MAY 2024

UK Civil Aviation Authority

STRIP
FLYING

SAFETY SENSE

SS12

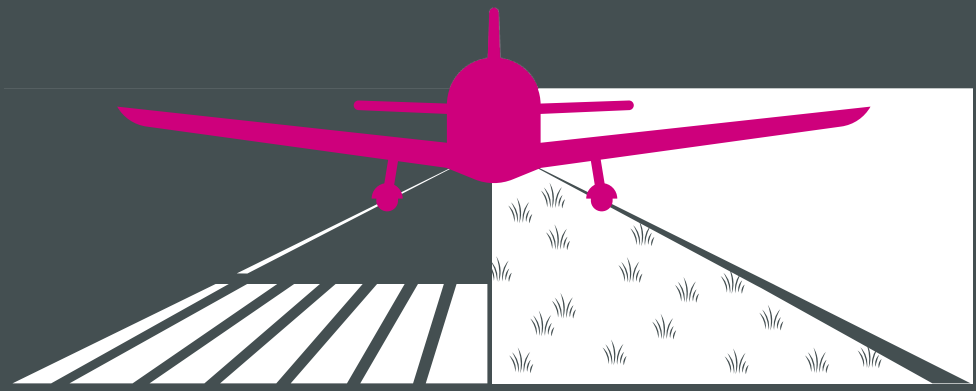
YOUR SAFETY SENSE LEAFLET FOR:
STRIP FLYING

The use of airstrips can bring new destinations and challenges to your flying. Some may also offer a location to keep your aircraft. However, many require special planning and consideration for their use.

Most strips will not be licensed or certified to any standard and may have hazardous features such as power lines or slopes that you would not find at a normal aerodrome.

This leaflet is intended to help you think about safety when planning a flight to a strip for the first time and provide general operational guidance.

Flying into strips is an ideal scenario to practice threat and error management. Most strips will have threats such as obstacles or poor surfaces, and are less tolerant of errors such as inaccurate flying speeds. Each one needs identifying, considering and mitigating as appropriate.



STRIP FLYING

Finding a suitable strip

You must make contact with the land owner or operator before visiting a strip – do not fly in unannounced. The details of some strips are available in commercial flight guides. Some are also marked on VFR charts, although this does not necessarily imply they are open to visitors. Many strips are found by word of mouth, so if you are interested in finding one in a particular area, ask around your local flying community. Consider the following issues:

Availability

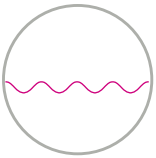
When is the **strip available for use?** Are there any times when it is used for livestock grazing or sports activities?

Useable length

The **useable surface length and distances for both takeoff and landing** must be established. Strips are usually less than 500m in length and a margin should be applied between the quoted Aeroplane Flight Manual (AFM) performance figures and what is safe in practice.

Obstacles

The **obstacle environment may require particular manoeuvring or techniques** to land in the available distance.



Surface condition

What is the surface condition, is it regularly inspected? Poor drainage during the winter can cause ruts and undulations to form, which then harden during the summer. Is the grass cut to an appropriate height?

Tell the operator of the strip what experience you have and what aeroplane you plan to use. They may be able to advise on past experience and any issues encountered. Be wary of anecdotal evidence that a particular aircraft is suitable for the strip – the exact model and pilot experience may not be known. Weather conditions, weight or any modifications will have a big influence on performance, so do your own assessment based on your aircraft and skill level.

Aircraft with tricycle landing gear tend to be vulnerable to 'digging in' on soft or rutted ground. In the right hands, 'taildraggers' tend to fare better, but directional control can be more challenging (particularly in crosswinds) and the aircraft may 'ground loop' or 'nose over' if landing and/or braking technique are not correct.

STRIP FLYING

Assessing the site

Having established that the strip is available and potentially suitable, you should conduct a more detailed assessment. The aim is to identify all hazards and threats to operating there. The strip operator should be able to provide most of the information you need, but it is a good idea to verify yourself.

A good option is to fly there with a pilot who is already familiar with the strip. If doing so you must be clear about who is pilot in command and who will fly the approach and landing – it may be best to observe the first landing. An instructor familiar with the strip would be ideal.

Surrounding environment

A large-scale Ordnance Survey (OS) map and/or satellite imagery may be useful to establish the **elevation of the strip** (non-aeronautical maps will normally be in metres) and to assess the **surrounding terrain, obstacles and any buildings** that will be a factor.

As well as obstacles for takeoff and landing, you should look at the environment within several miles – for example if approaching in conditions of low cloud, are there any **hills or masts that might be threats?** Review the VFR chart for surrounding airspace structures and hazards.

Conditions on the ground

A ground visit is recommended. Where a visit is not practical, you should only fly to a strip when completely satisfied as to the suitability and condition and have all relevant information for operating there.

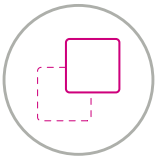
An OS map will give you an indication of length, but not the **exact usable length**. It may be possible to approximately measure the strip using online satellite pictures such as Google Earth. At a licensed aerodrome the runways and surrounding areas will have been surveyed to a high degree of accuracy – some strips may also have been surveyed, but it is not the norm.

The operator may have measured the strip using a surveyor's wheel or laser device. This should be reasonably accurate, however apply a conservative margin when considering real world aircraft performance. If in any doubt, verify the measurements using other means. If pacing a distance on foot, a typical human step is around 75 cm.

STRIP FLYING

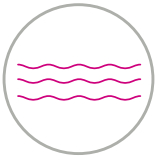
Assessing the site

Conditions on the ground



The surface condition should be assessed, along with any areas you will need to taxi on. **Establish which areas are suitable for the movement of aircraft and any that need avoiding.** Avoid parking the aircraft on soft ground since it will sink after a while. Note any public rights of way that may cross the strip.

One way of assessing the **condition of the surface** is to drive a car at approximately 30 mph and note the ride quality, if it is reasonably smooth, it should be suitable. Grass height should be not more than 30% of the diameter of the aircraft's main wheels and ideally shorter.



Consider drainage issues – does the strip become waterlogged easily? Many strips become unusable in the winter due to water and mud. If your aircraft has wheel spats or fairings, consider removing these since they can trap mud and other debris from grass surfaces.

Propellor wash when manoeuvring or conducting power checks – are there any buildings, other structures or animals that could be harmed? Areas with loose stones for example should be avoided, propwash will scatter them and may damage the propeller or anything else in the surrounding area. Always be aware of what is behind the aircraft when the engine is running.

Obstacles

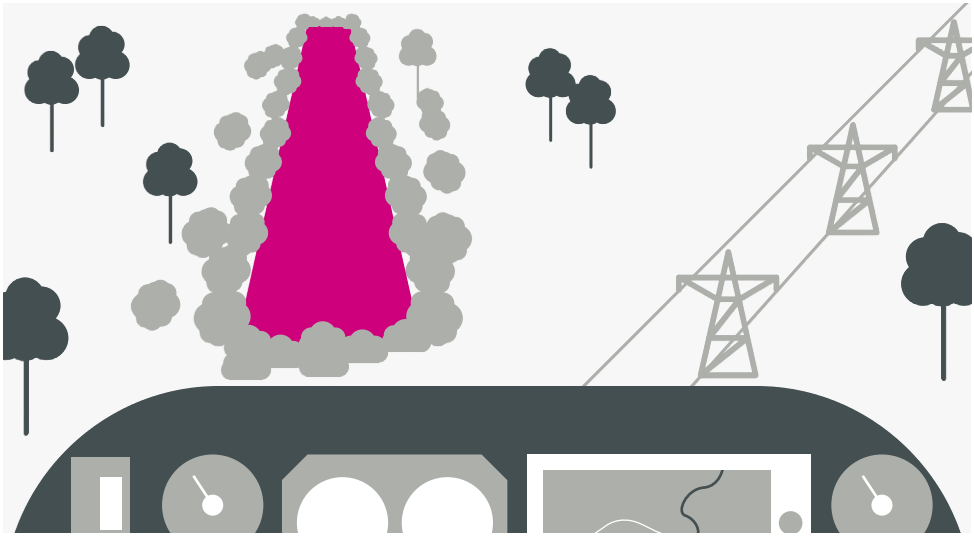
Obstacles such as trees, hedges or power lines may be a factor – the strip may be a certain length, but if you cannot touch down at the start or clear obstacles at the end, the usable distances are reduced.

The operator should know the approximate height of obstacles, but obviously trees and hedges can grow. If you are visiting on foot, a laser measuring device could be used to determine an approximate height.

The operator should be able to advise on the appropriate touchdown point and from this you can determine the stopping distance required. For takeoff, you must determine the last point from which you can safely lift off and still clear any obstacles.

STRIP FLYING

Approach challenges



A requirement for **late alignment with the landing surface** can be one of the most challenging factors in strip flying. Sometimes the layout of surrounding fields, slope, buildings and power lines can create a combination of steep descents and low-level manoeuvring that initially should only be attempted with a familiar and competent instructor.

Strips will often be oriented around whatever the constraints of local agriculture and topography will allow, rather than the prevailing winds. **Crosswinds and rotor turbulence from obstacles** may therefore be common.

Strips close to the sea may experience a 180° change in the wind direction during the morning. During the night the wind will typically blow from the land towards the sea (known as a 'land breeze') and then reverse during the day to a 'sea breeze'.

Other factors such as **low sun on the approach** can be an issue, so anticipate this by comparing the strip orientation, forecast wind direction and sunset at time of arrival.

On a hazy evening, forward visibility into the setting sun can drop to almost nothing, making low level manoeuvring and landing difficult.

You should **plan the go-around path from different positions**. If a late runway alignment is required, you should decide prior to alignment as to whether you are on speed and profile to successfully make the landing.

At some strips, crossing the threshold fast and high can leave you in a position where a low-level go-around may conflict with obstacles at the other end, so anticipate every scenario. **Always go around early if in any doubt about the approach.**

STRIP FLYING

Takeoff and landing technique

Most normal approaches in light aircraft are flown at an angle of around 4°, but some strips may require more than this to land in the available space.

Steep approaches and/or 'short-field' takeoffs and landings require different techniques from normal and should be practised with an instructor who is familiar with strip operations.

Most light aircraft will have a **short and/or soft field technique described in the Approved Flight Manual (AFM)**. Practising at a normal aerodrome is advisable since you can perfect the technique in an environment with more margin for error.

Achieving a particular stopping distance in the more forgiving environment of a normal aerodrome is not a replacement for **conducting takeoff and landing calculations applicable to the strip and conditions on the day.**

Also practice any unusual or compact circuit patterns **and low level maneuvering** that may be required.

Takeoff and landing performance

AFM figures should be used, but also review the table at the end of this leaflet for factors to be applied in different conditions. For older aircraft with less reliable or detailed performance data, practical experience becomes more important. Accurate performance figures require an **accurate weight and balance calculation** as well, this should be done for both takeoff and landing.

Remember performance figures in the AFM are produced in ideal conditions, using optimal pilot technique. If you have grass figures for your aircraft they will likely be for short and dry grass, which may not be representative of the strip.

Calculate the effect of carrying passengers on performance. It may be sensible to avoid taking passengers, particularly on a first visit. This will also remove a potential source of distraction.

You also need to know any slope factor on the surface. Knowing the **approximate elevation of each end of the surface will allow you to calculate a slope gradient – for example a 500 m strip with a 10 m change in elevation equals a 2% gradient.**

Due to terrain or obstacles, some strips require takeoff and landing to always be in opposite directions, or always in the same direction. These situations require special consideration of the winds and aircraft performance.

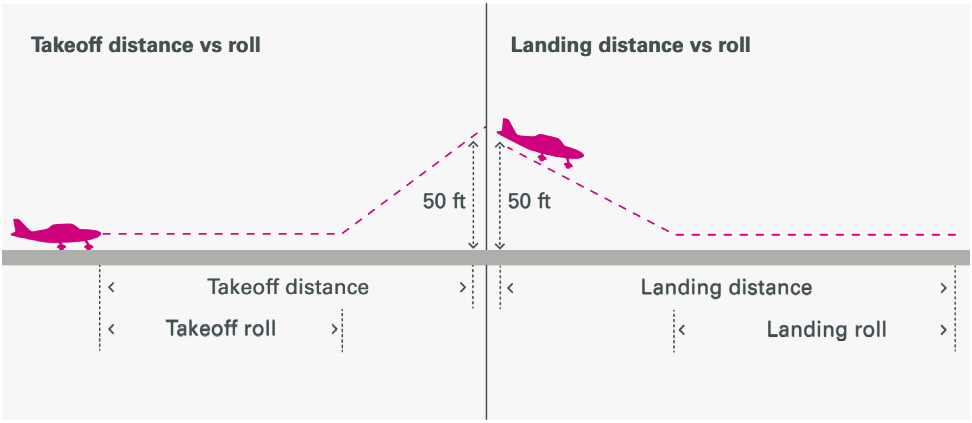
Mud or other debris stuck to the underside of the aircraft will add weight and drag, causing a reduction in performance, increase in stall speed and possible abnormal control behaviour. Clean the aircraft if necessary.

If the worst does happen and you feel that you are going to overrun the landing surface, switch off the magnetos and fuel mixture control and steer to avoid obstacles if possible.

STRIP FLYING

Takeoff and landing performance

Distances vs Ground roll



Strips will not have any formal **'declared distances'**, other than the overall length of usable surface.

When interpreting AFM data it is important to understand the difference between **takeoff or landing 'distance' and takeoff or landing 'roll' or 'run'.**

Takeoff distance refers to the horizontal distance required to complete the takeoff and climb to a certain height, as indicated in the AFM.

Landing distance is the horizontal distance from crossing the threshold at a certain height to the end of the landing. 50 ft is the normal height assumed, but some AFMs may quote a different figure such as 35 ft.

Takeoff or landing roll refers to the horizontal distance with the aircraft's wheels in contact with the ground and takes no account of obstacles at the start or end of the surface.

Using distance figures will allow some margin for obstacle clearance – you may not be able to touch down at the start of the landing surface and on takeoff there will likely be obstacles to consider.

For takeoff you should identify a point at which you will abort if a certain airspeed has not been achieved.

Speeds are critical

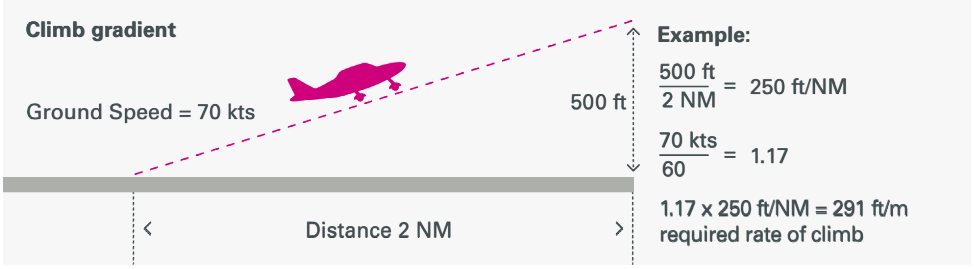
The speeds and approach profile need to be very accurately flown. Landing distance required is very sensitive to technique – crossing the threshold too high or a 10 kts increase over the optimal speed may go unnoticed at a normal aerodrome, but at a strip you may not stop in the available distance. A 10 kts tailwind can also add 20% to the landing distance required, so it is important to monitor the windsock during the approach.

A moving map device may be able to give an instant wind direction and ground speed but be aware that the wind can change considerably in the last few hundred feet of the approach. Some strips may not even have a windsock, in which case be very cautious about determining the surface wind.

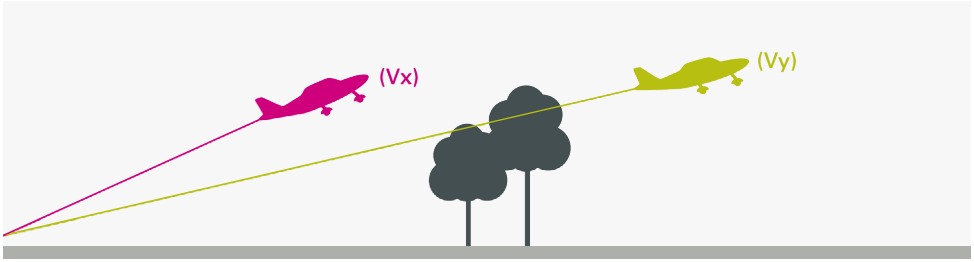
STRIP FLYING

Climb performance

If there is an **obstacle or terrain in the climb out**, for example a ridge or power lines, it may be useful to calculate the required gradient and rate of climb to clear it. This can be done if you know the height and distance of the obstacle from the takeoff surface. To calculate the rate of climb (in ft/m) required to achieve a known gradient, divide the aircraft's ground speed by 60 and then multiply the result by the required gradient in ft/NM.



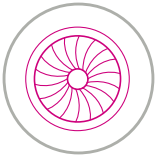
A cross reference table between ground speed, rate of climb and gradient in feet/NM is included at the end.



Know your **maximum angle of climb (Vx) and rate of climb speeds (Vy)**. For obstacle clearance you may need to fly for maximum angle rather than maximum rate, which means climbing in a shorter horizontal distance, even if it takes more time to gain the same height. The AFM may not quote a rate of climb figure for flight at Vx, so you may need to establish this from practical experience.

STRIP FLYING

Engine failures



You should **review the options in the event of an engine failure on takeoff.** The obstacle environment may require turning in a particular direction. Have a picture in your head of what the area in front of you will look like in the event of a low level engine failure.

Do not consider making a 'turn-back' manoeuvre – it is always safer to aim for a point in front of you or to the side. For twin engine aircraft, consider at what point you will continue the departure or close the throttles and land ahead.

Weather conditions

Determine the weather conditions under which it is safe to use a strip and do not commence the flight unless these will be met.

It may be that a particular strip is straightforward on a calm day but suffers from challenging low-level turbulence in higher winds.

Strips will not have a specific forecast or weather report, although the operator may provide an online weather data feed and/or webcam facility to monitor the strip. A picture will need to be built from the overall weather conditions and METARs/TAFs issued by nearby aerodromes.

Weather conditions can change or deviate from forecast, so have a plan if on arrival the conditions are not suitable for landing – for example will you return to the departure point or divert elsewhere?

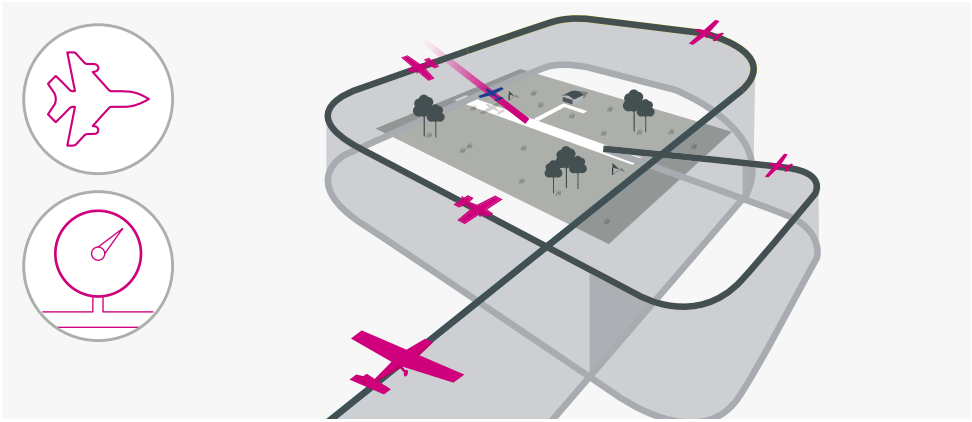
Noise

Some strips may be close to **residential areas or noise sensitive sites**, such as riding stables. Discuss any such considerations with the strip operator. Operators usually do their best to maintain good local relations and you should avoid doing anything to jeopardise this. Always fly in a considerate manner.

Strips will sometimes have local noise abatement procedures that involve late runway alignment or turns soon after takeoff. While you should observe these as best you can, it is important to prioritise control of the aircraft and obstacle clearance.

STRIP FLYING

Approaching the strip



Think about how you will approach the strip on the day

Many strips can be difficult to spot from the air, so ask the operator and/or familiar pilots if there are any local landmarks to assist.

Follow any local joining procedures and/or circuit patterns specified for the strip. Announce your position and intentions as required.

Terrain or obstacles may influence the direction from which you approach. If there are wind turbines nearby, give them a wide berth and avoid flying directly behind or downwind of them.

If you have the co-ordinates of the strip, input these into your moving map device and select a desired inbound course. This should be used to assist visual identification of the strip – it may not precisely align you with the landing surface.

If cloud base and airspace permit, an '**overhead join' will allow you to observe the windsock and any obstructions** on the strip. Be alert for wildlife or livestock. Keep circuits compact and avoid overflying any noise sensitive areas.

Even if the strip seems quiet, **be alert for other aircraft.** It is not unknown for passing aircraft to use strips for practice forced landings or even conduct ad hoc 'beat-ups'. Whilst that sort of behaviour is poor airmanship and inconsiderate, it may happen.

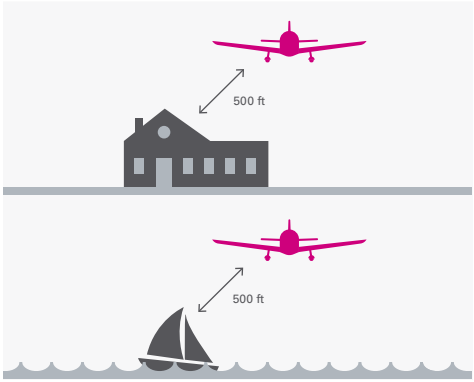
For landing **use the most relevant QNH figure**, for example from a nearby aerodrome. It is not recommended to use a regional pressure setting (RPS) since this is the lowest pressure of the entire setting region and will therefore under read compared to your true altitude. This is a threat, particularly if transiting below areas of controlled airspace.

Knowing the elevation of the strip will allow you to set a reasonably accurate QNH figure on your altimeter for departure.

Low-level military aircraft may be present below 1000 ft AGL in all areas of the UK. They may overfly strips without being aware of their presence. Keep a good lookout.

STRIP FLYING

Rules of the Air



When taking off or landing, it is permissible to come within 500 ft of people and structures, but only if strictly necessary. Avoid overflying human habitation when below 500 ft unless it is acceptable practice to do so at the strip.

Note that under the **Rule 5 of the Rules of the Air Regulations 2015**, you can only takeoff or land at an aerodrome in accordance with procedures notified by the CAA, or at a site other than an aerodrome with the permission of the CAA.

For more details on Rules of the Air, please see the *Skyway Code:* **caa.co.uk/skywaycode.**

Use of the radio

If the strip is within controlled airspace, there may be specific local procedures for coordinating your arrival. Most strips will not have a dedicated radio frequency, so use **SafetyCom on 135.480 MHz** to broadcast intentions when below 2,000 ft and within 10 NM of the strip. Use normal circuit pattern calls, but include the location in every call so it is clear which strip you are operating at – for example:

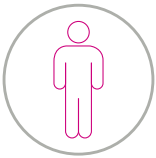
> Church Farm Traffic,
> G-DOME,
> 10 miles southwest,
> joining overhead,
> Church Farm

> Church Farm Traffic,
> G-DOME is downwind
> right hand for runway
> 10, Church Farm

More details of radio calls to be made at unattended aerodromes and/or on SafetyCom can be found in CAP413, chapter 4: **caa.co.uk/cap413**

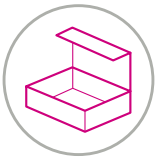
STRIP FLYING

Practicalities



The strip may not be attended when you arrive. If this is the case, it is recommended to nominate a 'responsible person' who can initiate overdue action or proceed to the strip if you do not contact them to confirm safe arrival after a certain time.

It is a requirement for Part 21 aircraft to carry an emergency location transmitter (ELT) or personal locator beacon (PLB). If flying a non-Part 21 aircraft into an unattended strip, it is recommended to carry a PLB. Consider fitting a fixed ELT if doing so on a regular basis, since this should activate automatically in the event of a crash.



Ensure you are clear about any local administrative procedures that are required. Most strips will have a small hut or caravan containing a movements log and possibly an 'honesty box' for any landing fee charged.

Secure the aircraft – bring tie-downs and chocks if required. Install any control locks or covers, such as for the pitot probe. Avoid soft ground since the aircraft may sink. Parking on a slope may result in a fuel imbalance. Consider security – for example, does the strip have CCTV, or is there any risk of damage from livestock? Leaving the aircraft in a hangar is preferable but often not possible.

Before departing, do a thorough preflight check to ensure the aircraft has not suffered any damage while parked and check no obstructions have appeared on the strip overnight. Also consider what you will do if you have some sort of technical problem with the aircraft, such as a flat battery.

Some strips may be able to provide fuel, but satisfy yourself it is of appropriate grade and quality. For example, has it been stored correctly, how old is it and has it been tested for water? It is usually more practical to fill up at a nearby aerodrome after departure, particularly if takeoff performance may be an issue. For guidance on handling fuel, see **SSL 28 - Fuel handling and storage.**

STRIP FLYING

International flights

It may be possible to depart and arrive directly to and from destinations outside the UK, but you must check the applicable requirements as published by the **UK Border Force**.

Normally the strip must have a 'Certificate of Agreement' in place in order for aircraft to fly directly to or from the strip internationally, otherwise an intermediate stop at a customs designated aerodrome will be necessary. You should check this with the strip operator if unsure.

It will aways be necessary to file the 'General Aviation Report' (GAR) forms as applicable for the origin and/or destination of the flight. There are also requirements under the Terrorism Act 2000 for notification of flights to and from Northern Ireland and the UK mainland, the Republic of Ireland, the Channel Islands and Isle of Man. For more details see the guidance on **gov.uk**.

STRIP FLYING

Recommended performance factors for takeoff

Condition	Takeoff		Landing	
	Increase in takeoff distance to height 50 ft	Factor	Increase in landing distance from 50 ft	Factor
A 10% increase in aeroplane weight	20%	1.20	10%	1.10
An increase of 1,000 ft in aerodrome elevation	10%	1.10	5%	1.05
An increase of 10°C in ambient temperature	10%	1.10	5%	1.05
Dry grass[1] - up to 20 cm (8 in) (on firm soil)	20%	1.20	15%	1.15
Wet grass[1] - up to 20 cm (8 in) (on firm soil)	30%	1.30	35%	1.35
Wet paved surface	-	-	15%	1.15
A 2% slope[2]	Uphill 10%	1.10	Downhill 10%	1.10
A tailwind component of 10% of lift-off speed	20%	1.20	20%	1.20
Soft ground or snow	25% or more	1.25+	25% or more	1.25+
Now use additional safety factors (if data is unfactored)		**1.33**		**1.43**

Notes

Factors must be multiplied, for example 1.20 x 1.35

[1] Effect on Ground Run/Roll will be greater. Short and wet grass can be very slippery and increase the landing roll by up to 60%.

[2] Do not attempt to use the factors to reduce the distances required in the case of downslope on takeoff or upslope on landing.

For a few types of aeroplane (for example those without brakes) grass surfaces may decrease the landing roll. However, to be on the safe side, assume the INCREASE shown until you are thoroughly conversant with the aeroplane type.

Any deviation from optimal technique is likely to result in an increased distance.

STRIP FLYING

Gradient vs rate of climb (ft/min)

	Ground speed in kts						
Ft/NM	**40**	**50**	**60**	**70**	**80**	**90**	**100**
300	200	250	300	350	400	450	500
350	233	292	350	408	466	525	583
400	267	333	400	467	533	600	667
450	300	375	450	525	600	675	750
500	333	417	500	583	667	750	883
550	367	458	550	642	733	825	917
600	400	500	600	700	800	900	1000
650	433	542	650	758	866	975	1083
700	467	583	700	817	933	1050	1167

Summary

When planning a flight to a new strip, consider the following points:

Permission

- Do you have permission to use the strip?

Suitability

- Have you satisfied yourself it is safe to operate there with your aircraft and flying experience?

Skill level

- Is your flying accurate enough and are you suitably competent in the steep approach (if applicable) and short field techniques for your aircraft?

Planning

- Have you planned your approach and departure profiles, including any special manoeuvres or noise abatement procedures?

Weather conditions

- Are they suitable on the day, particularly wind speed and direction?

Practicalities

- Have you considered parking, overnight weather and security at the strip?