Edinburgh Airport
Where Scotland meets the world

Arriving and departing aircraft at Edinburgh Airport

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Contents

Introduction

Edinburgh Airport is Scotland's busiest airport with over 12.3 million passengers passing through the terminal in 2016 for business or leisure. Whilst air travel provides us with many benefits, aircraft noise can impact on people who live or work near airports and under flight paths.

Whilst we can't eliminate it completely, we are working to minimise it. We are also committed to explaining what you're hearing and why.

Noise is caused by air going over the aircraft's fuselage (body) and wings - known as airframe - and its engines. When air passes over the aircraft's airframe, it causes friction and turbulence, which results in noise. The level of noise generated varies according to aircraft size and type, and can differ even for identical aircraft. Engine noise is created by the sound of the engine's moving parts and by the sound of air being expelled at high speed.

Aircraft have been getting progressively quieter as designs and engine technology has advanced and it is expected that today's airlines will be operating even quieter models in the future.

To help address noise, we work collaboratively with the Civil Aviation Authority who set the Airspace Policy, airlines themselves and Air Traffic Control (ATC) who advise the aircraft where to fly. Edinburgh Airport is a member of Sustainable Aviation, a coalition of UK aviation stakeholders spanning aircraft manufacturers, airlines, airports and National Air Traffic Services, the principal air navigation provider.

As an industry, the four main things we are doing are:

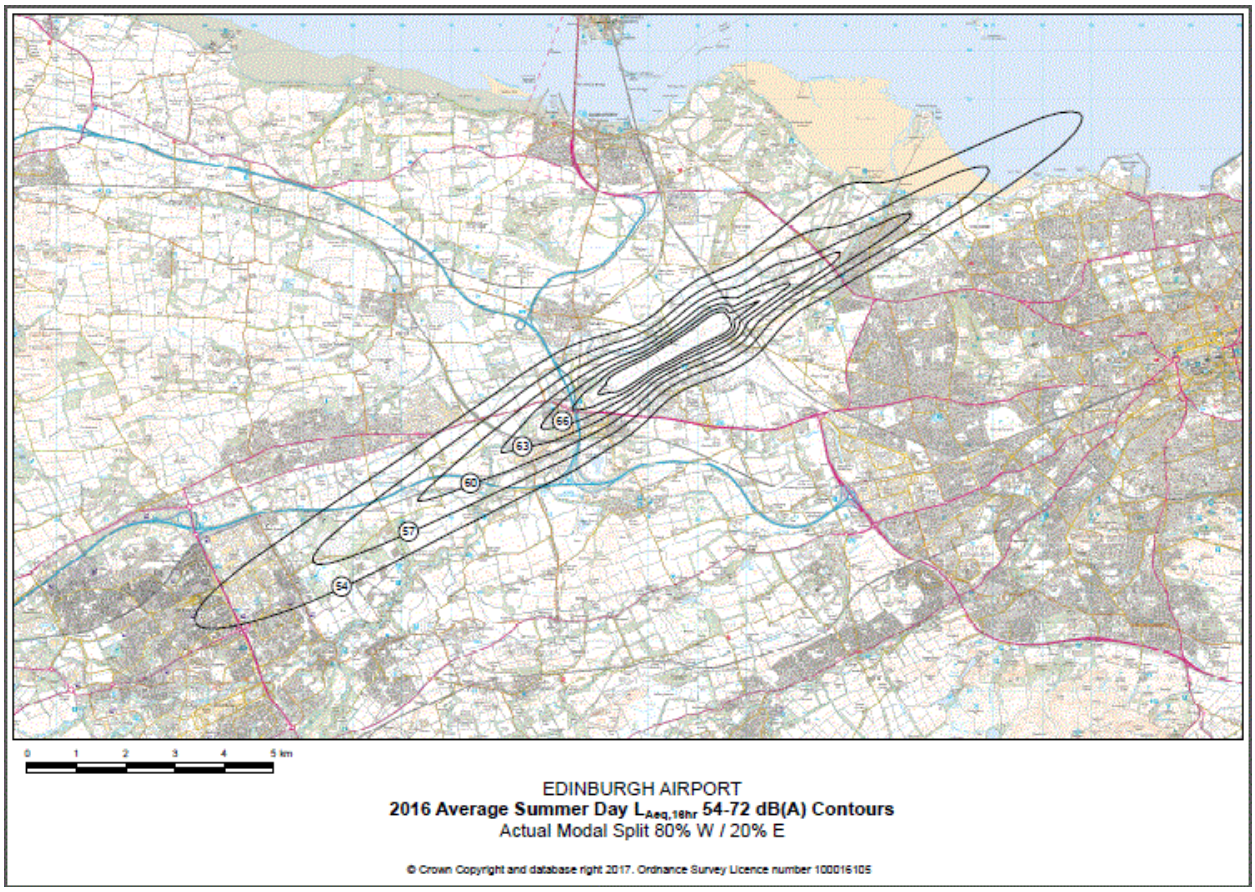
- designing airframes and engines to reduce noise generation
- tightening the regulations on noise
- improving the way aircraft and airports operate
- providing noise insulation and compensation for people who experience high levels of noise.

As long as people want to fly, there will be noise from aircraft landing and taking off. Although today's aircraft are typically 75% quieter than those used in the 1960s.

The latest figures published by the Civil Aviation Authority show Edinburgh Airport to be quieter today than any point in the past. This is because older and noisier aircraft are being phased out and being replaced by quieter, and more environmentally friendly, models.

In May 2006, Edinburgh Airport chose to introduce a voluntary system of noise fining, in line with those operated by Heathrow, Gatwick and Stansted. Any aircraft that breaks the stated noise thresholds set down by the UK Government is now automatically fined, with the level of the fine dependent on the level of infringement. Two different noise thresholds are used, one for daytime and one for night time. The level of fines imposed were doubled in 2007 and since the introduction of this new system, Edinburgh Airport has seen a significant fall in the number of aircraft making excessive noise on departure from the airport. All money raised from noise fines is placed into the Edinburgh Airport Community Fund.

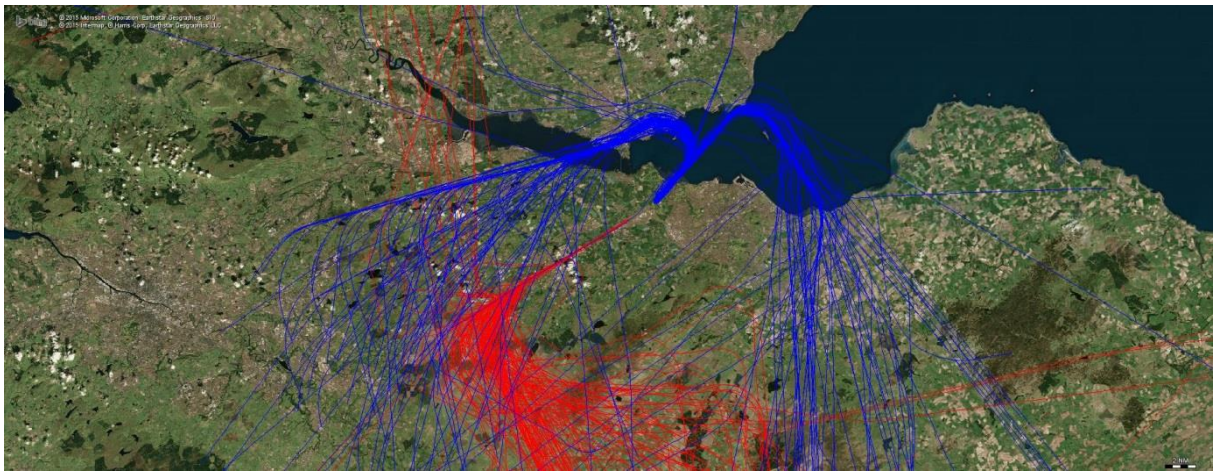
The Civil Aviation Authority, which acts as the independent regulator of aviation in the UK, produces noise contour maps for Edinburgh Airport every five years. These contours measure the average noise at Edinburgh Airport over the busiest hours of the day and busiest months at the airport, using the dB. Leq noise scale.



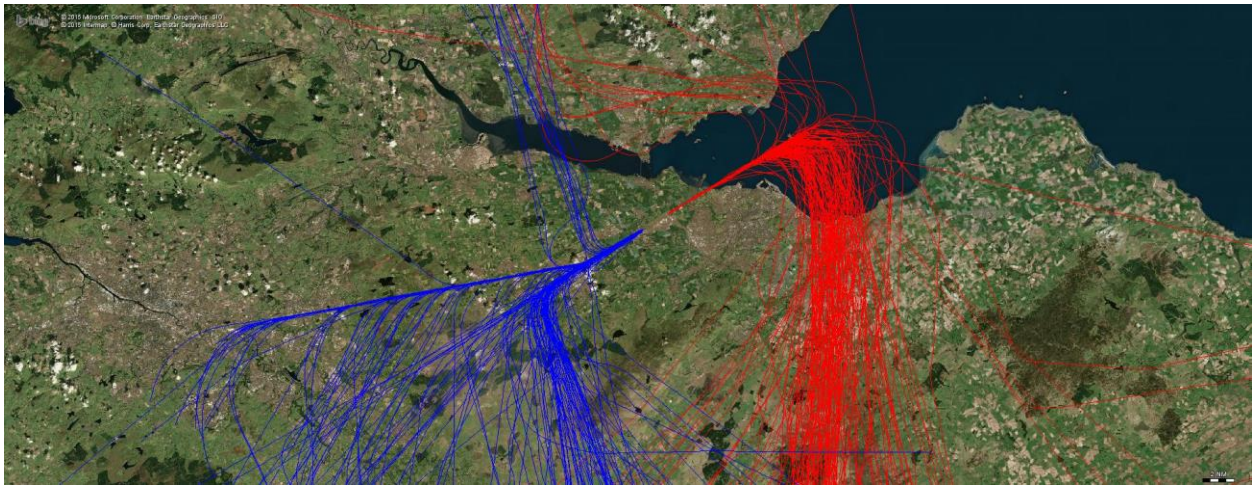
This document details the procedures that apply to arriving and departing aircraft at Edinburgh Airport.

Edinburgh Airport has one primary runway (Runway 06/24), which operates in two directions. When Runway 06 is in operation, aircraft arrive from the west and depart to the east. When Runway 24 is in operation, aircraft arrive from the east and depart to the west. The direction of operation is entirely dependent on weather conditions as, where possible, aircraft will take off and depart into wind. Due to local weather conditions (south-westerly is the prevalent wind direction at Edinburgh Airport), R24 is in operation approximately 70% of the time and R06 is in operation approximately 30% of the time.

A typical day of Runway 06 operations can be seen below, with arriving aircraft shown in red and departing aircraft shown in blue.



A typical day of Runway 24 operations can be seen below, with arriving aircraft shown in red and departing aircraft shown in blue.



No statutory controls exist for aircraft noise or to prevent aircraft overflying a particular area. Aircraft can operate anywhere in this area as Air Traffic Control (ATC) maintain an orderly flow of air traffic, whilst ensuring safe aircraft separation. ATC integrate arriving and departing aircraft and as safety is paramount, flexibility is necessary to achieve this.

However, we are aware of the impact that aircraft operations can have on our local communities and work closely with our Air Traffic Control provider NATS and our airline partners to encourage compliance with the procedures detailed in this document.

Arriving aircraft

The Instrument Landing System (ILS)

The most common approach to the runway uses the Instrument Landing System (ILS).

The ILS is a radio system that transmits two beams, the localiser and the glide path. The localiser beam defines the centreline of the runway and extends along the approach path for approximately 20 nautical miles. The glide path beam defines the glide slope that aircraft should fly while following the localiser course to approach the runway.

Aircraft arriving descend at a 3° angle, the ILS provides a safe and manageable descent to the runway ensuring that an aircraft's final descent is controlled in an assured manner.

Arriving aircraft do not have a specified route to follow before joining the ILS. They will be vectored by ATC, this means there is more variation in the position of arriving aircraft. Aircraft join the final approach at heights consistent with the use of the ILS, however pilots are generally instructed to maintain an altitude of at least 2,500 feet until they are turned towards the ILS by ATC.

Visual Approach

Although the majority of arrivals will follow the ILS, there are times when aircraft will use a visual approach and the pilot will land using visual references. These are required as part of a pilot's training schedule and will be authorised by, and under the control of, Air Traffic Control.

Non Directional Beacon Approach

Should the ILS be out of service, a Non Directional Beacon (NDB) approach is used. These are also required as part of a pilot's training schedule so may, on occasion, be used even when the ILS is operational.

An NDB is a single aerial transmitter which transmits directional information to an aircraft. Instrumentation on board the aircraft will home into the transmissions, and the aircrew will fly towards the beacon, making adjustments to the track as they fly towards the runway. When an NDB approach is used, aircraft are positioned approximately five degrees east of the ILS localiser.

As the NDB beacon is located off to one side of the runway, the NDB flight path over the ground can vary slightly and, therefore, is not so precise as an ILS approach.

Continuous Descent Approaches (CDAs)

Arriving aircraft are encouraged to use Continuous Descent Approaches. This encourages aircraft to stay higher for longer, by descending at a continuous rate. This requires significantly less thrust leading to reduced air emissions and noise, and also results in cost savings for the airlines. Improvements in CDA rates at Edinburgh are estimated to be saving airlines over £150,000 worth of fuel per year.

With a CDA an aircraft descends towards an airport in a gradual, continuous approach with the engine power cut back. By flying higher for longer and eliminating the need for the extra thrust required for the periods of level flight between steps of descent, CDAs result in reduced fuel burn and emissions and means less noise exposure for communities under the arrivals flight path. This type of procedure can result in noise reductions of up to 5 dB.

Departing aircraft

Standard Instrument Departure (SID) Routes

Standard Instrument Departure Routes are a set of instructions which a pilot will refer to when departing from the airport. These routes are not compulsory, but rather ensure that all departures are safe and efficient.

SIDs are given their name by a place or position/point that they lead to. For example, GRICE is a point in rural Perthshire and TALLA is near Carlisle.

In the 1970s, when Runway 06/24 was designed and built, SID construction was not as rigorous or sophisticated as it is today. There was limited technology, so instructions were fairly simple, involving directions to be taken once an aircraft had reached a certain height or travelled a certain distance.

The following SID are currently in use at Edinburgh Airport:

GRICE

GRICE is used by approximately 5% of departures comprising mainly Scandinavian and Highland and Islands services and occasionally Middle East aircraft.

There are two separate GRICE departures – GRICE 3C and GRICE 4D.

GRICE 3C is operational when Runway 24 is operational and GRICE 4D is operational when Runway 06 is operational.

A GRICE 3C departure leaves Edinburgh Airport westbound before turning north and veering east before crossing the Forth and overflying the GRICE point at heights of 6000 feet and above. All aircraft climb straight out to a beacon at Livingston before turning north. The Noise Preferential route terminates at 3,000ft, and aircraft may turn when they are above this height. Since July 2015, to alleviate noise intrusion in the Uphall area, we have raised this height/turn level to 4000ft for jet aircraft.

A GRICE 4D departure leaves Edinburgh Airport eastbound, turning west over the Forth and heading to GRICE. All aircraft on this departure are required to turn left on a 045 degree heading at 500 feet or at 0.5 nautical miles (whichever is reached earlier) to avoid the Cramond area of Edinburgh.

GOSAM

GOSAM is primarily used by aircraft heading south from Edinburgh towards Carlisle. This includes most UK domestic jet services, such as those to the London airports, and flights to France, the Iberian Peninsula, Balearic and Canary Islands, amongst others. GOSAM accounts for over half of all Edinburgh departures.

There are two separate GOSAM departure routings – GOSAM 1C and GOSAM 1D.

GOSAM 1C is operational when Runway 24 is operational and GOSAM 1D is operational when Runway 06 is operational.

GOSAM 1C is operated in the following way, all aircraft climb straight out to a beacon at Livingston before turning as directed by Air Traffic Control (ATC).

A GOSAM 1D departure leaves Edinburgh Airport eastbound, turning left initially and then left and left again over the Forth/South Fife and heading south-west or as directed by ATC. All aircraft on this departure are required to turn left on a 045 degree heading at 500 feet or at 0.5 nautical miles (whichever is reached earlier) to avoid the Cramond area of Edinburgh.

TALLA

TALLA is primarily used by non-jet aircraft to all destinations except north. This includes Aer Lingus flights to Ireland and Flybe all over the UK. It is also used by jet aircraft that are flying overhead from Newcastle to destinations in northern, eastern and southeast Europe, and the Middle East. TALLA accounts for around a third of all departures.

There are two separate TALLA departure routings – TALLA 5C and TALLA 5D.

TALLA 5C is operational when Runway 24 is operational and TALLA 5D is operational when Runway 06 is operational.

Aircraft operating on TALLA 5C climb straight out to a beacon at Livingston before turning left or as directed by ATC.

A TALLA 5D departure leaves Edinburgh Airport eastbound, turning left initially (as below) and then right over the Forth and then right again heading south towards TALLA and/or as directed by ATC. All aircraft on this departure are required to turn left on a 045 degree heading at 500 feet or at 0.5 nautical miles (whichever is reached earlier) to avoid the Cramond area of Edinburgh.

SIDs are depicted as lines on maps however recognising that aircraft are unable to follow this line exactly, aircraft fly within a corridor known as a Noise Preferential Route (NPR).

Noise Preferential Routes (NPR)

Noise Preferential Routes are corridors, extending 1 mile in each direction from the centre of the SID line, that aircraft are expected to fly when departing from the airport. NPR are not a statutory control but, rather, are used to reduce noise disturbance on our local communities. Departing aircraft are required to follow the NPR until they reach an altitude of 3,000ft. When they reach 3,000ft they can depart these routes and fly towards their final destination.

Since July 2015, to alleviate noise intrusion in the Uphall area, we have raised this height/turn level to 4000ft for jet aircraft.

On occasion, and to ensure aircraft safety, aircraft may be permitted to deviate from the NRP. The most common reason for this is extreme weather conditions in the airport vicinity.

Track keeping

All arriving and departing aircraft are monitored using our Noise and Track Keeping (NTK) system.

Track keeping refers to aircraft flying in the NPRs. If an aircraft is found to be off-track, we will contact NATS and the airline directly to understand why and work with the airline to ensure they understand the correct procedures and follow these in the future.

Continuous Climb Departures

Like CDAs, Continuous Climb Departures are encouraged due to the fuel savings and noise reductions on local communities.

The greatest benefit of continuous climb operations is from the significant reduction in CO2 emissions and the benefits this has on air quality.

The Sustainable Aviation partnership has promoted continuous climb techniques at UK airports, with the procedure being used up until 10,000 feet. From 55% of departures using the technique in 2006, implementation has grown to 67% in 2014. Sustainable Aviation is also promoting best practice in take-off and landing cycle operations through the publication, in partnership with others, of codes of practice. Climbing to optimum cruising altitude and out of congested airspace can reduce CO2 per departure by 100-300 kilograms.

Further information on CDA's and CCD's and the scientific reasoning behind the use of these procedures may be found on Sustainable aviation's website.

http://www.sustainableaviation.co.uk

Noise Monitoring and Fining

Aircraft flying to and from Edinburgh Airport are monitored by 3 permanent and fixed noise monitoring stations located at Cramond, Uphall/Broxburn and Livingston.

To measure the Noise from individual aircraft the noise measurement parameter Lmax is used this is measured in decibels (dB), and is the measurement of the maximum noise level during one noise event or, in this case, during one aircraft movement.

There are maximum allowed levels for Daytime noise (06:00 – 23:30) and Night time noise (23:30 - 06:00) - these are 94dBA Lmax and 87 dBA Lmax respectively. Flights must not exceed these levels and airlines are fined for all exceedances. This is a voluntary policy introduced by Edinburgh Airport to mitigate against noise nuisance in our communities.

Placement of noise monitors - the monitors are positioned in accordance with guidance from the Department of Transport (DfT). They are based on a detailed scientific study carried out for the DfT by the Civil Aviation Authority (CAA). Edinburgh Airport follows this guidance along with Glasgow, Heathrow, Gatwick and Bristol airports amongst others.