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ATC Phraseology Guide – Aerodrome Control

Introduction

In the second of our ATC Phraseology Guides for FSOpen, we concentrate on Aerodrome Control. The examples in this volume follow the same format as those set in the Ground Control guide and will provide current phraseology based on the CAA CAP413 Radiotelephony Manual and other current UK ATC source documents adapted, where required, to suit the virtual air traffic control environment.

Whether you are an FSOpen member wishing to improve your ATC skills or a pilot looking to brush up on your r/t technique, this guide will be of some use. Standard phrases and responses in communications between pilots and controllers ensure that messages and instructions are passed in a clear, concise and consistent format. When mastered in FSX, it adds greatly to the virtual flying experience and for those members wishing to progress through the FSOpen ATC structure the use and correct application of these phrases forms part of the evaluation process.

Of course, it is recognised that this guide cannot provide illustrations to cover all eventualities and, in circumstances where this is the case, controllers should use clear language and their own adaptation of these examples in order to suit the particular situation.

Control Position Responsibilities

Aerodrome Control

Aerodrome Control is responsible for issuing information and instructions to aircraft under its control to achieve a **safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions** between:

(a) aircraft flying in, and in the vicinity of, the Air Traffic Zone (ATZ);
(b) aircraft taking-off and landing;
(c) aircraft moving on the apron;
(d) aircraft and vehicles, obstructions and other aircraft on the manoeuvring area.

In order to execute these duties, the *Aerodrome Controller (ADC) has authority over all aircraft and vehicles on the **manoeuvring area** and aircraft moving on the **apron***.

However, it is not uncommon at busy airports for Aerodrome Control to be divided into **Air Control** (TWR) and **Ground Movement Control** (GMC or GRD).

Air Control provides services for (a) and (b) above and has absolute authority over all movements on active runways and their access points.

Ground Movement Control provides services for (c) and (d) **except** on active runways and their access points.

Having demonstrated to a satisfactory standard that they are competent to perform the tasks of a Ground Controller, FSOpen Aerodrome controllers (ATCO 4) will also be able to:

- demonstrate correct management of IFR/VFR traffic on the ground and in the air;
- control traffic in the VFR circuit;
- integrate the mixed arrival and departure of VFR and IFR traffic with traffic in the VFR circuit;
- maintain a safe, orderly and expeditious flow of air traffic using standard phraseology.

We hope you find the information contained in this guide useful.

Contents

1. R/T Protocols (Aerodrome Control)

1.1 Initial contact

At aerodromes where the ground (GND) and tower (TWR) function have been split, aircraft are usually transferred to the tower frequency at or approaching the holding point. As always, the initial contact with a new speaking unit should include the use of full callsign by both parties (pilot and ATC). Abbreviated callsigns may be used thereafter providing no confusion is likely to exist.

1.2 Read-backs

In the non-virtual ATC world, controllers are required to obtain accurate read-backs of all safety critical information including **any** clearance involving use of a runway. In FSOpen, it is accepted that some of our pilot members' knowledge of correct procedures is limited and allowances will often have to be made in order to accommodate a wide variety of experience levels. Notwithstanding this, FSOpen ATCOs will be expected to obtain correct read-backs whenever possible taking into account the relevant experience of the pilot. In the examples that follow, the symbol "Pilot ®" denotes the pilots' read-back.

1.3 Pressure Settings

In the United States and some other countries it is common for aircraft altimeters to be calibrated in inches of mercury rather than millibars and, although **not** correct, it is common practice for a pressure of (for example) "29.92" to be referred to by the last three digits (ie "992"). However, 29.92in equates to 1013mb (and not 992mb). In this example, the pressure difference in height between these readings equates to 630ft. In order to ensure that no such confusion exists when passing or referring to QNH and/or QFE settings, controllers are to append the word '***millibars***' to all pressure values of **999mb or less**. '*Millibars*' may be omitted for values of 1000mb or greater.

1.4 Take-off / Landing Clearance

When referring to runway movements, controllers should only use the word "*cleared*" in connection with a clearance to take-off or land. For any other R/T exchanges, words such as '*cross*', 'd*eparture*' and '*approved*' should be used. In addition, controllers should always issue a take-off clearance as a separate transmission.

2. Pre-Departure Manoeuvring and Take-off Clearance

2.3 When to "*Hold*" at the Runway Holding Point

Where sole use of the runway for an aircraft departure cannot be assured, take-off clearance should not be given. If the runway is occupied, or about to become so, when a pilot reports "ready for departure", the pilot should be instructed to remain at the holding point so as not to infringe the landing area. The instruction for the pilot to "*Hold*" or "*Hold Position*" may be amplified with the reason (eg "*Learjet, 4 miles final*") in order to aid the pilots' situational awareness. Furthermore, it is worth remembering that some pilots may not always be ready for take-off immediately on reaching the holding point. Where this is known to be the case, it may be prudent to instruct the pilot to hold at the holding point (or any other convenient point) rather than allowing entry onto the runway, (and therefore denying its use to other ac), until such time as the pilot reports that he is ready for departure.

2.4 The following is an example format for an instruction to "Hold":

Pilot:	"[Airport] Tower, [Callsign], ready for departure"
ATC:	"[Callsign], [Airport] Tower. Hold (position), ([reason*])"
Pilot ®:	"Hold, [Callsign]"

Or;

Pilot:	"[Airport] Tower, [Callsign], Holding at [x], ready in [y] minutes"
ATC:	"[Callsign], [Airport] Tower. Hold (position); Report ready for departure"
Pilot ®:	"Hold (Position); Wilco; [Callsign]"

Eg.

Pilot:	***"[Newtown] Tower. [Jersey 3-9-Kilo], ready for departure"***
ATC:	***"[Jersey 3-9-Kilo], [Newtown] Tower. Hold (Position),*** ([***ILS traffic, Beech 3-50 approaching 3 miles final***])***"***
Pilot ®:	***"Hold, [Jersey 3-9-Kilo]"***

Or;

Pilot:	***"[Newtown] Tower. [Jersey 3-9-Kilo], Holding [Echo 1], ready in [2] minutes"***
ATC:	***"[Jersey 3-9-Kilo], [Newtown] Tower. Hold (Position); Report ready for departure"***
Pilot ®:	***"Hold (Position); Wilco; [Jersey 3-9-Kilo]"***

2.5 **When to "*Line Up*" or "*Line Up and Wait"***

Notwithstanding the runway occupancy rules for issuing a take-off clearance, it is often possible to allow an aircraft to enter the active runway in order to expedite its departure when it becomes safe to do so. The phrase, "*Line Up*" or alternatively, "*Line Up and Wait"* is used to allow a departing aircraft to enter the runway when it is expected that a take-off clearance can be issued in the imminent future (ie before affecting other aircraft on approach). Note; "*Line Up*" is used without specifying a reason (usually in busy r/t conditions), "*Line Up and Wait*" should be amplified with a reason (eg. "…*Boeing 7-3-7 vacating at Delta*").

2.6 The following is an example format for an instruction to Line Up / Line Up and Wait.

Pilot: "[Airport] Tower, [Callsign], ready for departure"

ATC: "[Callsign], [Airport] Tower. Runway [a], Line Up!"

Pilot ®: "Line Up, [Callsign]"

Or;

Pilot: "[Airport] Tower, [Callsign], ready for departure"

ATC: "[Callsign], [Airport] Tower. Runway [a], Line Up and Wait; [reason]."

Pilot ®: "Line Up (and Wait), [Callsign]"

Eg.

Pilot:	***"[Newtown] Tower. [Jersey 3-9-Kilo], ready for departure"***
ATC:	**"*[Jersey 3-9-Kilo], [Newtown] Tower. Runway [1-2]; Line Up*"**
Pilot ®:	**"*Line Up, [Jersey 3-9-Kilo]"***

Or:

Pilot:	***"[Newtown] Tower. [Jersey 3-9-Kilo], ready for departure"***
ATC:	**"*[Jersey 3-9-Kilo], [Newtown] Tower. Runway [1-2]; Line Up and Wait, [Beech Baron vacating on Delta*]"***
Pilot ®:	**"*Line Up (and Wait), [Jersey 3-9-Kilo]"***

2.7 **When to give Take-off Clearance**

Following the call from a pilot that he is "*ready for departure*", take-off clearance should be issued **only when exclusive use of the runway ahead can be guaranteed** for the departing aircraft.

2.8 A typical example format for a take-off clearance would be as follows:

Pilot: "[Airport] Tower, [Callsign], ready for departure"

ATC: "[Callsign], [Airport] Tower. Runway [a*];
Cleared for take-off; (Surface) Wind [x] (degrees)/ [w] (knots)"

Pilot ®: "Cleared for take-off, [Callsign]"

*Note: Although not mandatory, the inclusion of the Runway designator before the take-off clearance is considered best practice at all aerodromes controlled by FSOpen ATCOs.

Eg.

Pilot:	***"[Newtown] Tower. [Jersey 3-9-Kilo], ready for departure"***
ATC:	**"*[Jersey 3-9-Kilo], [Newtown] Tower. Runway 1-2;*** ***Cleared for Take-off;*** (***Surface***) ***wind [0-9-0]***(***degrees***), ***[6]*** (***knots***)**"**
Pilot ®:	**"*Cleared for Take-off; [Jersey 3-9-Kilo]"***

2.9 **Conditional Clearances**

A conditional clearance allows a pilot to carry out an action only **after** another action has taken place. During the pre-departure phase, this would typically be a clearance to line-up or take-off once another aircraft on approach has landed and/or vacated the runway or has taken off ahead. Conditional clearances should not be used at night or in poor visibility. The condition should only relate to **one** movement and, in the case of landing traffic, should always be the next aircraft to land.

2.10 In FSOpen, Aerodrome Controllers should only use a conditional line-up or take-off clearance when in Tower View and then only when both pilots involved in the clearance are visual with each other. In addition, when a conditional clearance has been issued, it is important to ensure a full read-back is obtained in the sequence it was given.

2.11 A typical example format for a conditional clearance to Line Up would be as follows:

Pilot: "[Airport] Tower, [Callsign], ready for departure"

ATC: "[Callsign], [Airport] Tower. **Hold Position**; After the [reason for condition], Line Up"

Pilot ®: "Hold Position; After the [reason for condition], Line Up; [Callsign]"

2.12 **Conditional Line-Up clearance following aircraft on final approach**

Pilot:	***"[Newtown] Tower. [Jersey 3-9-Kilo], ready for departure"***
ATC:	**"*[Jersey 3-9-Kilo], [Newtown] Tower. Hold Position! After the [landing Boeing 7-3-7 two mile final Runway 1-2*], Line Up*"**
Pilot ®:	**"*Hold Position. After the [landing Boeing 7-3-7 two mile final Runway 1-2], Line Up; [Jersey 3-9-Kilo]"***

*Note: Intention, type, range and runway included to fully describe condition to departing pilot. It is important that the pilot understands this and reads back the clearance in full.

2.13. **Conditional Line-Up clearance following departing aircraft occupying runway ahead**

Pilot:	***"[Newtown] Tower. [Jersey 3-9-Kilo], ready for departure"***
ATC:	**"*[Jersey 3-9-Kilo], [Newtown] Tower. Hold Position! After the [CRJ700 ahead departing Runway 1-2], Line Up*"**
Pilot ®:	**"*Hold Position. After the [CRJ700 ahead departing Runway 1-2], Line Up; [Jersey 3-9-Kilo]"***

2.14 **Conditional Take-Off clearance following aircraft ahead vacating runway**

Pilot:	***"[Newtown] Tower. [Jersey 3-9-Kilo], ready for departure"***
ATC:	**"*[Jersey 3-9-Kilo], [Newtown] Tower. Hold Position!* *After the [landing C-1-8-2 has vacated Runway 1-2 at Delta],* *Cleared for Take-Off; Wind 1-1-0 at 6*"**
Pilot ®:	**"*Hold Position. After the [C1-8-2 has vacated Runway 1-2 at Delta], Cleared for Take-off; [Jersey 3-9-Kilo]"***

Note: In FSOpen, a conditional take-off clearance is not encouraged if it appears that the experience of the receiving pilot is suspect.

3. Hold, Line Up & Take-Off Clearance Example Templates

3.1 (Pilot Initial R/T Contact at Holding Point – not yet ready for departure)

Pilot: "_____[airport] ***Tower,***_____ *[*callsign*],*

Holding at _____ [position/holding point]

Ready in _____ ***minute(s)***"

3.2 Hold (Aircraft not yet ready for departure)

ATC: **"**[callsign] _____, [airport] _____ ***Tower.***

Hold (Position), report ready for departure!"

3.3 (Pilot Initial R/T Contact - Ready For Departure)

Pilot: "_____[airport] ***Tower,***_____ *[*callsign*],*

Ready for Departure"

3.4 Hold (Runway Occupied)

ATC: **"**[callsign] _____, [airport] _____ ***Tower.***

Hold! _____[(reason*)]***"***

**As Required*

3.5 Line Up (and Wait*)

ATC: **"**[callsign] _____, [airport] _____ ***Tower.***

Runway_____; Line Up*!

(or; ***Line Up and Wait)****_____ [reason]***"**

***As required by circumstances. Only "*Line Up and Wait*" requires reason

3.6 Take-off Clearance

ATC: **"**[callsign] _____, [airport] _____ ***Tower.***

Runway_____; Cleared for Take-off;

(Surface) Wind _____ (degrees), _____ (knots)

*The words "surface", "degrees" and "knots" may be omitted when passing surface wind information. However, if one is used, they should all be used.

4. Local Amendment to ATC Clearance

4.1 Occasionally, it may be necessary to amend an aircrafts' departure instructions from those passed in an ATC Clearance in order to ensure that adequate separation is maintained from other aircraft after departure. When the prevailing traffic situation dictates that such an amendment is required, a 'local restriction' to the ATC Clearance should be passed to the pilot immediately prior to, but separate from, his take-off clearance. If required in FSOpen, this local restriction would normally take the form of a climb-out restriction (CoR).

4.2 **Climb-out Restriction and routeing**

It should be noted that a climb-out restriction **only restricts the vertical profile** of a departure clearance - it **does not** affect the routeing. Therefore, when issuing a climb-out restriction, controllers should take account of any high ground in the vicinity and only issue levels that are terrain safe.

4.3 A typical example format for passing a climb-out restriction before take-off clearance would be as follows:

Pilot:	"[Airport] Tower, [Callsign], ready for departure"
ATC:	"[Callsign], [Airport] Tower. Climb-out Restriction, (altitude/Flight-Level*) [x]; Acknowledge."
Pilot ®:	"Climb-out restriction, (altitude/Flight Level*) [x]; [Callsign]"
ATC:	"[Callsign], Runway [a]; Cleared for take-off; (Surface) Wind [b] / [c]"

4.4 Eg.

Pilot:	***"[Newtown] Tower. [Jersey 3-9-Kilo], ready for departure"***
ATC:	***"[Jersey 3-9-Kilo], [Newtown] Tower. Climb-Out Restriction [Flight Level 5-0]; Acknowledge"***
Pilot ®:	***"Climb-Out Restriction [Flight Level 5-0]. [Jersey 3-9-Kilo]"***
ATC:	***"[Jersey 3-9-Kilo], Runway 1-2; Cleared for Take-off; (Surface) wind [0-9-0](degrees), [6] (knots)"***
Pilot ®:	***"Cleared for Take-off, [Jersey 3-9-Kilo]"***

5. Transfer of Control to Approach Radar

5.1 As the departing aircraft climbs out, transfer of control to the approach radar controller may be initiated using the following phraseology format:

ATC:	"[Callsign]; Contact [aerodrome] Radar, [frequency]"

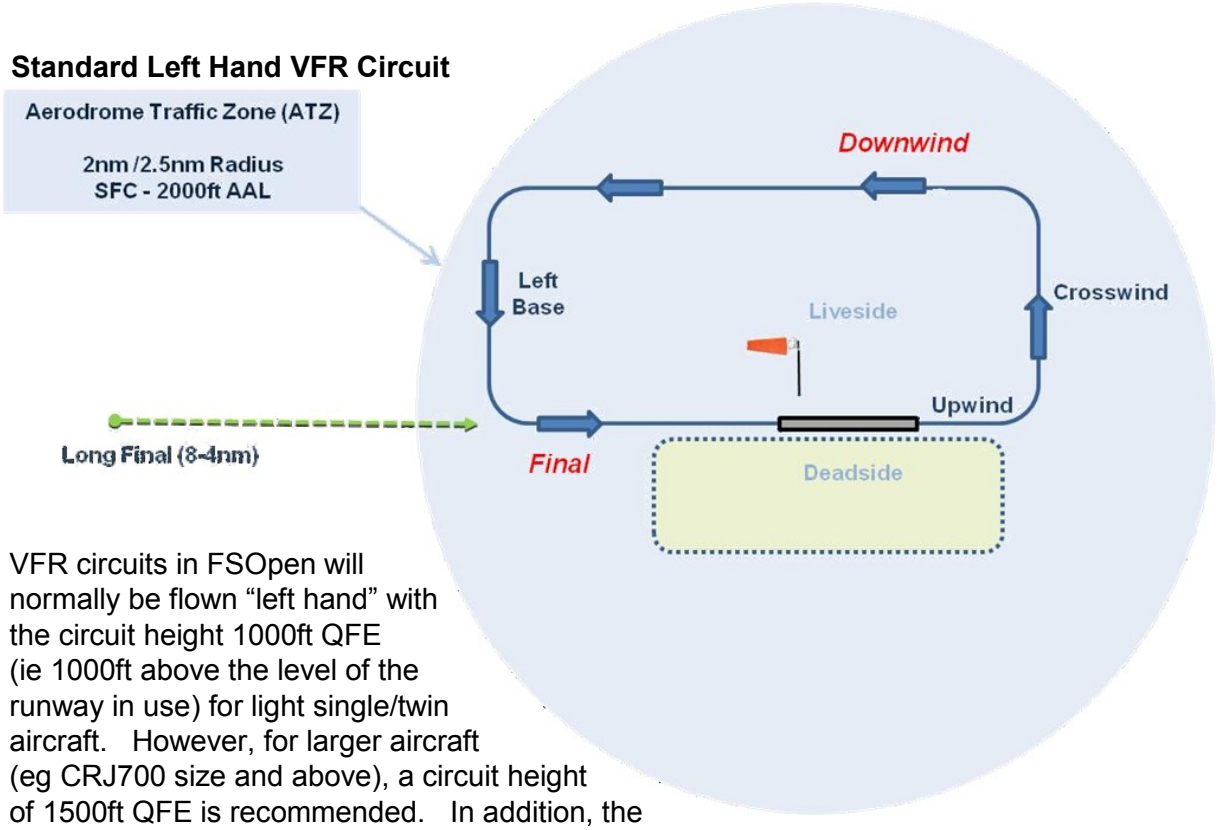
5.2 Eg.

ATC:	***"[Jersey 3-9-Kilo]; Contact [Newtown] Radar, [1-1-8 decimal 4-2-5]"***
Pilot ®:	***"[Newtown] Radar, [1-1-8 decimal 4-2-5], [Jersey 3-9-Kilo]"***

6. VFR Join and Circuit Procedures

6.1 In the non-virtual environment, pilots are taught to fly VFR circuits at an early stage of their flying training. Visual circuits allow a pilot to practice multiple approaches and landings as well as aircraft handling and energy (speed) management skills whilst remaining in close proximity to the aerodrome. This is advantageous as it allows for fuel costs to be reduced (more approaches for less distance flown) and increased safety (circuits usually within gliding distance of the airfield in the event of an engine failure). However, in FSOpen and many other online flight simulator environments, virtual pilots are generally less familiar with VFR flight and circuit procedures. Whilst this guide is primarily focussed on the phraseology associated with Aerodrome Control, the following paragraphs outline the basic circuit procedures so that pilots and controllers reading this document are familiar with the same principles.

6.2 **Standard Left Hand VFR Circuit**



6.3 VFR circuits in FSOpen will normally be flown "left hand" with the circuit height 1000ft QFE (ie 1000ft above the level of the runway in use) for light single/twin aircraft. However, for larger aircraft (eg CRJ700 size and above), a circuit height of 1500ft QFE is recommended. In addition, the following variations may be permitted at the Aerodrome Controllers discretion when traffic or other circumstances dictate:

- Mixed height circuits (eg mixed types require 1000ft and 1500ft circuits to be flown simultaneously); and/or
- Right hand circuits or simultaneous*[1] left and right hand circuits as required.
- Circuits may be flown on QNH*[2] providing the correct adjustment for the aerodrome elevation is applied.

*Note 1 Simultaneous left/right circuits have no deadside. Aircraft join the circuit from a straight in approach, left or right base join, or downwind join as directed by the ADC. Go arounds are flown at circuit height along and directly above the runway in use.

*Note 2 The mixed use of QFE and QNH in the VFR circuit is **not** appropriate due to the high risk of pilots misinterpreting QNH for QFE (and vice-versa).

6.4 Although the size of the circuit will vary depending on the aircraft type(s) being flown it should normally be contained within a radius from the airfield of **no more than** 4nm for light single/twin aircraft and/or no more than 5nm for all other types.

6.5 It is the responsibility of the pilot to arrange his flight so that it follows the normal "rules of the air". In the circuit, this effectively means that pilots must be able to see each other and the aerodrome at all times and must not fly their aircraft in such proximity to each other as to constitute a hazard. Aircraft must not cut in front of, or over/undertake, another on final approach and pilots must follow the sequence specified in any instruction issued by the ADC.

6.6 It is the responsibility of a pilot joining a visual circuit to give way to other aircraft in the circuit.

6.7 Aircraft joining the visual circuit from radar may be transferred to TWR when the pilot reports that he is visual with the aerodrome (in FSOpen, this is taken to mean when the pilot is visual with aircraft labels in the vicinity of the aerodrome).

6.8 If radar is not manned, pilots are to make the joining call **5 minutes or 15nm before arrival** (or when the pilot is visual with aircraft labels in the vicinity of the aerodrome), whichever is earlier.

6.9 **Joining Instructions**

Following a pilot's initial request to join the VFR circuit, the Aerodrome Controller (ADC) will need to ascertain the aircraft type, position (and/or direction from which the joining aircraft is arriving), altitude and the type of join required. In response, the ADC will issue joining instructions that will contain the following:

- Clearance to join the VFR circuit (or instructions to remain outside the circuit if unable to accept);
- Type of join;
- Runway in use;
- Circuit direction and Height (FSOpen only);
- QFE (or QNH* if requested and appropriate);
- Number and position of aircraft already in the circuit;
- Next reporting point

The pilot is only required to read back the Runway in use and QFE (or QNH if passed). The phrase, "*Wilco*" (the abbreviation for "I will comply") is used to acknowledge the reporting point instruction.

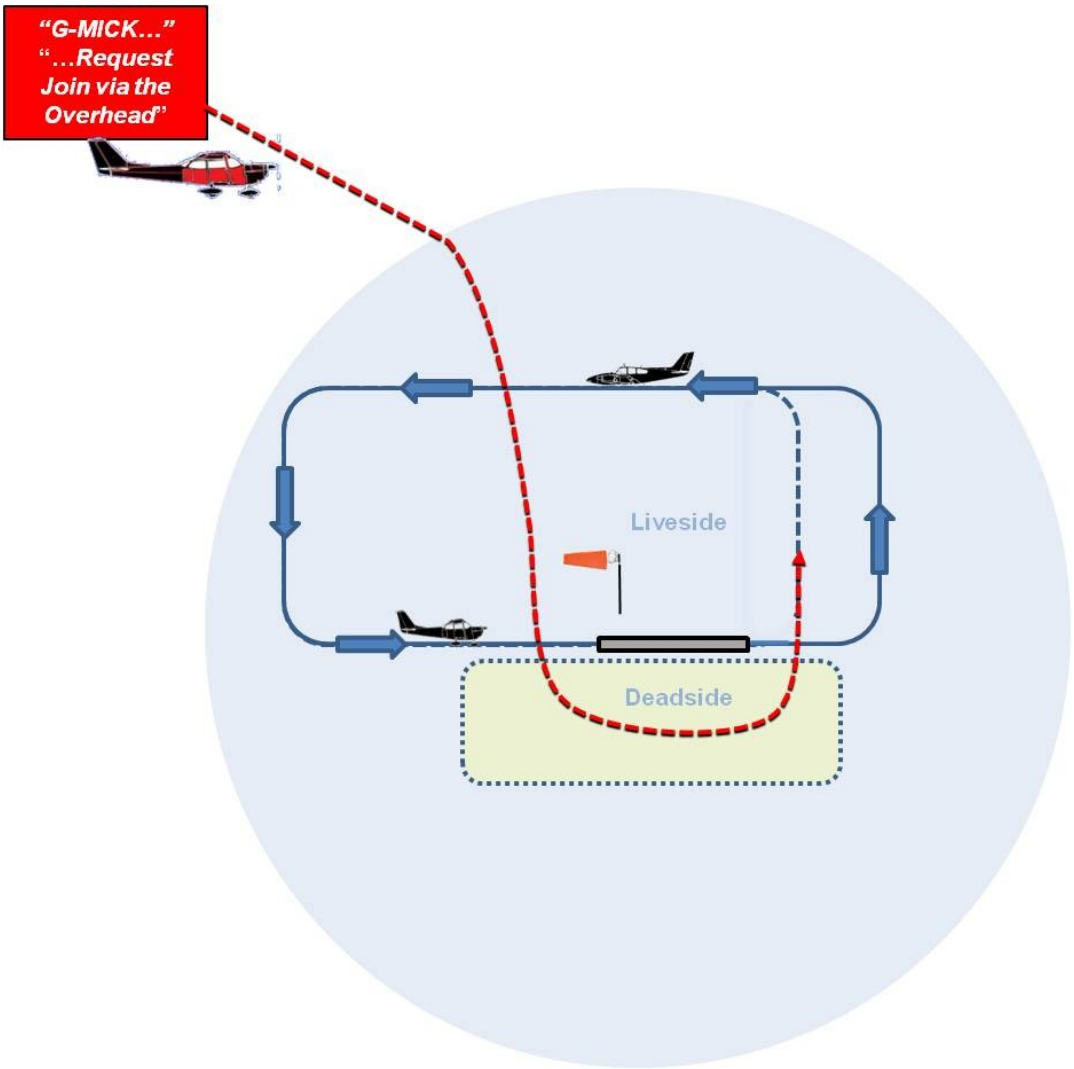
6.10 The following example format details the order that joining information should be passed:

Pilot:	"[Airport] Tower, [Callsign], request join"
ADC:	"[Callsign], [Airport] Tower. Pass your message"
Pilot:	"[Callsign]; [aircraft type]; [position]; [altitude]; request [type of join]"
ADC:	"[Callsign], Join [type of join], Runway [a], Left (/Right*) Hand Circuit Height [b], QFE [x]; [Number in and position of circuit traffic]; Report [z]
Pilot ®:	"Runway [a]; QFE [x]; Wilco; [Callsign]"

*As required

6.11 Eg. **Overhead Join**

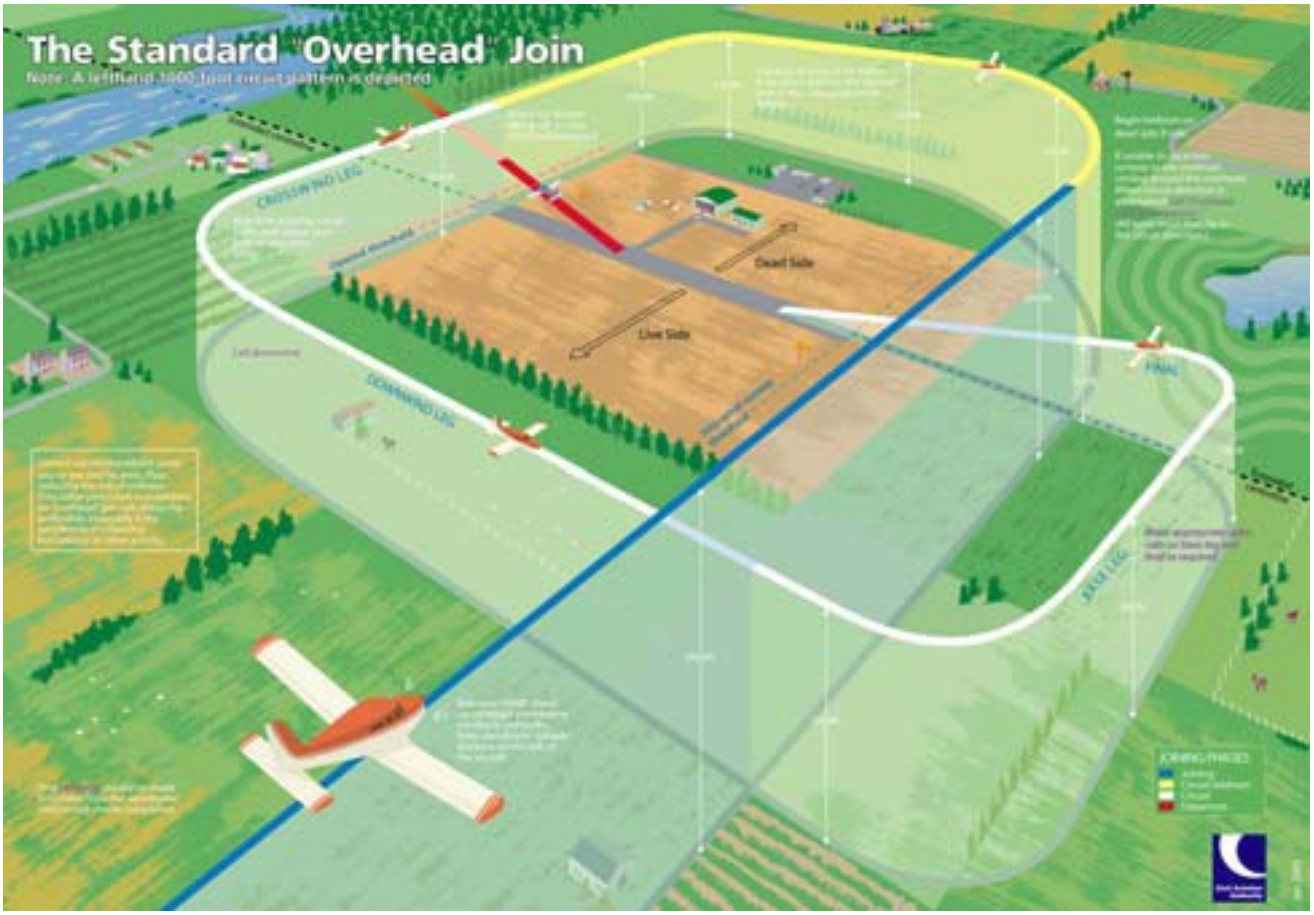
Pilot:	***"[Newtown] Tower. [Golf Mike India Charlie Kilo], request join"***
ADC:	***"[Golf Mike India Charlie Kilo], [Newtown] Tower. Pass your message"***
Pilot:	***"[Golf Mike India Charlie Kilo]; [Cessna 1-7-2]; [1-5 miles north of Newtown]; [2000ft] VFR; [Request join via the overhead]"***



ADC:	***"[Golf Charlie Kilo; Join [Overhead]; Runway [1-2], [Left] Hand Circuit, (Height [1000 feet])*; QFE [9-9-6 millibars]. [Two] in, [Beech 58 Downwind, Cessna 1-7-2 on Final]; Report [overhead]"***
Pilot ®:	***"Join Runway [1-2], QFE [9-9-6 millibars]; Wilco [Golf Charlie Kilo]"***

*Circuit Height passed in FSOpen only

6.12 **Standard Overhead Join (Left Hand Circuit)**

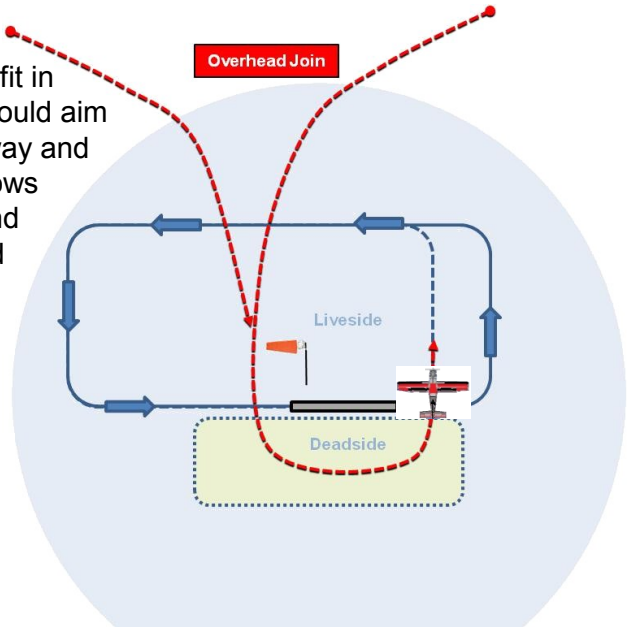


6.13 Aircraft joining via a standard overhead join will do so at:

- 2000ft QFE when the circuit is active at 1000ft; or
- 2500ft QFE if the circuit is active at 1500ft.

6.14 Joining aircraft should descend on the deadside **only when the position of all other aircraft in the circuit has been assessed**. If this cannot be achieved joining should be delayed and an alternative approach requested.

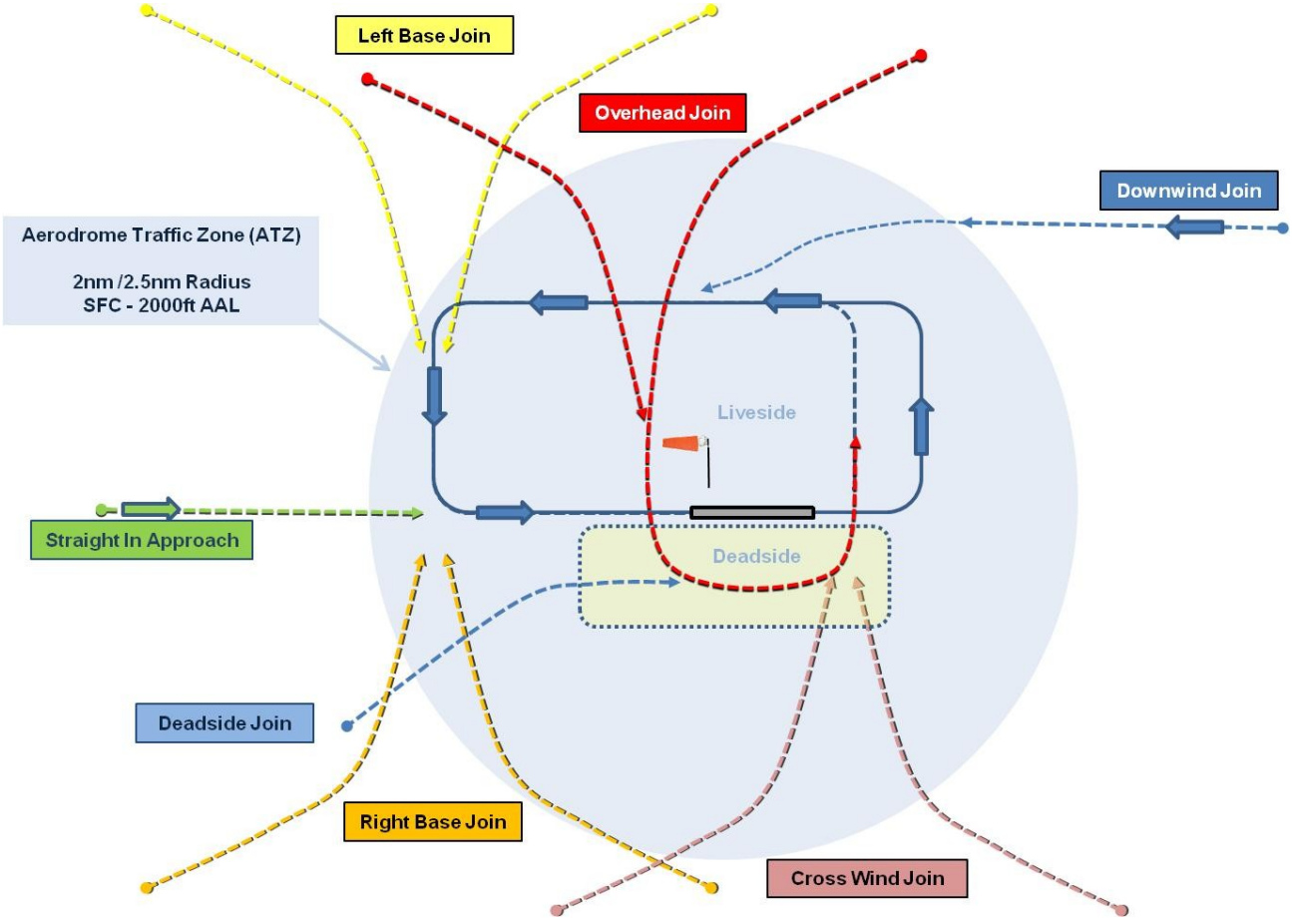
6.15 Unless it is necessary to adjust the join to fit in with other circuit traffic, the joining pilot should aim to cross the upwind end of the active runway and then turn onto the downwind leg. This allows other aircraft taking off and climbing upwind to adjust their circuit pattern to fit in behind the joining aircraft.



6.16 **Alternative Joining Procedures**

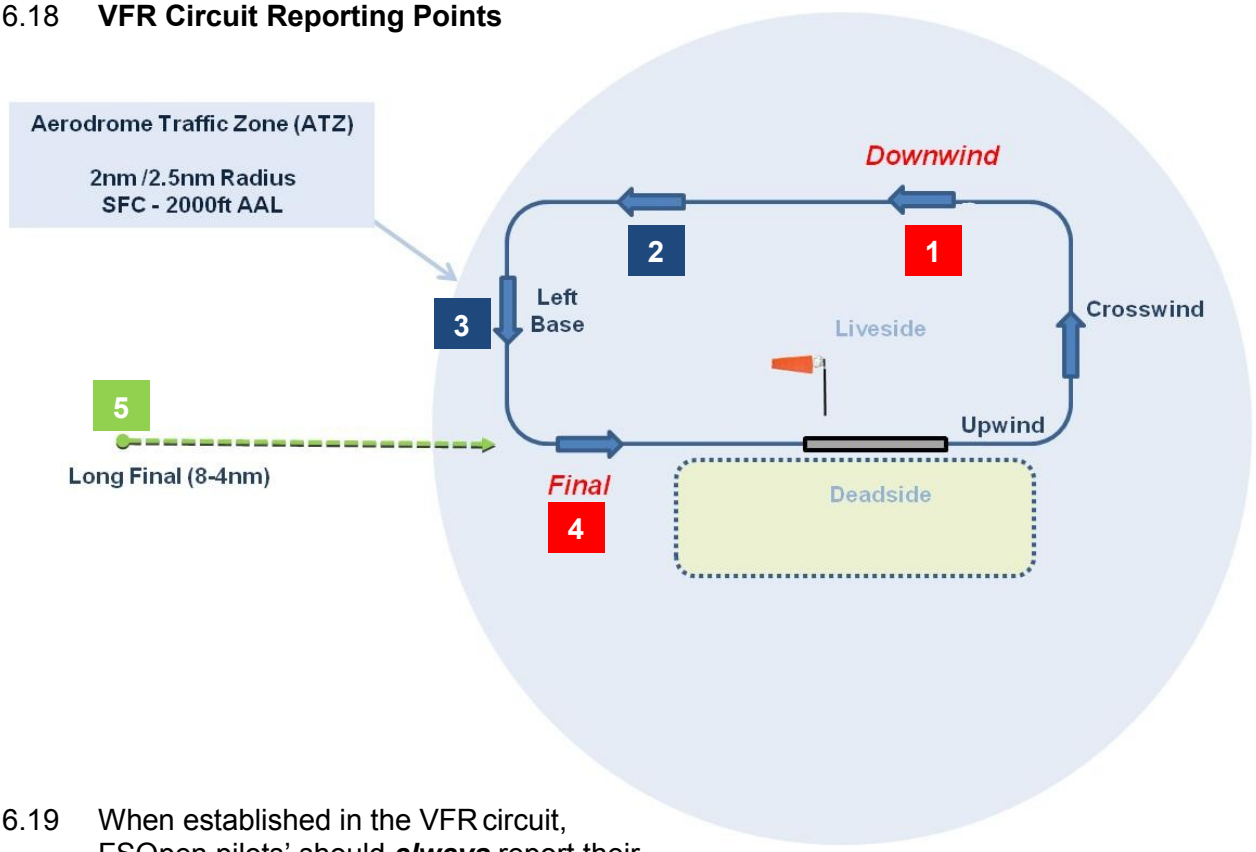
A standard overhead joining procedure may not always be the most expeditious means of joining the visual circuit. Unless otherwise requested by the pilot, the ADC will decide the most appropriate joining method taking into account the direction from which the joining aircraft is approaching the aerodrome and, in FSOpen, the experience of the pilot.

6.17 Where it is deemed appropriate, the ADC may instruct an aircraft to join the VFR circuit via any one of the circuit entry points highlighted in the illustration below:



6.17 Basic joining principles remain the same in that pilots should remain outside the circuit area until the position of all other aircraft already in the circuit has been ascertained and a safe join can be accomplished. Similarly, although the joining phraseology **format** remains unchanged, the circuit entry method should always be specified (eg in the example at paragraph 6.11 the phrase "*Join overhead*" would be replaced by one of the highlighted points above; ie "*Join downwind*", "*Join left base*", "*Join deadside*", "*Join Straight in*", etc).

6.18 **VFR Circuit Reporting Points**



6.19 When established in the VFR circuit, FSOpen pilots' should ***always*** report their position when they reach the **Downwind** leg and when lined up on **Final**.

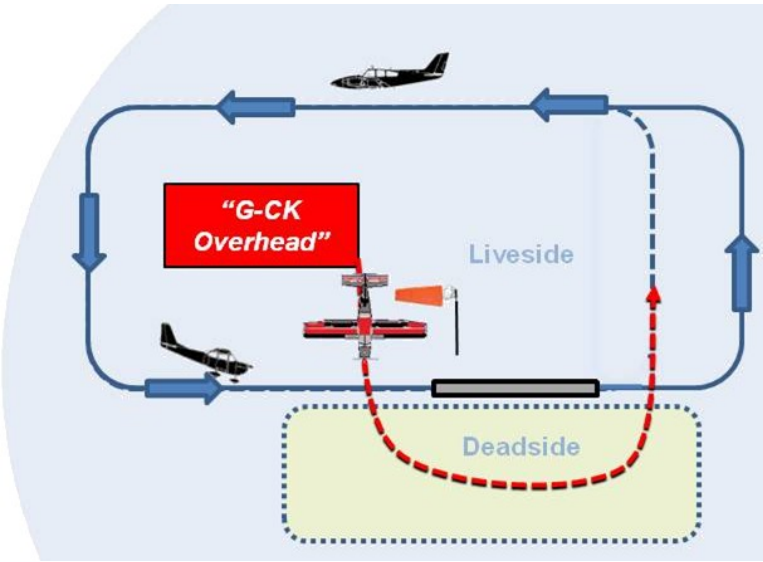
6.20 In addition, the illustration above depicts positions that correspond with the following notes:

- **Position 1:** Pilot reports "***Downwind***" with intentions (ie. "*Land*", "*Touch and Go*" or "*Low Approach and Go Around*").
- **Position 2**: Pilot reports "***Late downwind***" if he has passed abeam the downwind threshold and has been unable to report "downwind" at Position 1 for any reason.
- **Position 3**: Pilot reports "[***Left****/Right**] ***Base***" (only if required by the ADC).
- **Position 4**: Pilot reports "***Final***". Clearance to use runway or instruction to "*Continue*" issued here.
- **Position 5**: Pilot reports "***Long final***" (between 8 and 4 miles) when aircraft is on a Straight-in approach.

6.21 Exemplar Circuit Phraseology

G-MI**CK** Reports Overhead.

Pilot:	***"Tower; Golf Charlie Kilo, overhead"***
ADC:	***"[Golf Charlie Kilo]; Roger, report downwind"***
Pilot:	***"[Golf Charlie Kilo]; Wilco"***



R/T to other pilots:

C172: "*Cessna G-AB, Final*"

ADC: "***G-AB, Runway 1-2; Cleared touch & go; Wind 1-2-0, 6***"

C172®: "*Cleared Touch & Go, G-AB*"

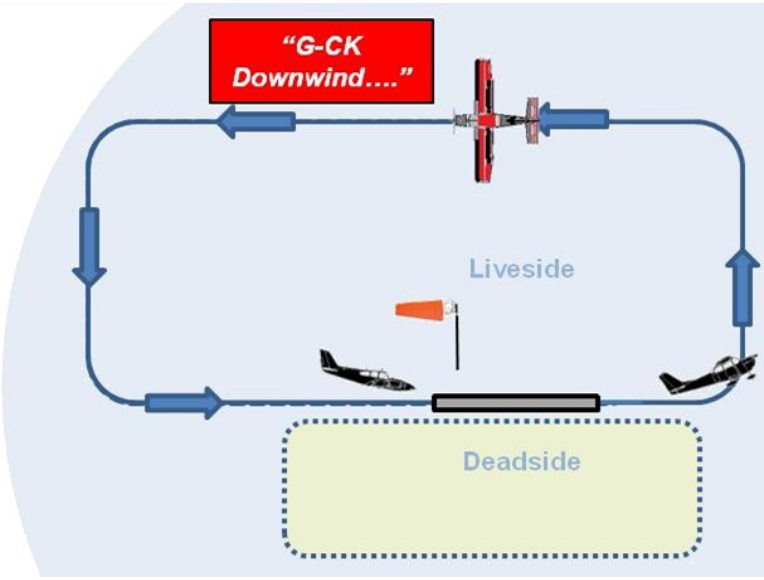
Be58: "*Baron G-CD; Downwind, Low Approach*"

ADC: "***G-CD; Number 2, Follow the Cessna on Final***"

Be58®: "*G-CD; Number 2; Wilco*"

G-MICK Reports Downwind

Pilot:	***"Golf Charlie Kilo; Downwind [to Land]"***
ADC:	***"[Golf Charlie Kilo]; Number [2]; Follow the [Baron on Final]"***
Pilot ®:	***"[Golf Charlie Kilo]; Number [2]; Wilco"***



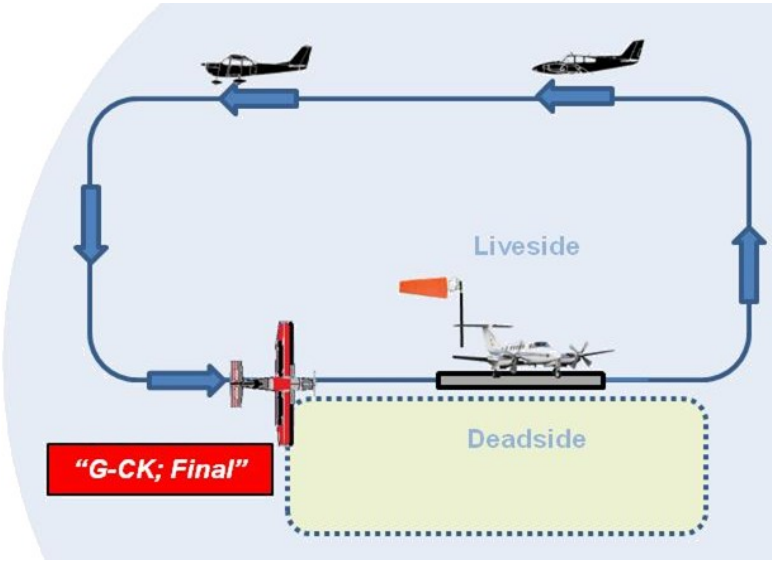
R/T to other pilots:

Be58: "*Baron G-CD; Final*"

ADC: "***G-CD; Runway 1-2, Cleared Low Approach & Go Around; Wind 1-2-0, 6***"

Be58®: "*Cleared Low Approach & Go Around, G-CD*"

14:09 Runway Becomes Occupied with Departing Traffic



R/T to other pilots:

Be200: "*Newtown Tower, KingAir G-WXYZ, ready for departure*"

ADC: "*G-WXYZ, Newtown Tower; Runway 1-2, Cleared for Take-Off; Wind 1-1-0 at 6*"

Be200®: "*Cleared for Take-Off, G-WXYZ*"

C172: "*G-AB; Late downwind; Land*"

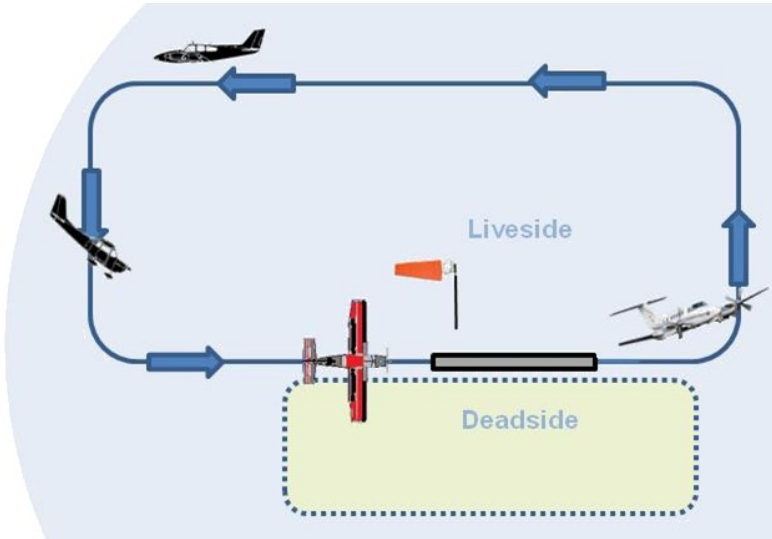
ADC: "*G-AB; Number 2, Follow the* red & black *Cessna on final*"

C172®: "*G-AB; Number 2; Wilco*"

Pilot:	***"Golf Charlie Kilo; Final"***
ADC:	***"[Golf Charlie Kilo]; [Continue Approach],[KingAir] [on for Departure];***
Pilot ®:	***"[Continue Approach]; [Golf Charlie Kilo]"***

14:10 Runway Becomes Available

ADC:	***"[Golf Charlie Kilo]; Runway [1-2]; Cleared to [Land]; (Surface) Wind, [1-2-0 (degrees), 6 (knots)]***
Pilot ®:	***"Cleared [to Land]; [Golf Charlie Kilo]"***



R/T to other pilots:

Be58: "*G-CD; Late downwind; Land*"

ADC: "*G-CD; Number 3, Follow the* black *Cessna on base*"

Be58®: "*G-CD; Number 3; Wilco*"

ADC: *"G-YZ; Contact Newtown Radar 118.425"*

Be200®: "*Newtown Radar, 118.425, G-YZ*"

7. VFR Circuit - Example Templates

7.1 (Pilots Initial Request for Join)

Pilot: "[Airport] _____ ***Tower;*** [callsign] _____,

Request Join"

ADC Initial Response

ATC: **"**[Callsign] _____*;* [airport] _____ ***Tower.***

Pass your message"

7.2 (Pilot Join Request)

Pilot: "[Callsign] _____*;* [type] _____

[position] _____

[Height/Level] _____; ***VFR,***

Request [circuit entry type] _____ ***join***"

ADC Join Instructions

ATC: **"**[Callsign] _____, ***Join*** _____ [circuit entry type]

Runway _____, ***Left* Hand Circuit, Height*** _____ ***feet;***

QFE _____ ***(millibars)****;* [No of ac already in the circuit) _____ ***in;***

[Type/position of ac in circuit] _____

Report _____***"*** [circuit entry point)

(Pilot Readback)

Pilot ®: "***Join Runway***_____; ***QFE*** _____ (***millibars****)

Wilco [acknowledging next reporting point]; _____" [callsign]

7.3 (Pilot Reports Downwind)

Pilot: "_____ [callsign]; ***Downwind to*** _____ **"**
[intentions from approach,
(ie land, touch & go or low approach)]

ADC Reply (to aircraft Downwind)

ATC: **"**[Callsign] _____*;* ***Number*** _____ [order in the circuit ie "1", "2", "3" etc)]

(Follow the _____)
(if required) (*[type and circuit position of ac immediately ahead],

(Pilot Readback)

Pilot ®: ***"Number*** _____ [as passed]; ***Wilco; (Traffic in sight*); _____*** [callsign]"

7.2 (Pilot Reports Final)

Pilot: "_____ [callsign]; ***Final***"

ADC Reply (to aircraft on Final – Runway OCCUPIED)

ATC: **"**[Callsign] _____*;* ***Continue (approach)"***

Or;

ADC Reply (to aircraft on Final – Runway NOT Occupied)

ATC: **"**[Callsign] _____*;* ***Runway*** _____*;*

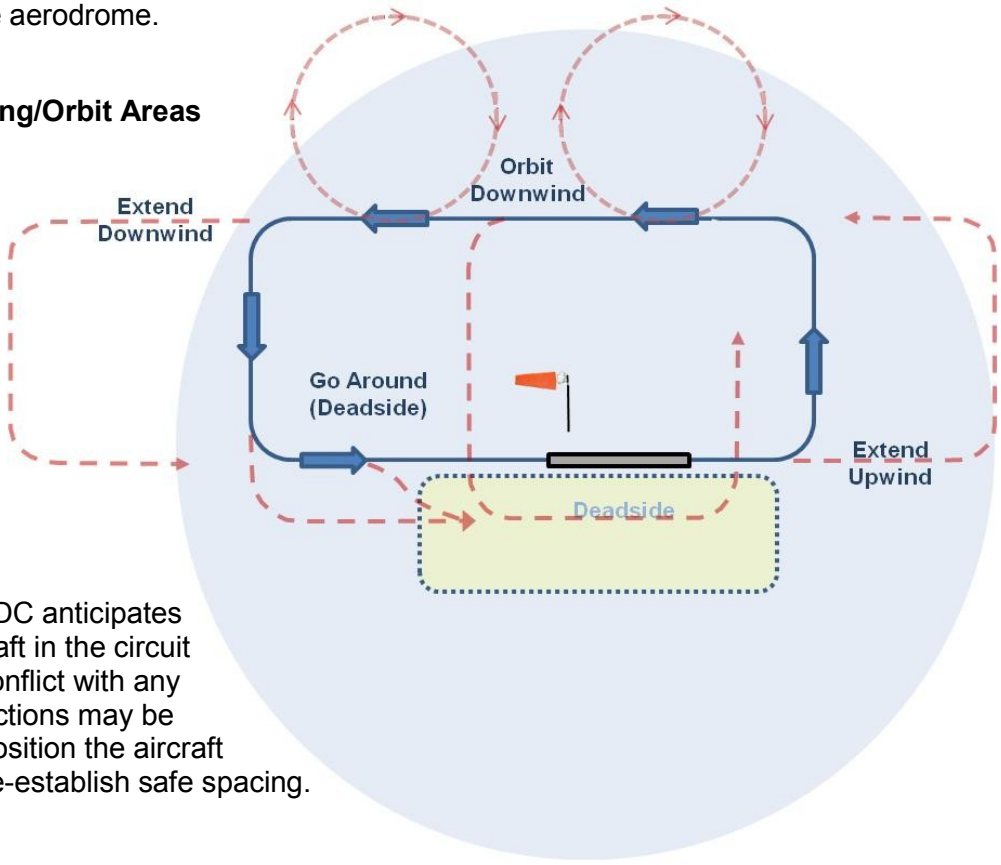
Cleared [***(To Land*) / (Touch & Go*) / (Low Approach & Go Around*)***]

(Surface) Wind:_____ (***degrees***), _____ (***knots***)"

8. Circuit Positioning and Sequencing Techniques

8.1 Although it the responsibility of the pilot to position his aircraft to fit into the VFR circuit, the ADC is responsible for the safe, orderly and expeditious flow of traffic. It is therefore often necessary to instruct pilots to adjust their position in the circuit in order to maintain the 'orderly flow'. This may be to allow for the different flight characteristics of other aircraft in the circuit or to sequence the safe arrival and departure of other VFR and/or IFR traffic to and from the aerodrome.

8.2 **Repositioning/Orbit Areas**



8.3 When the ADC anticipates that an aircraft in the circuit is likely to conflict with any other, instructions may be given to reposition the aircraft in order to re-establish safe spacing.

8.4 As a general guide, if an aircraft in the visual circuit has **passed** the midpoint of the downwind leg **before** an aircraft of similar speed reaches the 8nm point on a straight-in or ILS approach, the aircraft in the circuit **will** have adequate time to complete his approach and should be *normally* be allowed to do so. However, if the ADC is in any doubt, priority should be given to the IFR traffic on approach and the circuit traffic sequenced behind by one of the following methods:

- Extend circuit traffic upwind (if confliction anticipated at an early stage)
- Orbit downwind (in FSopen, orbit normally opposite to circuit direction, as illustrated)
- Extend Downwind
- Go Around (achieved from any position in the circuit – pilots maintain or climb to circuit height and fly through on the deadside before rejoining crosswind).

8.5 **Note for FSO Pilots:** Aircraft instructed by the ADC to orbit should maintain circuit height while flying turns opposite to the circuit direction (unless instructed otherwise). Turns are to be made through 360° and, allowing for wind, aim to return to the same point over the ground after every orbit.

8.6 It should be noted that traffic flying in the VFR circuit should NOT be using instrumentation for navigation and the ADC should refrain from passing any heading instructions (ie radar vectors) either for positioning or for the purposes of avoiding other aircraft.

8.7 Additionally, where traffic information is required, it should be passed relative to a position or leg in the circuit and NOT by the clock code method.

8.8 Useful ADC Phrases

The following phrases may be useful when sequencing traffic in the VFR circuit:

ATC: **"**[Callsign] _____*;* ***Extend Upwind /Downwind****;*

Number _____ ***to a*** _____ [aircraft type and position]".

ATC: **"**[Callsign] _____*;* ***For spacing, Orbit Right*** (or *Left**)

and report again _____ [position in circuit]."

ATC: **"**[Callsign] _____*;* ***Go Around, I say again Go Around****;*

Fly through Deadside and report again_____ [position in circuit]."

* As Required

8.9 ATC Clearance for VFR Circuit

The phraseology for the ATC Clearance messages is covered in detail in Volume 1. However, it is normal practice for the ADC to issue the clearance to pilots who wish to remain in the VFR circuit in the following format:

ATC: **"**[callsign] _____*;*

Hold Position (or) ***Hold at**** _____ [Holding Point]***,***

After departure, left/right* hand circuit,_____ [height]

QFE _____ (millibars); ***Maintain V-F-R;***

Squawk _____ (7-0-1-0)"

* As Required

9. IFR Arrival Procedures

9.1 Traffic Priorities

In the non-virtual environment traffic flying in the VFR circuit normally does so for training purposes. When compared to IFR traffic, an aircraft flying in the VFR circuit will have the opportunity to make several approaches to the runway before an aircraft flying an IFR circuit will be in a position to make even one approach. Because IFR traffic may have flown some considerable distance in order to complete one approach to the runway, it would normally be given priority over VFR circuit traffic. Similarly, aircraft arriving from any other aerodrome intending to make a direct approach to the runway, whether VFR or IFR, will normally be given priority over circuit traffic.

9.2 R/T Broadcast for Instrument Traffic

In order to make VFR traffic aware of impending IFR traffic on approach it is recommended that the ADC makes an r/t broadcast on the TWR frequency when the IFR traffic is between 10 and 8 miles from touchdown. The broadcast information should state "*Instrument Traffic*" or "*ILS Traffic"*, the inbound aircraft type, range and intentions from the approach (if not known the intention should be, "*for the Option*"). The format of the broadcast is as follows:

> "***Instrument Traffic***, _____[type]; ***8 miles***; _____ [intentions or "*Option"*]

9.3 Transfer of Control and Communication from Radar

IFR traffic should be transferred from Radar (RAD) to Tower (TWR) no later than the 8nm point or when established on the ILS.

9.4 Initial Contact IFR Inbound

The following example format details the phraseology for inbound IFR traffic:

Pilot: "[Airport] Tower, [Callsign]; [range], established on [type of approach], Runway [a]"

ADC: "[Callsign], [Airport] Tower. Continue approach; Runway [a]; QNH [x]; Circuit Active* [Left/Right* Hand]; Report 4 miles"

Pilot ®: "Continue Approach; Runway [a]; QNH [x]; Wilco; [Callsign]"

At 4nm/DME;

Pilot: "[Callsign], 4-miles"

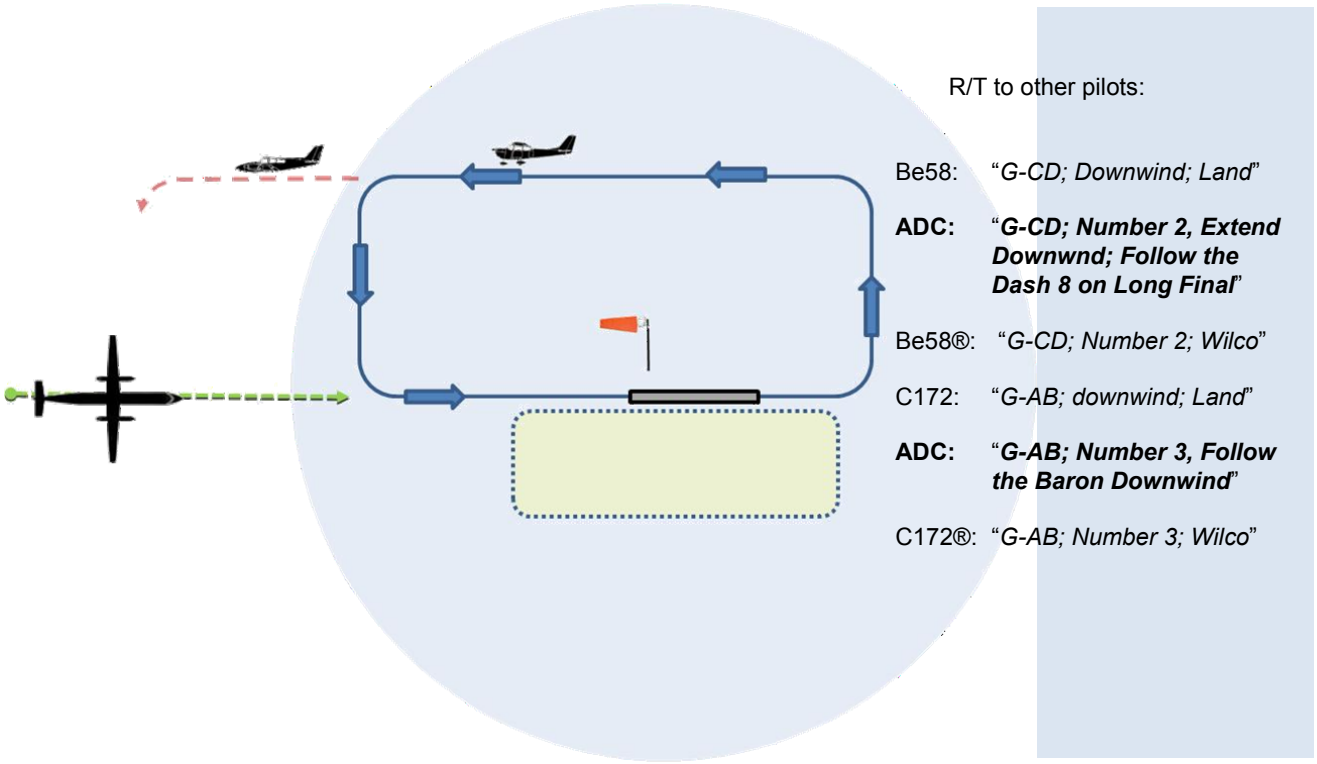
ADC: "[Callsign]; Runway [a]; Cleared [intention]; (Surface) Wind [b] (degrees), [c] (knots); Traffic is a [type and position of circuit traffic]"

Pilot ®: "Runway [a]; Cleared [intention]; [Callsign]"

*As required

9.5 Eg. **IFR Inbound R/T Boadcast and Initial Contact**

ADC:	"***Instrument Traffic***, [***Dash 8***]; ***8 miles***; [**Land**]"



R/T to other pilots:

Be58: "*G-CD; Downwind; Land*"

ADC: "***G-CD; Number 2, Extend Downwnd; Follow the Dash 8 on Long Final***"

Be58®: "*G-CD; Number 2; Wilco*"

C172: "*G-AB; downwind; Land*"

ADC: "***G-AB; Number 3, Follow the Baron Downwind***"

C172®: "*G-AB; Number 3; Wilco*"

DH 8 Pilot initiates r/t contact

Pilot:	***"[Newtown] Tower, [Jersey 3-9-Kilo]; [8 miles], established on [I-L-S] Runway [1-2]"***
ADC:	***"[Jersey 3-9 Kilo], [Newtown] Tower; Continue Approach; Runway [1-2]; QNH [9-9-7millibars]; Circuit active [Left Hand]; Report 4 miles"***
Pilot ®:	***"Continue Approach; Runway [1-2]; QNH [9-9-7-millibars]; Wilco; [Jersey 3-9-Kilo]"***

9.6 Eg **Runway Clearance**

Pilot:	***"[Jersey 3-9-Kilo]; 4 miles"***
ADC:	***"[Jersey 3-9 Kilo]; Runway [1-2]; Cleared [to land]; Wind 1-1-0, 7; Traffic is a [Baron and Cessna 1-7-2 extending downwind left behind you]"***
Pilot ®:	***"Cleared to Land; Runway [1-2]; (Traffic in sight*); [Jersey 3-9-Kilo]"***

10. IFR Inbound - Example Templates

10.1 8 Mile R/T Broadcast

ATC: **"Instrument Traffic; _____** [*type*]; ***8 Miles***; _____ [intentions]"
if intentions not known; "***for the Option***"

10.2 (IFR Pilot Initiates contact)

Pilot: "[Airport] _____***Tower;*** [callsign] _____,

[range] _____***miles; Established on*** _____ [type of approach];

Runway_____"

ADC Reply

ATC: **"**[Callsign] _____*;* [airport] _____ ***Tower.***

Continue Approach; Runway _____; QNH _____ *(millibars);*

Circuit active_____ (l/r) Hand;

Report 4 miles"

(Pilot Readback)

Pilot ®: ***"Continue Approach; Runway _____;*** **QNH** _____ *(millibars);*

Wilco; _____ [callsign]"

10.3 (Pilot Reports 4nm/Final)

Pilot: "[callsign] _____ ; ***4 miles*** (or Final)***"***

ADC Issues Clearance

ATC: **"**[Callsign] _____ ; ***Runway*** _____ ***;***

Cleared_____ (to Land, Touch & Go, Low Approach****;***

(Surface) Wind _____ ***(degrees),*** _____ ***(knots):***

(Traffic is*) _____ [type and position of circuit traffic]"

(Pilot Readback)

Pilot ®: ***"Cleared to Land; Runway*** ____ *; (Traffic in sight*);* _____ [callsign]"

Note: If a clearance cannot be issued at 4nm then the IFR aircraft is to be instructed to "*Continue Approach*" and a readback obtained.

Final clearance should be given r/t priority as soon as the runway becomes available.

The phrase "Expect late landing clearance", although a valid term, is not encouraged in FSOpen as the volume of traffic will rarely justify its issuance.

11. Helicopter Operations

11.1 "*Cleared Take-off*" or "*Take-off at your Discretion*"?

Helicopters have the ability to land on or take-off from areas of the aerodrome other than the runway. Aerodromes often have areas specifically set aside for helicopter operations and, in FSOpen, providing the ADC can see the position on the manoeuvring area that the helicopter wishes to land or depart from, the terms "*cleared to land"* or "*cleared take-off*" can be used in the same manner as fixed wing clearances. If, for whatever reason, the ADC cannot see the helicopter landing or take-off area, the responsibility for ensuring the area is safe lies with the pilot and the terms "*land at your discretion*" and "*take-off at your discretion*" are used.

11.2 Instruction to Taxi

When taxiing, light helicopters (eg B206, R44, EC135 etc) will normally lift into a low hover and 'air taxi' as directed. Larger helicopters (eg EH101, S61 etc) normally 'ground taxi' in order to reduce the effect of rotor downwash as they manoeuvre. An instruction by ATC to "*taxi*" allows the helicopter pilot to choose the most appropriate method whether it be ground or air taxi. If the Controllers requires the pilot to taxi using one of these methods in particular he will need to use the term "*air taxi*" or "*ground taxi*" as required in order to differentiate. In FSOpen it is considered best practice for the pilot to state what method of taxi he requires when requesting taxi clearance.

Eg

Pilot:	***"Newtown Tower, Golf-Hotel-Echo-Lima-India; JetRanger outside South Hangar; Request Air Taxi Runway 1-2 for VFR departure to the West"***
ADC:	***"Golf-Hotel-Echo-Lima-India, Newtown Tower; Runway 1-2; Air Taxi holding point Foxtrot-1, via taxiway Foxtrot; QNH 9-9-7 millibars"***
Pilot ®:	***"Air Taxi holding point Foxtrot-1 via taxiway Foxtrot for Runway 1-2; QNH 9-9-7 millibars; Golf-Lima-India"***

11.3 Instruction to Hold

When a helicopter air taxiing is instructed to "*hold*", the pilot may hold in the hover or may touchdown and hold on the ground at the pilot's discretion. If a touchdown is not desirable the pilot should be instructed to "*hold in the hover*". When a helicopter ground taxiing is instructed to hold, the pilot should hold on the ground, unless a hover manoeuvre is specifically authorised or requested.

11.4 Take-off and Landing Clearance

The format for helicopter take-off or landing clearance is the same as that for a fixed wing aircraft (ie the runway or take-off/landing area is passed immediately prior to the clearance).

Eg

ADC:	***"Golf-Lima-India, Runway 1-2; Cleared Take-off; Wind 1-1-0, 5"***

Or;

ADC:	***"Golf-Lima-India, Helipad 1; Land at your discretion; Wind 1-1-0, 5"***

NOTES: