RAF Brize Norton Radar and Visual Circuits, and Procedural Instrument Approaches

Radar Training Circuit and Procedural Instrument Approaches

- The RAF Brize Norton Radar Training Circuit (RTC) is a predetermined route for aircraft, providing standard recovery profiles. These have been designed and approved by Civil Aviation Authority registered Procedure Designers.
- The predetermined circuit facilitates the safe and effective flow of air traffic.
- Aircraft will be instructed to turn/descend at given points, in order to safely land at Brize Norton.
- It is routine for aircraft to conduct training sorties which require repeated use of the RTC; pilots require training in order to practice skills in the live environment and to maintain currency in many legally required competencies. Use of the RTC is also required when pilots convert to fly a different aircraft type.
- Although altitudes and turning points are fixed, on occasion these will be amended by Air Traffic Control (ATC) in order to maintain safety, ensure expedition, or in the event of an emergency. The turn and descent points may also change due to weather.
- The circuit, or pattern, is designed to ensure aircraft remain within the confines of Brize Norton's controlled airspace. This airspace is designed to provide protection to the passenger aircraft arriving/departing Brize Norton. The controlled airspace also provides a known traffic environment; this means that any aircraft wishing to transit the airspace, must be in contact with RAF Brize Norton ATC.
- Civilian aircraft can also request to make radar approaches to Brize Norton; the Ministry Of Defence encourages positive partnerships with local flying communities.

Radar Training Circuit and Procedural Instrument Approaches Continued

- Short Pattern Circuits are an emergency procedure, but may be flown for pilot/controller currency, training or operational necessity. As they shorten the length of the standard circuit, the number of approaches that can be flown may be increased. This aids achievement of regulatory mandated pilot/controller currencies, or can provide additional endorsement opportunities to controllers. However, they are not flown routinely because:
 - The aircraft flies at the same altitude as aircraft in the visual circuit, potentially introducing a conflict.
 - They significantly increase the cockpit workload for the pilot.
 - They reduce the preparation time a pilot has to complete checklists before their descent to land.
 - They do not meet all of the routine training requirements of ATC and aircrew.
 - They are predominantly an emergency procedure.
- Aircraft either fly vectored or procedural approaches. ATC direct when an aircraft should turn during a vectored approach. However, procedural approaches have turns that are determined by a pilot reviewing the position of their aircraft, relative to certain navigational aids.
- Aided approaches can be flown procedurally, the aircraft utilising a ground beacon (TACAN or NDB) to know when to turn and descend. Pilots must fly these in order to ensure a steady rate of descent and aircraft flying such approaches are often extremely high when handed over from civilian ATC agencies to RAF Brize Norton ATC. Pilots must also practice procedural approaches in preparation for when they fly into international airports and overseas aerodromes.

Runway 25 Radar Training Circuit (RTC)

5. Aircraft will begin descent from 2000ft to surface, at approximately 6.5nm from touchdown. This point gives aircraft a safe, steady rate of descent.

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Aston

Bampton

Black

Bourton

Clanfield

1. Following take off, aircraft will climb to 2500ft Above Ground Level (AGL).

2. Traffic situation dependent, aircraft will turn left, in the climb, on passing 2000ft. 4. The 'Standard' RTC is flown to the east of Farmoor Reservoir so that a pilot can fulfil Instrument Landing System (ILS) requirements, and also prepare for their descent. In liaison with London Oxford Airport, aircraft may have to extend to the east to either, provide safe separation on other aircraft, or to ensure the aircraft is correctly set up for a safe descent. Wytham

Farmoor

Botley

Cumnor

3. Once clear of the visual circuit – 5nm from the airfield, the aircraft will descend back to 2000ft.

Eynsham

Runway 25 Procedural Instrument Approaches

1. Aircraft returning to RAF Brize Norton often transit via the civil airway structure in high level airspace. This means that routinely, they will have been between 20,000 to 35,000ft in transit. Civil agencies will transfer returning aircraft during the descent to 9000ft AGL, but they may still be well above this when Brize Norton ATC takes control.

Aircraft flies overhead Brize Norton, then utilises beacon signal.

2. Aircraft will pass overhead Brize Norton in order to receive a beacon signal. At this point, they may still be as high as 6000ft Above Ground Level (AGL). Unlike a vectored approach, they'll fly straight out to approximately 8 miles south east from Brize Norton, descending to 2000ft AGL, before commencing a turn back.



Runway 25 Short Pattern Circuit



Runway 07 Radar Training Circuit (RTC)

3. Once clear of the visual circuit – 5nm from the airfield, the aircraft will descend to 2000ft.

4. Brize Norton ATC will liaise with Fairford ATC in order to deconflict aircraft. However, Brize Norton control Fairford's radar inbounds. On occasion, Brize Norton aircraft will have to amend their profile, extending to the West or South, to accommodate Fairford traffic.

Quenington

Bibury

5. Aircraft will begin descent to the surface from 2000ft, at approximately 6.5nm from touchdown.



Runway 07 Procedural Instrument Approaches



Visual Circuit

- Aircraft fly the Brize Norton visual circuit on return from dedicated UK training sorties or as a Base Training sortie.
- Pilots will only fly when certain visual criteria are met, therefore the visual circuit will often be closed when weather or visibility are poor.
- Visual recoveries and departures are permissible when the visibility is 5000m or greater; or the base of cloud layers is 1500ft or higher. While recoveries/departures may be suitable for Visual Flight Rules, ATC are authorized to declare the visual circuit unfit for use if they consider weather conditions are unsuitable (for example, too much cloud which is yet to be observed and reported by the Met Office).
- Due to variances in speed and aircraft performance, the length of the visual circuit flown will differ according to aircraft type, but the overall profile (northside/southside or right/left-hand) will remain the same.
- The flightpath may also vary due to wind or other factors, but they remain as generic flightpaths.
- Routine altitudes may be adjusted due to the volume of traffic in the airspace.
- Station based heavy aircraft and Brize Norton Flying Club light aircraft fly approximately 3 miles offset from the runway. This ensures that they remain at least 1 mile inside Brize Norton's controlled airspace, providing protection from general aviation such motor-gliders.

Visual Circuit Continued

- Due to 'slant ranges,' an aircraft's flight profile or position will appear different when viewed on the ground compared to where the aircraft would be if viewed from directly above and overlaid on a map.
- Pilots have Standard Operating Procedures and Orders detailing areas where they must not directly overfly for noise abatement; the Cotswold Wildlife Park, Clanfield, Bampton and Aston are just some of these areas.
- Similarly, Blue Cross has a helicopter specific avoid due to their unique operating environment.
- Civilian aircraft can also request to make visual approaches to Brize Norton; the Ministry Of Defence encourages positive partnerships with local flying communities.

Southside Visual Circuit (Runway 25 Lefthand / Runway 07 Righthand)

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VRP

BAMPTON

Black

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Clanfield

Carterton

BRIZE NORTON

BRIZENORTON

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Bampton

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1. Following take off, aircraft will climb to 1500ft AGL; light aircraft such as those in the Brize Norton Flying Club, will climb to 1000ft.

> 2. Aircraft will fly a profile according to the pilot's visual references, such as landmarks, and these may alter slightly depending on aircraft type.

BZ 386.000

ZN 111.900 Ch 056 4. Aircraft will begin their inbound turn and descent dependent on their own visual references.

Aston

3. Light and heavy aircraft will aim to fly approximately 3 miles offset from the runway. This ensures that they are afforded the protection of Brize Norton's controlled airspace, remaining inside by approximately 1 mile. They remain south of Clanfield, Bampton and Aston.

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Northside Visual Circuit (Runway 25 Righthand / Runway 07 Lefthand)

1. A northside circuit has the 2. Aircraft will avoid Witney to the east or west, depending on their profile and the traffic situation; same general profile as a aircraft may need to route 'around Witney' in order to southside circuit. Aircraft turn in sequence behind other inbound traffic or to allow a between Westwell and the Burford pilot instructor to complete training discussions. Wildlife Park, only flying the larger circuit to the west to gain Minste Lovel separation on other aircraft. Blue Cross hartervil Westwell Witney Avoid Wildlife Park lington Norton CARTERTON Carterton BRIZENOR BZ 386.000 BZN 111.900 Ch 056 ธ 0-FL150 Filkins