NATS

NATS

NATS is the UK's leading provider of air traffic control services. In 2015 we handled 2.4 million flights with 247 million passengers in UK airspace.

In addition to providing services to 13 UK airports, and managing all upper airspace in the UK, we work in more than 30 countries around the world.

UK Flight Information Regions

The UK airspace is divided into two flight information regions (FIRs), the Scottish and London FIRs (outlined in white above). In addition, the Scottish Control Centre at

Prestwick also provides Air Traffic Services to half way across the North Atlantic, known as the Oceanic Control Area.

Airways and Air Routes

Airways are controlled airspace that provide protected corridors below 24,500ft for aircraft to fly. Above 24,500ft airways become air routes.

This poster highlights the airways above the UK in green blocks. Did you know, many airways are one-way to help manage high traffic volumes?

Controlled zones and areas

The responsibility for managing controlled airspace is split between various teams of Air Traffic Controllers, some based in control towers at airports and others in our two national control centres at Prestwick and Swanwick. Controllers in

the tower are responsible for aircraft, and vehicles operating on the airfield, and aircraft flying within their aerodrome traffic and control zones. These aerodrome zones typically extend 2 miles out and up to 2,000ft above the airport, restricting

aircraft to only those using the airport. Larger airports may extend their control zones out to 10 miles or more and have additional controllers, using radar, to control the arriving and departing aircraft. All airspace above 24,500ft is controlled.

NATS videos

To see this poster come to life as an animation visit:
www.youtube.com/natsatcol

Control centres

NATS has two Control Centres in the UK that provide air navigation services to efficiently and safely manage aircraft travelling through UK airspace.

The NATS Prestwick Control Centre opened in 2010 and provides air traffic control services to aircraft flying through northern UK airspace, and out into the Northern Atlantic. This covers an area of 2.84million km², and includes 880,000 flights per year in the airspace over Scotland, Northern Ireland, Northern England the Midlands, North Wales and the North Sea, and 390,000 flights over the North Atlantic Ocean, the busiest 'remote area' operation in the world.

The Swanwick Control Centre became fully operational in early 2002, managing two civil operations that handle 2million flights a year flying over England and Wales, making it one of the busiest areas of airspace in the world.

London Area Control manages en route traffic in the upper airspace of the London Flight Information Region. London Terminal Control handles civil traffic below 24,500ft flying to or from London's airports. This area extends south and east towards the coast, west towards Bristol and north to near Birmingham. In addition the Royal Air Force manage a military operation from the Swanwick Control Centre.

Tower operations

NATS currently provides a mix of tower and approach air traffic control services to 13 UK airports. From the world's busiest heliport up in Aberdeen, to Luton, one of Europe's busiest business aviation airports, across to Cardiff where there is a complex mix of commercial, military and general aviation, and back to Heathrow, the world's busiest dual runway airport. In addition we provide tower services to Gibraltar Airport and are working at 9 Spanish airports through our joint venture, FerroNATS.

An airport can have two types of controllers who would manage responsibility for either approach or aerodrome operations. An Approach Controller working at an airport would often be based in the office of a Control Tower and will guide aircraft on their approach through the airports airspace, ensuring aircraft are ordered in the most efficient way. The controllers sitting high up in the airport tower are known as an Aerodrome Controllers and their job is to take over from the Approach Controller as the aircraft come into land. At a large airport, this role may be split between aircraft in the air and those that are already on the ground.

Drones

The recreational and commercial use of small drones in the UK is on the rise and the first ever UK drone show took place in 2015 attracting crowds of enthusiasts and commercial operators. Drones can vary in size from something that fits in the palm of your hand, to the size of a Boeing 737, but they are all still aircraft and can only operate if they do not represent a hazard to other airspace users or to people and property on the ground.

Small drones, or Remotely Piloted Aircraft Systems (RPAS) as they are formally known, are highly capable aircraft that give their operators immediate access to the skies and a chance to experience a different and unique perspective of the environment around them.

There are a growing number of clubs specifically for drone users, where operators may learn, develop, and gain experience safely. Guidance on the safe use of RPAS can be found on the Civil Aviation Authority website.

Airspace modernisation

Airspace is our invisible infrastructure. It is a carefully crafted network of routes, designed to ensure we can safely support millions of aircraft travelling to, from and through the UK every year.

However, today's airspace was designed more than fifty years ago when only half a million aircraft used our skies. Now that number is 2.2 million and is forecast to rise to 3 million by 2030. It's like the roads of the 1960s trying to support today's traffic.

Whilst it's currently able to support the safe movement of today's volume of traffic, it will not be able to cope with the growth in air traffic expected in the next ten to fifteen years and it is preventing us from delivering a more sustainable aviation industry – one which uses less fuel, lowers CO₂ emissions and reduces noise over the ground.

If we do nothing, with forecast growth in traffic of 40% by 2030, delays are predicted to rise to 50 times what they are today, costing airlines over £1bn every year and costing the UK economy much more.

We need to modernise our airspace if we are to meet future demand and keep our skies moving safely and efficiently, so we will be working hard in the coming years, with our customers and with local communities, to redesign our skies.

Infringements

When an aircraft makes an unauthorised entry into controlled airspace it's known as an 'Infringement'. Procedures exist to ensure that the risk of this happening is minimal, but the disruptive results of even a minor intrusion have the potential to affect many airspace users. Upon detecting an infringement, air traffic controllers must assume that the pilot is lost and therefore the flight path is unpredictable. They will ensure that the infringing aircraft is kept away from all other air traffic by establishing a 'buffer' around the offending aircraft with a radius of five miles.

This begins a chain reaction that can result in aircraft being directed to holding patterns, re-routed and potentially being prevented from taking off and landing, which causes significant disruption to flights and for passengers. If a pilot has a problem with their position they can contact a nearby air traffic services unit or the Distress and Diversion Cell to help them navigate to a safe flight path.

Some of the most common reasons for infringements include complacency, pilot workload and distractions, the misreading of charts, poor or incorrect pre-flight briefing and misidentification of land features. Addressing these points and using equipment such as a transponder and an airspace awareness device all help to avoid infringements and the potential risks this can create.

Bad weather

In normal weather conditions, each airfield is able to land a certain number of aircraft per hour. This figure is determined by the configuration and facilities of the airfield. Adverse weather conditions such as wind and snow or poor visibility can increase the time and space required to safely run operations, and may slow the rate at which aircraft can arrive and depart.

Aircraft land and take-off into the wind for maximum lift, helping them transition from the ground to flight and vice-versa. Most runways in the UK are aligned east/west, as UK prevailing wind conditions are mainly westerly. In strong wind conditions, the arrival rate may reduce as aircraft may require greater spacing to stabilise for landing on their final approach. Different aircraft types have different tolerances to crosswinds. If the crosswind is too strong, an aircraft may be unable to approach a runway and may have to hold for weather improvements or divert to another airfield with a more appropriately aligned runway.

Snow and ice can have a major impact on operations. Airport taxiways and runways need to be sufficiently cleared to use safely, and aircraft may need de-icing. The timing of both need close coordination with air traffic control to avoid delays. Finally, when visibility is poor with fog or heavy rain, pilots and air traffic control will use additional procedures to space aircraft and ensure safety.

UK skies

NATS