model 1	Discus B	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	66

During the aerotow launch the pilot noticed the ASI reading erratically. The glider pilot advised the tow pilot of the problem and that they were going to release and land back on the runway. The tow pilot acknowledged the radio call and followed the glider pilot in the circuit while periodically advising of airspeed. A safe landing ensured. The pilot reported that they received advice during the morning briefing that, on the previous day, mud wasps had been found in the pitot tube and cleaned out. The pilot conducted the Daily Inspection and confirmed the instruments were functioning correctly. Upon landing the pilot disconnected the ASI plumbing and flushed the lines to clear any residual debris. The tubing was reconnected, and the aircraft was test flown with no further faults reported. The CFI noted that the pitot cover had not been fitted when the aircraft was last hangared, and this incident highlights a lack of understanding for the consequences of failing to re-fit pitot covers after a flight. In May 2015 CASA published an airworthiness bulletin dealing with Wasp Nest Infestation (AWB 02-052). This AD applies to all aircraft because wasps are not selective. These insects love the nooks and crannies of aircraft large and small, in particular pitot tubes, fuel tank vents and drains in which to build their solid mud nests. Mud dauber wasp nests pose a significant safety hazard to aircraft because the wasp's nest can completely block not only pitot tubes, but fuel tank vents and drains. Pitot tubes blocked by a wasp nest typically remain undetected until halfway down the runway. A wasp nest in the vent of a small aircraft fuel system is usually only discovered as the pilot watches the fuel tank being crushed in flight, or the fuel quantity strangely staying static, or even increasing, as the bladder tank gets sucked off its buttons; or during the post-crash investigation. CASA recommends that owners and operators:

1. Install approved fuel vent screens or removable drain/vent covers and engine compartment blanks, as well as installing tight fitting pitot/static vent covers.
2. Remove inspection panels as required to inspect unsealed wing and fuselage cavities before flight, if the aircraft has been stored long term in the open air.
3. Continually monitor and remove any wasp nesting sites in the general area where the aircraft is stored or maintained.After this incident all club members were reminded of the need to ensure that instrument covers were placed on the aircraft after the days flying. The club has also developed an 'After Flight' checklist for configuring the aircraft at the end of the days flying that is placed with the Maintenance Release. The incident also highlights the importance of pilots being trained to fly without reference to the ASI.

Date	1-Dec-2018	Region	VSA	SOAR Report Nbr	S-1428

Level 1	Operational	Level 2	Crew and Cabin Safety	Level 3	Other Crew and Cabin Safety Issues
A/C Model 1	ASK-21	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	54

It was reported that a member conducted an AEF or private passenger flight whilst medically unfit, and with the consent of their CFI who was allegedly aware the member's doctor had refused to issue a certificate of medical fitness. Investigation revealed the member concerned had fractured their leg, which at the time was strapped and fitted with a boot. The pilot had not been refused a medical certificate and had been cleared by their doctor to drive a motor vehicle. The member informed their CFI of the injury and requested a check flight. The CFI assessed the member's capacity to manipulate the controls and cleared them to fly mutual with another pilot while seated in the rear cockpit, which was ergonomically more suitable. No passenger flying was conducted by the member. Pursuant to the Austroads standards, which are the relevant medical standards applying to glider pilots, the treating doctor is required to make an assessment as to whether the fracture would render the person unfit to drive (and therefore unfit to fly). In this case the doctor had not assessed the member as unfit to drive and the member, being a responsible person, had properly sought the advice of their CFI. The CFI took appropriate steps to formally assess the risks.

Date	1-Dec-2018	Region	NSWGA	SOAR Report Nbr	S-1373
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain
A/C Model 1	Discus b	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Outlanding	PIC Age	45

The pilot reported they got low in difficult soaring conditions during a cross country flight, and during the final approach into a paddock the glider's wingtip struck a small branch on a dead tree. Investigation by the CFI revealed the pilot became focussed on finding a thermal and made a late decision to select a landing area. As a consequence, the most suitable area was a small paddock. While attempting to land as close as possible to the approach boundary, the glider's wingtip clipped the branch of a dead tree causing minor damage. The CFI counselled the pilot on outlanding techniques, and reinforced the need to make an earlier decision to select a suitable paddock and break-off the flight. In addition, it is generally safer to land near the centre of the paddock to ensure the approach is flown above the height of potential hazards, such as trees and difficult to see power lines.

Date	4-Dec-2018	Region	NSWGA	SOAR Report Nbr	S-1376
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain
A/C Model 1	LS 6	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Outlanding	PIC Age	54

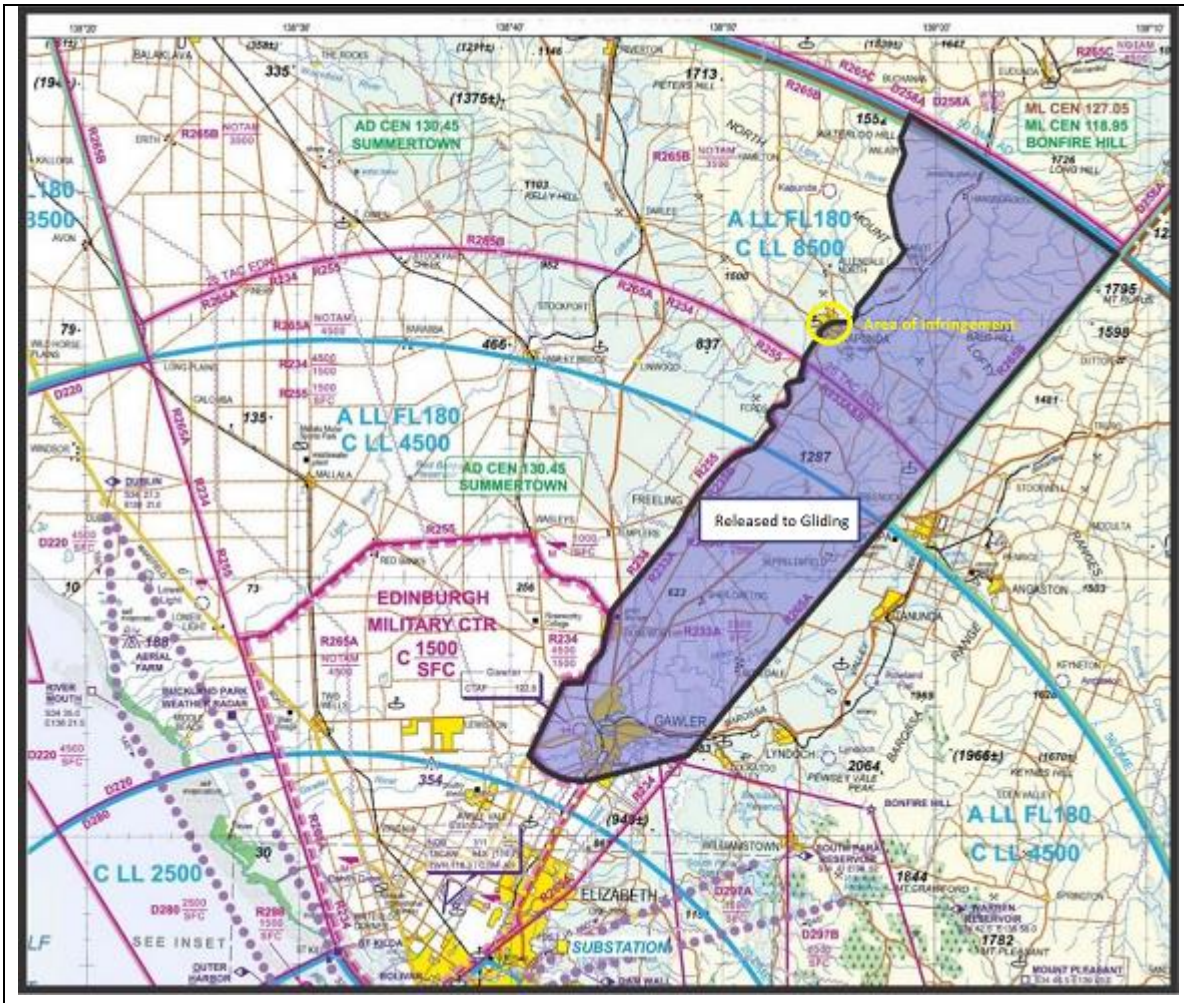
The pilot was competing in 15m class at the 2018 multiclass nationals. The pilot was on a marginal final glide into an 11-knot headwind. About 5 kms from the finish circle (and 7 kilometres from the aerodrome) at about 700ft AGL, the pilot decided to break off the flight despite their flight computer suggesting the glide home was probable. The pilot noted that *"the area has many suitable paddocks and I had selected my preferred paddock a few kms before; it was very large and aligned with the wind"*. The pilot conducted a circuit at about 500ft AGL and decided to land in the paddock close and parallel to a road alongside an irrigation canal. Upon touching down the glider began to decelerate quickly in the soft ground, so the pilot veered towards the road to minimise the potential for crop damage during the retrieve. However, due to the rapid deceleration the left wing contacted the ground and the glider ground looped towards the road and the canal. The glider slowly crossed the road and rolled into the 2-metre-deep irrigation canal. The pilot stated: *"my mistake was that I stopped flying the glider when it touched down to focus on minimising paddock damage, what I should have done was to just stop as fast as possible in straight line."*

Date	5-Dec-2018	Region	VSA	SOAR Report Nbr		S-1388	
Level 1	Operational	Level 2	Airframe	Level 3		Fuselage/Wings/Empennage	
A/C Model 1		Standard Libelle 201 B		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	66

Just after the wingtip runner released the wing during the launch, the wing dropped to the ground and the wingtip wheel was pushed into the wing. This damage was not noticed by the pilot until after the flight, when the glider was being manoeuvred on the ground after landing. Investigation revealed a past repair to the wingtip wheel failed when the wing dropped. The glider was repaired and returned to service.

Date	5-Dec-2018	Region	SAGA	SOAR Report Nbr		S-1379	
Level 1	Airspace	Level 2	Airspace Infringement	Level 3		Airspace Infringement	
A/C Model 1		Arcus M		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	74

The pilot reported that they got low on task and inadvertently intruded into restricted airspace while climbing away. The aerodrome from which the pilot was flying is situated amid several airspace boundaries, both military and civil. On the day of this incursion, the Gliding Club had arranged for the RAAF to issue a NOTAM releasing the eastern portion of two restricted areas for the use of gliders up to 8,500ft. The Restricted Areas were not active. The western boundary of the released area where the infringement occurred is the main highway. Review of the pilot's logger trace showed the glider strayed 1NM west of that boundary. The pilot was carrying maps and charts and was familiar with the local airspace but became distracted while trying to stay airborne. The pilot was counselled and undertook refresher training with the Club's Airspace officer.



Date	5-Dec-2018	Region	GQ	SOAR Report Nbr	S-1374
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain
A/C Model 1	HPH Glasflugel 304 C	A/C Model 2			
Injury	Minor	Damage	Substantial	Phase	Outlanding	PIC Age	62

FACTUAL INFORMATION

On 5 December 2018 at 1027 AEST, the low experience pilot flying a Glasflugel 304C 'Wasp' was launched by aerotow to 2,400ft AGL for a local flight. After a brief search for lift, the pilot contacted a weak thermal to the north-east of the aerodrome. After five minutes the glider had climbed to 3,800ft AGL, drifting about 2.5 kms to the north-west in a 15 knot SSW wind. The pilot made a position report and then noticed some rain on the canopy from a nearby rain shower. The pilot flew to the north away from the rain and then east but did not find another climb. When about 10 kms from the aerodrome and at a height of about 2,200ft AGL, the pilot turned towards home. After travelling 3kms on the return trip, the pilot again encountered the rain shower that had now drifted to a position between the glider and aerodrome. The pilot turned onto a north-westerly heading to fly around the rain but became disoriented and could not locate the aerodrome. By the time the pilot visually located the aerodrome the glider was down to 900ft AGL and about 9 kms from home. The pilot realised he was too low to make it back and that an out landing was imminent. Intending to conduct a straight-in approach to a paddock, the pilot realised it was too short and, unable to land ahead the

pilot turned 90 degrees to the right to land uphill in an adjacent paddock. The glider flew underneath powerlines and its starboard wing struck a fence post and tree. The glider turned through 270 degrees before striking the ground going sideways. The main wheel was sheared off and the tail boom broke, resulting in damage to the tailplane. The pilot was uninjured except for a small scratch on his knee.

Fig 1. Wreckage looking in direction of travel.

Fig 2. Wreckage looking towards the approach path.

Pilot Information

The pilot was medically fit and qualified to undertake the flight. The pilot commenced flying around March 2017 and had qualified for their 'B' Certificate in August 2018. At the time of the accident the pilot had accumulated a total of 21 solo flights; 14 of which were in an ASK-21, 2 in a Twin Astir and 5 in the accident

aircraft. As the pilot had not yet qualified for the 'C' Certificate, formal outlanding training had not commenced. However, the pilot had received a briefing on outlanding and paddock selection.

Aircraft information

The aircraft had a current maintenance release and the pilot confirmed the aircraft was airworthy up until the collision with terrain.

Wreckage and impact information

The damage to the aircraft was substantial. The starboard wing struck a sapling tree and impacted two fence posts (inboard of the shrub impact mark and also at the tip), and the extended undercarriage contacted the top two strands of the post and wire fence which tore the wheel from the aircraft. The fuselage turned through 270 degrees and struck the ground not far from the fence while travelling sideways. The impact broke the tail boom and the tailplane and the elevator suffered damage from contact with the ground. The starboard wing was further damaged as the wing tip came to rest on top of another post some 25 metres into the paddock, and there was debris from the shrub hanging from the aileron gap of the starboard wing. The pilot could not open canopy normally so activated the ejection mechanism.

Fig 3. Starboard wing damage

Fig 4. Fuselage and tailplane damage

Meteorology

The weather at the time of the accident was good visual meteorological conditions (VMC) but with isolated showers. Cloud base was around 4,500ft. Wind observations for the area around the time of the accident were:

Time	Wind Direction	Wind Speed kts	Wind Gust kts
Wed 10:50 EST	ESE	13	15
Wed 11:00 EST	ESE	10	16
Wed 11:10 EST	SE	10	12
Wed 11:20 EST	SE	14	17
Wed 11:30 EST	SE	11	15

Analysis

The pilot was launched by aerotow from RWY 04 in light easterly-crosswind conditions at 10:27. The pilot released from tow about 4 minutes later at a height of about 2,700ft (2,400ft AGL) and headed towards the town in search of lift. Shortly after, the glider flew into weak lift at 2200ft and the pilot made two thermalling turns. After climbing about 300ft, the pilot headed off in search of a better climb. The glider again contacted lift just south of the town and climbed to about 4100ft at an average rate of climb of 3.5 knots. The pilot than made a position report and headed in an easterly direction. Shortly afterwards, the

pilot noticed spots of rain appearing on the canopy from a small rain shower from the south-east and altered heading North into clear skies. The pilot continued to search for lift but was unsuccessful. When down to 3000ft about 10 kilometres to the north-east of the aerodrome, the pilot elected to return. The pilot noted: *"at that point I was in the position of flying over unfamiliar terrain and I think that the small shower that went by earlier was now obscuring the township."* The pilot initially tracked on a south-westerly heading towards the aerodrome but after a couple of minutes turned to the north-west into clear air and to avoid the rain shower that was passing to the north of the township (see Fig. 5). At this point the pilot became disoriented and continued to fly further away from the aerodrome. By the time the pilot realised his error and identified the aerodrome, the glider was at about 1200ft (900ft AGL) with 9kms to run. The pilot stated: *"After changing course again to head back in the right direction shortly after, I realised that I wasn't going to make it back. The terrain was rolling landscape with not many options."* The return track was over some difficult terrain with numerous small and undulating paddocks. A few suitable paddocks either side of track were overlooked as the pilot attempted to reach what appeared to be a more suitable landing area some distance ahead.

Fig 5. Graphic of return flight path showing approximate area of rain shower.

As the glider came within reach of the previously observed paddock for a straight-in landing approach, and at a height of about 100ft AGL, the pilot realised the paddock was short and had a downhill slope. The

paddock beyond was also unsuitable as it had powerlines running across its approach that the pilot did not believe the glider would clear. A late decision was then made to land uphill in an adjacent paddock to the right (see Fig 6). The pilot stated: *"on getting closer I then saw multiple power lines in my path, to the left were trees and the right a small uphill paddock. As I turned right there was a single line either power or telephone that I had to fly under."* The glider flew underneath the powerline, between the power pole and a tall tree (see Fig 7), whereupon its starboard wing struck a fence post and shrub (see Fig 8). The glider turned through 270 degrees before striking the ground going sideways. The main wheel was sheared off by the fencing wire, and the tail boom tailplane and tailplane suffered substantial damage. The pilot was uninjured.

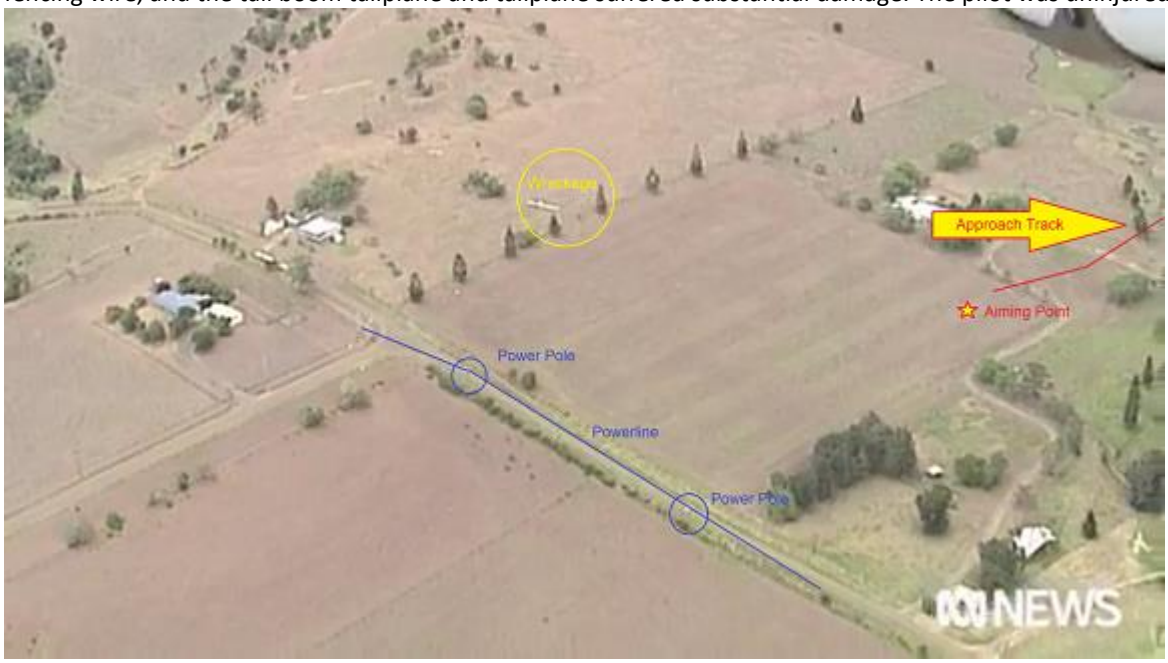


Fig 6. The selected paddock and aiming point.

Fig 7. The glider passed between power pole (left) and tree (right), and under the powerlines.

Fig 8. The glider struck the marked post and shrub in the right foreground, and the top two strands of fencing wire.

Aircraft

Aircraft maintenance

The aircraft had been maintained in accordance with GFA requirements and had a valid Maintenance Release. At the time of the accident the aircraft had accumulated 1317 hours for 1275 landings. There were no major defects, nor were any significant minor defects recorded. A daily inspection had been completed on the morning of the accident.

Aircraft systems

The aircraft is equipped with automatic couplings on the controls and investigation confirmed the aircraft was properly rigged. It was determined that all control rods and surfaces were connected and functioning correctly prior to the accident. Inspection of the aircraft confirmed substantial damage to the starboard wing all along the wing with holes and impact marks to leading edges with compression damage to fore and aft of the wing root area. The fuselage was substantially damaged with the tail boom broken and the mainwheel torn out. The tip of the tailplane was damaged, with elevator fittings twisted and damaged tailplane attachment points. All damage was consistent with impact with terrain.

Human Factors

The pilot's stress levels were heightened when he encountered rain that obscured his view of the township and aerodrome. This contributed to disorientation when flying north-west, away from the aerodrome over unfamiliar ground, while descending. The pilot informed his CFI that upon realising he would not make it back to the aerodrome he became panicked and this affected his decision making. The stress levels were exacerbated due to the undulating terrain that the pilot was flying over and the fact that he had no previous inflight experience in planning, observing or conducting an outlanding. Fear, anxiety, panic and inaction are the common behavioural responses experienced by pilots when get into stressful circumstances or are confronted with potential threats. Panic is an exaggerated form of the fight-or-flight response, in which the perception of immediate danger triggers a cascade of physiological and psychological responses. Psychologically, people in highly anxious situations begin to see the world negatively, and confusion sets in. This results in the inability to problem-solve, over- or under-control the aircraft, and forgetting the fundamentals.

Survivability

Rescue fire service response

The accident was witnessed by a member of the public who immediately telephoned the Police. Several minutes later the Police and Ambulance arrived at the scene and attended to the pilot.

Analysis of injuries

The pilot was uninjured and only suffered a minor abrasion.

Survival aspects

Although the aircraft was substantially damaged, the impact with the fence and bush absorbed much of the energy, and the aircraft struck the ground at a significantly reduced velocity than would otherwise have been the case. In addition, the geometry of the crash was such that the aircraft struck the ground sideways in a relatively level attitude and the cockpit remained intact. These factors contributed to protecting the pilot from serious injury.

CONCLUSIONS

While early solo pilots are trained to remain within glide range of the aerodrome, occasionally unforeseen circumstances, such as those described here, can place a pilot in position where an outlanding is necessary. Orientation and early soaring flights must emphasise reference to landmarks and line features that can lead a pilot back to the aerodrome, and safe local outlanding options. It is therefore important for Training Panels and Instructors to ensure their students are appropriately trained and assessed as competent to conduct an outlanding prior to solo cross-country flight. Students should observe a demonstration outlanding in a dual instructional flight as a minimum, prior to flying solo. Ideally, they should perform a practice outlanding under supervision prior to flying solo. Students and solo pits alike should also remember that, unlike landing at the home airfield where the runway layout, ground features and hazards are usually well known, when landing in a strange paddock the pilot is faced with the unknown. Such a situation demands the pilot take additional precautions to ensure a proper survey is undertaken of the landing area so as to identify all hazards and ensure a safe approach and landing can be accomplished. In power flying this is called a 'precautionary search' and is commenced from no lower than 500ft AGL, although in gliding the pilot must obviously start a lot higher.

Findings

1. The command pilot was appropriately qualified and medically fit for the flight.
2. The aircraft had a valid Maintenance Release and had been maintained in accordance with relevant requirements.
3. The aircraft was capable of normal operation up until the time of impact with terrain.
4. The command pilot became disoriented after losing visibility of the township and aerodrome due to a rain shower, resulting in flight below a safe glidepath back to the aerodrome.
5. The command pilot had not observed a demonstration outlanding in a dual instructional flight.
6. The command pilot had not completed their outlanding training (a prerequisite for award of the 'C' Certificate and GPC) and was unprepared for an off-field landing.
7. The command pilot was operating in a high workload environment, and due to inexperience adopted a high-risk flight profile that eroded safety margins.
8. The command pilot conducted a straight-in approach that made identification of the suitability of the selected landing area difficult.
9. When the pilot finally determined the proposed landing area was unsatisfactory there were few safe options available, leading the pilot to adopting a high-risk solution which led to the collision with terrain.

Date	6-Dec-2018	Region	SAGA	SOAR Report Nbr		S-1392	
Level 1	Airspace	Level 2	Airspace Infringement	Level 3		Airspace Infringement	
A/C Model 1		G 102 Club Astir IIIb		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	

The pilot reported inadvertently entering Restricted airspace on 6 separate occasions during a cross-country flight, and flew above 10,000ft while not carrying supplemental oxygen. The pilot suspects their attention and decision making were affected by stress and fatigue due to personal issues, possibly heat stress, and over confidence. The pilot's flying privileges were suspended pending refresher training with the club airspace officer. **Note:** A major element of flight discipline is compliance with established rules and procedures that guide a pilot's performance of tasks. Therefore, good discipline in following rules and procedures will improve an individual's safety record. On the other hand, the failure to follow procedures or rules reflects inadequate discipline, which is certain to increase accident likelihood.

Date	7-Dec-2018	Region	GQ	SOAR Report Nbr	S-1380
Level 1	Operational	Level 2	Ground Operations	Level 3	Taxiing collision/near collision
A/C Model 1	IS-28B2	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Ground Ops	PIC Age	75

While towing the glider to the flight line in gusty conditions, the person walking the wing tripped over. The wing dropped onto a runway cone, which caused a small crease to develop in the underside of the left wing. The damage was assessed by a qualified inspector as non-structural and the aircraft was returned to service.

Date	8-Dec-2018	Region	SAGA	SOAR Report Nbr	S-1406
Level 1	Technical	Level 2	Systems	Level 3	Other Systems Issues
A/C Model 1	ASK-21	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	60

On 27 October 2018 the glider experienced an uncommanded release of the tow rope from its forward Tost release. The release occurred prior to any significant movement of the glider and soon after the tug had gone to full power. The glider had performed 4 successful launches on the day prior to the uncommanded release. The glider was reconnected and preformed a launch without incident, and it was launched a further 4 times on that day. The glider flew on two further days, 10 November and 24 November 2018 without incident. A second uncommanded release occurred on 8 December when the aircraft was being flown by the Duty Instructor. The instructor observed that the release occurred under considerable load due to the distance the rings travelled after release. The release circuit was subsequently checked and was found to be operating correctly. A further 2 flights were conducted without incident. At the end of flying operations, the duty instructor entered a major defect in the maintenance release, grounding the aircraft. Investigation later revealed that the premature releases occurred due to friction in the release circuit. It was identified that the rubber seal in the tow release cover plate slot that the cable passes through had hardened, thereby occasionally causing the cable to bind and prevent the release from locking over-centre. The rubber was removed, and the aircraft was returned to service without further incident.

Date	12-Dec-2018	Region	WAGA	SOAR Report Nbr	S-1387
Level 1	Operational	Level 2	Runway Events	Level 3	Runway undershoot
A/C Model 1	ASW 27-18	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	65

The pilot reported that they experienced strong sink when turning onto the base leg of the circuit on return from a cross-country flight. The pilot was unconcerned as the glider was relatively high (about 600ft AGL) and the sink rate was not sustained. On turning final, the glider flew into extremely strong sink in excess of 10 knots down. The glider descended rapidly to the point that the pilot realised that it was unlikely to clear the aerodrome boundary fence. The pilot deployed full airbrake and manoeuvred to land in the paddock

before the aerodrome. During the ground roll the glider's right wing contacted a dead crab apple tree, causing the glider to skid to a halt sideways. The glider suffered a small hole in the inboard starboard aileron but was otherwise undamaged. The pilot reported: "*It is the first time that I have experienced this sinister insidious situation of an irretrievable undershoot! I say insidious because it was not until very late in the approach that I was ready to abandon an attempt to "get over" the fence and it is just as well because on close inspection on the ground there were two fences about 30meters apart. What a trap!*" A glider overshooting only has to go a little way above the approach path in order to detect that it will in fact overshoot. However, a glider undershooting has to go a long way below the approach path before it becomes obvious that the aiming point has shifted and that the glider is in an undershoot situation. As this pilot discovered, the undershoot situation is potentially dangerous, because once it has been detected it may not be possible for the glider to regain the previous approach path. A new, flatter approach is therefore inevitable, and if obstacle clearance was previously limited it then becomes impossible to achieve. In theory, the ideal descent path is with half airbrake. In practice, aim for approximately two thirds airbrake as this

allows a greater margin for recovering from an undershoot.

Date	14-Dec-2018	Region	WAGA	SOAR Report Nbr	S-1389
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain
A/C Model 1	DG-1000S	A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Landing	PIC Age	57

Following a normal landing and during the ground roll, the pilot taxied clear of the runway to expedite the next launch. As the aircraft slowed, the port wing dropped to the ground and impacted a removable runway light. The light was broken and the leading edge and underside of the port wing was damaged. The pilot noted that the light was normally removed during gliding operations but had not been done on this occasion. The CFI will put a note in the Club newsletter to raise awareness among the members.

Date	14-Dec-2018	Region	WAGA	SOAR Report Nbr	S-1393
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing
A/C Model 1	ASK-21	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	42

The pilot reported that immediately after the flare the glider dropped heavily onto the runway and bounced. The pilot flew the approach with about 2/3 airbrake at about 57 knots. After the aircraft rebounded into the air, the pilot levelled the attitude, maintained airbrakes and proceeded to a normal landing. Subsequent inspection revealed a flat tailwheel. Investigation attributed the bounced landing to wind shadow and turbulence associated with a line of trees close to the end of the runway. The gliding club has since displaced the threshold of RWY 34 by 150 metres to be clear of the effects of the trees.

Date	15-Dec-2018	Region	NSWGA	SOAR Report Nbr	S-1394
Level 1	Operational	Level 2	Runway Events	Level 3	Runway excursion
A/C Model 1	LS-10 st	A/C Model 2	N/A		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	63

While on downwind for runway 36 after a 2½ hour flight, the pilot received a radio report advising the wind was gusting to 15 knots from the North. During the final approach the pilot undershot the aiming point and landed shorter than intended. Following a normal touchdown, the pilot taxied left towards the dead side of the runway and then noticed the glider was heading for the boundary fence. In the absence of an effective wheel brake the pilot initiated a ground loop, at relatively slow speed, to avoid the fence. The glider came to rest after turning through 180 degrees and was undamaged. This incident highlights the risk of taxying an aircraft, and of operating an aircraft without a reliable wheel brake. Pilots should make a straight approach and landing run parallel to the runway and must not taxi off the runway unless operationally required and only if no other aircraft can land alongside in the direction of taxi. A contributing factor was a lack of currency.

Date	16-Dec-2018	Region	NSWGA	SOAR Report Nbr	S-1391
Level 1	Operational	Level 2	Miscellaneous	Level 3	Other Miscellaneous
A/C Model 1	Piper PA-25-235	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	66

During an approach for a landing on RWY 30 and at a height of about 150ft AGL, the tow plane flew through some wind shear resulting in the aircraft undershooting the glide path. The pilot applied power to intercept the glideslope and became focussed on their aiming point. As the tow plane approached the airfield boundary, the pilot caught sight, in their peripheral vision, of a vehicle as it was being driven across the approach and beneath the tow plane. Due to the low height of the tow plane, the rope contacted the fence. It is not known whether the vehicle was struck. Operations for the day were on RWY 27 but the runway was occupied by three gliders and retrieve crew. As a consequence, the tow pilot elected to land on RWY 30 and

made a radio broadcast of their intention. The Club CFI stated: *"… RWY 30 is a shorter runway and it slopes downhill, and these factors prompt landing pilots to choose an aiming point close to the runway threshold, rather than further in. The runway threshold is close to the airfield boundary fence, and closer still to the airfield perimeter track situated adjacent to the boundary fence. Consequently, an aircraft landing on RWY 30 will pass sufficiently near the perimeter track that a collision risk exists. This is particularly so when the landing aircraft has a tow rope attached."* Investigation of the vehicle's movements were inconclusive, as there were no witnesses to the event. However, it was determined that the vehicle was being driven by a visitor to the club. The CFI noted that *"the possibility of collision between a vehicle and a landing aircraft is a known hazard, especially at locations where the perimeter track runs close to a runway threshold. Gliding Club members are trained to stop their vehicle before crossing a runway alignment, get out of the vehicle and scan for approaching aircraft before proceeding across the runway alignment. However, it was recognised that visitors to the airfield provide a greater hazard, as they lack detailed knowledge of the airfield layout and are likely to have little knowledge of aircraft operations and possible aircraft movements."* Following from this incident, the CFI reinforced the requirement for club members (and particularly instructors running a gliding operation) to provide an effective safety briefing to airfield visitors, including the need to ensure that no vehicle was driven across the path of an approach aircraft. This requirement was disseminated to all Club instructors through the Club's weekly Training Panel Notes, and signs that warn drivers to "stop and look" have been rejuvenated.

Date	17-Dec-2018	Region	GQ	SOAR Report Nbr	S-1395
Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing
A/C Model 1	LS 8-b	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	69

The pilot reported cycling the undercarriage from down to up late on final approach in response to an automated instrument warning to "check gear". The pilot reported that a "check gear" audio warning was generated by the LX9050 flight computer, which has several audio messages and sensors to connect to the air frame. In this case there was no undercarriage sensor fitted to the airframe. The instrument is pre-programmed to give the pilot a warning regardless of whether the sensor is connected. The pilot reported that the warning usually goes off a few hundred feet above ground, but in the case of this flight the warning was given only metres above the ground. Investigation revealed that the pilot had delayed landing while waiting for another pilot to land (the other pilot had experienced a bird strike and was seeking landing priority). While flying over the airfield at some 2,000 ft AGL, the pilot decided to extend the undercarriage in preparation for joining the circuit. While a good decision, it did of create the potential for the capture error later on. Given that there was now no memory trace of the pilot extending the gear at the normal time (just before entering downwind at 1,000 ft AGL), the pilot actually took the 'check gear' warning seriously, thinking that he must have forgotten to put the gear down. He subsequently manipulated the gear lever in the last moments before landing and moved the gear back up (and from research we know that an opposite direction of movement is not a strong cue as to the erroneousness of the act). The fact that the flight computer warning came so late was likely due to the high descent rate; once the other pilot was safely on the ground, the pilot descended with full airbrakes. This most likely caused the flight computer warning to lag, as it normally warns at around 300-600 feet AGL. **Note:** lowering the undercarriage at low level on final approach is fraught with danger. It has been identified as a factor in at least two fatal low-level stall/spin events in the past few years, and to gliders striking the ground hard and being substantially damaged with the pilot suffering injury. Pilots and ground crew should recognise that it is far safer for the pilot to land properly with the undercarriage retracted than to potentially lose control while lowering it.

Date	18-Dec-2018	Region	GQ	SOAR Report Nbr	S-1396
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Aircraft Separation Issues

A/C Model 1		DG-1000S		A/C Model 2	DG-1000S		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	72

During a training sortie in which the instructor was demonstrating exercise in airbrake usage, the option was taken to allow the student the opportunity to practice flying the approach while on a long and high final to the operational runway (RWY 09). As the glider (NDS) neared the aerodrome the command pilot noted other aircraft in the circuit and decided to break off the approach. The airbrakes were closed, and the command pilot deviated to the north to join circuit from the live side. This resulted in the glider flying against the circuit traffic. The command pilot of a glider already established on the downwind leg (NGY) reported they were following a powered aircraft and observed it commence a base leg. Shortly after the command pilot observed the other glider (NDS) *"…flying to our north about 100 ft higher than us (at the 2 o'clock position), however in the opposite direction to the circuit. The glider was not on a conflicting course with us and was approximately 200-300 meters (best estimate) to our north as it passed."* The standard aerodrome traffic circuit facilitates the orderly flow of traffic and is normally a left-hand circuit pattern with all turns to the left (Regulation 166A of CAR). When arriving at an aerodrome to land, a pilot will normally join the circuit on upwind, crosswind (midfield), or at or before mid-downwind. Aircraft joining on the active side at circuit altitude should enter midfield at approximately 45 degrees to the downwind leg, giving way to, or following, aircraft already established in the circuit. CAAP 166-1 notes that at training aerodromes and gliding sites, pilots using these aerodromes should be alert to non-standard operations by training aircraft and gliders in the vicinity, some of which may be piloted by low-hours and student pilots. The command pilot of NDS later reflected that they should have flown upwind on the dead side of the circuit, but their recent flying had been at a site where gliders and powered aircraft flew contra circuits and were prohibited from crossing the runway centreline.

Date	22-Dec-2018	Region	VSA	SOAR Report Nbr	S-1399
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing

A/C Model 1		PW-6U		A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Landing	PIC Age	69

On the final approach and during the round-out, the student pilot flying closed the air brakes while the aircraft was about 15 feet above ground. The instructor asked the student why they had closed the airbrakes, and the student responded by immediately opening the brakes fully. The glider stalled onto the ground from about 8 feet before the instructor had time to react. The glider struck the ground heavily and came to an abrupt stop. Subsequent inspection revealed the undercarriage was substantially damaged, but the airframe was otherwise undamaged. Investigation by the Club CFI identified the student had misunderstood the use of airbrakes during the flare and hold-off, and that more work was required at this phase of flight. It was also determined that the student interpreted the instructor's question *"why did you close the airbrakes"* as a criticism of his action, which led to him opening them at an inappropriate moment. Instructors need to be careful in their choice of phrase when dealing with students in high workload phases of the flight. In this case the instructor could have asked the question after the glider had landed.

Date	23-Dec-2018	Region	SAGA	SOAR Report Nbr	S-1398
Level 1	Consequential Events	Level 2	Forced / Precautionary landing	Level 3	Forced/Precautionary Landing
A/C Model 1	ASK-13	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	41

The recently solo pilot reported that after approaching the airfield to land after a one-hour flight they encountered unexpected lift and varying wind direction. The pilot became flustered while attempting to deal with the lift and determining the appropriate runway for landing, and eventually got too low to safely return to the airfield. The pilot selected a paddock adjacent to the airfield and completed a safe landing. The duty instructor reported that the decision to outland was the safest option once the pilot realised they were in an undesirable position. Fatigue and frustration were identified as potential causal factors.

Date	26-Dec-2018	Region	NSWGA	SOAR Report Nbr	S-1404
Level 1	Operational	Level 2	Flight Preparation/Navigation	Level 3	VFR into IMC
A/C Model 1	ASH 26 E	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	61

The pilot declared a 1000 Km FAI triangle diploma flight. The forecast indicated that the day would be slow to start but would improve during the day with climbs to over 10,000ft. The pilot launched at 10:57 as cumulus clouds began forming on the Liverpool range to the South-West. The pilot noted that the *"lift was better than expected, though not going high, and I probably could have got going half an hour earlier"*. For the first hour the pilot was working a height band of between 3,000ft to 5,000ft. Conditions then quickly improved and climbs to 11,500ft were achieved just before rounding the first turn point. The first leg (348kms) was completed after 3 Hours 21 minutes at an average speed of 104kph. During the second leg the pilot worked a height band between 6,500ft to 12,500ft and completed the second leg (310 kms) in 2 hours 30 minutes at an average speed of 124kph. The pilot noted that an hour after turning the second turn point, they *"had to cross a large blue area to reach some good clouds that were working over the Pillaga forest, however as I approached, they started to decay (and) I still found lift underneath them"*. The pilot crossed the Pillaga forest by working three thermals to 9,000ft but conditions softened and after a further 65kms the aircraft was down to 2,500ft. With 50kms to run and at 20:16 hours (15 minutes after sunset), the pilot started the motor to self-retrieve and climbed to height from which they could glide back to the home airfield. The pilot stated that the *"…light was failing by this time, but I still thought I could make it to (the home airfield) with enough light to land. I was in contact with club members on the ground and they cleared the Kangaroos for me. I could possibly have landed at (a nearby Regional) airport, but would have needed the PAL (Pilot Activated Lighting) and was unsure of the frequency, (so) I elected to continue to (the home airfield) because I know it much better than (the nearby Regional airport), and there were plenty of people on the ground to help me there."* The glider was 20kms from the airfield at 4,800ft when last light fell (20:33

hours). As the pilot got closer to the airfield they noted that *"…it was very hard to see the runway, but because I know it well, I was able to line up by using the lights of Sport and Rec (facility), and a car that was parked at the end of the strip, along with the lights further along on the Club house. I was taken aback as I passed the windsock to see how low I was, and quickly put the glider into the landing attitude and landed safely. The car on the end of the runway drove behind me lighting up the runway as I came to a stop. The landing was uneventful, but if I hadn't seen the light on the windsock I could easily have flown into the ground."*

This incident highlights the importance of pre- and in-flight planning and decision-making in limiting exposure to risk. It is important for pilots to plan for contingencies prior to and throughout a flight, and to carry out those plans well before encountering difficulty. Reliance on ambient lighting at night rather than instruments for attitude reference is potentially hazardous due to the increased risk of pilot susceptibility to loss of visual cues, visual illusions or, in extreme cases, disorientation. Furthermore, remote areas with limited or nil ground lighting provide limited visual reference cues for pilots, which can increase the risks of hazardous approaches or flight into terrain or obstacles. The pilot's account contains references to limited visual cues and point light sources. Approaching and landing uphill in near darkness, with surrounding trees and rising terrain may lead to a visual "black hole effect" illusion which can easily lead to controlled flight into terrain or a very late transition from approach into flare. In this case, the pilot was extremely lucky, as upon entering an area of reduced visual cues, sighting the windsock allowed the rate of descent to be perceived and then arrested. The risk of experiencing spatial disorientation and a loss of control if visual cues are lost is also high, measuring from between 60 to 178 seconds from the time of entering the area of low visibility.

The following casual factors were identified:

- Inadequate flight preparation. The pilot did not have access to ERSA that would have provided the PAL frequency to enable a safe landing at the nearby regional airport.
- Placing priority on completing the task and getting home, rather than making a safe landing while lighting conditions were good.
- Approach in hazardous low light into environment with sloping runway and lack of visual cues, with higher risk of susceptibility to visual illusions.
- It is also possible the pilot's decision making was affected by fatigue and stress.**Note:** GFA Operational Regulation 6.1 states: *"A sailplane shall be flown under Day Visual Flight Rules (VFR)."* 'Day' is defined as the period between the beginning of morning civil twilight (first light) and the end of evening civil twilight (last light). Many smartphone weather apps will give sunrise and sunset times for various locations, which can by adjusted by about 20 minutes for last light. Safe light levels are also affected by latitude and cloud coverage.

For further information on the hazards of night flying and visual illusions, refer to:
ATSB Aviation Research and Analysis Report B2007/0063 'An overview of spatial disorientation as factor in aviation accidents and incidents' https://www.atsb.gov.au/publications/2007/b20070063.aspx; and
CASA Advisory Circular, AC 61-05 'Night VFR rating'. Refer also to AIP GEN 2.7 'First Light and Last Light Computations' https://www.casa.gov.au/files/061c05pdf.

Date	27-Dec-2018	Region		SAGA		SOAR Report Nbr		S-1478	
Level 1	Operational		Level 2	Miscellaneous		Level 3		Other Miscellaneous	
A/C Model 1		Piper PA-25-235			A/C Model 2				
Injury	Nil	Damage	Nil	Phase	Launch		PIC Age	66	

During aerotow operations the tow pilot noticed a knot in the rope about half a metre from the TOST rings on the glider end. The tow pilot observed the wing runner pick the rope up and believed they had identified and undone the knot. About three launches later, the pilot of the glider ready for launch noted the knot was still in the rope and refused to launch until it had been removed. As the knot was tight, the problem was rectified by shortening the rope and retying the TOST rings using a standard bowline. The remaining

launches proceeded as normal. The reporter noted that the Club had adopted the practice of splicing the TOST rings and using a protective reinforced plastic hose over the first 600mm of the rope to prevent knots occurring. On this day the protective hose had moved up the rope, thereby allowing the end to become knotted. The ground crew involved were reminded of their responsibilities an article on the subject was circulated in the E-News bulletin. It is not usually acceptable to do an aerotow launch using a towrope that has a knot in it. All knots reduce the breaking strength of rope by forming a bend that distributes the load on the fibres unequally. Tow pilots are responsible for an initial check on the rope they are using, and launch crew hooking on the rope to the glider have a responsibility for checking the rope for chaffing, knots and the condition of the rings and weak links. If any irregularities are found, they should be remedied.

Date	27-Dec-2018	Region	GQ		SOAR Report Nbr		S-1402		
Level 1	Operational		Level 2	Runway Events		Level 3	Runway excursion		
A/C Model 1		Sundancer D13/15			A/C Model 2				
Injury	Minor	Damage	Substantial	Phase	Landing		PIC Age	69	

The command pilot had flown from Grafton to Tyagarah airfield to undertake their Annual Flight Review with their CFI. The command pilot was accompanied by an experienced pilot from the Grafton Gliding Club. When the pilot arrived at the Tyagarah airfield, they observed a Cesena Caravan operated by the local skydiving operation landing on runway 23. The command pilot did not identify the Cesena Caravan was landing downwind with a 10 to 15 knot tailwind (the skydiving aircraft land on RWY 23 regardless of wind direction to facilitate taxiing to their operation and can reverse their props to come to a quick stop). The command pilot turned final with the engine idling and the aircraft overshot the aiming point. Witnesses at the gliding clubhouse situated 250 metres from the threshold of the 1100 metre runway saw the motor glider going past the clubhouse quite fast and high. As the end of the runway was fast approaching, the command pilot, fixated on landing, slammed the aircraft onto the ground. Both the right-hand undercarriage and nosewheel collapsed, the propeller struck the ground and the aircraft came to a stop in a cloud of dust about 100 metres from the end of the runway. The Club CFI noted the following:

- The selected approach direction exposed the aircraft to a tailwind that significantly increased the groundspeed on final approach and resulted in insufficient landing distance available.
- The command pilot should not have blindly followed the Cessna Caravan but instead assessed the conditions for themselves. There were many clues to wind direction such as the wind sock, whitecaps on the ocean and drift on base. If in doubt about the active runway the command pilot could have communicated with the pilot of the Cessna Caravan.
- Another causal factor was the pilot's decision to continue with the landing when a go-around could have been undertaken (the engine was still running). The command pilot became fixated on landing and did not properly evaluate the developing situation.
- Although the second pilot saw the situation developing, they did not speak up.

It is important that pilots obtain all relevant information about the local conditions, including wind direction and strength, prior to commencing an approach to an aerodrome. While a windsock is not required for all aircraft landing areas, it provides a simple visual means for pilots to assess the wind direction and strength. This accident highlights the importance of conducting a standard approach to an aerodrome. This enables assessment of the environmental and runway conditions and allows checks to be completed in a predictable manner. When approaching a non-controlled aerodrome, pilots are required to join a leg of the circuit and to establish the aircraft on final approach at a safe altitude and at the calculated approach speed, having regard to the local conditions. If a safe landing cannot be assured when flying under power, a pilot of a should initiate a go-around early, and ensure the aircraft is configured in accordance with the operating handbook.

Date	27-Dec-2018	Region	NSWGA	SOAR Report Nbr	S-1405		
Level 1	Operational	Level 2	Runway Events	Level 3	Depart/App/Land wrong runway		
A/C Model 1	Pilatus B4-PC11AF	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	55

The pilot launched from RWY 36 grass of this regional airport and released from aerotow at 2000'. After a period thermalling in the vicinity of the aerodrome, the pilot positioned the aircraft upwind of the airfield to join circuit. However, the pilot lost situational awareness and mistakenly identified RWY 05 as the active runway. The pilot carried out their pre-landing checks on downwind and made an uneventful landing on the uneven grass verge of RWY 05, stopping clear of gable markers and about 100 metres short of the PAPI visual approach guidance system, which is a sensitive and significant obstacle sited outside the sealed runway surface. On exiting the aircraft, the pilot pushed the aircraft clear. Because of the poor surface condition and obstacles, gliding operations are conducted from the main bitumen runway only. The pilot had recently qualified for their C certificate and was visiting this regional airport to attempt a Silver badge flight. Although the pilot had flown at this airport as an RA-Aus pilot some years ago, they had not flown a glider there nor did they seek a briefing on the local operations. As a consequence, the pilot was unaware of local Gliding Club's requirement to undertake either a dual check or an area familiarisation flight with a local safety pilot. The pilot relied on their prior experience, a written brief provided by the local gliding club showing the airfield layout and SOPs, and discussions with more experienced glider pilots who had flown there. As the pilot had flown gliders several times throughout the year at other gliding sites during their C certificate training, they were confident of their ability to operate at different sites. The pilot advised that they were aware of the position of the active runway after they launched. The pilot then found a thermal and attempted to gain height, but had significant difficulties staying in the thermal and became frustrated with their efforts. They decided to land but continued thinking about their thermalling experience. In this state the pilot misidentified RWY 05 as RWY 36 and continued with a circuit and landing on what they believed was RWY 36 grass. It was only when on short finals that the pilot realised their mistake. The pilot was not aware of the restrictions associated with the grassed areas of RWY 05 and landed clear of obstacles. The CFI assessed the pilot possibly experienced a form of target fixation while thermalling, lost situational awareness, and selected the wrong runway mainly due to their unfamiliarity with operations at this airport,

and not completely switching from a soaring pilot to a landing pilot before breaking off and joining circuit. The following day the pilot attended the local club's daily briefing and subsequently flew with an Instructor to become familiar with the airfield and surrounding ground features, and to work on thermalling technique. The CFI later flew with the pilot in difficult conditions on a local flight, and on two cross-country flights.

Date	28-Dec-2018	Region	NSWGA	SOAR Report Nbr		S-1521	
Level 1	Operational	Level 2	Runway Events	Level 3		Runway incursion	
A/C Model 1	Astir CS			A/C Model 2	Piper PA-25-235		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	68

A glider and car combination from a visiting gliding club operation taxied from the glider flight line across the runway in front of a tow plane established on final approach. The tow pilot applied power to climb and overfly the glider and landed further down the runway. Conditions at the time were blustery, with the wind gusting to 25 knots. About 25 minutes earlier a thermal had overturned a Pilatus glider tied down near the terminal apron (refer SOAR Rpt S-1403). As a consequence, the pilots of the visiting gliding club decided to tow their gliders back to the tie-down area to deal with the damaged Pilatus. In the course of doing this, the vehicle driver forgot to check the approach and make a radio call. The driver was counselled by the CFI of the local gliding club. Factors frequently associated with incidents of this nature involve inadequate communication, haste or lack of precaution, and distraction.

Date	28-Dec-2018	Region	NSWGA	SOAR Report Nbr		S-1418	
Level 1	Airspace	Level 2	Aircraft Separation	Level 3		Near collision	
A/C Model 1	Astir CS			A/C Model 2	not known		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	74

After returning to the home airfield after a cross-country flight, the pilot decided to extend the flight by flying to a town about 12NMs east and then return. When the glider was about 3NMs from the town and at an altitude of 9,200ft, the Flarm alerted the pilot to the presence of another glider about 1km away. The pilot stated: *"The range then dropped to 0.8 and 0.7 kms on successive flashes. At this stage I had my eyes pretty seriously out of the cockpit and did not notice the indicated direction or relative height of the other glider. As I could not see anything, I decided to turn in the hope that my plan view would be more visible to the other pilot. As I completed a full 360-degree turn, the FLARM flashed 0.0 and almost immediately the other glider passed by on a reciprocal heading to mine. I would estimate that he was less than one wingspan clear of me, slightly above and slightly off to my right. I could not see the pilot as I was looking up at his underside"*. The identity of the other glider, a single-seater with winglets, could not be recalled by the pilot. The pilot was monitoring the home airfield CTAF and reported that they saw the other glider 15 minutes later heading east about 2,000ft lower. Pilots have a responsibility to avoid collisions between aircraft and see-and-avoid is the primary means of preventing collisions between VFR aircraft. This occurrence highlights the difficulties of the see-and-avoid principle, even when the pilot is given information about (or alerted to) the other aircraft's position. When pilots are alerted to the location of another aircraft, it should improve their ability to sight the other aircraft. However, many factors can affect a pilot's ability to sight another aircraft and, in this case, despite a good lookout in the direction of the threat, the pilot did not sight the other aircraft until it was too late. For further information, refer to the ATSB publication'Limitations of the See-and-Avoid Principle'. https://www.atsb.gov.au/publications/1991/limit_see_avoid

Date	28-Dec-2018	Region	NSWGA	SOAR Report Nbr		S-1403	
Level 1	Environment	Level 2	Weather	Level 3		Other Weather Events	
A/C Model 1	Pilatus B4-PC11AF			A/C Model 2			

Injury	Nil	Damage	Write-off	Phase	Ground Ops	PIC Age	65

The Pilatus and three other gliders were deployed to this regional airport on 27 December for the Club's annual cross-country camp. The Pilatus was to be flown over this period by three 'C' Certificate qualified pilots seeking to achieve their Silver badge. On the day of the incident the glider was left tied down alone in the aircraft tie-down area, as the other gliders had been towed to the launch point. The pilot assigned to fly it was at the flight line preparing to undertake a familiarisation flight with an instructor. Conditions at the time were quite strong, with the wind blowing at 15 knots and gusting to 20 knots. A number of strong dust devils had been observed in the area. The glider was tied down at three points (the wings and the tail), with each rope secured by two crossed 40cm stainless steel round pegs of about 8mm diameter. The dust devil passed directly over the glider, raising the nose and tearing the wings and tail tie-down pegs out of the ground. The aircraft was lifted about 15 to 20 metres into the air and dumped on its back *(the photograph below was taken shortly afterwards, and the dust devil can be seen in the top right)*. The aircraft was substantially damaged (possibly written-off). Investigation identified inadequate tie down arrangements (including tying down at the nose), and a possible degree of complacency during deployment planning. The club is now using star pickets, which have a larger bearing surface, with rope or straps to secure club aircraft when tied down unattended.

Level 1	Level 2	Level 3	Definition
Airspace	Aircraft Separation	Collision	An aircraft collides with another aircraft either airborne or on the runway strip, or a vehicle or person on the runway strip.
Airspace	Aircraft Separation	Issues	Airspace - Aircraft separation occurrences not specifically covered elsewhere.
Airspace	Aircraft Separation	Near collision	An aircraft comes into such close proximity with another aircraft either airborne or on the runway strip, or a vehicle or person on the runway strip, where immediate evasive action was required or should have been taken. (a) En-route (b) Thermalling (c) Circuit
Airspace	Airspace Infringement	Airspace Infringement	Where there is an unauthorised entry of an aircraft into airspace for which a clearance is required.
Airspace	Other	Other Airspace Events	Airspace occurrences not specifically covered elsewhere.
Consequential Events	Ditching	Ditching	When an aircraft is forced to land on water.
Consequential Events	Diversion / Return	Diversion / Return	When an aircraft does not continue to its intended destination, but either returns to the departure aerodrome or lands at an alternative aerodrome.
Consequential Events	Emergency / Precautionary descent	Emergency / Precautionary descent	**Emergency descent** - Circumstances that require the flight crew to initiate an immediate high rate descent to ensure the continued safety of the aircraft and its occupants.
Consequential Events	Emergency evacuation	Emergency evacuation	When crew and/or passengers vacate an aircraft in situations other than normal and usually under the direction of the operational crew.
Consequential Events	Forced / Precautionary landing	Forced / Precautionary landing	**Forced landing** – Circumstances under which an aircraft can no longer sustain normal flight and must land regardless of the terrain. **Precautionary landing** - A landing made as a precaution when, in the judgement of flight crew, a hazard exists with continued flight.
Consequential Events	Low Circuit	Low Circuit	Any occasion where a pilot flies a Low Circuit that was potentially hazardous.
Consequential Events	Other	Other Consequential Events	Consequential events not specifically covered elsewhere.
Environment	Weather	Icing	Any icing issue that affects the performance of an aircraft.
Environment	Weather	Lightning strike	The aircraft is struck by lightning.
Environment	Weather	Other Weather Events	Weather occurrences not specifically covered elsewhere.
Environment	Weather	Turbulence/Windshear/Microburst	Aircraft performance and/or characteristics are affected by turbulence, windshear or a microburst.
Environment	Weather	Unforecast weather	Operations affected by weather conditions that were not forecast or not considered by the flight crew.
Environment	Wildlife	Animal strike	A collision between an aircraft and an animal.
Environment	Wildlife	Birdstrike	A collision between an aircraft and a bird.
Environment	Wildlife	Other Wildlife Events	Wildlife related occurrences not specifically covered elsewhere.
Operational	Aircraft Control	Airframe overspeed	The airspeed limit has been exceeded for the current aircraft configuration as published in the aircraft manual.
Operational	Aircraft Control	Control issues	The flight crew encounter minor aircraft control difficulties while airborne or on the ground.
Operational	Aircraft Control	Hard landing	Damage occurs during the landing.
Operational	Aircraft Control	Incorrect configuration	An aircraft system is incorrectly set for the current and/or intended phase of flight.
Operational	Aircraft Control	In-flight break-up	The aircraft sustained an airborne structural failure or damage to the airframe, to the extent that continued flight is no longer possible.
Operational	Aircraft Control	Loss of control	When control of the aircraft is lost or there are significant difficulties controlling the aircraft either airborne or on the ground.
Operational	Aircraft Control	Other Control Issues	Aircraft control occurrences not specifically covered elsewhere.
Operational	Aircraft Control	Pilot Induced Oscillations	Any PIO occurrence occassioning damage.
Operational	Aircraft Control	Stall warnings	Any cockpit warning or alert that indicates the aircraft is approaching an aerodynamic stall.
Operational	Aircraft Control	Wheels up landing	An aircraft contacts the intended landing area with the landing gear retracted.

Operational	Aircraft Loading	Loading related	The incorrect loading of an aircraft that has the potential to adversely affect any of the following: a) the aircraft's weight; b) the aircraft's balance; c) the aircraft's structural integrity; d) the aircraft's performance; e) the aircraft's flight characteristics.
Operational	Aircraft Loading	Other Loading Issues	Aircraft loading occurrences not specifically covered elsewhere.
Operational	Airframe	Doors/Canopies	When a door or canopy, or its component parts, has failed or exhibited damage.
Operational	Airframe	Furnishings & fittings	An internal aircraft furnishing or fitting, including its component parts, has failed or exhibited damage.
Operational	Airframe	Fuselage/Wings/Empennage	Damage to the fuselage, wings, or empennage not caused through collision or ground contact.
Operational	Airframe	Landing gear/Indication	When the landing gear or its component parts (including indications), has failed or exhibited damage.
Operational	Airframe	Objects falling from aircraft	Objects inadvertently falling from or detaching from an aircraft.
Operational	Airframe	Other Airframe Issues	Technical - Airframe occurrences not specifically covered elsewhere.
Operational	Airframe	Windows	A window or a component part has failed or exhibited damage.
Operational	Communications	Other Communications Issues	Communications occurrences not specifically covered elsewhere.
Operational	Communications	Transponder related	The incorrect setting of a code and/or usage of transponder equipment.
Operational	Crew and Cabin Safety	Cabin injuries	A cabin crew member or passenger has suffered an illness or injury.
Operational	Crew and Cabin Safety	Flight crew incapacitation	A Flight Crew member is restricted to nil or limited duties as a result of illness or injury.
Operational	Crew and Cabin Safety	Inter-crew communications	Relates specifically to a loss, or breakdown, of communication between flight crew or associated ground staff.
Operational	Crew and Cabin Safety	Other Crew and Cabin Safety Issues	Cabin safety occurrences not specifically covered elsewhere.
Operational	Crew and Cabin Safety	Passenger related	Where the actions of a passenger adversely or potentially affects the safety of the aircraft.
Operational	Crew and Cabin Safety	Unrestrained objects	When objects are not appropriately restrained for the aircraft operation or phase of flight.
Operational	Fire Fumes and Smoke	Fire	Any fire that has been detected and confirmed in relation to an aircraft operation.
Operational	Fire Fumes and Smoke	Fumes	When abnormal fumes or smells are reported on board the aircraft.
Operational	Fire Fumes and Smoke	Smoke	When smoke is reported to be emanating from: a) inside the aircraft; or b) an external component of the aircraft.
Operational	Flight Preparation/Navigation	Aircraft preparation	Errors or omissions during the planning and/or pre-flight phase that affect or may affect aircraft safety in relation to: a) the aircraft's weight; b) the aircraft's balance; c) the aircraft's structural integrity; d) the aircraft's performance; e) the aircraft's flight characteristics.
Operational	Flight Preparation/Navigation	Lost / Unsure of position	When flight crew are uncertain of the aircraft's position and/or request assistance from an external source.
Operational	Flight Preparation/Navigation	Other Flight Preparation/Navigation Issues	Navigation - Flight planning occurrences not specifically covered elsewhere.
Operational	Flight Preparation/Navigation	VFR into IMC	An aircraft operating under the Visual Flight Rules enters Instrument Meteorological Conditions.
Operational	Fuel Related	Contamination	When the presence of a foreign substance is found in fuel.
Operational	Fuel Related	Exhaustion	When the aircraft has become completely devoid of useable fuel.
Operational	Fuel Related	Leaking or Venting	Relates specifically to the unplanned loss of fuel from a fuel tank or fuel system.
Operational	Fuel Related	Low fuel	The aircraft's supply of fuel becoming so low (whether or not the result of a technical issue) that the safety of the aircraft is compromised.
Operational	Fuel Related	Other Fuel Related Issues	Fuel related occurrences not specifically covered elsewhere.

Operational	Fuel Related	Starvation	When the fuel supply to the engine(s) is interrupted, but there is still usable fuel on board the aircraft.
Operational	Ground Operations	Foreign Object Damage/Debris	Any loose objects on an aerodrome have caused, or have the potential to cause, damage to an aircraft.
Operational	Ground Operations	Ground handling	Any ground handling and aircraft servicing that caused, or has the potential to cause injury or damage to a stationary aircraft.
Operational	Ground Operations	Jet blast/Prop/Rotor wash	Any air disturbance from a ground-running aircraft propeller, rotor or jet engine that has caused, or has the potential to cause, injury or damage to property.
Operational	Ground Operations	Other Ground Ops Issues	Ground operation occurrences not specifically covered elsewhere.
Operational	Ground Operations	Taxiing collision/near collision	An aircraft collides, or has a near collision, with another aircraft, terrain, person or object on the ground or on water during taxi.
Operational	Miscellaneous	Missing aircraft	The aircraft is reported as missing.
Operational	Miscellaneous	Other Miscellaneous	Miscellaneous occurrences not specifically covered elsewhere in this manual.
Operational	Miscellaneous	Rope break/Weak link failure	Towplane separation incident necessitating a modified circuit.
Operational	Miscellaneous	Rope/Rings airframe strike	Airframe struck by launch cable or rings. Includes entanglemt with rope.
Operational	Miscellaneous	Warning devices	Situations in which an aural or visual aircraft warning device activates to alert the flight crew to a situation requiring immediate or prompt corrective action.
Operational	Miscellaneous	Winch Performance Issue	Any incident caused by poor winch performance, such as power failure, or mechanical reasosn.
Operational	Runway Events	Depart/App/Land wrong runway	An aircraft that: a) takes off b) lands, c) attempts to land from final approach d) operates in the circuit at, to or from an area other than that authorised or intended for landing or departure
Operational	Runway Events	Other Runway Events	Runway event occurrences not specifically covered elsewhere.
Operational	Runway Events	Runway excursion	An aircraft that veers off the side of the runway or overruns the runway threshold.
Operational	Runway Events	Runway incursion	The incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft.
Operational	Runway Events	Runway undershoot	Any aircraft attempting a landing and touches down prior to the threshold.
Operational	Terrain Collisions	Collision with terrain	Any collision between an airborne aircraft and the ground, water or an object, where the flight crew were aware of the terrain prior to the collision.
Operational	Terrain Collisions	Controlled flight into terrain (CFIT)	When a serviceable aircraft, under flight crew control, is inadvertently flown into terrain, obstacles or water without either sufficient or timely awareness by the flight crew to prevent the collision.
Operational	Terrain Collisions	Ground strike	When part of the aircraft drags on, or strikes, the ground or water.
Operational	Terrain Collisions	Wirestrike	When an aircraft strikes a wire, such as a powerline, telephone wire, or guy wire, during normal operations.
Technical	Powerplant/Propulsion	Abnormal Engine Indications	A visual or cockpit warning that indicates an engine is malfunctioning or operating outside normal parameters.
Technical	Powerplant/Propulsion	Engine failure or malfunction	An engine malfunction that results in a total engine failure, a loss of engine power or is rough running.
Technical	Powerplant/Propulsion	Other Powerplant/Propulsion Issues	Powerplant / Propulsion occurrences not specifically covered elsewhere.
Technical	Powerplant/Propulsion	Propeller malfunction	The failure or malfunction of an aircraft propeller or its associated components.
Technical	Powerplant/Propulsion	Transmission & Gearboxes	The failure or malfunction of an aircraft transmission/gearbox and/or its associated components.

Technical	Systems	Avionics/Flight instruments	The partial or complete loss of normal functioning of the avionics system or its components.
Technical	Systems	Electrical	The partial or complete loss of normal functioning of the aircraft electrical system.
Technical	Systems	Flight controls	The partial or complete loss of normal functioning of a primary or secondary flight control system.
Technical	Systems	Fuel	The partial or complete loss of normal functioning of the fuel system.
Technical	Systems	Hydraulic	The partial or complete loss of the hydraulic system.
Technical	Systems	Other Systems Issues	Technical - Systems occurrences not specifically covered elsewhere.