AIRSPACE

Modernising our flightpaths

DEPARTING AIRCRAFT FACTSHEET

GLASGOW AIRPORT

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AIRCRAFT DEPARTURE ROUTES

This factsheet outlines how departing aircraft are managed in terms of how the flight paths, that they use, fit into the wider scheme of aircraft and airspace operation and why these flight paths need to be defined.

DEPARTURE PROCEDURES

The flight paths used by aircraft departing from Glasgow Airport are known as "SIDs" (meaning Standard Instrument Departure Procedures). A SID is an Air Traffic Control (ATC) procedure which allows the aircraft to enter the airspace, clear of any obstacles, in a specified manner along a repeatable specified flight path after departure. Issuing a SID clearance to a pilot is far simpler than issuing a bespoke individual and complex set of departure instructions resulting in reduced workload and radio transmissions. The design of a SID procedure must take into account numerous factors, the basics of which are:

- It must be **safe to fly.** That means it must ensure that aircraft are kept clear of obstacles and terrain in the early stages of departure when it is still close to the ground and when cockpit workload is high. We have plenty of high ground around Glasgow Airport which must be taken into account in the design of SIDs. The SID must also be safe with respect to the capabilities of all aircraft that are going to use it. We cannot impose turns or rates of climb on aircraft which are beyond their safe capable limits, in all weather conditions. **Safety is always paramount in everything we do.**

- The SID must be **compatible with the ATC requirements** of the airspace structure, both close to the Airport and further away where it interacts with routes to and from other airports. The airspace surrounding the 3 Scottish Lowland Airports, Glasgow, Edinburgh and Prestwick, is known as the Scottish Terminal Control Area (ScTMA) and contains a network of arrival and departure routes servicing the 3 airports (as well as overflying routes). The ScTMA Air Traffic Management (ATM) system is, basically, arranged in an "anti-clockwise flow" (in common with the flow of air traffic over the whole of the UK north/south spine). This means that southbound departing aircraft from the 3 airports route to the west side of the ScTMA whilst inbound traffic are routed to the eastern side of the ScTMA. (It means that departures from Edinburgh Airport route towards Glasgow before turning south). It is essential that all SIDs from Glasgow Airport, whichever runway they are departing from, fit into the wider ATM system.

- The SID design must **meet our environmental requirements;** specifically, it must take due regard of the Noise Abatement Procedures (NAPs) specified by us, the Airport Operator. Equally, our NAPs must be safe to fly and take due regard of the safety requirements of SID design and the available navigation infrastructure. There are many additional factors that we, the Airport Operator must consider in developing our NAPs, which are considered in our Noise Factsheet.

- The SID procedures must be **published** in a National document known as the UK Aeronautical Information Package (AIP). This is a document published by the Civil Aviation Authority (for world-wide distribution) which contains flight procedures and airport details for the UK. SIDs are published in graphical and text format so that pilots can brief themselves well before their flight as to the route they must follow after take-off and the altitudes they must achieve. It also enables the navigation database coders who prepare the navigation data for the aircraft Flight Management Systems (FMS) to carry out their coding functions well in advance of any changes being implemented.

WHY ARE THINGS CHANGING?

As outlined in our factsheet on Navigation, the whole of the UK's ATM system is being modernised to reflect the navigation capabilities of modern aircraft FMS and the increasing reliance on "space-based" navigation satellite systems instead of the "old-fashioned" ground-based navigation beacons. As part of this modernisation programme, the CAA has approved the withdrawal of many of the conventional navigation beacons (known as VORs - see the Navigation factsheet). The VOR network is owned and operated by NATS and was established for en-route (flight between airports) navigation as well as being used to define airspace procedures for airports themselves (SIDs and Standard Arrival Routes (STARs)) and Instrument Approach Procedures (IAPs).

With the approval of the CAA, NATS has determined that the VOR located on Glasgow Airport (known as the Glasgow "GOW" VOR) should be withdrawn in 2019. This VOR was installed on the Airport in 1987. Since then has been used to define all of the SIDs and STARs for Glasgow Airport as well as IAPs to both of our runways and the overlying airways routes.

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Due to the modernisation of navigation technology on-board aircraft, many aircraft have not been using the VORs and other navigation facilities as originally conceived for a number of years. Instead they have been flying procedures that loosely mirror existing procedures, loaded in their FMS. This is not a regulated practice meaning we have no control over the accuracy of the tracks that are flown. As our procedure designs are all based on the GOW VOR it is vital that we now redesign them before the GOW VOR is withdrawn to ensure we maintain control where aircraft fly.

HOW WILL THE SIDS BE REDESIGNED?

In order to reflect the CAAs Future Airspace Strategy (FAS) (see the Navigation Factsheet) and the current CAA Policies for the design of departure routes, we must reconfigure the SIDs as "RNAV" procedures. RNAV is an abbreviation of "a**R**ea **NAV**igation" and, in simple terms, means that the routes are designed between points in space that can be flexibly positioned known as "waypoints" instead of along tracks aligned between old-fashioned ground beacons.

The new SID procedures will be predominantly based on signals from satellite navigation systems (known as Global Navigation Satellite Systems (GNSS)). A recent study has shown that there is sufficient Distance Measuring Equipment (DME) coverage when combined with the aircraft Inertial Referencing Unit (IRU) to additionally support the SIDs as DME/DME/IRU.

As our SID procedures have been in place since 1987, they must be further updated to reflect the demands of our operators and the ATM system. Equally, the current CAA policies for SID design did not exist when the current SIDs were introduced and therefore some of the historic flight paths cannot be replicated using the present-day requirements.

Finally, in adapting our SIDs to reflect the new arrangements following the withdrawal of the GOW VOR, we must take the opportunity to review our NAPs. We have been investigating whether the changeover to RNAV procedure designs will enable us to reduce the environmental impact of departing aircraft on communities living close to the Airport. Environmental impact covers both the overall number of people that are affected by overflight of aircraft at low altitudes and the emissions from aircraft caused by inefficient flight profiles and operating restrictions. Where improvements can be made, within the safety and regulatory constraints that we face, we will endeavour to make them.

In conjunction with the specialist flight procedure designers we have also considered where adjustments can be made to the initial flight paths used in order to reduce the number of people overflown by departing aircraft close to the airport.

WHERE WILL THE NEW SIDS GO AND WILL I BE AFFECTED?

When an Airport Operator wants to change any SID procedure, regardless of whether or not it stems from circumstances outside the control of the Airport Operator as is the case here or the CAA requires the Airport Operator to undertake a comprehensive and stringent Airspace Change Process and submit a change proposal.

This ACP process requires that we take account of all aspects of the safety, operational and environmental objectives. We must also look at different options which might be feasible. Then we must consult widely on the proposals for the routes; this is what we are doing now. Then we must consider all your views and make a balanced judgement as to which particular options would be the most suitable. These we then submit to the CAA as a proposal for their review and approval.

If you think you might be affected by any of our proposed routes as presented in our Consultation Material or you have a view on what is being proposed, you now have the opportunity to make your opinion known. Please read our full consultation document to find out how you can respond to this consultation.

1 NATS, formerly known as National Air Traffic Services, is an Air Navigation Service Provider (ANSP) Company which was previously part of the CAA but was privatised by Government in 2001. It provides the whole of the UK en-route network and terminal Air Traffic Services, including the ground-based navigation infrastructure, under licence from Government and is Regulated by the CAA.