

Departures



At Heathrow there are approximately 650 departures every day. Most of these happen between 06:00 and 23:00 hours local every night. This fact sheet explains how departure routes work, operational restrictions and how we manage noise from departures.

Why does the direction in which aeroplanes take off change sometimes?

For safety reasons, aircraft must take off and land into the wind. Most of the time at Heathrow, the wind comes from the west. This is known as a westerly wind. Therefore, because aircraft must take off into the wind, they will usually depart to the west (that is over Windsor). However, when the wind is coming from the east (an easterly wind), aircraft will depart to the east (that is over London).

How is the wind direction assessed?

The direction of the wind is assessed at the airport at ground level and at 1,000ft and 2,000ft by Air Traffic Control (ATC) and also with reference to reports from aircrew. It is important to note that the wind on the ground at the airfield can vary from that even locally. Additionally, the wind experienced at 1,000ft and 2,000ft can be very different from that experienced at ground level. It is therefore not possible to rely on local wind direction you may experience at your property or on weather reports.

Although the direction of the wind is the predominant factor which affects which direction the aircraft must take off in (and land in), at Heathrow, government policy is that unless the wind is too strong, planes should always take off to the west (towards Windsor). This means that unless the wind is too strong, they should therefore arrive from the east (over London). This is known as the "westerly preference." However, if the wind is from the east and is over 5kts (little more than a breeze), aircraft will take off to the east and so arrive from the west (over Windsor).

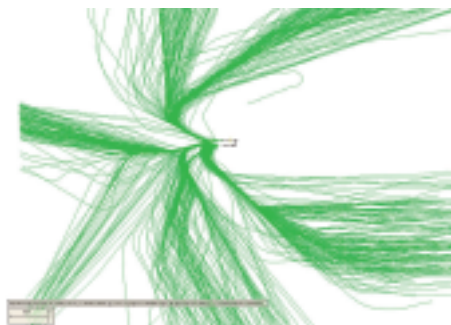
Please note that the westerly preference does not operate at night. In 2001 the Department for Transport (DfT) introduced a weekly rotation of easterly and westerly operations, where weather conditions permit, at night. Therefore, at night, when there is little or no wind, the preference will be easterly one week and westerly the next. The aim is to provide a more even split of easterly and westerly operations during the night.

What does this mean locally?

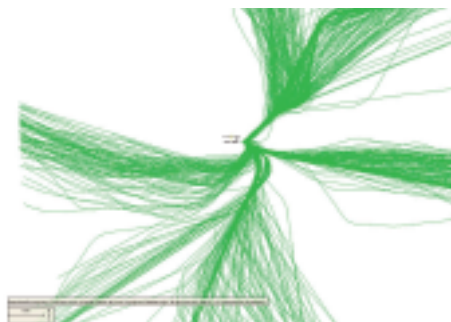
It means that on average, approximately 70% of take-offs head toward the west and only about 30% to the east. The exact percentages vary from month to month and year to year. As it is due to wind direction, the direction of operation cannot be controlled or predicted.

Where do aircraft go after taking off?

Below are two maps showing a typical day of departure tracks for both easterly and westerly operations.



A typical day of westerly departures.



A typical day of easterly departures.

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All jet aircraft leaving Heathrow Airport should follow flight paths known as Noise Preferential Routes (NPRs) up to an altitude of 4000ft. NPRs were set by the Department for Transport (DfT) in the 1960s and were designed to avoid overflight of built-up areas where possible. They lead from the take-off runway to the main UK air traffic routes, and form the first part of the Standard Instrument Departure routes (SIDs). The routes have not been altered since they were established in order to give people the predictability of knowing where noise from departing planes will be heard. Their location remains the responsibility of the Government. As an airport operator, BAA has no authority to change them. Any significant changes to the NPRs would be subject to public consultation by the Government.

Aircraft cannot fly in the same way that a train runs on tracks. This means that there will be some variation as to where different aircraft will be on the NPR. This is because all aircraft perform differently or may be affected by weather conditions which can cause them to drift left or right. It is for these reasons that each NPR has a "swathe" measuring 1.5 kilometres either side of the route centreline, resulting in a corridor 3 kilometres wide. As long as the aircraft are within this 'swathe' they are considered to be on track. They do not have to follow the centreline of the NPR.

Air Traffic Control (ATC) are responsible for the routing of aircraft once airborne. When they have reached 4000ft, ATC can instruct the pilots to leave the NPR and fly a more direct heading to their destination. This is known as vectoring. Additionally, ATC can direct planes off the NPR at an altitude below 4,000ft if this is required for safe separation from other aircraft or for other safety issues such as weather avoidance. Therefore, if a plane is not following the NPR, it does not necessarily mean it is doing anything wrong. However, if you do have a query regarding a particular aircraft you may contact our Flight Evaluation Unit, who will be able to assist. Contact details are shown below and you can also make an enquiry via the 'Contact Us' section of our website.



Heathrow Noise Preferential Routes map.

How many aircraft stay 'on track' in the NPRs?

Track keeping at Heathrow is very good. In 2010 94.8% of departures from Heathrow were on track.

Any flight leaving an NPR below 4,000ft (a track deviation) is automatically tagged by a Noise and Track Keeping System in the Flight Evaluation Unit at Heathrow. Details of all track deviations are analysed to check if the aircraft had received a vector from ATC or deviated for safety reasons such as weather avoidance. Details are supplied to our Flight Operations Performance Committee and discussed at their monthly meetings.

This Committee was formed to ensure the development of best practice in the operations of airlines using Heathrow in order to minimise the effect on the local community and maximise runway capacity, while ensuring that safety continues to be given the highest priority at all times. The Committee is made up of representatives of Heathrow Airport, the Department for Transport, National Air Traffic Services and several major airlines operating at the airport.

There are no financial sanctions against airlines that fly off track because there are many factors, such as speed, wind, weight and temperature that can affect the performance of an aircraft. Also, some Heathrow routes have turns which, when they were first designed, were easier to fly with older, slower aircraft, although they remained lower on the route for longer.

Propeller driven aircraft do not have to follow the NPRs if they are below certain weights (it is a lighter weight at night). However, they must still follow the route for a short period before ATC can direct them off it. This is done so that they are turned early enough to allow a faster plane behind them to take off without the possibility of the slower propeller aircraft being caught up by the faster jet.

How does this affect you?

If you live beneath an NPR you will see aircraft taking off and may hear noise when that NPR is being used. How often any particular NPR is used will vary, and is an operational decision for ATC. They have to take account of the final destination of each flight and factors such as the overall air traffic and weather conditions, both locally and along intended routes. There are no requirements in terms of the number of aircraft which may be directed down each NPR.

If you live to the side of an NPR, you may hear noise if a plane flies outside the flight path. This can be for a variety of reasons (see above). Please see above for details about how track deviations are dealt with.

If you live beyond the flight path at the point by which a plane has reached 4,000ft, you may hear noise as it leaves the NPR to head towards its destination.

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What is done about take off noise?

- **NPRs**

NPRs are used to provide set routes aircraft must follow and so provide some certainty as to which areas will be overflowed by departing aircraft. Track keeping is taken very seriously and is closely monitored and we work with airlines whose achievement is lower than is responsible to improve their performance.

- **Cranford agreement – when taking-off to the east (over London)**

The Cranford Agreement is a verbal agreement dating from the 1950s to avoid use of the northern runway for take-offs in an easterly direction over Cranford unless necessary for operational reasons or essential maintenance (for example, when the southern runway is closed). Therefore, aircraft depart to the east using the southern runway and arrive using the northern runway.

In January 2009, following public consultation, the then Secretary of State for Transport announced that the Cranford Agreement will end as soon as is reasonably possible.

Ending the agreement will mean that departing aircraft will be able to use the northern runway (09L) on easterly operations and so allow the introduction of runway alternation for arriving aircraft on easterly operations, thereby redistributing noise more equitably around the airport.

However, the airport has not historically been developed to operate with departures from 09L or runway alternation on easterly operations whilst maintaining the current schedule. Therefore introducing full runway alternation on easterly operations presents many challenges in terms of the airport's infrastructure.

Before we can end the current operational arrangements, a significant amount of work with NATS and the CAA is necessary to identify and assess the changes which will be necessary. This has been a complex process, with many factors needing to be considered but the work is now well underway and we now aim to produce the schedule for the works necessary later in 2011.

- **'1000ft rule'**

After take-off aeroplanes are required to climb to at least 1000ft above the airport level by 6.5km from when they begin moving on the runway. This encourages aircraft operators to gain height as quickly as possible and then reduce engine power and noise at the earliest opportunity.

- **Noise limits**

The noise is measured at fixed monitors sited at approximately these points (some at the easterly end of the runway and some at the west). It is impossible to locate all the noise monitors at exactly 6.5km or at the same height, consequently a small adjustment is made to the limits to ensure that they are applied consistently across all the monitors.

Noise limits for take-offs are set by the DfT and differ during the day (07:00 – 22:59 hours local), night (23:30 – 05:59 hours local) and 'shoulder periods' (06:00 – 06:59 and 23:00 – 23:29 hours local).

What are the limits?

Time (hours local)	Sound (dB)
Day (07:00 – 23:00)	94
Shoulder period	89
Night (23:30 – 06:00)	87

Giving back to the community

Departures are continually monitored and if an aircraft creates more noise than is allowed, the airline is fined up to £1,000. Money collected is distributed via our Large Grants scheme to a wide range of community projects in areas affected by the airports operations. For details of the awards, please go to the Community Matters page of BAA's website www.heathrowairport.com.

Our other factsheets

Please see our other fact sheets which provide information on:

- Arrivals
- Go arounds
- Aircraft stacks
- Night flights
- Aircraft noise on the ground
- Heathrow and helicopters
- The legal overview.

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Further information

If you would like further information, please contact the Flight Evaluation Unit:

By telephone: 0800 344 844

By e-mail: noise_complaints@baa.com

By post: Flight Evaluation Unit
Second Floor Meridian
The Compass Centre
Nelson Road
London Heathrow Airport
Hounslow
TW6 2GW

Website: Make an enquiry on our website:
www.heathrow.com/noise

Please note that the freephone telephone number is an answerphone between 4.30pm and 8.30am. Please leave your name, contact details and brief details of your enquiry. A member of the FEU will contact you as soon as possible. Between 8.30am and 4.30pm, your call will be answered whenever possible.