

BGA GLIDING STRIP CRITERIA

This guide aims to identify some basic criteria for an efficient gliding operating strip. Local hazards must be taken into consideration and cannot be specifically addressed here.

Gliders are designed to operate from any reasonably flat and solid surface, eg well drained short grass. Having completed a launch, a glider descends at around 200 feet per minute (fpm). Glider pilots use thermals and other sources of air that are rising faster than the gliders natural rate of descent to climb and remain airborne for extended periods of time. Soaring is a fundamentally important aspect of the sport. Gliders fly circuits and approaches that are similar to those flown by other air sport aircraft. Unpowered gliders cannot taxi. 'Going around' ie overshooting is only an option (and sometimes necessary) where excessive energy is acquired on approach to the airfield.

Launch methods

Gliders are usually launched by;

- Winch
- Aerotow
- Self-launch
- Bungee (this method of launch is limited to hill-top sites and is not discussed here)

Winch

A purpose designed winch reels in steel or fibre cable to provide forward motion for the glider. The glider pilot controls the flightpath of the glider to optimise the launch following which he or she releases from the cable. The height achieved is limited by the length of the launching strip. A 1500 metre strip will normally result in a 1500 feet high launch if launched into the wind. The strip needs to be wide enough to accommodate a landing glider in the event of a failed launch. There needs to be adequate clear ground to accommodate the cable its drogue parachute as it falls after the launch.

A training glider will glide at a descent rate of around 200 fpm. Bearing in mind that a glider circuit starts at about 700 feet, a 1000' winch launch does not provide a reasonable amount of training time. Most aero-tow launches are to around 2000' above ground level.

Aerotow

An appropriately certified aeroplane tows the glider. The glider pilot stays in position behind the towing aeroplane until the desired height/position has been reached and then releases. The relationship between the available aeroplane towing acceleration and the length of the available launching strip are important. It is clearly undesirable if the launching strip is too short for the available acceleration. The strip needs to be wide enough to accommodate a landing aeroplane and/or glider in the event of a failed launch. A 500-metre hard strip may be theoretically manageable for a powerful aeroplane towing an average rather than heavily loaded glider.

However, a critical issue is take-off and climb to clear obstacles with real world factors (eg wet grass, some slope, and CAA recommended safety factor) applied. Here are two examples;

Tug take-off on grass with a climb to clear a person or persons (with typical two-seat training glider)

Take off distance on grass (180m) x Wet Grass Factor (1.30) x 2% Uphill Slope Factor (1.20) x Soft Ground Factor (1.25) x ASK21 (2.0) x Safety Factor (1.33)

= a safe take-off distance of 860m

Tug take-off on tarmac with a climb to clear a person or persons (with typical two-seat training glider)

Take off distance on tarmac (150m) x 2% Uphill Slope Factor (1.20) x ASK21 (2.0) x Safety Factor (1.33)

= a safe take-off distance of 480m

Aeroplane pilots acting as towing pilots are encouraged to consider several variables before carrying out aero towing. As with most flying, the more runway in front on take-off, the better.

Self-launch

Some gliders have self-launch capability supplied by an integrally mounted power-plant and retractable propeller. The power-plant is shut down after launch and the propeller retracted. In that configuration they are indistinguishable from other gliders. The required launching strip is as required for a 'normal' aerotow launching strip.

Landing

Gliders and towing aircraft need somewhere to land and park. It is convention at most gliding sites to ensure that a landing glider can, if it becomes necessary or by accident, pivot around a wing tip and 'ground loop' resulting in the glider pointing 90 degrees or even 180 degrees to its landing track. This means the landing strip should ideally be at least three wing spans wide. Most gliders have a wingspan of between 15 and 20 metres. Therefore, the minimum strip width is 60 metres. 100 metres is comfortable as it can allow for a normal situation where a glider lands and manoeuvres to one side while another glider lands on the strip. It should be noted that many clubs routinely experience multiple gliders landing within seconds of each other.

Safeguarding

There is clear need to ensure safe and unobstructed arrival and departure routes for aircraft using a runway or strip in accordance with Civil Aviation Authority standards. CAA policy guidance is that unofficial safeguarding is acceptable for unlicensed airfields.

Summary

A glider operating area needs to accommodate launching and landing operations, as well as any known training or contingency situations, eg practice or real launch failures.

The criteria can be broadly summarised as;

1. A strip of flat ground that is not prone to waterlogging, is generally aligned with the prevailing wind direction, can result in safe launches from which gliders can soar in rising air, and is as long as reasonably possible where aero-towing, but ideally at least 1200-1500 metres in length where winch launching or 900 metres when aero-towing, and at least 100m wide.
2. Where concurrent winch launching and aerotowing takes place, the strip needs to be wide enough to accommodate the additional activity.
3. An area at each end of the strip that is large enough to manoeuvre and accommodate parked aircraft and those waiting to launch without preventing aircraft from landing or taking off. The larger the gliding operation, the greater the area required.
4. No significant obstacles or hazards on approach at either end of the strip.
5. Additional space should be available on the airfield to park trailers and assemble gliders.
6. Access should be provided to in-use hangars and other facilities.

Where required, additional expert guidance can be sought from the BGA.

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CAA references that may be applicable:

CAP 793 - Safe Operating Practices at Unlicensed Aerodromes

CAP403 - Flying Displays and Special Events

CAP 393 - Article 164