# LSA FASI(S) ACP

## An Introduction to Design Principles

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# Executive Summary

We at London Southend Airport (LSA) are acutely aware that we have engaged on a number of occasions with our stakeholders on Airspace Change Proposal (ACP) consultations over the last few years and that it may seem odd that we are coming to you again for feedback on further changes to airspace. We have engaged with you on the introduction of new Standard Instrument Departure procedures (SIDs) and new Instrument Approach Procedures (IAPs) both of which utilised modern navigation methods, namely Performance-Based Navigation (PBN). In addition, we have engaged with you on revisions to our controlled airspace configuration. Please be assured that your time and consideration on the introduction of these new procedures has not been wasted; the changes to the airspace have been approved and the proposals for the SIDs and IAPs are with the CAA for their final decision. These are in keeping with the Civil Aviation Authority's (CAA) Airspace Modernisation Strategy (AMS) and form a part of the wider modernisation programme.

However, the CAA has written to 18 airports in the South-East of England (including LSA) to advise them that it is essential that they participate in a programme of Airspace Modernisation that will result in significant changes to the airspace over the region. Airspace is a finite resource and if not managed effectively, it can lead to significant delays in air travel. This programme consists of a coordinated attempt to improve upon the efficiency of airspace usage across the region whilst implementing the latest technology with the aim of reducing the environmental impacts associated with aviation.

This document is intended to provide you with a background understanding of what LSA needs to address in this ACP. It should enable you to answer a short survey on the establishment of 'Design Principles' that will ultimately shape the development and assessment of 'Options' for change.

We would like to thank you again for your time, consideration and valuable input. We look forward to working with you to improve our system of flight procedures and our airspace configuration taking onboard the views of as many of our stakeholders as we can.

# Abbreviations

| | |
|---|---|
| ACOG | Airspace Change Organising Group |
| ACP | Airspace Change Proposal |
| AIP | Aeronautical Information Publication |
| AMS | Airspace Modernisation Strategy |
| ANSP | Air Navigation Services Provider |
| AONB | Areas of Outstanding National Beauty |
| ATC | Air Traffic Control |
| ATCO | Air Traffic Control Officer |
| CAA | Civil Aviation Authority |
| CAT | Commercial Air Transport |
| CTA | Control Area |
| CTR | Control Zone |
| dbA | A-weighted Decibels |
| DfT | Department for Transport |
| DME | Distance Measuring Equipment |
| DP | Design Principle |
| EASA | European Aviation Safety Agency |
| EGNOS | European Geostationary Navigation Overlay Service |
| FAS | Future Airspace Strategy |
| FASI(N) | Future Airspace Implementation North |
| FASI(S) | Future Airspace Implementation South |
| GA | General Aviation |
| GNSS | Global Navigation Satellite System |
| IAP | Instrument Approach Procedure |
| ICAO | International Civil Aviation Organisation |
| IFP | Instrument Flight Procedure |
| Leq | Equivalent Continuous Sound Level |
| LAeq | Equivalent A-weighted Continuous Sound Level |
| LOAEL | Lowest Observed Adverse Effect Level |
| LPV | Localiser Performance with Vertical Guidance |
| MTWA | Maximum Take-Off Weight Authorised |
| NAP | Noise Action Plan |
| NERL | NATS En-Route Limited |

| | |
|---|---|
| NMT | Noise Monitoring Terminal |
| NPR | Noise Preferential Route |
| NTK | Noise and Track Keeping |
| PANS-OPS | Procedures for Air Navigation Services – Aircraft Operations |
| PBN | Performance Based Navigation |
| PDR | Preferred Departure Route |
| RNAV | Area Navigation |
| RNP | Required Navigational Performance |
| SIDs | Standard Instrument Departures |
| STARs | Standard Arrival Procedures |
| VOR | VHF Omni Directional Range Finder |

# References

[1] CAP1711 – CAA Airspace Modernisation Strategy V1.0 dated Dec 2018

[2] UK Legislation - Transport Act 2000 – Section 70

[3] Commission Implementing Regulation EU 2018/1048 – PBN-IR

[4] CAP1616 – CAA Airspace Change - Guidance on the regulatory process for changing the notified airspace design and planned and permanent redistribution of air traffic, and on providing airspace information V4.0 dated March 2021

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# 1. Introduction

## 1.1. Airspace Modernisation Strategy – Why does LSA need more change?

1.1.1. The Civil Aviation Authority (CAA) published its Airspace Modernisation Strategy (AMS) in December 2018. This Strategy was developed in response to the Department for Transport (DfT) tasking the CAA with preparing and maintaining a co-ordinated plan for the use of UK airspace up to 2040, including the modernisation of it.

1.1.2. The AMS, which replaced the Future Airspace Strategy (FAS), sets out the ways, means and ends of modernising airspace through 15 initiatives intended to modernise the design, technology and operations of airspace, initially focusing on the period until the end of 2024. Amongst other initiatives, this includes a fundamental redesign of the terminal route network using precise and flexible satellite navigation.

1.1.3. It describes what airspace modernisation must deliver, drawn from relevant national and international policy and law. Paragraphs 3.5-3.7 set out factors that airspace modernisation must deliver, drawn from Section 70 of the Transport Act 2000 and relevant policy as:

- the need to increase aviation capacity in the South East;
- for this growth to be sustainable; and
- for the need to make the best use of existing runways.

1.1.4. The UK's airspace, particularly that of southern England, was originally designed decades ago; it has evolved over time in a bid to manage the increasing volumes of climbing and descending aircraft travelling to and from the various airports all within close proximity. This complex evolution has resulted in an environmentally inefficient and overly complicated puzzle that places a burden on Air Traffic Controllers and in turn limits airspace capacity. Prior to the unexpected worldwide pandemic, flights in southern England were forecast to double over the next 20 years. Whilst COVID-19 has undoubtedly had a significant impact upon the aviation and travel industries, if the airspace is not modernised, the benefits of reduced carbon emissions and noise may not be realised.

1.1.5. The Airspace Change Organising Group (ACOG) was established in 2019 as a fully independent organisation at the request of the Department for Transport (DfT) and Civil Aviation Authority (CAA), to coordinate the delivery of key aspects of the AMS.

1.1.6. The requirement for ACOG is to coordinate the delivery of two major national airspace change programmes known as Future Airspace Implementation South (FASI-S) and Future Airspace Implementation North (FASI-N). FASI-S is a complete redesign of the existing airspace structure in Southern England and LSA is one of 18 airports included within this programme.

1.1.7. ACOG, in collaboration with NATS, En-route Plc (NERL) and each of the airports, must deliver a Masterplan that provides detailed information on the airspace design options under development, the potential areas of overlap between individual Airspace Change Proposals (ACPs) and the compromises and trade-offs that may need to be made to integrate them effectively.

1.1.8. LSA, just as with all the airports affected, must ensure that their modernisation proposals are aligned with neighbouring airports and connect efficiently with the network above. The FASI(S) airports are responsible for modernising or upgrading their individual arrival and departure routes up to 7,000ft. NERL are responsible for redesigning the route network above 7,000ft. It is therefore possible that despite the new departure procedures (SIDs) and Instrument Approach Procedures (IAPs) not having been implemented yet, we may need to consider alterations to fit in with the overarching airspace plan for the region.

1.1.9. For more information, including a brief video, on the importance of modernising UK airspace, see https://www.ourfutureskies.uk/why-modernise/

1.1.10. **Why are you seeking my opinion on your airspace again?** We at LSA are acutely aware that we have approached you on several ACP consultations over the last few years and that it may seem odd that we are coming to you again for feedback on further changes to airspace. The ongoing ACPs were specifically for the introduction of new SIDs and IAPs that utilised modern navigation methods, namely Performance-Based Navigation (PBN). Please be assured that your time and consideration on the introduction of these new procedures has not been wasted and the proposals are with the CAA for their final decision. The procedures are in keeping with the AMS and form a part of the modernisation programme albeit in the process of the FASI-S programme taking shape, the procedures may ultimately require amendment to accommodate other changes in the region. This should not be seen as a negative, rather an opportunity to further improve the overall construct for all stakeholders.

## 1.2. Performance-Based Navigation

1.2.1. One of the major aims of the AMS is to optimise future airspace designs to take account of modern aircraft performance and functional capabilities and make them more efficient, saving time and fuel and reducing emissions.

1.2.2. Key to achieving this is through the application of Performance-Based Navigation (PBN). In parallel, the UK navigation infrastructure can also be optimised to take advantage of the lateral navigation accuracy from Global Navigation Satellite Systems (GNSS) while retaining adequate conventional ground-based navigation aids to ensure both resilience and contingency measures.

1.2.3. PBN is being adopted world-wide and States are expected to modernise airspace through International, Regional and State level initiatives, including regulations. It impacts both the high-level airways and the lower-level arrival and departure routes into and out of airports and IAPs.

1.2.4. European-wide legislation has been developed (Commission Implementing Regulation EU 2018/1048 – PBN-IR) to drive the deployment of PBN in the European region to meet the international vision laid down by the International Civil Aviation Organisation (ICAO).

## 1.3. Impact upon LSA

1.3.1. LSA has already commenced the modernisation of its airspace having submitted a proposal for the introduction of PBN procedures in the form of Area Navigation (RNAV) SIDs and IAPs. In addition, the FASI(S) programme may result in additional requirements for the Airport to

implement new Arrival Transitions to enable aircraft to get established on an instrument approach (IAP) into the Airport.

1.3.2. It is possible that in the development of options for new departure and arrival profiles for the other airports in the region, that the existing airspace configuration may also require re-configuration.

## 1.4. LSA PBN SIDs and GNSS RNAV Approaches ACPs

1.4.1. Two ACPs (ACP-2015-20 and ACP-2016-16), associated to the introduction of new PBN SIDs and IAPs respectively, are currently with the CAA for Regulatory Decision and details of both the proposals can be found on the CAA's Airspace Change Webpage.

1.4.2. LSA would like to thank you for support in the engagement process for these ACPs and the one related to changes to the airspace configuration. We hope to be able to introduce these new procedures in the next calendar year. Your efforts have not been wasted and your feedback will also prove valuable in the progression of this new ACP particularly in the development of Design Principles.

## 1.5. CAP1616 Process

1.5.1. ACPs are conducted using an established process laid down by the CAA in Civil Aviation publication (CAP) 1616. The airspace change process is designed to be transparent, comprehensible, and proportionate, and is aligned the Government's policy on managing airspace.

1.5.2. The 7-stage process contains 14 'Steps' and 4 'Gateways'. The Change Sponsor must satisfy the CAA at each of these 'Gateways' that it has followed the process. Failure to do so results in the need to conduct further work until such time as the CAA is satisfied.

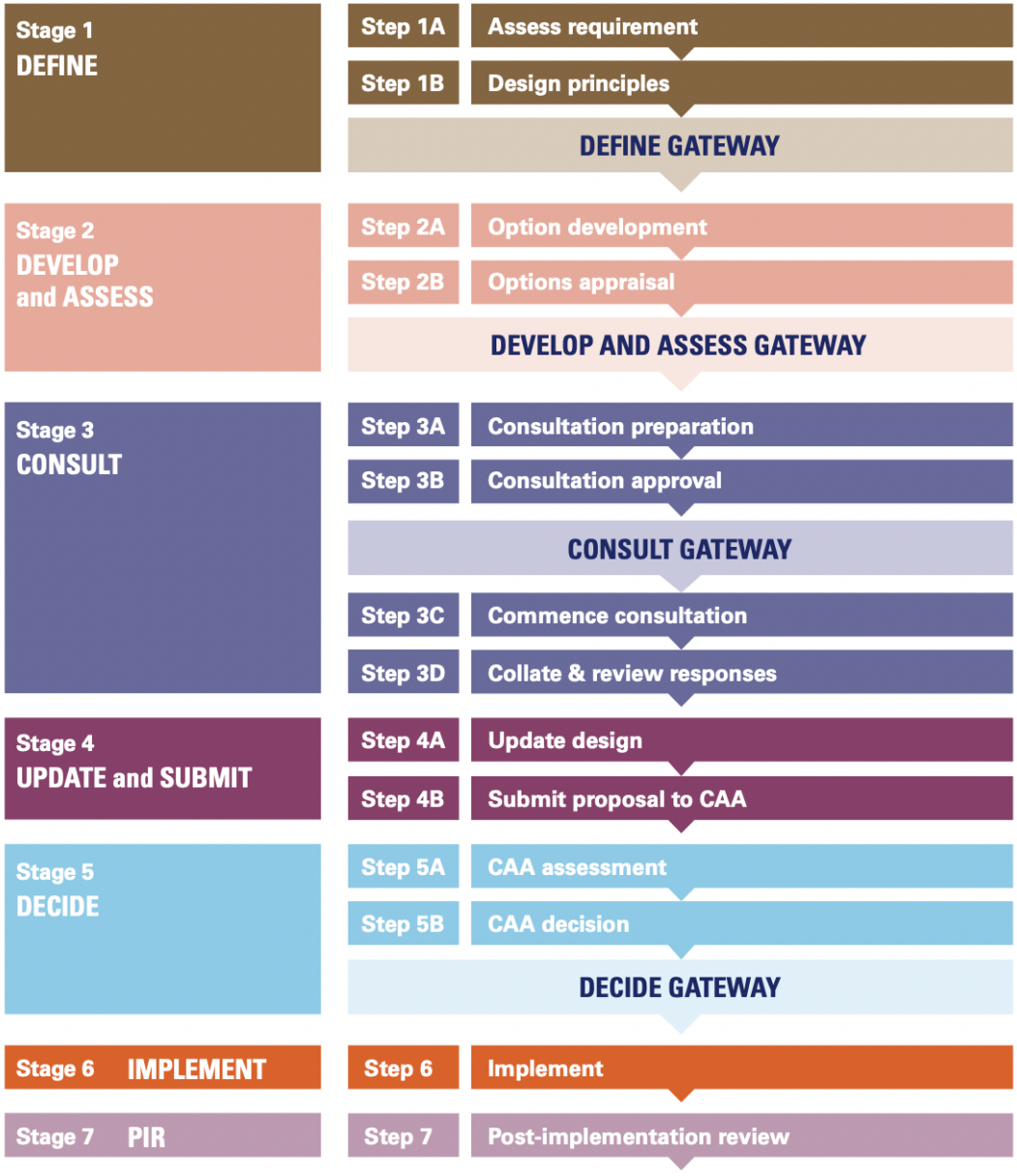



**Figure 1: CAP1616 Process**

1.5.3. LSA has completed Step 1A and we are now embarking upon the development of Design Principles (Step 1B). Design Principles must be developed through a two-way engagement process with stakeholders; therefore, we welcome your input.

# 2. Current Operations

## 2.1. London Southend Airport

2.1.1. Esken (previously Stobart Group) bought LSA in 2008 and set about the first phase of re-development to bring online a longer runway with upgraded navigation and lighting systems. A new state-of-the-art air traffic control tower and mainline railway station were opened in 2011, the same year that easyJet signed a ten-year agreement to use Southend as a new hub, with flights to a range of European destinations. In March 2012, the runway extension became operational, and our new passenger terminal building was officially opened. LSA was able to handle a new generation of medium capacity, high-efficiency jets for short-haul scheduled flights and holiday charters.

2.1.2. A month later, a proposed extension to the new terminal at LSA was given the go-ahead by Rochford Council to help meet our target of serving 2 million passengers by 2020. The extended terminal building was opened in 2014 delivering more check-in desks, improved security screening channels, larger Departure and Arrivals areas, providing space and a better customer experience for our passengers.

2.1.3. LSA has won 'Best Airport in London' by Which? Airport Passenger Survey, an impressive six times in a row and is proud to be one of the fastest growing airports in the UK. With a catchment of 8.2 million users, 60% of which come from London, it has become the airport of choice. Thanks to the onsite train station located 100 paces away from the passenger terminal, it takes no more than 15 minutes from plane to train.

2.1.4. However, the last twelve-eighteen months have been particularly challenging for the aviation sector, and this is reflected in LSA's performance for the period March 2020 to February 2021, a period which coincided with the spread of the COVID-19 virus. The Airport saw passenger numbers fall from 2.15 million in the previous year to 147,000, a reduction of 93%. In addition, easyJet announced the closure of its base at London Southend and other airlines withdrew. The Airport saw a complete reversal from the previous year, when it recorded its busiest year ever, to its lowest throughput post development.

2.1.5. LSA have been able to attract training activity, permissible within Government guidance, and as a result air traffic controllers remained "recent" in their activity and so ready for an increase in commercial flying at the appropriate time. We also continued to support cargo operations and the business aviation market.

## 2.2. Types of Operations

2.2.1. LSA is able to accommodate a wide range of aircraft ranging from medium sized twin engine jets to small business jets and single and twin-engine propeller aircraft for training and private (General Aviation) use.

2.2.2. LSA supports the execution of the following types of operation:

- Commercial Air Transport (CAT) operations providing scheduled and charter services;
- Cargo Operations;

- Non-Commercial operations, that include business aviation, military training and refuelling, private and commercial pilot training and skill testing and private recreational flying.

2.2.3. LSA supported a total of 36,327 movements in 2019 (just over 2 million passengers). This number halved in 2020 owing to the global pandemic to 18,401 and there was a significant downward shift in passenger carriage (only 400,000 passengers).

2.2.4. Movement figures are expected to fluctuate as the aviation industry comes to terms with the effect of the COVID pandemic. It is the desire of LSA to return operations to pre-pandemic levels in keeping with our Section 106 conditions. The volume of General Aviation (GA) traffic is likely to remain static or in a growth scenario, as can be accommodated.

## 2.3. Operational Hours

2.3.1. Whilst LSA is operational 24 hours a day, the published operational hours are 0630-2200, outside of these hours' aircraft operations are only permitted by prior arrangement.

## 2.4. Runways

2.4.1. LSA has a single runway with two ends known as '05' and '23'; these are given their names as their true bearing is rounded to two figures, e.g. Runway 05 has a true bearing of 054.16 degrees.

2.4.2. Aircraft normally land and take off heading into the wind, thus the wind direction at the time of an aircraft approach or departure usually determines which runway is chosen. The prevailing wind direction at LSA is from the south-west, Runway 23 is therefore in use most frequently.

2.4.3. Due to predominantly westerly winds, Runway 23 is in operation roughly 70% of the year. Therefore, aircraft typically depart initially to the west before turn and typically arrive from the east.

2.4.4. LSA has a 'Preferred Runway Scheme' agreed with the local authorities forming part of the Section 106 Agreement. The Airport has committed to use Runway 23 for arrivals and Runway 05 for departures at night (2300-0630) whenever weather and safety conditions permit. In the daytime, the Airport has committed to do the same (for more than 50% of operations) provided weather and safety conditions and movement volumes allow. The rationale for the employment of this Scheme is that the area to the North-East of the Airport (Rochford) is less densely populated. This ACP is not seeking a shift away from this policy.

## 2.5. Airspace

2.5.1. LSA is overflown by some of the busiest and most complex airspace in the world. It is affected by flights to and from the major airports of Stansted, Luton, London City, Gatwick and Heathrow.

2.5.2. The consequence of LSA being positioned in such proximity to these other London airports is that it sits beneath their traffic flows. Figure 2 shows the departure and arrival traffic from

London City and Stansted (the airports which interface with LSA to the greatest extent). When the traffic flows for the other airports are added (not illustrated) the picture becomes extremely busy. Although the diagram indicates 2016 traffic flows, these have not changed significantly.

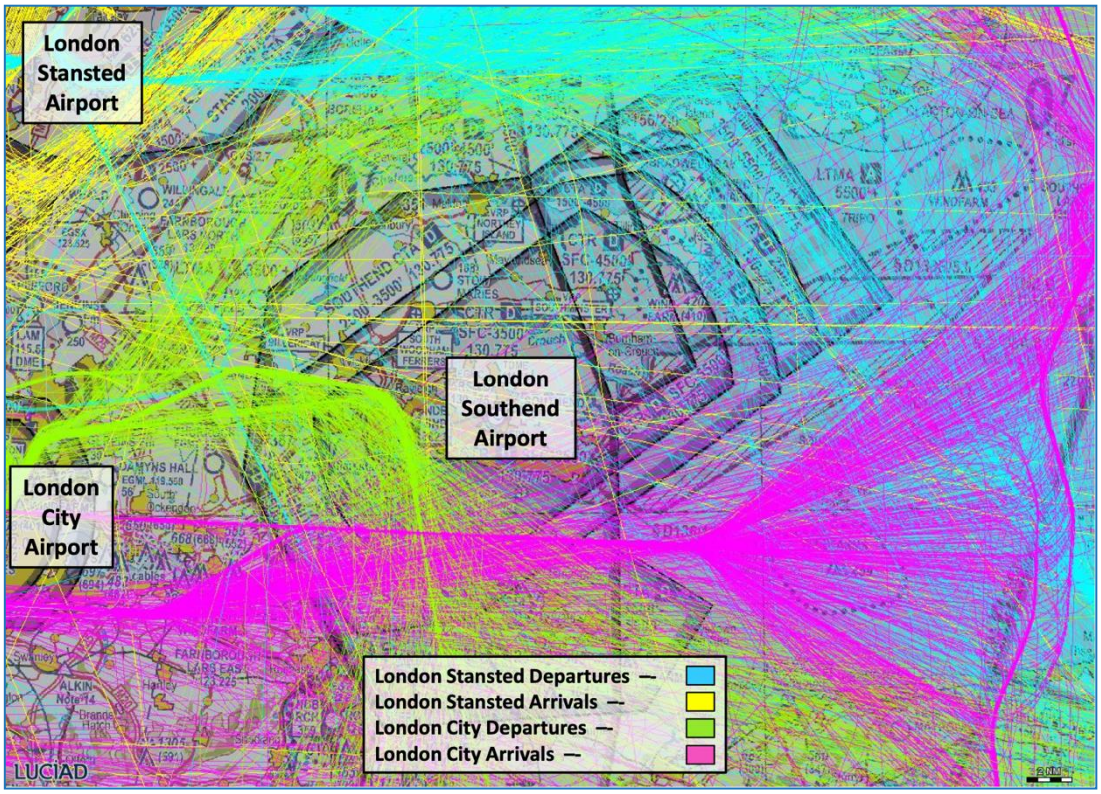
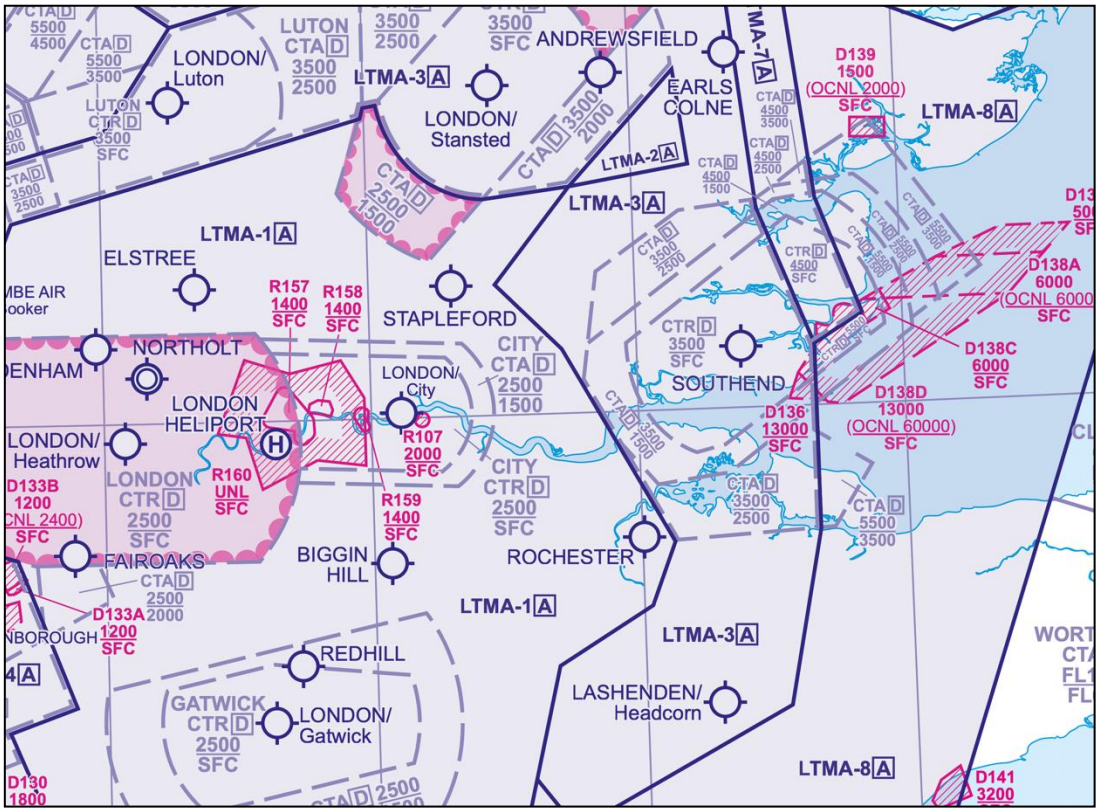



**Figure 2: London Stansted & London City arrivals and departures over LSA and surrounding area (one week, August 2016)**

2.5.3. The terminal airspace surrounding LSA is very complex given its proximity to Stansted, Luton, London City, Gatwick and Heathrow. LSA sits underneath the London Terminal Manoeuvring Area (LTMA) airspace. The LTMA and the respective Control Areas (CTA) and Control Zones (CTRs), depicted at Figure 3, comprises layers of 'controlled' airspace used by air traffic controllers to manage the flights of LSA and other airports. These layers of LTMA airspace dictate the vertical and horizontal extent of LSA's own airspace.

2.5.4. The LSA CTR extends from the surface to 3,500ft above mean sea level (amsl) and in other parts extends to 4,500ft and 5,500ft respectively. The CTR is surrounded by several CTAs that provide continuous controlled airspace containment from the Airport into the LTMA above.

2.5.5. Military danger areas abut that of LSA, further restricting our airspace, as well as densely populated areas and the Kent Downs Area of Outstanding Natural Beauty (AONB) to the South.

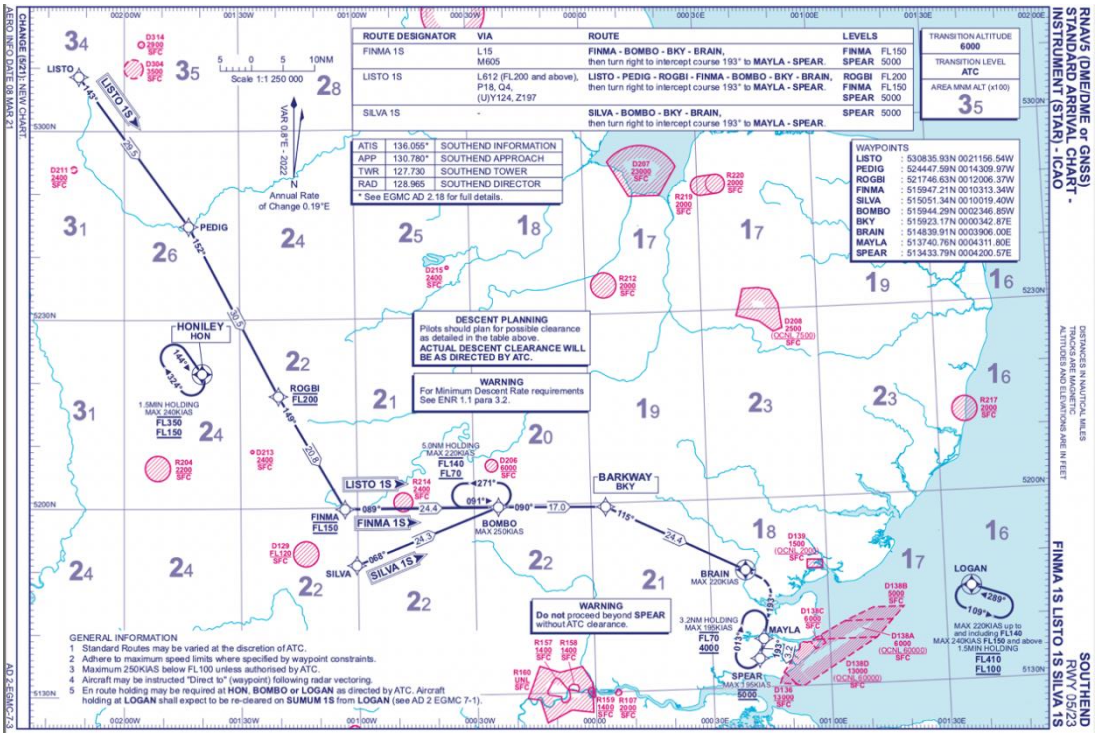



Source: UK AIP ENR 6-42

**Figure 3: London TMA**

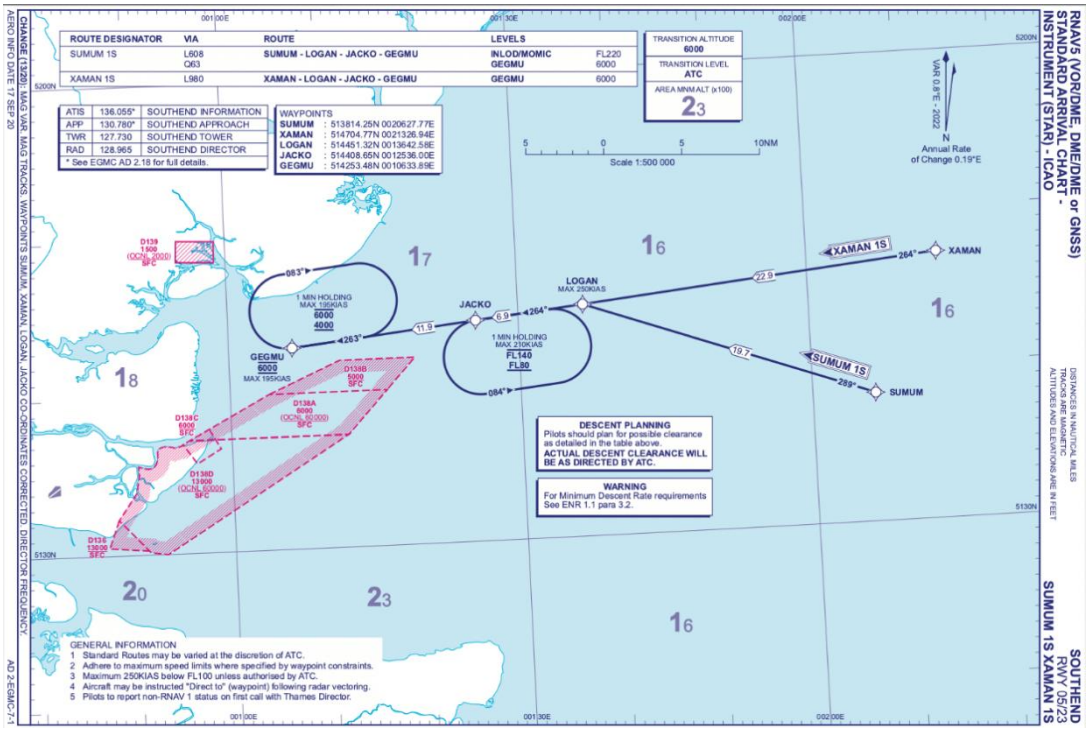
## 2.6. Arrivals/Approaches

2.6.1. Aircraft arriving at LSA initially follow Standard Arrival procedures (STARs). During this phase of flight, aircraft are descended from the en-route system and their speed is typically reduced. If required, the aircraft enter holding patterns overhead LSA (MAYLA) or to the east at GEGMU. Figure 4 shows the route from the north, depositing aircraft overhead LSA. Figure 5 shows the route from the east whilst Figure 6 shows the route from the south. These aircraft are routed to a holding waypoint known as GEGMU. However, in the majority of cases they are acquired by ATC well before entering the holding patterns and are directed to the runway in use. Aircraft arriving at LSA predominantly fly tracks from the east and south with a very few, non-scheduled flights arriving from the north.



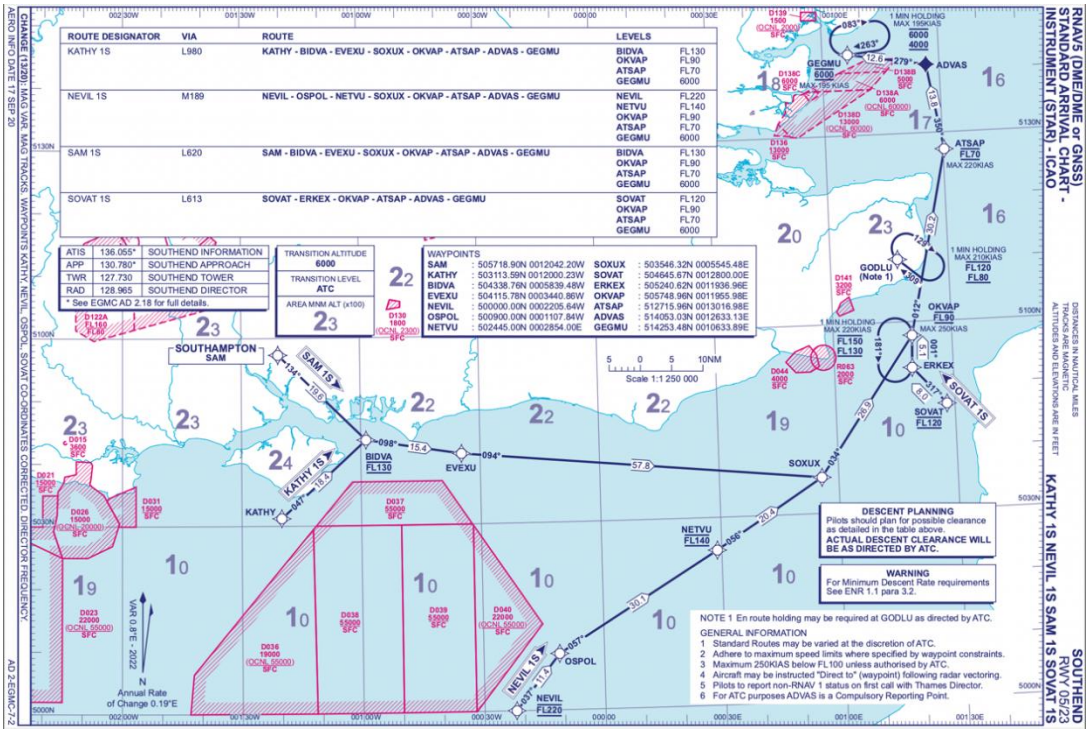

Source: UK AIP AD2.EGMC-7-3

**Figure 4: STAR from the North**




Source: UK AIP AD2.EGMC-7-1

**Figure 5: STAR from the East**




Source: UK AIP AD2.EGMC-7-2

**Figure 6: STAR from the South and West**

2.6.2. Beyond the STARs and holding patterns, the route taken by aircraft into LSA is not defined by fixed lines on a chart. Instead, aircraft are radar vectored by LSA ATC. Aircraft do not follow identical paths, but over time, aircraft occupy a broad 'swathe' (a trend) that focuses into a single track along the extended runway centreline at the Airport.[1]

2.6.3. To modernise and systemise the airspace, the link between the STARs and the final approach can be designed or formalised. These links are known as 'Arrival Transitions' and consideration of these will form part of this ACP. Arrival Transitions may be needed for both the Instrument Landing System (ILS) approaches[2] and the new GNSS approaches[3]. The ILS still provides the most operationally effective means of completing an approach in inclement weather.

2.6.4. The only changes to the final approach path in recent years has been to increase the ILS fixed glide path for Runway 05 to 3.5 degrees from 3 degrees. This increases the height of aircraft making an ILS approach, as they overfly Canvey Island and Leigh on Sea. Furthermore, the ILS procedures were raised slightly to facilitate a reduction in the volume of our Control Zone (CTR).

[1] Aircraft typically fly an Instrument Landing System (ILS) approach. There will soon be the option to fly a GNSS approach should the CAA approve the ongoing IAP ACP.

[2] The ILS allows aircraft to descend to a lower 'minima' (altitude or height) in poor weather before a decision has to be made whether to make the approach or break-off. Such a minima cannot be achieved with the RNP approaches as there is no longer an agreement with the EU over use of European Geostationary Navigation Overlay Service (EGNOS) permitting Localiser Performance with Vertical Guidance (LPV) approach minima to be achieved. LPV approach minima are often comparable to a ILS Category 1 minima (circa 200ft).

[3] An Arrival Transition was proposed for Runway 05 from GEGMU as part of the PBN IAP ACP but these procedures have not yet been approved or implemented.

## 2.7. Departures

2.7.1. LSA currently has no Standard Instrument Departures (SIDs), i.e. it has no formerly charted departure procedures that have undergone the rigours of an Instrument Flight Procedure (IFP) design.

2.7.2. Instead, LSA has Preferred Departure Routes (PDRs) that utilise conventional navigation that rely upon ground-based navigation aids. This results typically in a broader swathe of tracks over time as the routes are not flown as precisely as a charted procedure. The current departure routes rely upon ground-based aids that will be withdrawn from use in December 2022. These ground-based navigational aids, known as VOR-DMEs[4], are part of the national rationalisation of the country's ground-based navigational infrastructure and airports are required to remove any such dependency on these before December 2022.

2.7.3. Despite not having formally charted departure procedures, aircraft greater than 5700kg Maximum Take-Off Weight Authorised (MTWA) are required to follow the Noise Abatement Procedures (NABs) detailed in the UK AIP.[5] The flight paths of the NABs can be seen at Figure 7 along with some typical departure tracks towards the North-East (over Rochford) and the South-West (over Leigh on Sea)

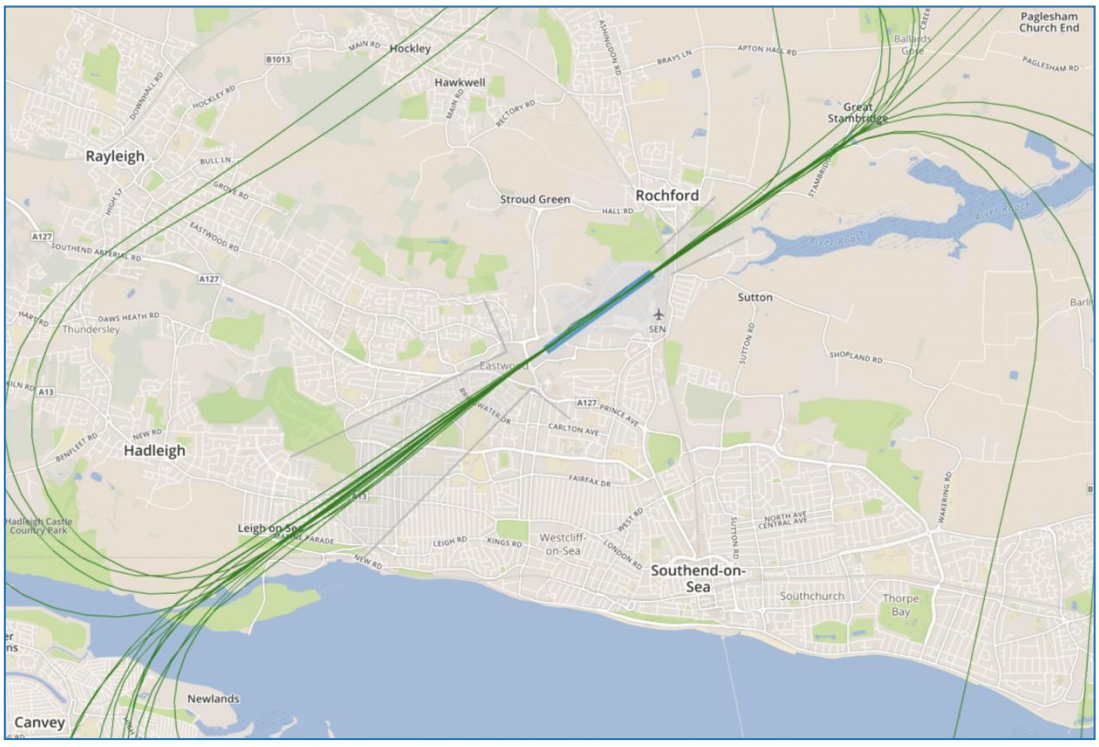



**Figure 7: LSA Typical Departure Tracks**

2.7.4. It is anticipated that the new PBN SIDs associated with ACP-2015-20 will be implemented in the next year. However, as part of the FASI-S programme of modernisation, designed to systemise the airspace, the 'Gateways' that link the Airport to the en-route system might need to move. Accordingly, it is not beyond possibility that the proposed SIDs might require

[4] Very High Frequency Omni-Directional Range Finder and Distance Measuring Equipment
[5] https://www.aurora.nats.co.uk/htmlAIP/Publications/2021-08-12-AIRAC/html/index-en-GB.html AD2.21 sub para a)

amendment as part of this ACP. This will not become apparent until the 'Design Principles' and associated 'Options' for all of the affected airports are considered as a collective.

2.7.5. The Noise Abatement Procedures currently in place at LSA for departing aircraft do not change as a consequence of implementation of these PBN SIDs and will continue to be applied and reported on, in the same way.

## 2.8. Noise & Track Keeping

2.8.1. LSA employs Envirosuite ANOMS NTK system and has introduced the WebTrak radar replay service, which allows members of the public to replay aircraft operations, to display their identity and altitude. The data to support WebTrak is sourced from the radar. The public can interrogate the system to obtain information such as the aircraft's track, altitude, airline and aircraft type.

2.8.2. WebTrak provides historical flights data for up to two weeks. There is no need to note flight details if you are disturbed by aircraft. At a convenient time, simply use the historical tab and enter an approx. time, then scroll through the timeline to find the flight concerned. A 20-minute delay is built in to allow for the radar track and noise data processing, which in turn ensures that the data displayed is accurate.

2.8.3. Webtrak enables you to:

- Locate your address on a map showing all overhead aircraft operations;
- Look at details of individual flights as they take off or land at LSA, detailing the type of aircraft, height and operation, within 10 km and up to 1 km in altitude;
- Look at specific flights over different day/time periods (within a two-week timeframe);
- Confirm whether the flight that disturbed you was compliant and operating within the airports agreed controls;
- Record a noise complaint; and
- See aircraft operations displayed just 20 minutes behind real time.

2.8.4. WebTrak can be accessed at this link. There is a video showing how to use the system on the LSA website.

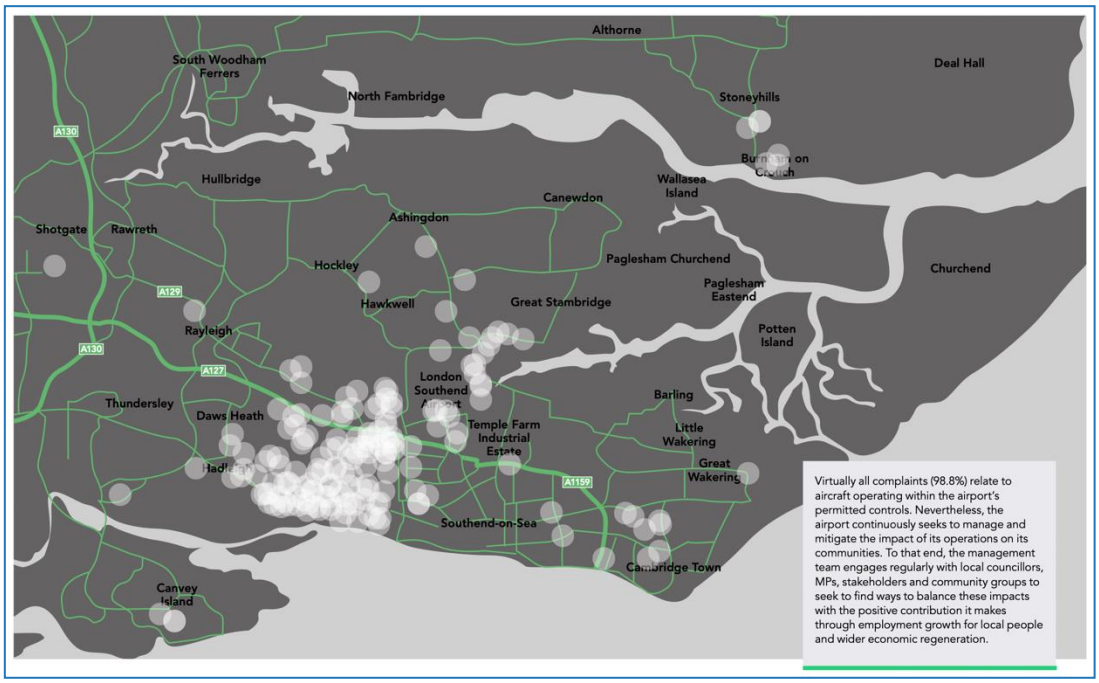
## 2.9. Noise Action Plan

2.9.1. Noise Abatement instructions are published in the Aeronautical Information Publication (AIP) to minimise the impact of noise. The current Noise Action Plan (NAP), adopted in February 2019, can be found here.

2.9.2. LSA has Noise Monitoring Terminals (NMTs) at opposite ends of the operation as is depicted in Figure 8. The data from these supplements the WebTrak NTK system.


Source: LSA Annual Report 2020-21
**Figure 8: LSA NMTs**

2.9.3. The graphic at Figure 9 provides a representation of where noise complaints are generated from (i.e. largely to the South-West of the Airport due to the more densely populated area).




Source: LSA Annual Report 2020-21
**Figure 9: Map of all LSA Noise Complaints 2020-21**

## 2.10. Noise Contours

2.10.1. The Noise Contour chart shown at Figure 10 depicts the average daytime aircraft noise from summer 2018 as compared to summer 2020. It specifically shows the 63db $L_{Aeq\ 16\ hour}$ contour and how this has been shrunk due to the effects of the global pandemic.

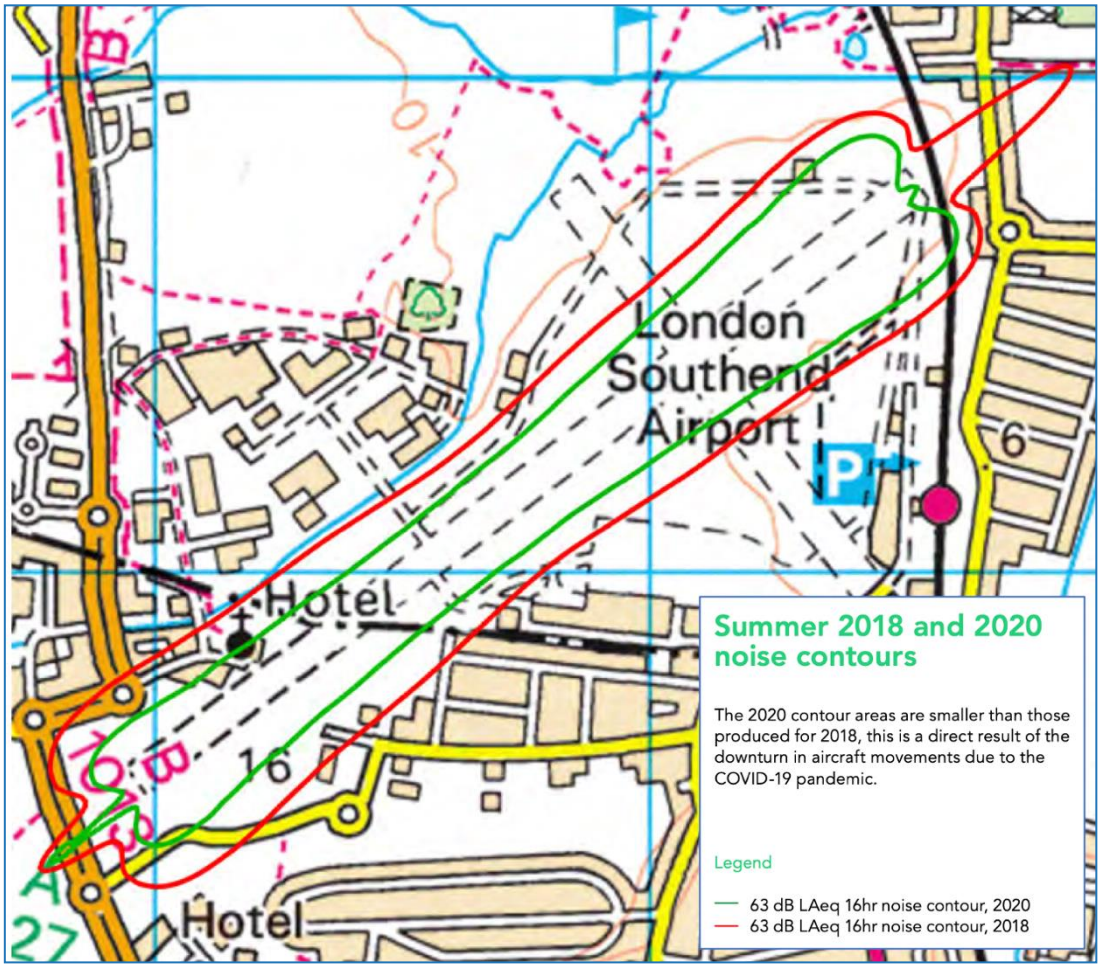





**Figure 10: LSA summer noise contours 2020. Airborne aircraft noise contours summer average daytime. Contour comparison 2018/2020– 63dB.**

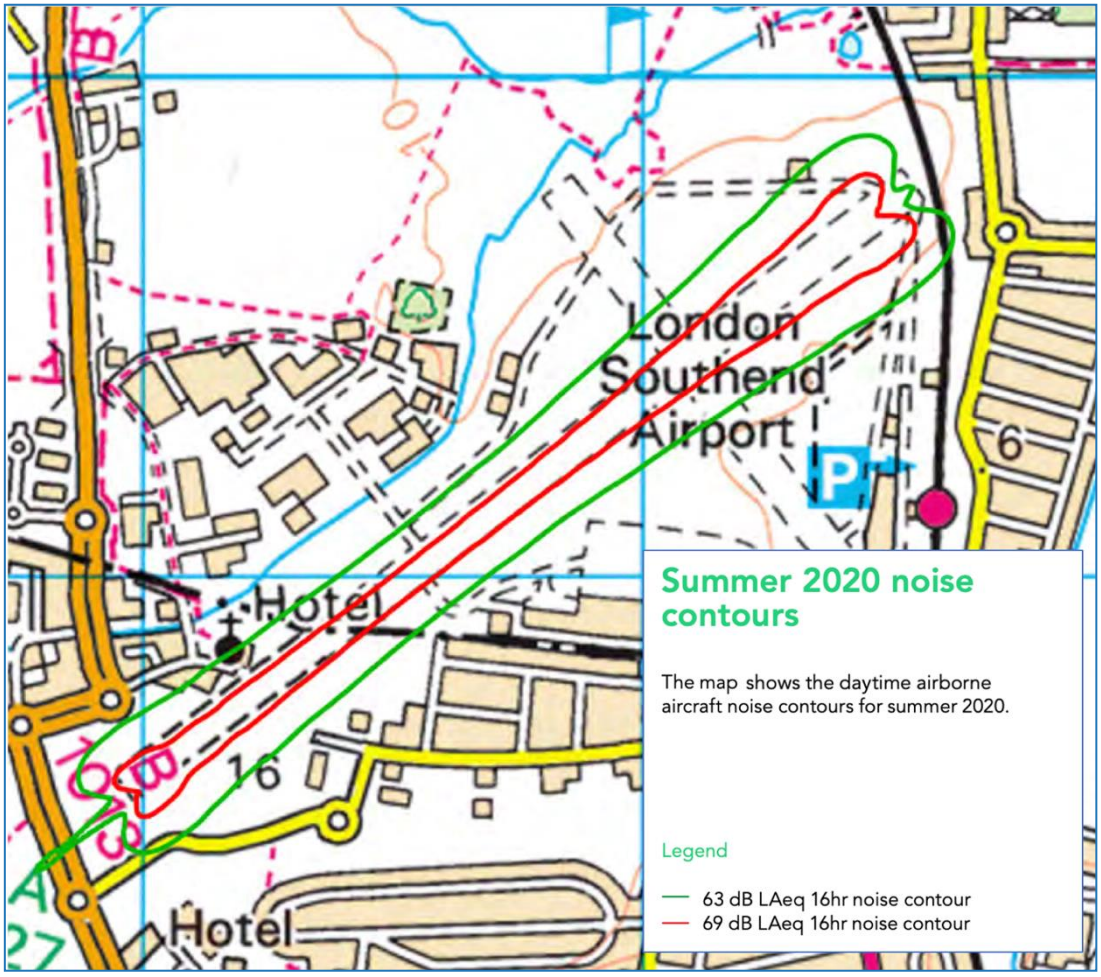





**Figure 11: LSA summer noise contours 2020. Airborne aircraft noise contours summer average daytime.**

2.11. Figure 11 depicts the average daytime aircraft noise from summer 2020, specifically the 63dB and 69dB contours.

2.12. Of greater interest to many in the community will be the 51dB $L_{Aeq16hr}$[6] contour as this is defined by the Department for Transport as the Lowest Observed Adverse Effect Level (LOAEL) for daytime noise, regarded as the point at which adverse effects begin to be seen on a community basis. Adverse effects are considered to be those related to health and quality of life. The 51dB contour (the outer contour) for Summer 2018 can be seen at Figure 12.

[6] 45dB $L_{Aeq8hr}$ for night time noise.

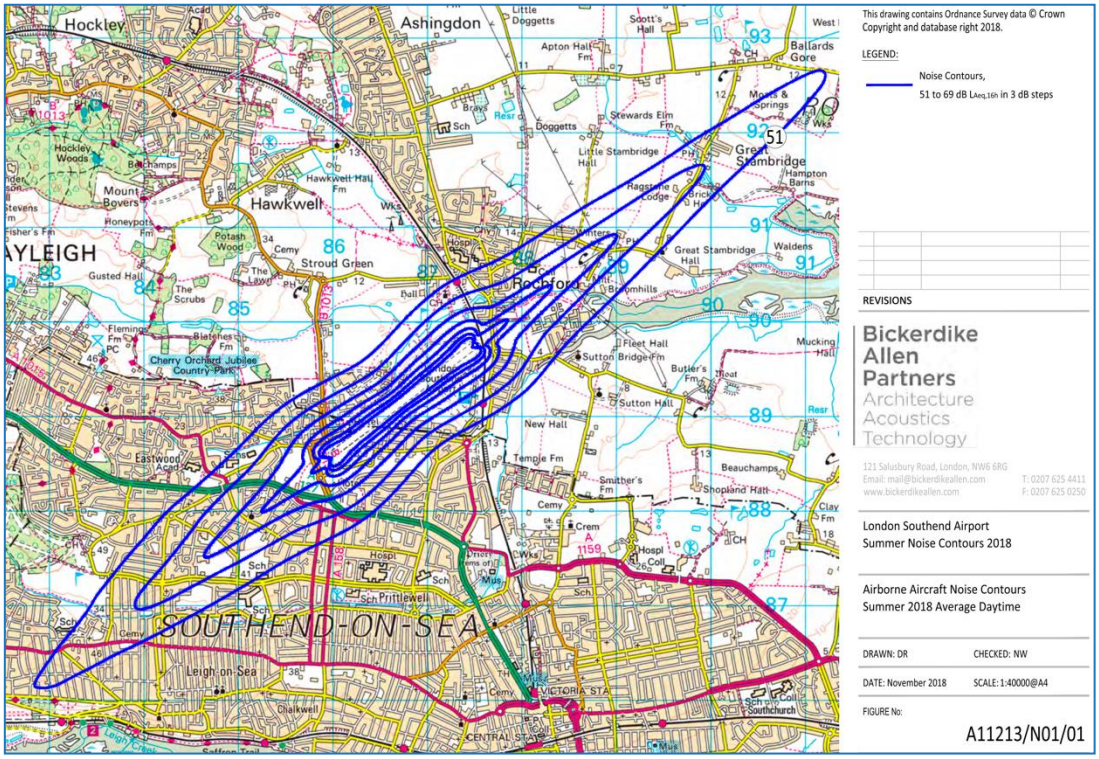



**Figure 12: Airborne Aircraft Noise Contours Summer 2018 Average Daytime**

# 3. Draft Design Principles

## 3.1. Categories

3.1.1. CAP1616 categorises DPs into the following aspects:

- Safety;
- Environmental;
- Operational;
- Technical;
- Economic; and
- Strategic Policy

## 3.2. Starting Point

3.2.1. We have drafted some DPs for consideration and review. These are only draft DPs and are not listed in priority order. We would like these to be moulded to reflect the views of our stakeholders. The survey will give you as stakeholders the opportunity to comment on them and to offer up other suggestions.

## 3.3. Safety

3.3.1. **DP1 – Importance of Safety** – The airspace design and its operation must be as safe or safer than today.

## 3.4. Environmental

3.4.1. **DP2 – Overflight** – The new procedures should not increase the number of people overflown by aircraft using the Airport.

3.4.2. **DP3 – Noise Footprint** – The new procedures should not increase the noise footprint of the existing airport operation, i.e. it should not increase the number of people affected within the 51dBA $L_{Aeq\ 16\ hour}$ contour.

3.4.3. **DP4 – Tranquillity** – Implementation should minimise impact and disturbance to any Areas of Outstanding National Beauty (AONB).

3.4.4. **DP5 – Emissions and Air Quality** – The new design should seek to minimise the growth in aircraft emissions, the further degradation in local air quality and adverse ecological impacts to address growing concerns about the impact of aviation on climate change.

3.4.5. **DP6 – Noise Preferential Routes** – Should the SIDs need to be amended to accommodate the broader FASI-S programme of change, the amendments must honour the Section 106 NAB.

## 3.5. Operational

3.5.1. **DP7 – Operational Requirements** – The new procedures should address the needs of most operators at LSA.

3.5.2. **DP8 – Airspace Dimensions** – The airspace design should afford the appropriate volume of controlled airspace to contain and support commercial air transport for both runways, enable safe, efficient access for other types of operation and release controlled airspace that is not required.

3.5.3. **DP9 – Airspace Complexity –** The airspace design should seek to reduce complexity and bottlenecks in controlled and uncontrolled airspace and contribute to a reduction in airspace infringements.

## 3.6. Technical

3.6.1. **DP10 – Compliance** – The design shall be fully compliant with the design criteria stated in ICAO Doc 8168 (PANS OPS), acceptable to the CAA and, the implementation shall follow all applicable legislation and regulations.

3.6.2. **DP11 – Aircraft Category** – The new procedures shall be technically flyable by all aircraft types in approach Speed Categories A through D.

3.6.3. **DP12 – Equipage and Approval** – The new procedures shall be flyable by the majority of LSA commercial aircraft operators.

3.6.4. **DP13 – Arrival Transitions** – The arrival transition designs shall seamlessly integrate with the new GNSS instrument approach procedures at LSA and if possible, the existing ILS approach procedures without conflicting with the SIDs.

3.6.5. **DP14 – Departure Procedures** – Should the SIDs require amending to satisfy the broader FASI-S programme of change, these shall terminate at the agreed 'Gateways' into the route network and should be deconflicted from the arrival transitions.

3.6.6. **DP15 – Coordination** – The new procedures result in a reduction in the amount of tactical coordination required by ATCOs.

## 3.7. Economic

3.7.1. **DP16 – Cost of Change** – The new procedures shall be implemented in a cost-effective manner.

3.7.2. **DP17 – Operational Cost** – Provided it does not have an adverse impact of community disturbance, procedures should be designed to optimise fuel efficiency.

## 3.8. Strategic Policy

3.8.1. The CAA has insisted that, subject to the overriding principle of maintaining a high standard of safety, the highest priority principle of this airspace change, that cannot be discounted, is

that it accords with the CAA's published Airspace Modernisation Strategy (CAP1711) and any future plans associated with it. LSA is expected to participate in the development of the AMS Masterplan, in conjunction with ACOG, NERL and the other identified airports. The following DP is therefore second only to maintenance of safety.

3.8.2. **DP18 – AMS Realisation** – This ACP must serve to further, and not conflict with, the realisation of the AMS.

3.8.3. Note: It is accepted by the CAA that adherence to this DP, in what is a coordinated modernisation programme, may impact upon the development of 'Options'.

3.8.4. **DP19 – PBN** – The new procedures should capitalise on as many of the potential benefits of PBN implementation as are practicable. This includes predictability, efficiency, continuous climb and descent operations with the intention of reducing carbon emissions.

# 4. What do we need from you?

## 4.1. Identified Stakeholders

4.1.1. CAP1616 requires that a discussion with affected stakeholders takes place. Local stakeholders normally include local authority representatives, local community groups, the Airport Consultative Committee (ACC) and representatives of local General Aviation (GA) organisations or clubs.

4.1.2. LSA believes that the ACC represents stakeholder groups across the community. In addition, the Airport has included:

- Environmental stakeholders;
- Technical stakeholders (ATC and Operators); and
- Local and Statutory (National) aviation stakeholders.

4.1.3. The list of stakeholders engaged at this stage of the process can be seen at Annex B. There is nothing to stop those agencies from sharing this material with a broader audience. LSA will consider all the feedback it receives.

## 4.2. Survey

4.2.1. We have created a short survey in order to garner your opinions on our draft Design Principles and glean further ideas from you on other potential Principles that we might seek to adhere to in the development of Options at Stage 2.

## 4.3. How to respond

4.3.1. The survey has been created in MS Forms. The preferred method of response is an online response through the following link.

4.3.2. Accepting that there may be some not able to do an online response, a written version of the survey can be found at Annex A. Responses to the questions may be submitted by email to the following address LSAfutureairspace@southendairport.com: or to the following postal address:

Design Principles Feedback
Airspace Team
London Southend Airport
Southend on sea
Essex
SS2 6YF

4.3.3. If submitting a response via email or post, please title your correspondence 'Design Principles Feedback'. Please also include the name of the organisation/community that you represent.

## 4.4. Timescale

4.4.1. The engagement period on Design Principles shall run for a minimum of 30 days and shall close at 1700hrs on 31 October 2021. Once the results of the engagement have been collated, the Airport will complete a report that will be submitted to the CAA and published on the ACP Portal. This report will detail the final Design Principles that will be used to assess the 'Options' developed during Stage 2.

# A. Textual Version of the Survey

A.1. The following questions are replicated on the online survey and it is preferred that you use the online form to submit your answers. Should you be unable to, please email or post a response to the questions below.

- Q1) It is possible that, during the options development phase, flightpaths may be identified that have a lower potential environmental impact and greater efficiency. These flightpaths may of course impact new people currently not overflown routinely. **Would you prefer that any future LSA flight procedures be designed to deliver the best possible routes in terms of noise, emissions and operational efficiency, or is the avoidance of impacting new communities of greater importance?** Available answers:
  - Avoid affecting new people; or
  - Seek options that reduce environmental impact and have greater efficiency; or
  - Don't know; and
  - Optional open text field to provide amplification on your answer.

- Q2) It may be possible to concentrate or merge flightpaths in such a way that the environmental impact is always concentrated in certain areas (perhaps because the route is more efficient or affects less people). Conversely, it may be possible to design a system that disperses the environmental impact. Dispersion would affect more people but less often. **Would you prefer to see a system of flight paths that concentrates the impact or disperses it?** Available answers:
  - Concentrate; or
  - Disperse; or
  - Don't know; and
  - Optional open text field to provide amplification on your answer.

- Q3) It may be possible to avoid certain areas. **In order of preference ((1) being of greatest most importance and (3) being of least importance), please advise which of the following you would like us to protect from the impact of aviation noise and emissions.** Available answers:
  - Built-up areas (i.e. densely populated);
  - Rural Areas (i.e. sparsely populated);
  - Areas of Tranquillity (e.g. National Parks, AONBs, recreational parks etc.)
  - Optional open text field to provide amplification on your answer.

- Q4) **Are there any specific areas or noise sensitive buildings you would like us to be made aware of where overflight should be avoided if possible?** Available answers:
  - Yes (Please expand on answer); or
  - No; and
  - Optional open text field to provide amplification on your answer.

- Q5) Some airports have sought opportunities to build into the system known periods of relief from the adverse effects of aviation noise. These known or scheduled periods are known as 'Respite' periods during which times aircraft are channelled onto 'Respite' routes relieving the burden on certain communities. It must be stressed that airspace constraints sometimes limit the art of the possible, however it is something that could

be investigated. **Given the option, would you like to see a system developed that had periods of known respite built-in?** Available answers:

- Yes; or
- No; or
- Don't mind; or
- Don't know; and
- Optional open text field to provide amplification on your answer.

- Q6-Q24) **To what extent do you agree with each of the draft DPs? Please provide comment as to how you would prefer the Design Principle in question reworded or why you would like to see it removed altogether.** Available answers:
  - Strongly agree; or
  - Agree; or
  - Neither agree nor disagree; or
  - Disagree; or
  - Strongly disagree;
  - Optional open text field to provide amplification on your answer.

- Q6) **DP1 – Importance of Safety** – The airspace design and its operation must be as safe or safer than today.

- Q7) **DP2 – Overflight** – The new procedures should not increase the number of people overflown by aircraft using the Airport.

- Q8) **DP3 – Noise Footprint** – The new procedures should not increase the noise footprint of the existing airport operation, i.e. it should not increase the number of people affected within the 51dBA $L_{Aeq\ 16\ hour}$ contour.

- Q9) **DP4 – Tranquillity** – Implementation should minimise impact and disturbance to the Kent Downs Areas of Outstanding National Beauty (AONB).

- Q10) **DP5 – Emissions and Air Quality** – The new design should seek to minimise the growth in aircraft emissions, the further degradation in local air quality and adverse ecological impacts to address growing concerns about the impact of aviation on climate change.

- Q11) **DP7 – Operational Requirements** – The new procedures should address the needs of most operators at LSA.

- Q12) **DP8 – Airspace Dimensions** – The airspace design should afford the appropriate volume of controlled airspace to contain and support commercial air transport for both runways, enable safe, efficient access for other types of operation and release controlled airspace that is not required.

- Q13) **DP9 – Airspace Complexity –** The airspace design should seek to reduce complexity and bottlenecks in controlled and uncontrolled airspace and contribute to a reduction in airspace infringements.

- Q14) **DP10 – Compliance** – The design shall be fully compliant with the design criteria stated in ICAO Doc 8168 (PANS OPS), acceptable to the CAA and, the implementation shall follow all applicable legislation and regulations.

- Q15) **DP11 – Aircraft Category** – The new procedures shall be technically flyable by all aircraft types in approach Speed Categories A through D.

- Q16) **DP12 – Equipage and Approval** – The new procedures shall be flyable by the majority of LSA commercial aircraft operators.

- Q17) **DP13 – Arrival Transitions** – The arrival transition designs shall seamlessly integrate with the new GNSS instrument approach procedures at LSA and if possible, the existing ILS approach procedures.

- Q18) **DP14 – Departure Procedures** – Should the SIDs require amending to satisfy the broader FASI-S programme of change, these shall terminate at the agreed 'Gateways' into the route network and should be deconflicted from the arrival transitions.

- Q19) **DP15 – Coordination** – The new procedures result in a reduction in the amount of tactical coordination required by ATCOs.

- Q20) **DP6 – Noise Preferential Routes** – Should the SIDs need to be amended to accommodate the broader FASI-S programme of change, the amendments must honour the Section 106 NPRs.

- Q21) **DP16 – Cost of Change** – The new procedures shall be implemented in a cost-effective manner.

- Q22) **DP17 – Operational Cost** – Provided it does not have an adverse impact of community disturbance, procedures should be designed to optimise fuel efficiency.

- Q23) **DP18 – AMS Realisation** – This ACP must serve to further, and not conflict with, the realisation of the AMS.

- Q24) **DP19 – PBN** – The new procedures should capitalise on as many of the potential benefits of PBN implementation as are practicable.

- Q25) **Have we missed anything that should be incorporated as a Design Principle?** Available answers:
  - Yes (please provide amplification); or
  - No, I'm content you've captured everything; or
  - Not sure; and
  - Optional open text field to provide amplification on your answer.

# B. Stakeholder List

## B.1. Community Stakeholders

| LSA Consultative Committee (ACC) | |
|---|---|
| Castle Point Borough Council | Southend Residents Association (inc West Leigh Residents Association) |
| Essex County Council | Independent Representative |
| Leigh Town Council | Essex Chambers of Commerce |
| Maldon District Council | Rochford Board of Trade |
| Rochford District Council | Southend Business Partnership |
| Rochford Hundred Association of Local Councils | Southend Flying Clubs |
| Southend-on-sea Borough Council | |

| Community Stakeholders | |
|---|---|
| Friends of North Kent Marshes | Kent County Council |
| RSPB – Wallasea Island | |
| SAEN (Stop Airport Expansion & Noise) | |

## B.2. Environmental Stakeholders

| Environmental Bodies | |
|---|---|
| CPRE Essex | Friends of the Earth |
| CPRE Kent | National Trust |
| English Heritage | Natural England |
| Environment Agency | |

## B.3. Technical Stakeholders

| Air Navigation Services Providers/ATC | |
|---|---|
| NATS En-Route Ltd (NERL) | D&D (Distress & Diversion) |
| LTC (London Terminal Control) | |

| Aircraft Operators | |
|---|---|
| ASL Airlines | QinetiQ |
| easyJet | Titan |
| Essex Air Ambulance | Wizz |
| Essex PASU | 2Excel Aviation |
| Vista Jet ltd | Net Jets |
| London Executive Aviation (LUX) | Muskany Ltd |
| TBMI Aviation | Private Operator |

## B.4. Local Aviation Stakeholders

| Neighbouring Airports/Airfields/Flying Clubs/LSA Tenants | |
|---|---|
| London Luton Airport | London City Airport |
| London Stansted Airport | London Gatwick Airport |
| London Heathrow Airport | London Biggin Hill Airport |
| Headcorn Aerodrome | Stapleford Aerodrome |
| Rochester Airport | Earls Colne Airfield |
| St Lawrence Aerodrome | Stoke Airfield |
| Tillingham Aerodrome | Barling Airfield |

| Neighbouring Airports/Airfields/Flying Clubs/LSA Tenants | |
|---|---|
| Stow Maries Great War Aerodrome | Maylandsea (Paragliding) |
| Avionicare Ltd | Air Livery Ltd |
| Seawing Flying Club | Southend Flying Club |
| Canewdon Paragliding | Essex and Suffolk Gliding Club |
| Kent Gliding Club | |

## B.5. Statutory Aviation Stakeholders

| National Air Traffic Management Advisory Committee | |
|---|---|
| Airspace4All | General Aviation Alliance (GAA) |
| Airfield Operators Group (AOG) | Honourable Company of Air Pilots (HCAP) |
| Aircraft Owners and Pilots Association (AOPA) | Helicopter Club of Great Britain (HCGB) |
| Aviation Environment Federation (AEF) | Isle of Man CAA |
| British Airways (BA) | Light Aircraft Association (LAA) |
| BAe Systems | Low Fare Airlines |
| British Airline Pilots Association (BALPA) | Military Aviation Authority (MAA) |
| British Balloon and Airship Club | Ministry of Defence - Defence Airspace and Air Traffic Management (MoD DAATM) |
| British Gliding Association (BGA) | NATS |
| British Helicopter Association (BHA) | PPL/IR (Europe) |
| British Microlight Aircraft Association (BMAA) / General Aviation Safety Council (GASCo) | UK Airprox Board (UKAB) |
| British Parachute Association (BPA) | |

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