

#Route Planning

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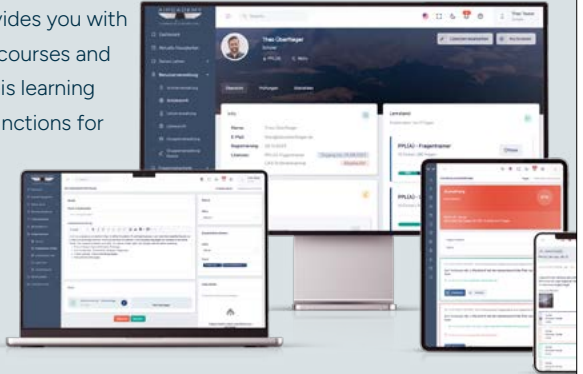


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In the following you will find a flight planning example from our **South Africa** edition, which will be available shortly.



Route Preparations

The corresponding VFR chart for this flight planning can be found at the end.

The route planning can be done **the day before** the flight by following the basic steps listed below:

- ▶ Determining the route
- ▶ Determining the minimum safe altitude
- ▶ Determining the flight altitudes
- ▶ Entering waypoints
- ▶ Entering catch lines

First, plot the **direct line** connecting the departure aerodrome, Vereeniging (FAVV), and the destination aerodrome, Brits (FABS), on the aeronautical map. This allows for visualizing the entire route and identifying potential restrictions due to obstacles, danger zones, or other airspaces.

In this case, consider the control zone of Lanseria Airport (FALA) and the Special Rules Area (SRA) South and West.

The **Special Rules Area (SRA)** is an airspace in which specific rules apply that must be adhered to at all times:

- ▶ Maximum speed: 180 kts
- ▶ Altitude northbound: 7500 ft
- ▶ Altitude southbound: 7000 ft
- ▶ Maximum altitude if unable to comply: below 6500 ft
- ▶ QNH and ATIS of Johannesburg (FAOR):
The QNH of FAOR must be set and can be received via the ATIS frequency 126.2 MHz.

To determine the **minimum safe altitude**, set a corridor of 5 NM to the left and right of the planned flight route and add 500 ft to the height of the highest obstacle within this corridor.

Divide the entire route into **several sections**.

These sections can be defined by visually noticeable points such as large buildings, towers, quarries, motorways, lakes, and rivers. For better oversight, individual sections should not be longer than 20 NM.

Takeoff in Vereeniging

The flight begins on runway 03 of Vereeniging airfield. In accordance with Vereeniging's circuit regulations, a **right-hand circuit** is flown after takeoff and exited to the northeast.

Information on specific rules, procedures, or regulations at an airfield can be found in the AIP aeronautical charts. If no charts are published, it is recommended to check the Internet. Many airfields have their own homepages where important information for pilots is published.

After takeoff, the pilot initiates a climb according to the rules of the Special Rules Area (SRA) Route to 7500 ft. A highway located east of the airfield serves as a visual catch line for the pilot.

Catch lines, such as railway tracks or highways, assist with navigation and correcting possible deviations from the planned route.

The pilot follows the highway north to the first waypoint, "KLIPRIVIER."

Kyalami VFR route - "Blue Route"

From waypoint "KLIPRIVIER," the flight continues via the Kyalami VFR route, also known as the "Blue Route."

This route was introduced to increase safety in the busy airspace around Johannesburg. Within this VFR corridor, the following rules apply:

- ▶ Frequency: 125.8 MHz for position reports
- ▶ Maximum speed: 180 kts
- ▶ Altitude northbound: 7500 ft
- ▶ Altitude southbound: 7000 ft



- ▶ QNH from FAOR: ATIS 126.2 MHz
- ▶ Transponder code for aircraft: 2000
- ▶ Transponder code for helicopters: 2600

While flying along the Blue Route, pilots must transmit regular **position reports** on the frequency 125.8 MHz. It is recommended that aircraft on this route always have their **landing lights on** to increase visibility to other aircraft.

The pilot uses visual landmarks such as towers, rivers, lakes, roads, and towns to guide along the route. Several **mandatory reporting points** must be observed on this route and reported on the specified frequency.

The route passes through the points KL-IPRIVIER, HIGHWAY JCTN, RACETRACK, SANDTON TWR, KYALAMI WEST, CHICKEN FARM, ATTERIDGEVILLE, and GEROTEK.

For example, the mandatory reporting point CHICKEN FARM is clearly visible due to large buildings. A flight altitude of 7500 ft in a northerly direction must be maintained along the entire VFR route, with a maximum speed of 180 kts not to be exceeded.

The waypoint GEROTEK is located above a racetrack and is also easily identifiable from the air. GEROTEK marks the last mandatory reporting point on the Blue Route.

Course towards Brits

After reaching the waypoint GEROTEK, the pilot sets a course of 317° towards the destination airport, Brits.

The Hartbeespoort Reservoir, located on the left side of the flight route, serves as a visual orientation landmark. If the dam is not on the left side of the aircraft, the pilot can quickly determine that a course adjustment is needed, possibly due to changed wind conditions. Therefore, it is crucial to use visual orientation landmarks, even when following planned courses precisely. Visual landmarks help

identify changed wind conditions early.

To the northeast of the dam, the airspace “FA-D71 Hartebeespoort” is marked on the map as a danger area. This danger area extends from the ground to an altitude of 7600 ft and must be circumnavigated or overflown.

The flight path continues until it crosses a highway where the Zilkaats airfield is located. The town of Brits appears on the left side of the flight route and is easily visible from the air, serving as an additional visual orientation aid. The destination airfield, Brits, is located north of the town.

Approach to Brits airfield

The red symbol on the aeronautical map indicates that **aerobatics** take place at Brits airfield. The pilot should check the frequency 124.2 MHz early to determine if aerobatics are occurring to avoid a potential conflict with another aircraft.

In accordance with Brits airfield procedures, a **left-hand circuit** is flown for landing on runway 20. The approach is initiated by descending to 1500 ft AGL above the airfield, followed by a descent to 1000 ft AGL west of the airfield over the hangars and a turn into the circuit.

During the entire approach, **position reports** must be made on the frequency 124.2 MHz, and attention must be paid to other air traffic. The specific approach procedure for VFR traffic can also be found on the airfield’s homepage.

Alternative route

The preferred route uses the so-called Blue Route, which requires a flight altitude of 7500 ft when flying north. This altitude allows for a smooth flight over potential obstacles with sufficient safe altitude. However, if the **weather is poor** and the clouds are too low to reach this altitude, an alternative route is required.

The alternative route begins after takeoff from Vereeniging with a course of 334° to the northwest, followed by a climb to a maximum altitude of 6500 ft.

This altitude must not be exceeded because the aircraft is in the **Special Rules Area South** after departure from Vereeniging. The rules in this airspace state that aircraft unable to maintain the specified altitudes of 7500 ft when heading north or 7000 ft when heading south must remain below an altitude of 6500 ft.

The first waypoint is the mandatory reporting point GRASMERE TOLL, located on a motorway. For additional orientation, the pilot can **use radial 083 of the Grasmere VOR** (115.5 GAV) as a reference line, thus supporting visual navigation with radio navigation.

The flight continues northbound with a course of 352°. On this course, a body of water is overflowed that is directly next to a motorway. Shortly after the motorway, there is a transition from SRA South airspace to **SRA West airspace**. At this point, the frequency must be changed from 125.5 MHz to the new frequency 125.8 MHz of SRA West.

The flight continues to a quarry, which marks another waypoint. In this area, there is **airspace C with a TMZ of Lanseria Airport** (FALA). However, since the airspace is only defined from 6500 ft to 7600 ft, it can be underflown in our case.

When passing the quarry, the course is set westbound to 314° to **avoid flying into the Lanseria control zone**. Entry into the control zone is only permitted with prior clearance from the responsible air traffic control center.

The pilot can request a flight through the controlled airspace and often will receive clearance, which usually specifies a specific route, altitude, and speed. However, since a clearance can be refused at any time, the pilot must always plan an alternative route that runs outside the control zone.

After passing another motorway and the "Farm Sterkfontein" airfield, the pilot sets a course north on 010° to the mandatory reporting point E OF HARTEBEE SHOEK. At this point, there is a restricted area to the left of the aircraft, which extends from the ground to 1000 ft AGL and must not be flown through.

For this reporting point, it is also advisable to generate a catch line using radio navigation with the radial 305 of the VOR Lanseria 117.4 MHz (LIV).

From the reporting point, the flight continues northbound on course 007°. Several airfields are overflowed on this route, so **increased traffic can be expected** and attention must be paid to avoid possible collisions with other aircraft.

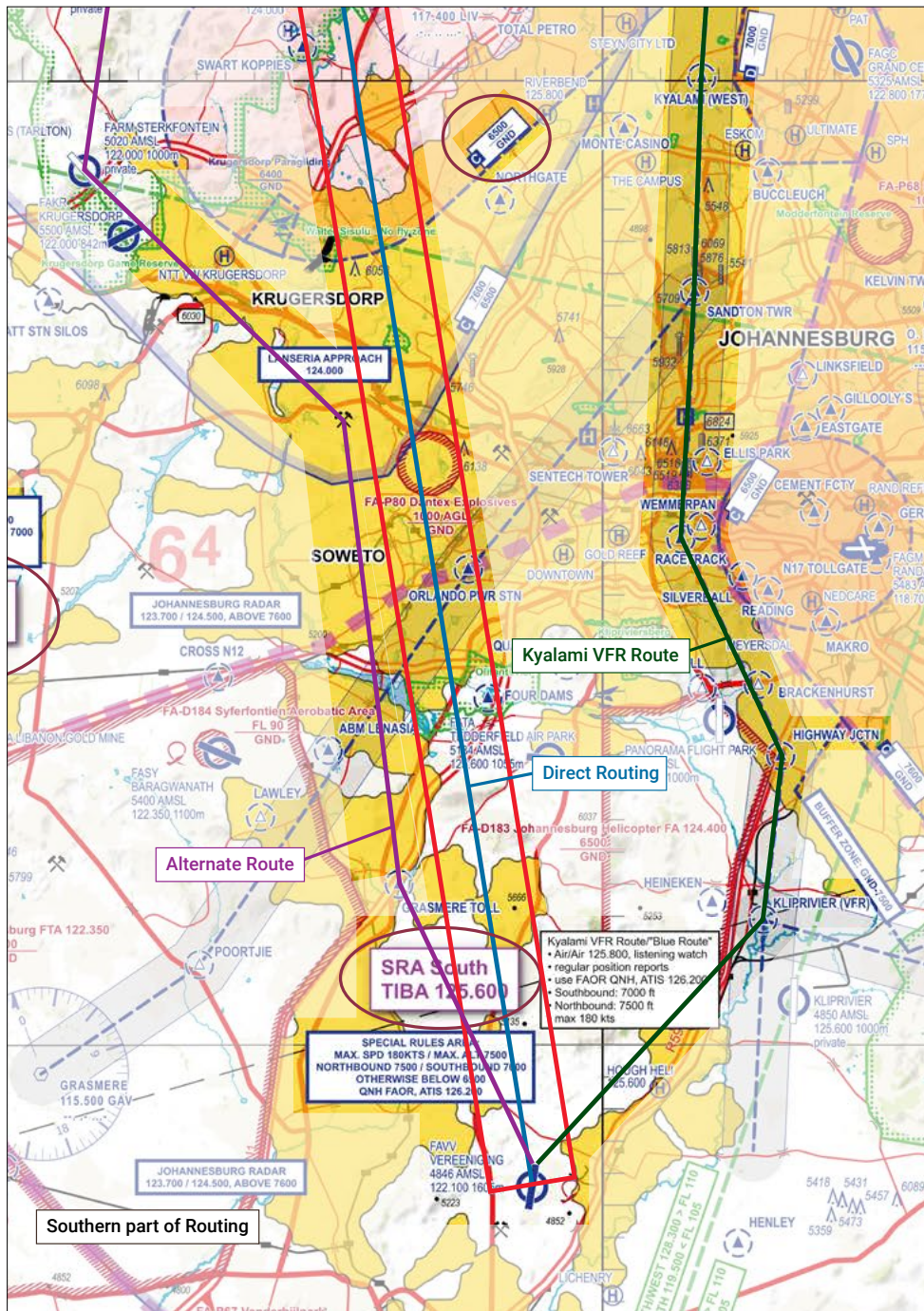
The route eventually leads over a railway track, and the town of Brits appears on the right-hand side. The approach to the destination airfield, Brits, is carried out as already explained in the previous route planning, observing the special approach procedures at the airfield.

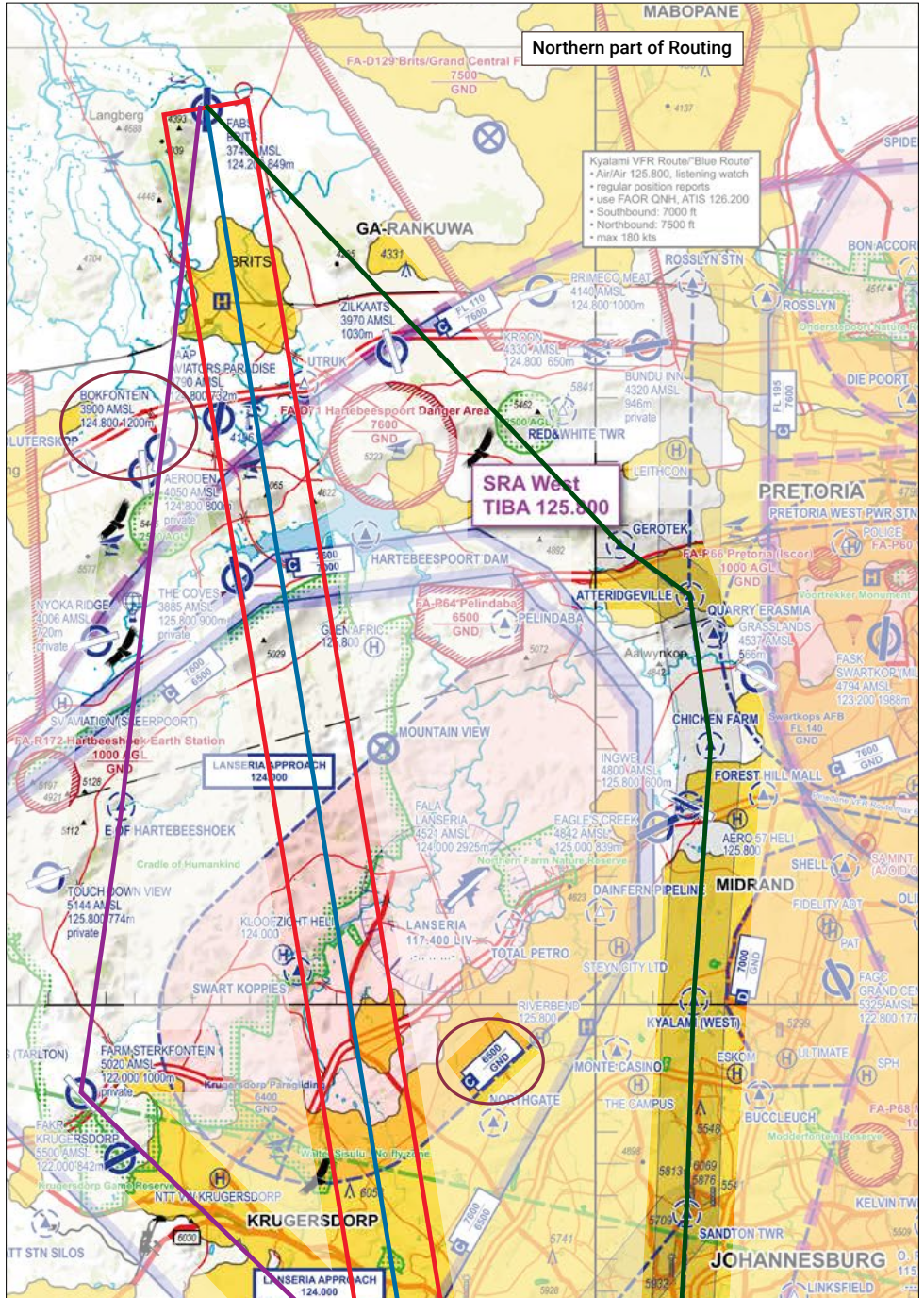
Alternate airfield

If landing at the destination airport is not possible, it is always advisable to plan an additional route to a nearby alternate airfield, even if this is not required for VFR flights.

In this case, an alternate route is planned to **Bokfontein airfield**, which is about 40 NM from the destination airfield. The airfield is already overflowed on the alternative route to Brits and is therefore particularly suitable as an alternate airfield.

This allows the pilot to assess the current weather at the alternate airfield while flying over it. If weather conditions deteriorate in the direction of the destination, this can be quickly recognized, and a turnaround to the alternate airfield can be initiated early.





Northern part of Routing

SRA West
TIBA 125.800

Kyalami VFR Route "Blue Router"
 • Air/Air 125.800, listening watch
 • regular position reports
 • use FAOR QNH, ATIS 126.200
 • Southbound: 7000 ft
 • Northbound: 7500 ft
 • max 180 kts

LANSERIA APPROACH
124.000

SANDTON TWR
7600 GND

JOHANNESBURG
LINKSFIELD

How does the SRA250 chart work?

These VFR charts for Johannesburg and Cape Town Special Rules Areas are designed at a 1:250,000 scale, offering clear visibility and usability in the cockpit. They clearly depict airspace boundaries, frequencies, reporting points, airfields and published routings, essential for navigating these complex airspaces.

It is worth turning the SRA250 chart over: The backside includes important telephone numbers, communication frequencies, descriptions of Special Routes, and other crucial information, significantly reducing pilot stress in busy airspace. You will also find a co-ordinate ruler on the edge of the reverse side: If the chart is face up, the edge can be folded over, which allows you to use the degrees to read the southern latitude of a specific point. Selected elements are explained in more detail below.

Aerodromes

The SRA250 provides you with airfield information such as elevation, frequency and runway length. The chart also shows information about paragliding, gliding and radio-controlled sites and activities to be aware of.



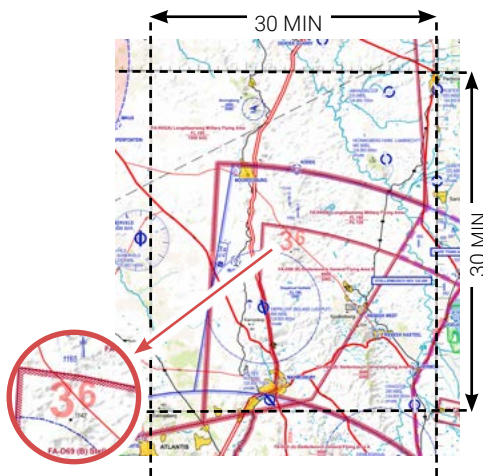
	Ultra-light aircraft operations
	Aerial sporting activities
	Glider activities
	Aerobatics
	Model flight activities

Maximum Elevation Figure

This number is a minimum safety altitude within an area of 30 min east/west and 30 min north/south as shown in the picture. The altitude ensures, that you will remain clear of any terrain/obstacles for this particular area.

MAXIMUM ELEVATION FIGURE

27 = 2700 ft AMSL
(Explanation see reverse)



A detailed explanation and description of the calculation can be found at: www.eisenschmidt.aero/en/repitition-corner (see RepetitionCorner 08/20)

Airspace Label

Prominent depiction of airspaces, vertical limits and their frequencies.

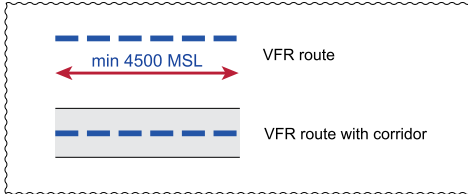
FL 100 4500	FL 100 4500	Altitude in FEET above MSL
2500 AGL GND	2500 AGL GND	Height in FEET above ground



Special routings through complex airspaces

These are defined routings at specified altitudes with reporting points.

The reverse side provides more detailed information.



VFR Reporting Points: compulsory and non-compulsory.

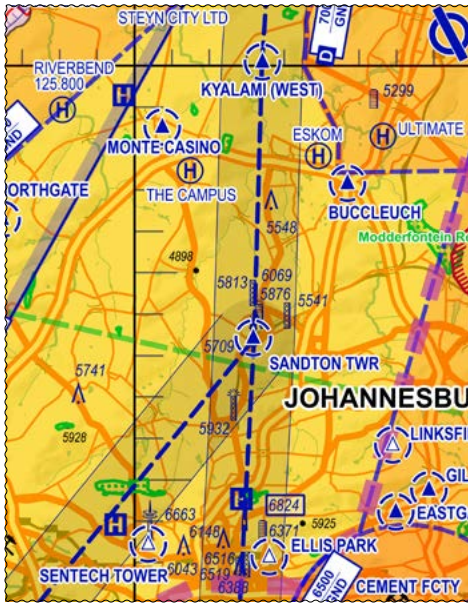


Non-compulsory reporting point / Compulsory reporting point for VFR flights

Representation of obstacles

The SRA250 chart shows obstacles with a height of 100 m (328 ft) above ground and more. The altitude information is referred to Mean Sea Level (MSL). If the numbers are shown in brackets, they refer to the height above ground.

Spot elevations are drawn in black with the height above sea level. Obstacles are man-made, e.g., television towers or wind turbines. The altitude refers to the highest point above sea level and is drawn in blue.



Further important information

National Parks, Nature Reserves, Heritage Sites where overflight height restrictions apply are also marked on the SRA250 chart.

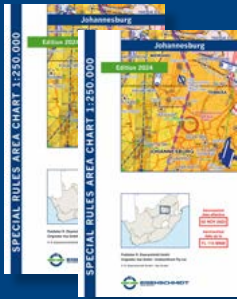


ELEVATION IN FEET

- 569 Spot elevation
- ▲ 1198 Peak
- × 753 Mountain pass
- 1198 300 Highest object in quadrant (see MEF)
- 300 (300) Elevation above MSL (height above GND)
- ▲ ▲ Obstacle / group obstacles (unlighted)
- ▲ ▲ Obstacle / group obstacles (lighted)
- Wind turbine / television tower / chimney
- Church / lattice pylon / high-tension pylon
- Building / dump
- Flare stacks; avoid overflying below 2000 ft AGL
- Cable cars / with markers
- high-tension (power) line
- Telephone line

Purchase options

Aeronautical Chart SRA250 Johannesburg and Capetown



Both charts are available from the Eischmidt online store (www.eischmidt.aero/en), Aviation Direct (www.aviationdirect.co.za) or selected dealers in Germany and South Africa.



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