CONTROL ZONE MANAGEMENT

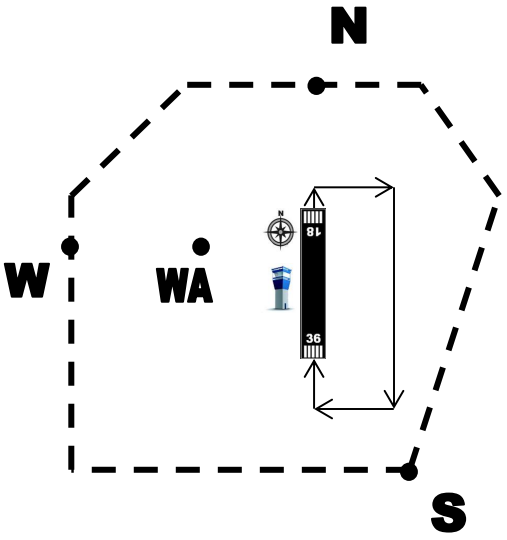
1. Introduction

A control zone named CTR is a defined airspace which is under a tower/aerodrome controller responsibility.

A control zone starts at the ground level and stops at an upper limit defined on the charts.

Pay attention that 'CTR' used alone is a control zone. 'CTR' used as suffix with an ICAO position is an en-route position (example LLLL_CTR).

The control zone used in the example extends upward, from the surface towards altitude 2000ft, and laterally until 5Nm at least of the aerodrome. There is an aerodrome traffic circuit right hand runway 36 at 1000ft.
There are 3 entry/exit VFR points of the control zone: **W** - Whiskey, **N** - November, **S** - Sierra
There is one transit point: **WA** - Whiskey Alpha



2. Working conditions

We will take during this example a controlled CTR class C, D or E only for VFR flight management. In this type of airspace, VFR separation is done by air traffic controller using traffic information only.

You always have to consider that VFR pilots will have to stay clear of clouds at any time. For this reason it might be possible that there will be some inaccuracy (landmark, clouds and traffic avoiding manoeuvers).

The headings given by the controller are recommendations.

3. IFR management

When an IFR flight arrives in your CTR, he must be established on the final approach axis.

All VFR points are not applicable for IFR flights.

The management of IFR only traffic is simple inside the CTR.
You will give the following clearances or instructions:

- landing or take-off clearances
- go-around clearances
- traffic to continue the approach instruction
- speed restrictions

Example when the runway is free,

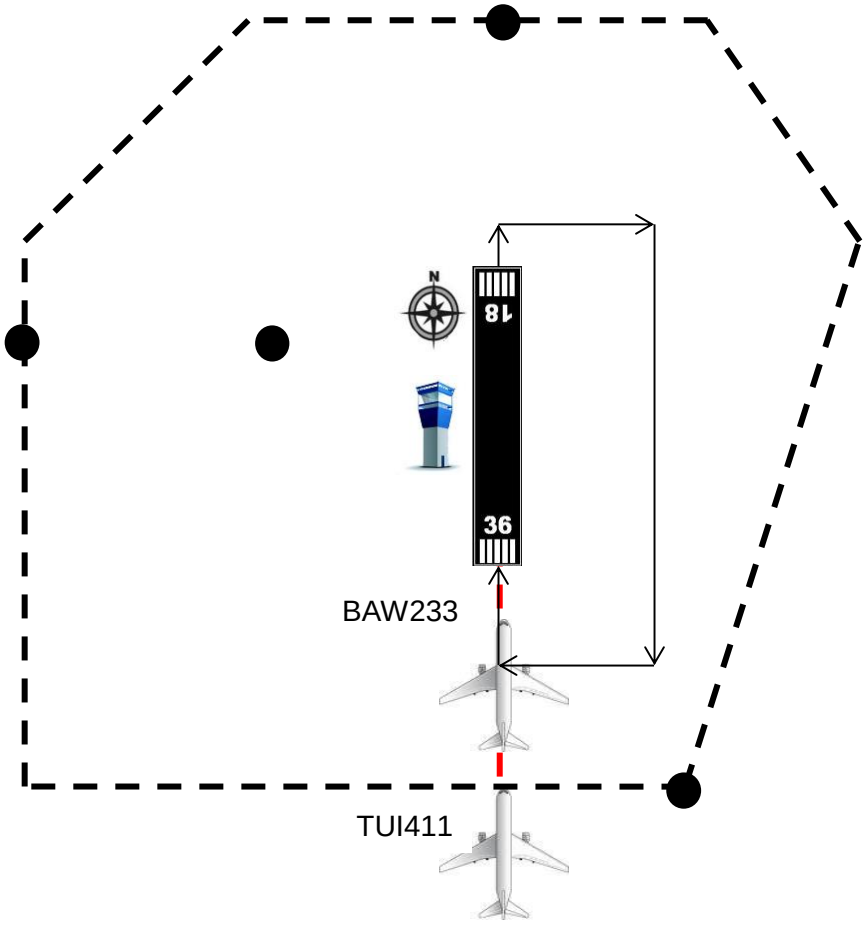
ATC: "BAW233, runway 36 cleared to land, wind 300° 5knots"
Pilot: "Runway 36 cleared to land, BAW233"

Pilot: "Tower, on final runway 36, TUI411"
ATC: "TUI411, B757 on final runway 36, continue approach runway 36, number 2."
Pilot: "Continue approach runway 36, number 2, traffic in sight, TUI411"

Example when the runway is occupied,

ATC: "BAW233, runway 36 occupied, go around, wind 300° 5knots"
Pilot: "Going around, BAW233"

Pilot: "Tower, on final runway 36, TUI411"
ATC: "TUI411, B757 going around runway 36, continue approach runway 36, number 2."
Pilot: "Continue approach runway 36, number 2, traffic in sight, TUI411"



In the event that the aerodrome controller, after a landing clearance has been issued, becomes aware of a runway incursion or the imminent occurrence thereof, or the existence of any obstruction on or in close proximity to the runway likely to impair the safety of an aircraft landing, he shall instruct the landing aircraft to execute a go-around or missed approach.

4. VFR Transit management

A VFR aircraft which enters inside a control zone and crosses it without any intention of landing on any airfield inside this zone is called a transit.
These aircraft usually have to transit the control zone in a predefined way. This can be done either via VFR reporting or exit points, certain VFR routes or direct on course.

4.1. One aircraft on transit

Handling one aircraft inside a control zone is easy. The transit aircraft usually enters the control zone via or near a published VFR entry point and contacts the air traffic controller 2 minutes before overflying this point.

As an active controller tower, you shall give transit instruction to the pilot and await his read back:

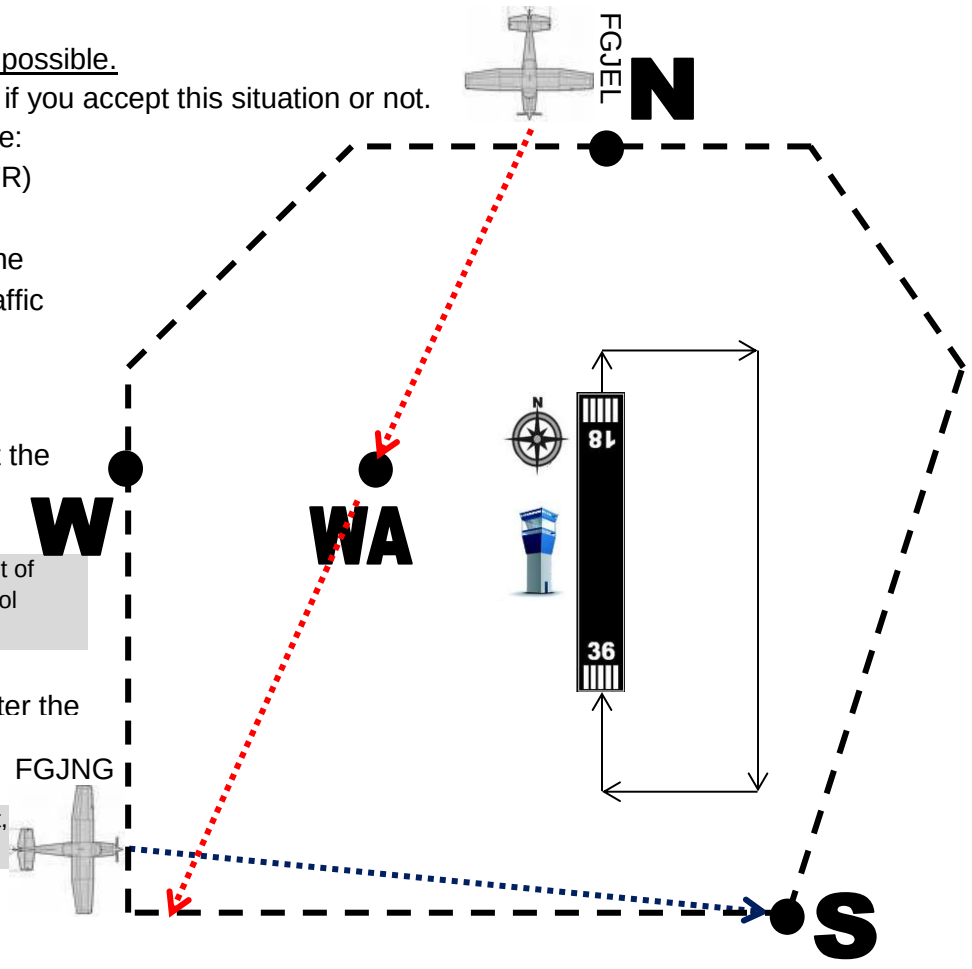
Pilot : "Tower, Cessna 1 7 2, 3000ft, 2 minutes to W, request transit in your airspace to S, FGJNG"
ATC: "FGJNG, transit W, WA, overhead the field, and S, altitude 2000 feet, report WA "
Pilot: "transiting W, WA, overhead the field, and S, altitude 2000 feet, will report WA, FGHNG"

4.2. Transit outside any VFR report point

Sometimes due to configuration of the airspace, a VFR flight can ask a transit to enter not near a published VFR point. This is mainly due to shorten the travel distance to his destination airfield.

Giving a transit outside these points is possible.
As air traffic controller, you can decide if you accept this situation or not.
It will depend of several parameters like:

- Weather conditions (special VFR)
- Night flight
- Traffic around in the control zone
- Traffic present in aerodrome traffic circuit



Example: Aircraft FGJEL wants to exit the CTR at the south-west.

ATC: "FGJEL transit WA, and exit at south-west of CTR, altitude 2000feet, report leaving the control zone."

Example: Aircraft FGJNG wants to enter the CTR at the south-west and exit at S

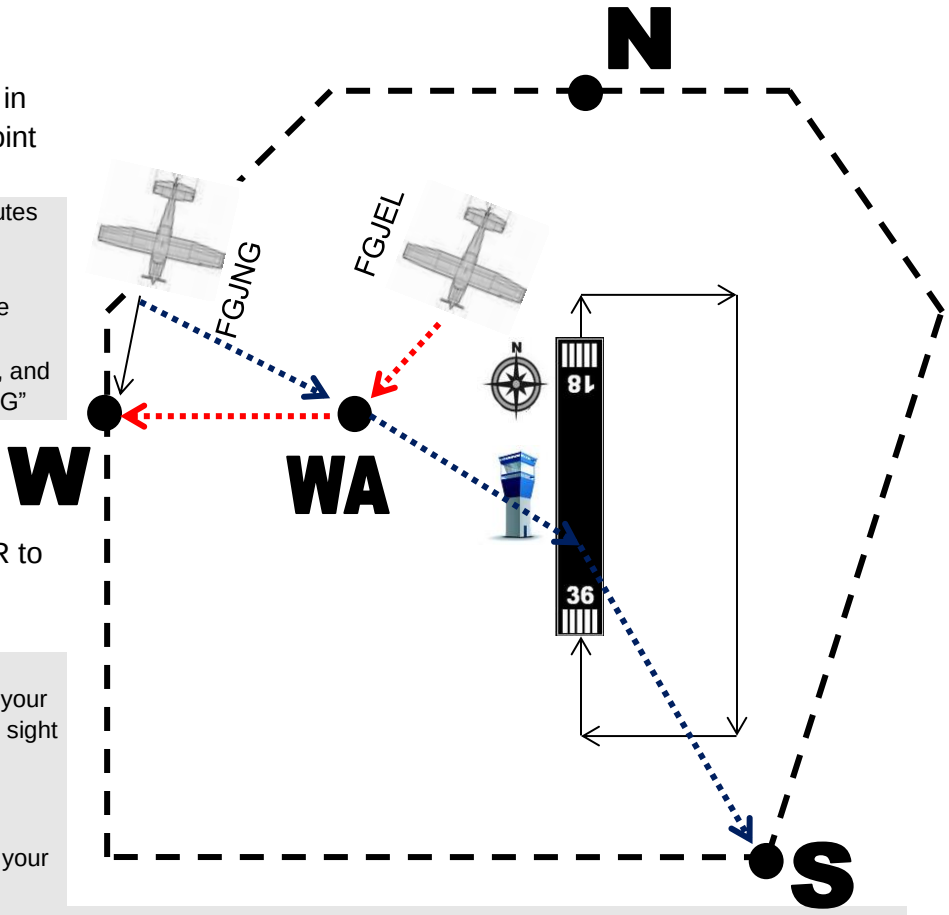
ATC: "FGJNG transit direct S, altitude 2000feet, report leaving the control zone."

4.3. Two aircraft in transit

Handling more than one aircraft inside a control zone can be complex sometimes.
Two aircraft routes can create a potential conflict, so the tower controller must send traffic information to both aircraft. After receiving traffic information, both aircraft will ensure their own separation with maintaining visual and separation

The aircraft FGJNG requests a transit in CTR zone. He is going to the S exit point from the W point.

Pilot : “Tower, Cessna 1 7 2, 1500ft, 2 minutes to W, request transit in your airspace to S, FGJNG”
ATC: “FGJNG, transit via WA, overhead the field, and S, altitude 2000 feet, report WA “
Pilot: “transiting via WA, overhead the field, and S, altitude 2000 feet, will report WA, FGHNG”



FGJEL is already flying inside the CTR to W exit point from N point via WA:

ATC: “FGJNG, traffic, Cessna 1 7 2, same altitude at your 9 o'clock 4 miles, will cross your route from left to right around WA, report in sight
Pilot: “Traffic in sight, FGJNG”

ATC: “FGJEL, traffic, Cessna 1 7 2, same altitude at your 3 o'clock 4 miles, wll cross your route from right to left around WA, report in sight”
Pilot: “Traffic in sight; FGJEL”

After the traffic information, each pilot will ensure enough separation with other traffic with adjusting his heading, adjusting slightly his altitude and maintaining visual until clear of conflict.

4.4. One VFR in transit and one VFR in aerodrome circuit

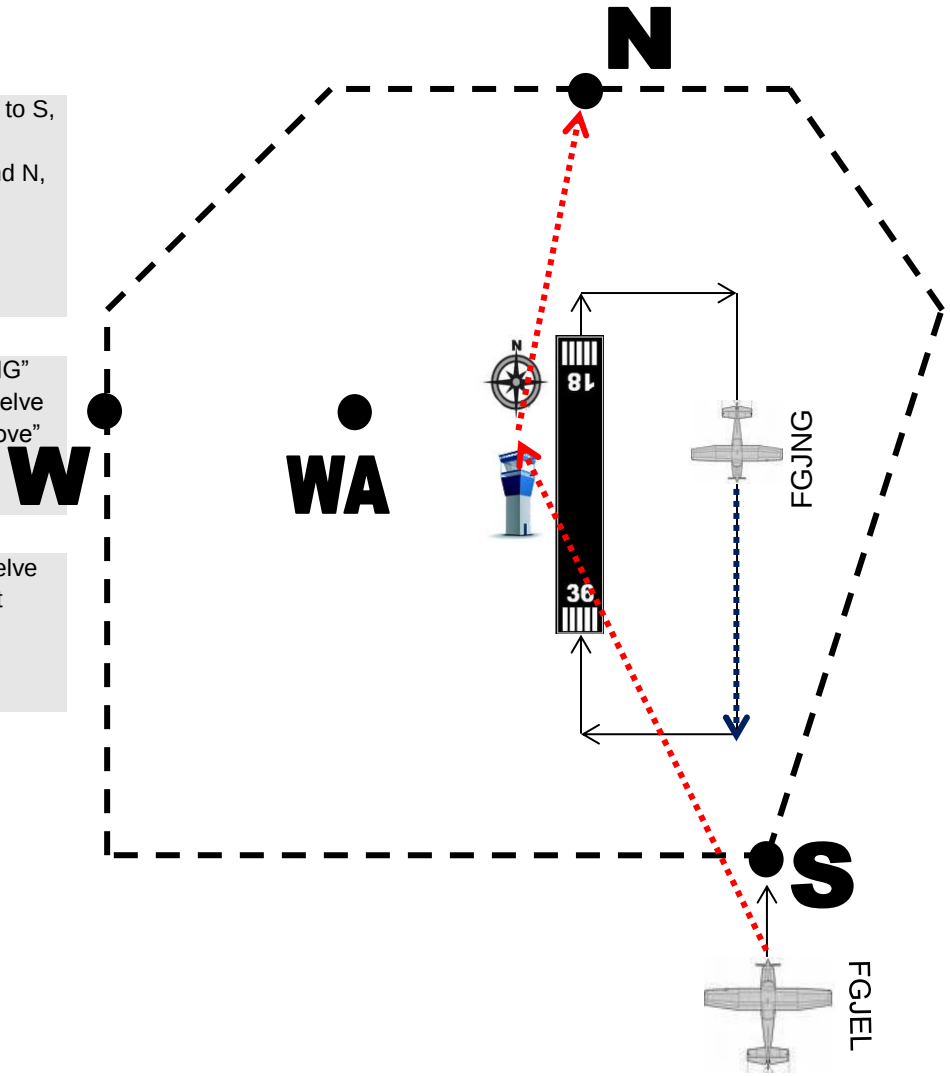
We will study the situation with one aircraft in the aerodrome circuit on downwind, and another one on transit from point S to exit point N.

With traffic routing overhead the field, it is recommended to the tower controller to impose a height, higher than the aerodrome circuit altitude, in order to avoid any potential conflict with aircraft in the aerodrome circuit. A separation of at least 500ft to 1000ft shall be applied when possible. Traffic information shall be provided to all aircraft.

Pilot: "Tower, Cessna 1 7 2, 1000ft, 2 minutes to S, request transit in your airspace to N, FGJEL"
ATC: "FGJEL, transit S, overhead the field, and N, altitude 1500 feet, report N "
Pilot: "transiting S, overhead the field, and N, altitude 1500 feet, will report N, FGHNG"

Pilot: "Right hand downwind runway 36, FGJNG"
ATC: "FGJNG, traffic, Cessna 1 7 2 at your twelve o'clock, from S to overhead the field, 500ft above"
Pilot: "Traffic in sight, FGJNG"

ATC: "FGJEL, traffic, Cessna 1 7 2 at your twelve o'clock, right hand downwind runway 36, 500ft below"
Pilot: "Traffic in sight, FGJEL"



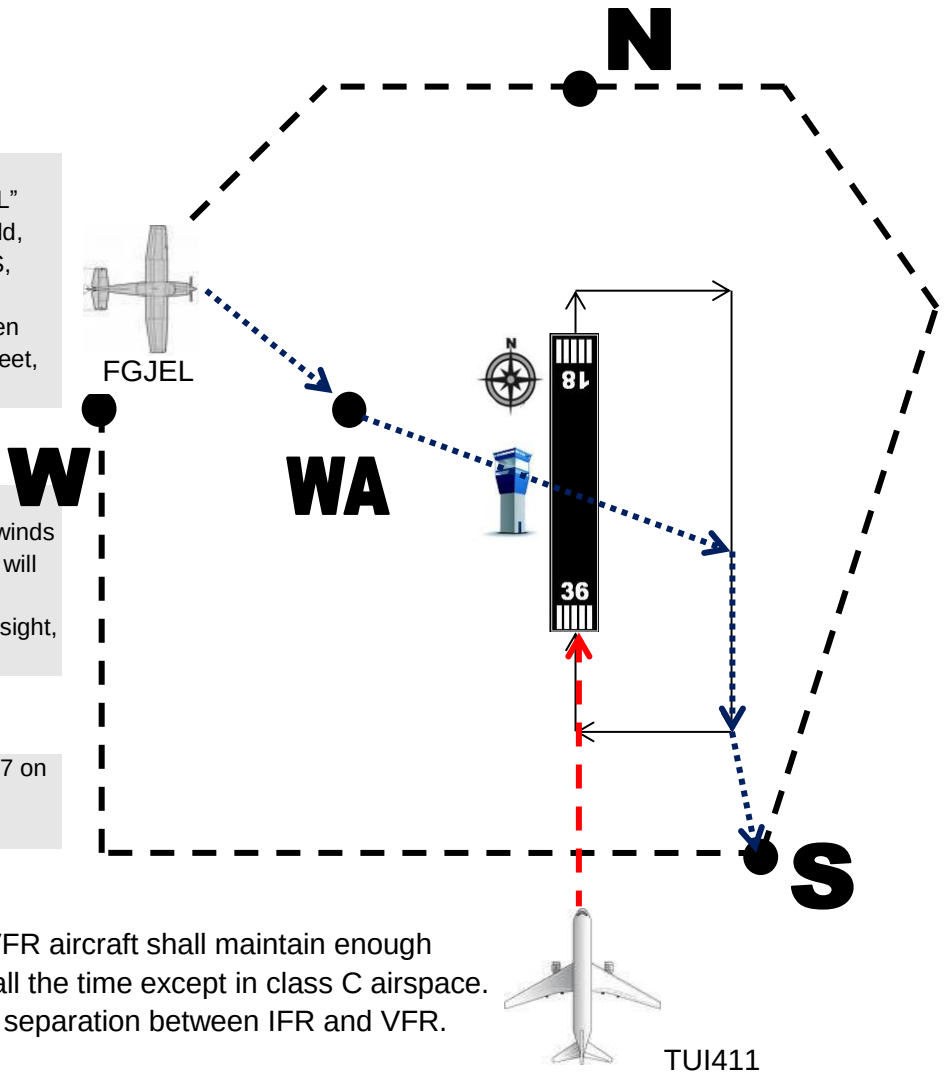
During transit operation, VFR flights will try not to overfly along the runway at low altitude. Aircraft must take an offset in order to free the runway axis and to let enough place for incoming or departing aircraft.

4.5. One VFR in transit and one IFR on final

We will study the situation with one IFR aircraft on final runway 36, and one transit VFR aircraft from point W to exit point S.

During the route overhead the field of the aerodrome, it is recommended to the tower controller to impose a height higher than the aerodrome circuit altitude, in order to avoid any potential conflict with incoming aircraft.

The controller should avoid runway axis crossing at low altitude when possible.



First step VFR contact:

Pilot: "Tower, Cessna 1 7 2, 1000ft, at W, request transit in your airspace to S, FGJEL"
ATC: "FGJEL, transit WA, overhead the field, then right hand downwind runway 36 and S, altitude 2000 feet, report S "
Pilot: "transiting WA, overhead the field, then right hand downwind and S, altitude 2000 feet, will report S"

Second step IFR contact:

Pilot: "Tower, on final runway 36, TUI411
ATC: "TUI411, runway 36 cleared to land, winds 340° 6KT, traffic from left to right at 2000ft, will cross overhead the field."
Pilot: "Runway 36 cleared to land, traffic in sight, TUI411

Third step traffic information to VFR:

ATC: "FGJEL, traffic information Boeing 757 on final runway 36, report in traffic in sight"
Pilot: "traffic in sight, FGJEL"

With traffic information received, the VFR aircraft shall maintain enough separation with incoming IFR aircraft all the time except in class C airspace. In class C airspace, ATC shall ensure separation between IFR and VFR.

When a VFR aircraft intends to cross the runway axis, as a tower controller, you should consider the possibility of a go-around from the traffic on final. It is therefore wise to expedite the runway crossing, or hold the VFR traffic clear of the runway axis and once he reports the IFR traffic in sight clear him to cross the runway axis behind the IFR traffic or once the IFR traffic has landed.

5. Arrival VFR aircraft

Arriving aircraft usually enters the control zone via a predefined route. This can be done either via VFR reporting or entry points, prescribed routes or direct on course.

5.1. One VFR arrival aircraft

Handling one arrival aircraft inside a control zone is easy. The arrival aircraft usually enters the control zone via or near a published VFR entry point and contacts the air traffic controller 2 minutes before overflying this point. As a tower controller you should integrate this aircraft in the aerodrome traffic circuit.

You can integrate this traffic in different positions:

- Default integration is at **the beginning or at the middle of the downwind leg** (depends on regulation)
- Alternative integration is **on the base leg** if this integration can shorten the integration time
- Last alternative is to integrate the traffic directly **on final** (straight-in approach) if the position of the aircraft permits that integration (±30° of the runway axis heading).

Of course the integration shall be made, taking into account the traffic already present in the aerodrome circuit.

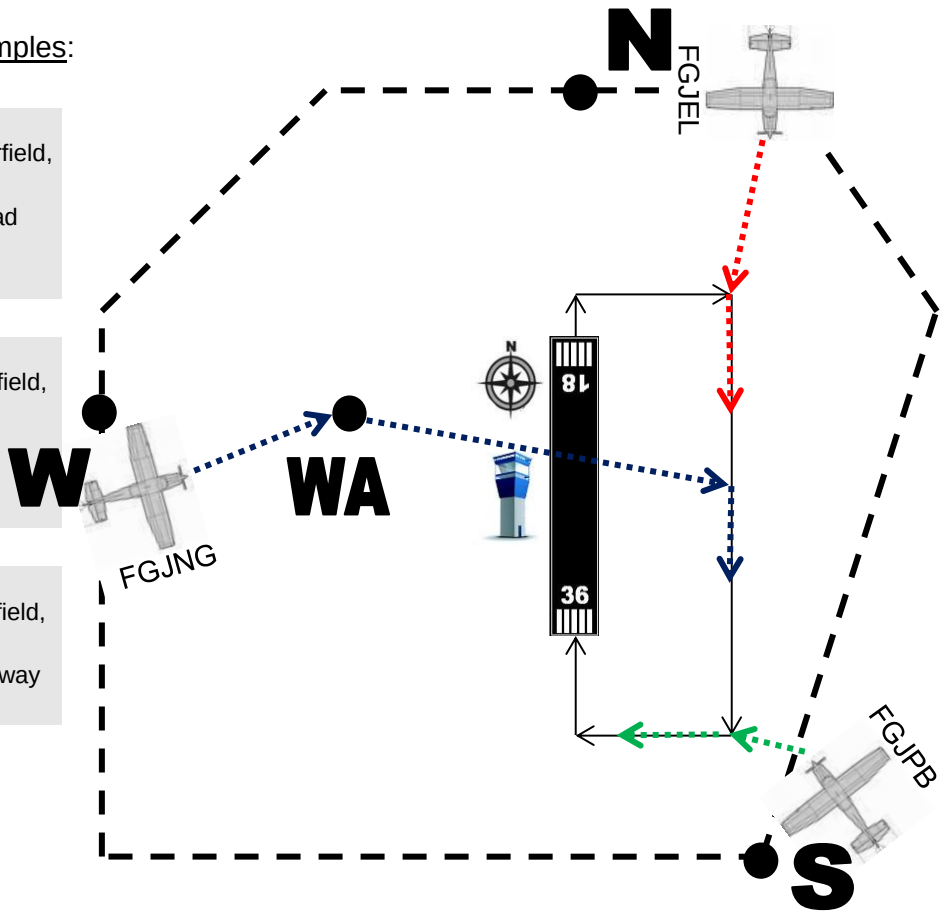
The aircraft already present in the aerodrome circuit have priority over incoming traffic outside the circuit.

We present you 3 independent examples:

Pilot : "Tower, Cessna 1 7 2, 1000ft, 2 minutes to **W**, request landing at your airfield, **FGJNG**"
ATC: "**FGJNG**, Direct WA, then overhead the field, and **join middle of right hand downwind** runway 36"

Pilot : "Tower, Cessna 1 7 2, 1000ft, 2 minutes to **N**, request landing at your airfield, **FGJEL**"
ATC: "**FGJEL**, join **beginning of right hand downwind** runway 36"

Pilot : "Tower, Cessna 1 7 2, 1000ft, 2 minutes to **S**, request landing at your airfield, **FGJPB**"
ATC: "**FGJPB**, join **right hand base** runway 36, report on final runway 36"



If you give the clearance to join the base leg, the aircraft will turn automatically on final at the end of base.

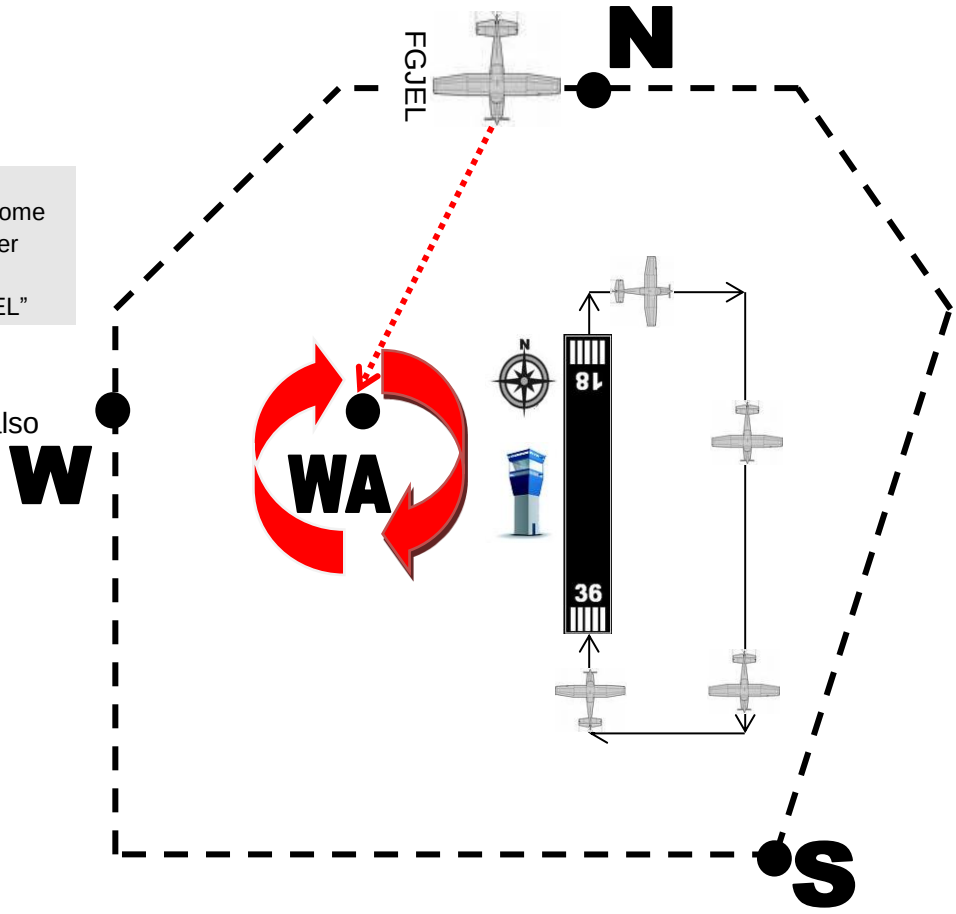
5.2. Orbiting clearance – 360°

Sometimes, the aerodrome circuit is full and the tower controller shall not take any new aircraft in it.
In this situation, the tower controller shall use the orbit clearance on a VFR point.

Orbit clearance is necessary to maintain a VFR aircraft waiting over a VFR point and prevent the aircraft to go into congestion areas.

ATC: "FGJEL, too many aircraft on aerodrome circuit, direct WA, and orbit by the right over WA"
Pilot: "will orbit by the right over WA, FGJEL"

ATC can give orbit altitude when necessary in the clearance and can also give an expected orbit time.



The aerodrome circuit can be considered full starting with 4 aircraft in the aerodrome circuit.
When the integration will be possible, the tower controller shall give a clearance to enter the aerodrome circuit and provide any useful traffic information.

5.3. Several aircraft arrivals

With several aircraft arrivals entering in the control zone, the situation is more complex. The goal is to manage the first aircraft to integrate into the aerodrome circuit as the first in priority, then, follow the second … etc…
Pay attention that all aircraft shall receive adequate traffic information to ensure VFR separation.

Study the **documentation of aerodrome circuit management** in order to have more information about this situation.

6. VFR Leaving the Control Zone

To leave a controlled airport, VFR traffic usually leaves the control zone via a predefined route. This can be done either via VFR reporting or exit points, prescribed VFR routes or direct on course.

The control zone exit via a reporting point is the classical way of handling departing VFR traffic due to the fact that these points are depicted on VFR charts and these points can be also found by pilots using visual landmarks.

Example with reporting point:

Pilot: "DEBCL, ready for departure runway 27."
ATC: "DEBCL, leave control zone via November, wind 240 degrees 10 knots, runway 27 cleared for take-off."
Pilot: "DEBCL, leaving control zone via November, runway 27 cleared for take-off."

VFR pilots can proceed without air traffic services as long as they are in airspace G, F or E after passing the reporting point. After this point, they can ask flight information service to the adequate controller if necessary.

Besides the reporting points, there are other ways to leave a control zone. In some airports VFR pilots have to follow a certain route including several reporting points or geographical guiding marks. These routes can be mandatory for night VFR or special VFR, for noise reduction regulation, or with presence of IFR traffic in some airfields.

Example with published route:

Pilot: "DEBCL, ready for departure runway 23."
ATC: "DEBCL, leave control zone via NW3 route, wind 240 degrees 10 knots, runway 23 cleared for take-off."
Pilot: "DEBCL, leaving control zone via NW3 route, runway 23 cleared for take-off."

Always be sure, when using these routes, that there is no conflicting traffic and you give the necessary traffic information in order to avoid separation problems.

In some situations it might be useful to leave a control zone on a certain heading without any reporting point. In this case the pilot has to receive the information prior to departure.

Example:

Pilot: "DEBCL, ready for departure runway 36."
ATC: "DEBCL, leave control direct on course, wind 290 degrees 4 knots, runway 36 cleared for take-off."
Pilot: "DEBCL, leaving control zone direct on course, runway 36 cleared for take-off."

This means, that the pilot will maintain runway heading after airborne until he/she left the control zone. Instead of "direct on course" you can allocate any desired heading or an approximate direction like "to the north-east".

Aircraft leaving a control zone by climbing through its top can only be done in coordination with your adjacent radar unit.