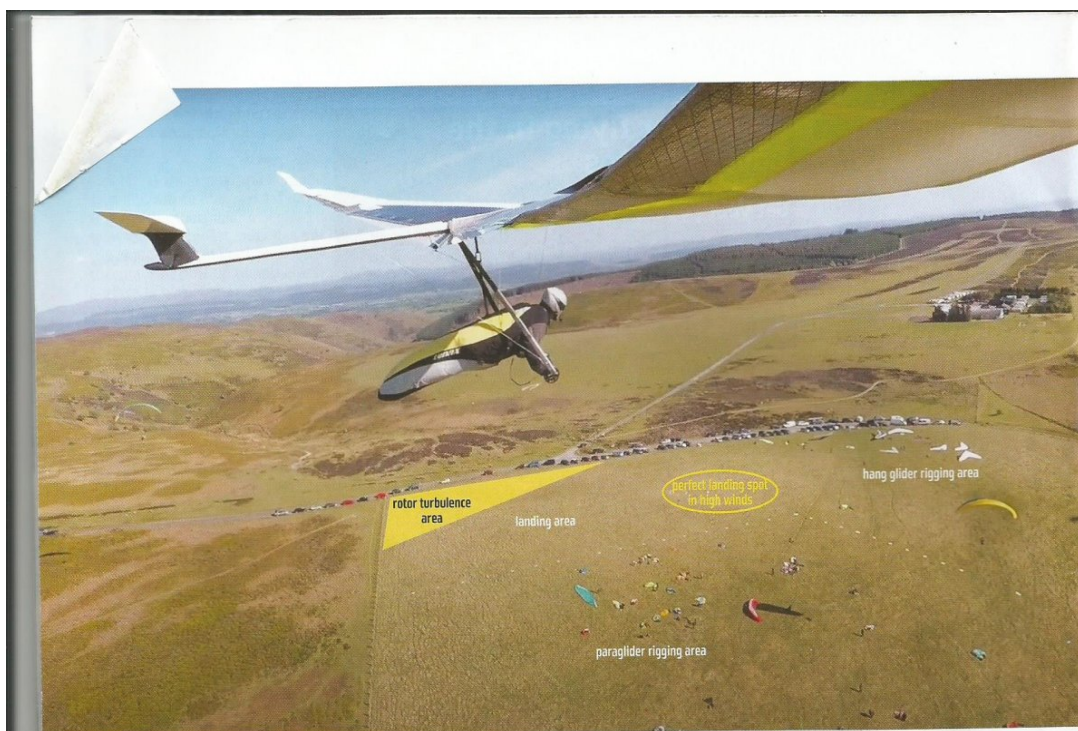


Definitive guide to top landing on the Long Mynd for paragliders, hang gliders and rigid wings.

Skywings Feb 2021 issue – Steve Young



Avoiding the turbulence!

STEVE YOUNG OUTLINES THE TOP-LANDING CONUNDRUM

Firstly I would like to emphasise that this is not a 'how to' guide to top land, it is a discussion on top landing and my observations about how one might go about it and what to avoid. If you are unsure about top landing and have low airtime, contact your BHPA coach and discuss your local hill and your experience with them.

In this article I have used the example of the Long Mynd as I know it well and it is well organised and run. However the principles I want to discuss will transfer to many hills where there is a possibility to top land.

When starting to plan a top landing, many things go through a pilot's head in a few seconds. These may not be so obvious to the less experienced pilot. The primary ones are:

1. Wind direction. Is it slightly off to one side or the other? Choose a direction to come in that will minimise the final turn, and also avoid obstacles and overflying hazards like other gliders, people or parked cars.

2. The shape of the hill. So you don't land down-slope.

3. Wind speed. This is what I would like to concentrate on. At the Mynd we have witnessed a fair few 'arrivals', on all types of aircraft, as the wind speed increases.

Paragliders, hang gliders and rigid wings all have the same issue when deciding at what height to start your approach. You don't want to come in too high as you will be stoozing around in an area of increased wind speed caused by the venturi effect over the hill, and might overfly the hill or be blown back. And you don't want to come in too low as it involves a high-speed, possibly high-banked turn at low altitude.

All of this is complicated by the shape of the hill. Although I will concentrate on the Long Mynd I think it is typical of many top landing areas where the shape of the hill is curved almost like an aerofoil (see Fig. 1).

In light winds up to 10 mph there is no issue as the air simply follows the shape of the top of the hill and there is very little turbulence. However, as the wind speed gets near 15 mph and above, on the Mynd the character of the airflow starts to change. This is easy to detect at 'Upright Corner'. Go to the rear of the top landing field on a strong wind day and you will feel two effects. Firstly the wind speed will be greatly reduced, and secondly you will feel a very gusty component with rapid changes in wind speed.

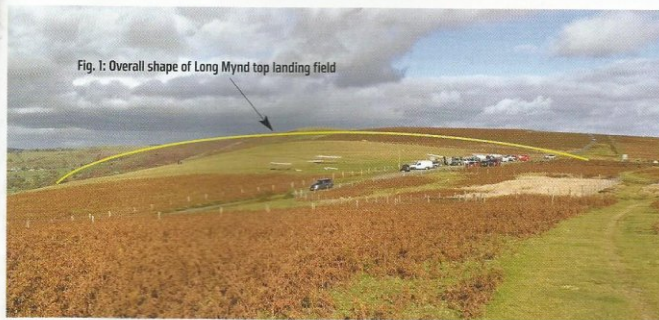


Fig. 1: Overall shape of Long Mynd top landing field

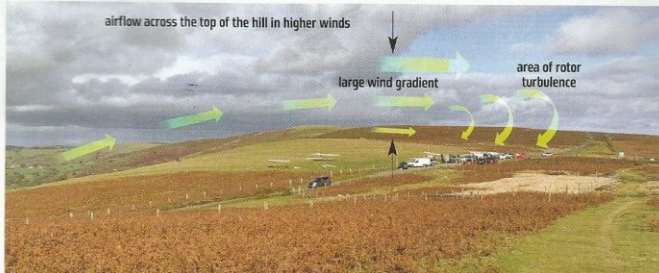


Fig. 2: In higher wind speeds the temptation is to make a lower landing approach. However this involves a large wind gradient across the wing if the final turn is too tight, particularly on large wingspans

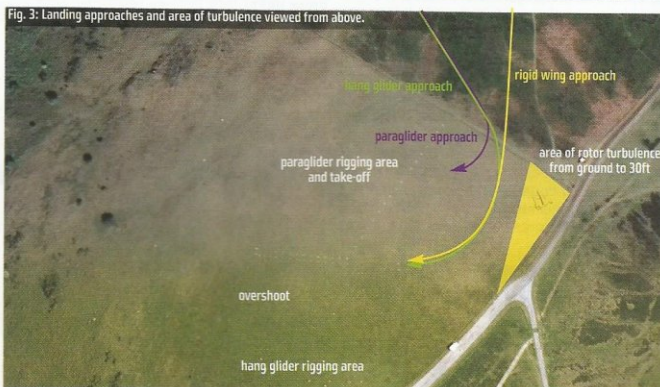


Fig. 3: Landing approaches and area of turbulence viewed from above.

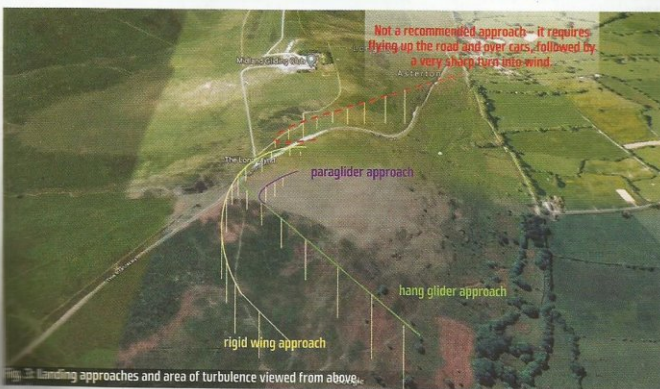


Fig. 4: Landing approaches and area of turbulence viewed from above.

This is due to the airflow breaking away from the surface of the hill. The mass of air has been rising up the front of the hill at about 40 degrees to the horizontal. As it goes over the crest of the hill it leaves the surface and creates turbulence (see Fig. 2). From experience I believe this rotor and turbulence can get up to about 30ft above the rear corner of the field, reducing as you move forward towards the crest of the field. The area north of the big orange windsock in the picture is the perfect landing spot.

All three types of aircraft can get caught out by this. Paragliders will often not fly as the windspeed gets up to 15 mph, but we all know that the wind can increase rapidly and catch us out. As you come in to land on a paraglider you have the advantage that the wing is further away from the ground and the turbulence, but a landing approach too far back can still catch you out. On a number of occasions I have seen paragliders land behind the road and in the turbulence.

Hang gliders and rigid wings must come in fast in these conditions to cut through the wind-gradient, and this is where you need to be very aware of your positioning. Too high and you could overshoot, although this is really no problem as long as the overshoot area is clear. Too low and your wing is in the rotor and turbulence as you are making a turn. Also the lower wing is in slower-moving air due to the wind gradient, giving less lift and making it more difficult to get the glider to turn into wind.

I believe it is better to make a longer approach when the wind speed is higher, closer to the rigid wing approach (see Fig. 3).

I began to think about this as I was planning my first top landing after buying a rigid wing, but it works for all our aircraft. If you make a longer approach you can position yourself above and in front of the turbulence at the corner of the field, and not have to put on too much bank to get into wind. Keep your wing nearly horizontal and aim for the area just behind the crest of the hill (see Fig. 4).

Fig. 4 also shows the southern approach to the top landing field. You can see how, using this approach, you are flying up the road and over cars before making a very tight turn into wind. It gives very few options if there is a problem or you hit sink.

I have based this analysis on the Long Mynd but I know of many top landing sites, both in this country and abroad, where the hill is a very similar shape and you will have the same issues.

If you are flying on a stronger wind day where there is a top landing area, just walk around all of the field holding a streamer, concentrating on the wind speed and direction. You may be very surprised by what you discover. It may save you money ... and/or prevent something worse!