



Castle Bromwich



With flights to more than 140 destinations worldwide and a workforce of around 8,500 people, Birmingham is the UK's 7th largest airport and an economic powerhouse, contributing millions of pounds to the Midlands economy every year. However, these benefits have to be balanced against the Airport's impact on nearby communities. Focussing on Castle Bromwich, this guide aims to explain operational procedures at Birmingham and how they affect your neighbourhood.

The Basics: where do aircraft fly and why?

Controlled Airspace

Castle Bromwich lies within the Control Zone for Birmingham Airport, an area of Controlled Airspace extending from ground level up to a height of 4,500 feet. In turn, the Control Zone is part of a wider system of airspace controlled by Air Traffic Control (ATC) to ensure the safety of aircraft operating in and out of the Airport. All aircraft operating within Controlled Airspace are under control of ATC and while the majority of movements follow the well-established procedures we will describe here, there are occasions when ATC will route aircraft away from the usual flight paths. So, while residents will become familiar with the 'normal' routes aircraft follow, there are occasions when they may be seen in locations where they do not normally appear. This does not mean that they have 'broken the rules' or are flying 'illegally'. On occasion, aircraft may be seen *anywhere* within controlled airspace, though the Airport, the airlines and ATC all work closely together to make sure that these occasions are kept to an absolute minimum. See the section on 'other factors' later in this guide for more information.

The Runway

Birmingham Airport has one runway, which aircraft use in either of two directions, known as Runway 15 and Runway 33. The numbers refer to the runway's heading, in degrees. Runway 15 is aligned on a heading of 150°, approximately South southeast, while Runway 33 lies on a heading of 330°, or North northwest. The runway only operates in one direction at any time.



This means that at any given point in time, residents of Castle Bromwich may be affected by either arrivals or by departures. It is meteorological conditions – primarily the direction of the wind – which determines this because, where possible, aircraft will usually take off and land heading into the wind.

We sometimes get asked why Castle Bromwich experiences more than its ‘fair share’ of departures when the prevailing south-westerly winds suggest Runway 15 should be in use more than Runway 33. Where winds are below five knots, we operate our ‘Preferential Runway’ policy, when ATC will generally direct arrivals onto Runway 33 to minimise the risk of wake vortex strikes. Wake vortices are rotating columns of air generated by arriving aircraft as they pass through the air. In calm conditions they can cause damage to roofs. Although vortex strikes are rare, the Preferential Runway policy minimise the risk to the large number of properties just to the north of the airport underneath the R15 centreline by directing arrivals onto R33, where there a very few properties at risk. Taken together, wind direction and the Preferential Runway policy explain why Castle Bromwich experiences departures for 60% of the time and arrivals for only 40%.

What happens when aircraft are taking off?

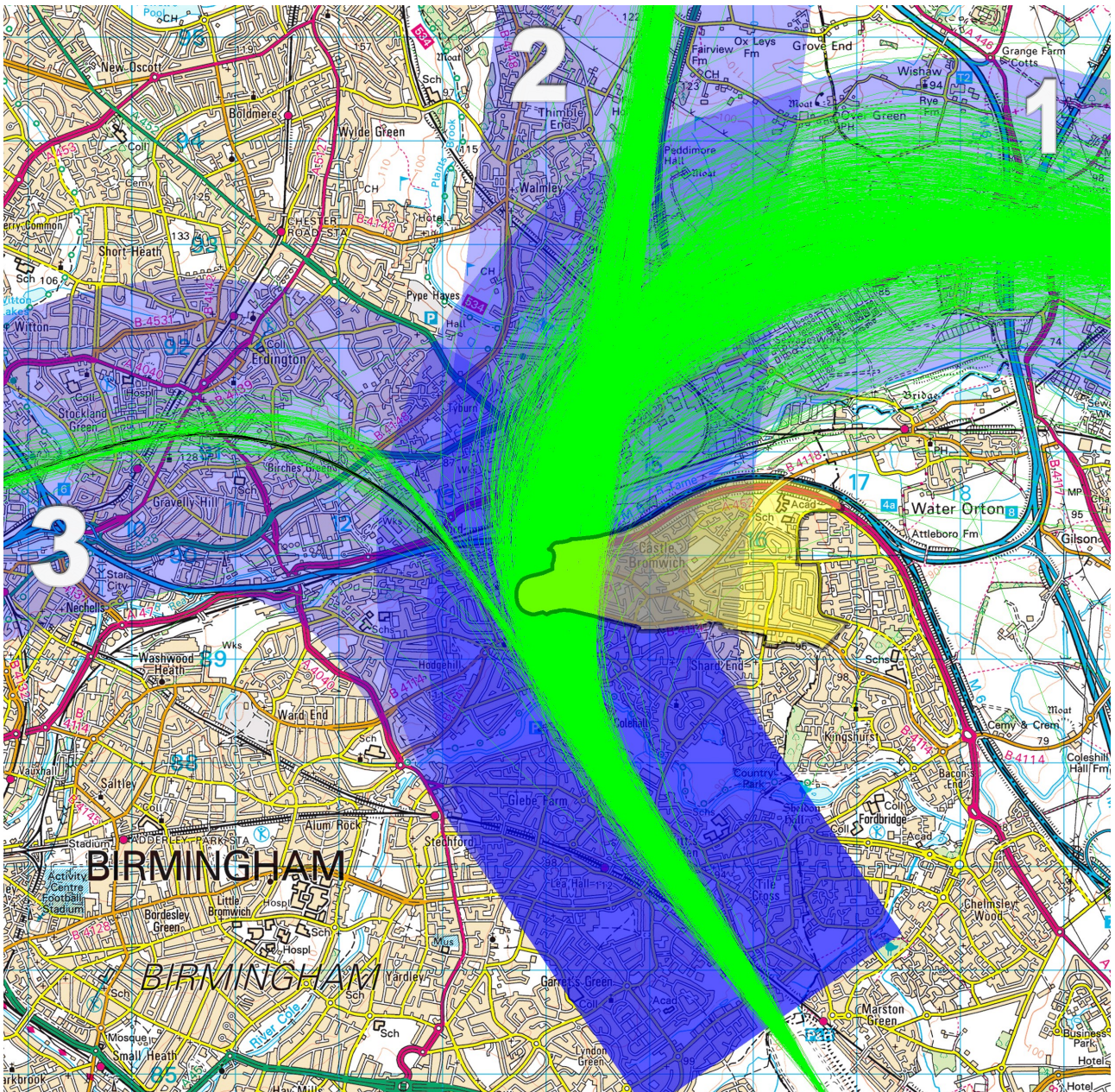
When Runway 33 is in operation, you will notice aircraft taking off to the north. Departing aircraft are required to follow a Standard Instrument Departure (SID) route — a set of instructions pilots refer to when departing from a particular airport. They are intended to strike a balance between the need to avoid obstacles, noise abatement and interaction with the wider airspace beyond the immediate locality of the airport.

Following a consultation process, new satellite-based SIDs for R33 departures were introduced in May 2019, and Castle Bromwich residents will notice departing aircraft following one of the following routes (see the image right).

- 1) The majority of departures - around 66% - take off heading north before turning right, to head south for destinations in Europe.
- 2) Around 26% of flights continue on a northerly track towards destinations in Scotland and Ireland. The amount of traffic on this route has approximately doubled since the new procedures were introduced in May 2019, when an existing flightpath to the north-west was closed.
- 3) A small number of departures turn left, taking the so-called MOSUN route. MOSUN is a non-standard departure route used by aircraft flying to destinations such as southern Ireland, Portugal and the Canaries. It is used to provide a more direct routeing to these destinations and avoids London airspace, which is often congested. There are restrictions on when MOSUN can be used so that it is only available for airlines to use at certain times. These are overnight — between the hours of 1700 and 1000—on weekdays and at all times during weekends. During the bulk of weekday daytime hours therefore, MOSUN is not used.

SIDs are shown as lines on maps but, recognising that aircraft fly in three dimensions, they actually operate within a corridor known as a Noise Preferential Route (NPR), of which the SID forms the centreline.

This image on the right is taken from our ANOMS system (see page 5) and shows Castle Bromwich in relation to the NPR's in blue, the SID centrelines in black (only really visible on the MOSUN routeing) and the tracks of individual aircraft operating between 1st and 14th July 2019.



Aircraft departing from Runway 33 are required to remain within the NPRs until they have climbed to a height of 3,000 feet. How quickly an aircraft will achieve 3,000 feet varies considerably and is influenced by its type, destination (and hence fuel load), how many passengers are on board, how much cargo it is carrying and the weather conditions at the time. Once they have achieved this height, aircraft may be routed outside the NPR by ATC onward to their destination, so you may notice some dispersion.

While the image shows how the introduction of the new SIDs has achieved good concentration on the centreline, we are aware that some residents of Castle Bromwich have noticed that certain aircraft, including the large and conspicuous A380, are making the right hand turn to follow the southbound routeing earlier than the majority of aircraft. We are currently investigating the cause of this with the airlines involved in order to understand why this should be happening. It should however be noted that while these aircraft are turning more tightly, the overwhelming majority of the time they remain within the NPR until 3,000 feet has been achieved and are operating according to the correct procedure.

What happens when aircraft are coming in to land at Birmingham?

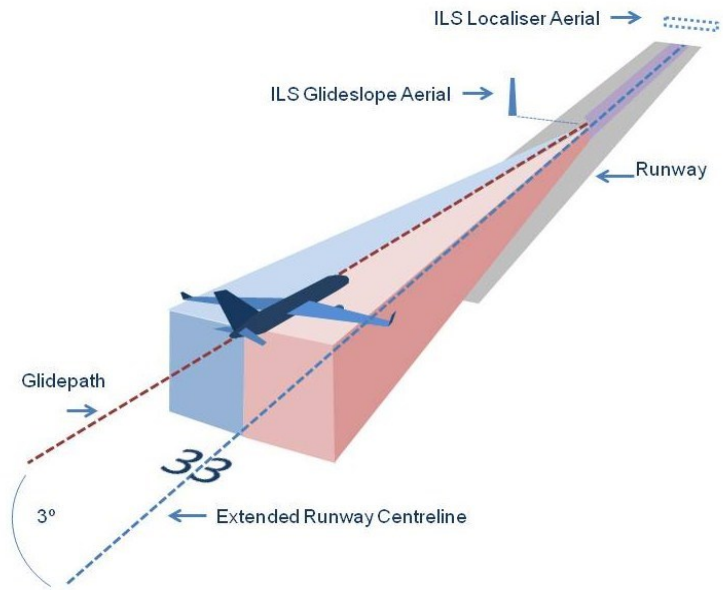
When Runway 15 is operating, you will notice aircraft arriving from the north, passing to the west of Castle Bromwich as they descend into Birmingham Airport. By the time they pass the village, these aircraft will be established on the Instrument Landing System (ILS), which is used by the majority of aircraft arriving at Birmingham.

The ILS is a highly accurate system that enables aircraft to land safely on the runway, including at night and in poor visibility. It consists of two radio signals transmitted from the airfield.

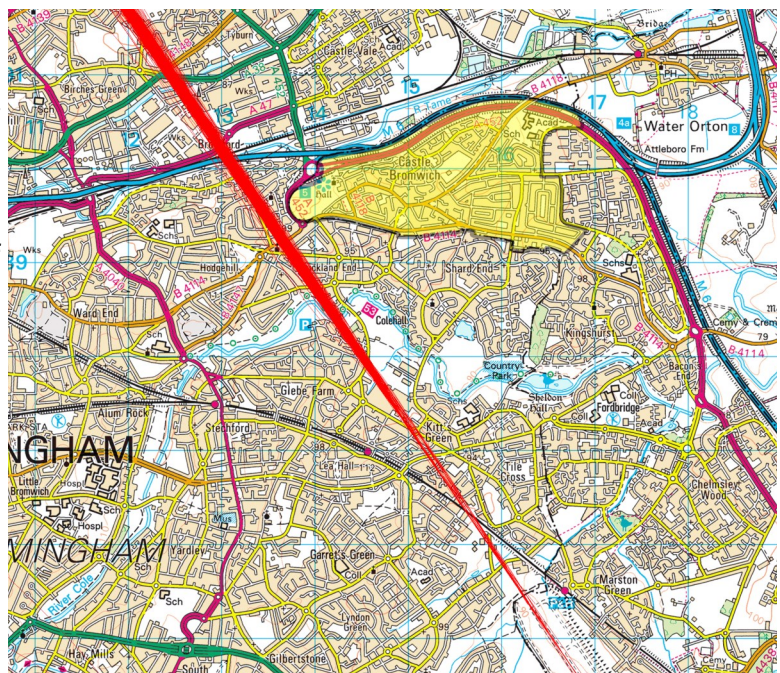
The *localiser* establishes the centre-line of the runway and defines a straight line approach path which extends out from the Airport for around twenty miles.

The *glide slope* beam defines the *glidepath*, the angle at which the aircraft descends, enabling it to fly along the localiser beam in a controlled descent, clearing all obstacles along the way, until it touches down safely on the runway. The angle of the glide slope is 3°, which means the aircraft will descend approximately 300 feet for every mile it travels.

Air Traffic Control (ATC) will direct arriving aircraft to join the ILS from a number of different directions, so there will be some variation in the point at which aircraft turn to begin their final approach. However, by the time they are passing Castle Bromwich, they will be established on the ILS and flying the same fixed path.



Aircraft tracks for arrivals on to Runway 33, showing aircraft concentrated west of Castle Bromwich once established on the ILS.



Aircraft tracks for arrivals on to Runway 33, showing aircraft concentrated west of Castle Bromwich once established on the ILS.

Residents sometimes report large aircraft, such as the easily-recognised A380 operated by Emirates, are arriving, they appear to be flying lower than other types. However, once an aircraft is established on the ILS, at any given point along the glide slope it will be at approximately the same height as all other aircraft passing that same point. What we see is an optical illusion, caused by the size of these aircraft, which operate only a few times each day, compared to the smaller types with which people are more familiar. Because all aircraft are established on the same ILS glide slope, there is very little actual variation in height.

Night Flying

Some residents believe that Birmingham Airport closes at night, or that night flying is banned. Neither is true. Birmingham is a 24-hour operation and has been for many years. However, there is widespread recognition that night flying is one of the main impacts that Airports have on local communities and it is an issue that we take very seriously. In fact, we have one of the most stringent Night Flying Policies of any UK airport, with an annual limit on night movements, a ban on the noisiest aircraft operating during the night period and a night noise limit of 83dB (A). If a departing aircraft registers a noise level above this at our noise monitors, then the airline is surcharged an amount equivalent to a full runway charge. All funds from night noise violations are placed into the Community Trust Fund, which makes grants to small, community based organisations in areas affected by our operations, including Castle Bromwich. You can find out more about the Community Trust Fund on the Airport's Website at: birminghamairport.co.uk/about-us/community-and-environment/community-investment/

Weather

As we have seen, weather — in particular wind direction, is the main factor that determines the direction that the runway at Birmingham is used and therefore whether Castle Bromwich is affected by arrivals or departures. However, there are other weather-related factors that can have an impact.

Something that we notice is that there will often be a spike in complaints when changes in runway direction are implemented after a prolonged period of settled weather. Sometimes the runway is used in the same direction for period of days, even weeks. When the weather shifts and the runway direction is reversed, some residents become very aware of aircraft and believe we have changed flight paths. In Castle Bromwich, this usually occurs after Runway 33 (bringing arrivals) has been in use for some time, followed by a change to Runway 15, which feeds the more noticeable departures to the south. In reality, there has been no change in flight paths, just a reversion to operating procedures that have not been used for some time.

Bad weather may also be the cause of aircraft deviating from the usual flight paths. Pilots are sometimes instructed by ATC to take a non-standard route shortly after taking off to avoid thunderstorms, which can cause severe turbulence. Often the storm cell involved may be some miles away from Castle Bromwich and its presence is not apparent to anyone on the ground in the village. Although relatively uncommon, these 'weather avoidance' procedures may mean you sometimes see aircraft where you are not used to seeing them.

Visual Approaches are where a pilot will land without using the ILS. They are authorised by ATC and take place in clear weather when the runway can be kept in sight at all times. Visual approaches are also an essential part of pilot training and from time to time they will therefore make a request to ATC to be permitted to make a visual approach.

Keeping track

As near neighbours of Birmingham Airport, residents of Castle Bromwich will always be affected by aircraft operations. It is our job to ensure that we keep that impact to a minimum and one of the most important ways we can achieve this is by monitoring how well our policies and procedures are working. To do so we operate a sophisticated system known as ANOMS – the Airport Noise and Operations Monitoring System. ANOMS uses radar data to record details of the height, speed and position of every aircraft operating into and out of Birmingham. ANOMS allows us to record and replay actual tracks over the ground and when matched against noise data from our six community noise monitors, we have a set of highly accurate data with which we can measure the impact of aircraft activity.

One example of how we use ANOMS is to record Track-Keeping Performance, which refers to the ability of aircraft to fly within the NPRs until they reach the required altitude of 3,000 feet. Each NPR is monitored and analysed by the system and any aircraft leaving the NPR below the required altitude is recorded as 'off track'.

We can use this information to work with the airlines to improve track-keeping and we report our statistics through the Airport Consultative Committee and Solihull Metropolitan Borough Council, which monitors the Airports compliance with its Section 106 Planning Agreement with the Council. We also use ANOMS to investigate individual complaints, where it provides us with the accurate information we need to discuss residents concerns in more detail.

And finally....

We hope you find this guide to how airport operations affect Castle Bromwich useful. We hope too that it has answered some of the questions you may have had. If not, the Sustainability Team is always happy to discuss your individual concerns. You can contact us by completing the form on our web site at: <https://www.birminghamairport.co.uk/community-complaint>



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