Leeds Bradford Airport ACP

An Introduction to Design Principles

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Executive Summary

Leeds Bradford Airport (LBA) has identified a need to embark on an airspace change. This need for change has been brought about primarily by necessary changes to the navigational infrastructure that supports existing routes in and out of LBA but it provides the opportunity to improve our airspace in line with the UK's Airspace Modernisation Strategy (AMS).

LBA conducted an airspace change a few years back, this was not successful for a number of reasons, however the requirement to amend the airspace has not changed. We are acutely aware that we need the input and support of our stakeholders to effect change. We are mandated however to embark upon another journey with you to seek change as part of a nationwide AMS.

The CAA has written to nine airports across the North of England and Scotland (including LBA) to advise them that it is essential that they participate in a programme of Airspace Modernisation. Airspace is a finite resource and if not managed effectively, it can lead to inefficiencies in safety, the environment (noise and carbon emissions) and capacity. 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.

Whilst you may have been familiar with the process for change used previously under CAP725, the CAA has since implemented a new change process documented in Civil Aviation Publication (CAP) 1616. The new process places greater emphasis on stakeholder engagement from much earlier in the project and accordingly we need your input from the outset.

This document is intended to provide you with a background understanding of what LBA 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
LPV	Localiser Performance with Vertical Guidance
MTWA	Maximum Take-Off Weight Authorised
NAP	Noise Action Plan
NDB	Non-Directional Beacon
NERL	NATS En-Route Limited

NPR	Noise Preferential Route
NTK	Noise and Track Keeping
NTMS	Noise and Track Monitoring System
PANS-OPS	Procedures for Air Navigation Services – Aircraft Operations
PBN	Performance Based Navigation
RNAV	Area Navigation
RNP	Required Navigational Performance
SIDs	Standard Instrument Departures
SSSI	Site of Specific Scientific Interest
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 LBA need change?

1.1.1. One of the drivers for this change is the rationalisation of navigational aids by NATS En-Route Ltd (NERL). The program, approved by the CAA, will result in the removal of the Gamston VHF Omni-Range (VOR) navigational aid, this system is an integral part of the currently designed Instrument Flight Procedures (IFPs) serving LBA.

1.1.2. LBA may not simply amend these procedures, it requires extensive stakeholder engagement to ensure we address all relevant airspace issues, this includes noise to communities and the associated carbon emissions together with avoiding constraints to other airspace users. Collectively, all stakeholders will be involved in to addressing the challenges of airspace usage. It must be stressed, that this process must not pre-determine a solution and as such a 'blank sheet' approach must be taken whereby we determine, at the outset, what the Design Principles are for this change.

1.1.3. The main driver for the changes is as a result of the Civil Aviation Authority's (CAA) Airspace Modernisation Strategy (AMS) published 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.

1.1.4. 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.

1.1.5. It describes what airspace modernisation must deliver, drawn from relevant national and international policy and law. Paragraph 3.5 sets out the ends that airspace modernisation must delivery, drawn from Section 70 of the Transport Act 2000. Airspace modernisation should:

- Maintain a high standard of safety;
- Secure the most efficient use of airspace and expeditious flow of air traffic;
- Integrate and satisfy the requirements of operators and owners of all classes of aircraft across various sectors;
- Consider environmental performance and impact together with the interests of all stakeholders affected;
- Facilitate the integrated operation of air traffic services provided by or on behalf of the armed forces and take into account the interests of national security; and
- Take account of international recommended practices or obligations related to the UK's air navigation functions, such as those from the International Civil Aviation Organisation (ICAO) and the EU.

1.1.6. The current UK airspace was designed decades ago and 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. Flights in the UK are forecast to significantly increase over the next 20 years; if the airspace is not modernised, delays and cancellations will become the norm.

1.1.7. 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.

1.1.8. 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-N is a complete redesign of the existing airspace structure in Northern England and Scotland. LBA is one of nine airports included within this programme.

1.1.9. 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.

1.1.10. LBA, 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(N) 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.

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

1.1.12. **Why are you seeking my opinion on your airspace again?** We at LBA are acutely aware that it is not that long ago that we involved you in our previous ACP consultation and that it did not result in changes being made. We must however tackle this issue together as our airspace, along with the airspace of the whole nation, needs modernising.

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 route structure 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 LBA

1.3.1. LBA is required to introduce the following:

- PBN approaches in the form of Required Navigation Performance (RNP) Instrument Approach Procedures (IAPs);
- PBN departure routes (known as Standard Instrument Departures (SIDs) to link the Airport to the evolving airspace structure above 7,000ft; and
- Arrival Transitions to enable aircraft to get established on an approach into the Airport.

1.3.2. It is likely that in the development of options for new departure, arrival and approach profiles, that the airspace configuration may also require re-configuration.

1.4. CAP1616 Process

1.4.1. ACPs are conducted using an established process laid down by the CAA in CAP1616. The airspace change process is designed to be transparent, comprehensible and proportionate, and is aligned the Government's policy on managing airspace.

1.4.2. The 7-stage process contains 14 ‘Steps’ and 4 ‘Gateways’ (Figure 1). 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.

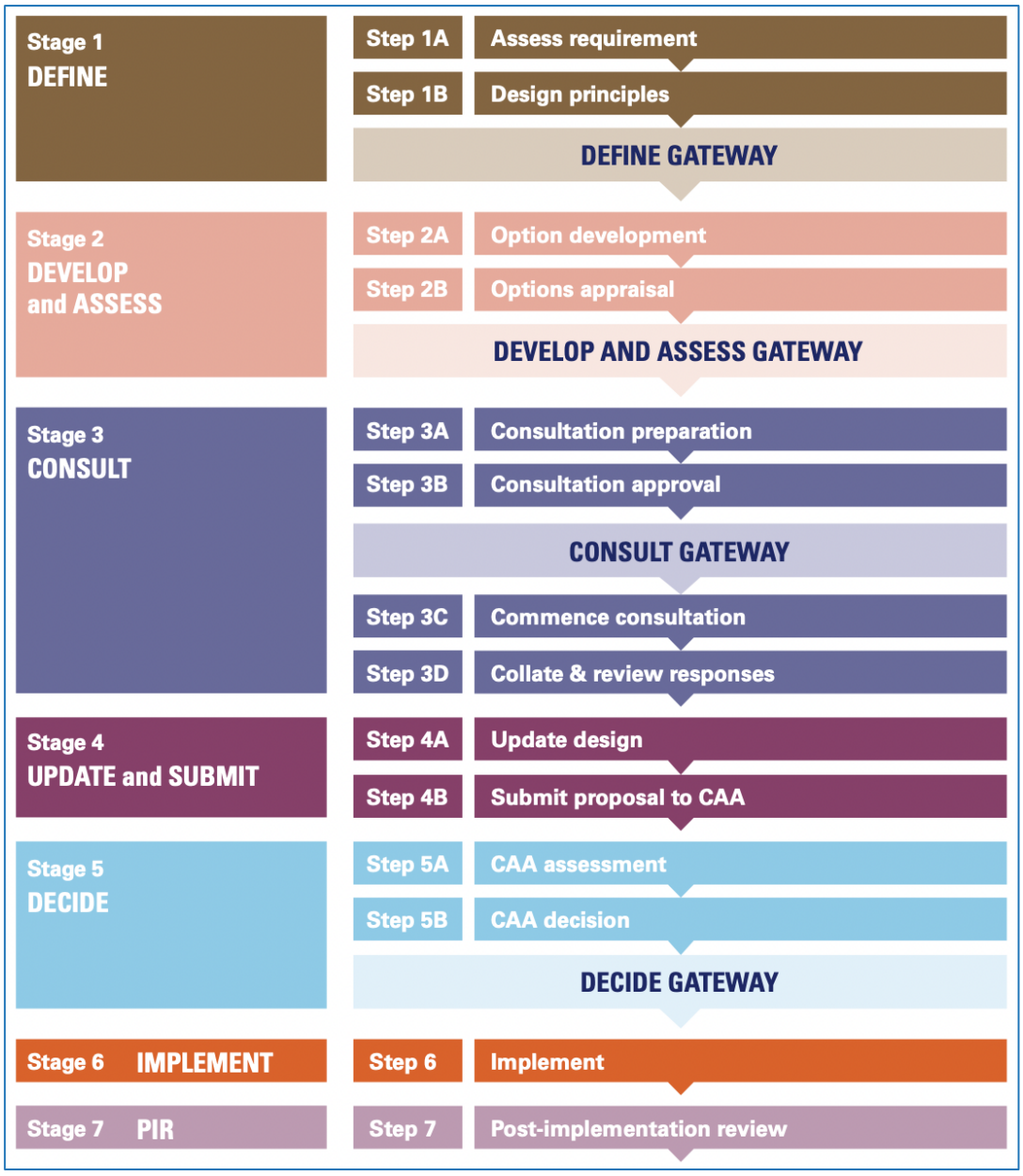


Figure 1: CAP1616 Process

1.4.3. LBA has assessed the requirements and in so doing has completed Step 1A. 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; we therefore need your input.

2. Current LBA Operations

2.1. Leeds Bradford Airport

2.1.1. LBA is a thriving regional airport. The Airport is an important local asset, a major employer in the area and a significant contributor to the local economy. Pre-pandemic, c.4m passengers used the airport each year, having grown significantly by 22% in 5 years. Whilst COVID-19 has had a negative impact on passenger volumes in line with wider industry trends, future outlooks are positive, and confidence remains that the airport will welcome 7 million passengers per year by 2030.

2.1.2. AMP Capital acquired LBA in 2017, bringing expertise and a successful track record of investing in airports globally within its infrastructure portfolio, to Yorkshire. Since then, the airport terminal has undergone significant improvement.

2.1.3. The responsibility of serving our region and local communities sustainably is a long-term commitment at the heart of our planning.

2.1.4. To help achieve our ambitions, and in order to ensure that we continue to provide a safe and as environmentally efficient 'Route to 2030' as possible, this investment in the future of LBA is essential.

2.2. Types of Operations

2.2.1. LBA supports the execution of the following types of operation:

- Commercial Air Transport (CAT) operations providing scheduled and charter services;
- Cargo Operations; and
- Non-Commercial operations, that include business aviation, military training and refuelling, private and commercial pilot training and skill testing and private recreational flying.

2.2.2. LBA supported a total of 35,576 movements in the period 2019-2020 (3,832,805 total passengers). This number reduced significantly in the period 2020-2021 owing to the global pandemic to 8,634 and only 298,955 passengers).

2.2.3. Movement figures expected to remain at a similar level over coming years with commercial movements and passenger numbers likely to return to pre-pandemic levels, or beyond in 2022. Continued growth is anticipated in cargo operations. 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. LBA operates 24/7 and has been operating flights 24 hours a day since planning permission was granted in 1994. The designated night-time period is from 2300hrs to 0700hrs. During this period, only the quietest jets are permitted to operate and there are maximum permitted noise levels in place for both aircraft arrivals and departures. In addition, there are restrictions on the number of aircraft movements permitted.

2.4. Runways

2.4.1. LBA has two runways known as '14' and '32'; these are given their names as their magnetic bearing is rounded to two figures, e.g. Runway 14 has a magnetic bearing of 137.74 degrees.

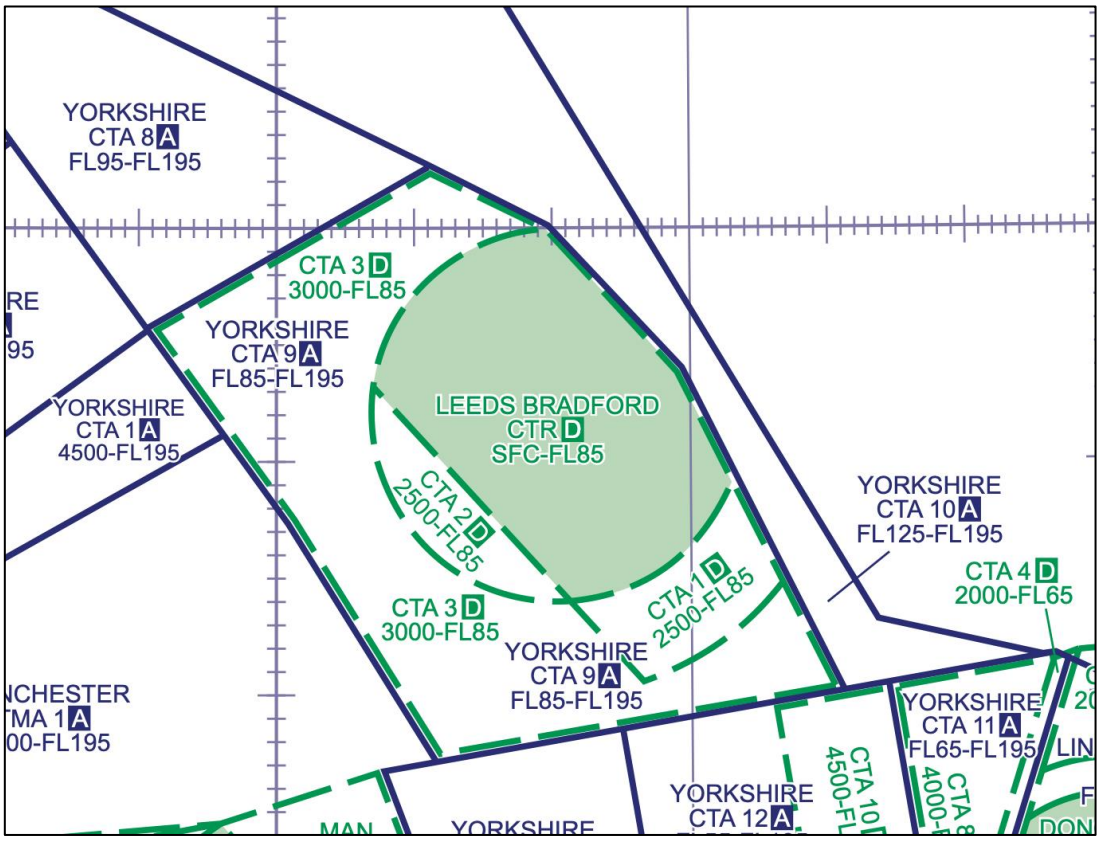
2.4.2. Aircraft normally land and take off heading into the wind, thus the wind direction at the time of an aircraft approach or departure usually determines which runway is chosen. The prevailing wind direction in the UK is from the South-West, Runway 32 is therefore in use most frequently albeit often with a crosswind component.

2.4.3. Due to predominantly south-westerly winds, Runway 32 is in operation roughly 75% of the year. Therefore, aircraft typically depart initially to the north-west before turning and typically arrive from the south-east.

2.5. Airspace

The terminal airspace surrounding LBA is relatively small, and our air traffic controllers routinely need access to the airspace to the south-east, associated with our neighbour, Doncaster Sheffield Airport. The LBA Control Areas (CTAs) and Control Zone (CTR) are depicted in Source: UK AIP ENR 6-7

2.5.1. Figure 2.



Source: UK AIP ENR 6-7

Figure 2: LBA CTR and CTAs

2.5.2. LBA has a CTR that extends from the surface to Flight Level (FL) 85 (8,500ft above mean sea level (amsl)). In addition, there are three CTAs extending from 2,500ft (CTAs 1 and 2) and

3,000ft amsl (CTA 3). These are all adjoined vertically by the Yorkshire CTA that extends upwards from FL85 and laterally by the Manchester Terminal Manoeuvring Area (TMA).

2.5.3. The CTR and CTAs are categorised as Class D airspace. Class D is Controlled Airspace (CAS) where a clearance is required from ATC before entry and, aircraft must comply with this clearance instruction. CAA regulations require that unless an aircraft has planned to leave CAS, it is not to be vectored outside the horizontal or vertical limits except when an emergency occurs or weather requires it, or if the pilot specifically makes a request.

2.5.4. The existing CTR and associated CTAs are fairly complex and are not ideal for managing air traffic safely and efficiently. This not only affects traffic flow at the airport but also increases planning time and reduces the capacity of the controllers. Furthermore, aircraft are often not afforded continuous descent or climb. These delays and climb/descent profiles are not optimal from an environmental perspective. Accordingly, LBA would like the controlled airspace configuration to form part of the discussion on change.

2.6. Arrivals

2.6.1. At present, LBA has no Standard Arrival Routes (STARs) or Arrival Transitions, each aircraft is handled individually, and its routing will be dependent on where it has been presented by the en- route ATC agency, NATS En-Route Limited (NERL) based at the Prestwick Air Traffic Control Centre (ATCC) and, the positions of other air traffic that the Airport is already handling. This lack of predictability is unhelpful for ATC and aircraft operators alike. Ideally both would like to know, in advance, both the route to be flown and the likely descent profile. That is what STARs and Arrival Transitions can provide.

2.6.2. Most aircraft currently operating from LBA use Performance Based Navigation (PBN), which provides accurate three-dimensional information base on satellite data known as Global Navigation Satellite System (GNSS); this is similar to your car navigation system. Proliferation of this technology opens the door to the introduction of predictable and repeatable satellite-based procedures at LBA, essential for the modernisation of our airspace. The predictable use of airspace results in in reduction of carbon emissions, improved noise management and better use of airspace for all users.

2.6.3. NERL has the responsibility for the development and introduction of the STARs. These will likely terminate at a holding pattern at or above 7,000ft. 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’. LBA, with your assistance, need to develop Arrival Transitions to link the STARs to the start of the Instrument Approach Procedures (IAPs).

2.7. Approaches

2.7.1. The IAPs take aircraft on approximately the last 10 nautical miles (NM) of their journey inbound to the Airport and provide a stable, straight track to fly and a steady descent rate for a safe landing. The current IAPs utilise ground-based navigation means[1], some of which

[1] Aircraft typically fly an Instrument Landing System (ILS) approach or a Non-Directional Beacon (NDB)/Distance Measuring Equipment (DME) approach.

are on the verge of obsolescence. The IAPs are also not linked to any STARs or Arrival Transitions as we don't have any.

2.7.2. To cater for aircraft operators needs and to future-proof operations at the Airport, we will need to introduce satellite-based GNSS IAPs known as Required Navigation Performance (RNP) approaches. These approach tracks are very unlikely to differ from those currently flown by aircraft on their last 10 NM before landing; any changes that might be required would only be evident early in the procedure as the aircraft gets established on the approach.

2.7.3. The ground-based Instrument Landing System (ILS) to still provides the most operationally effective means of completing an approach in inclement weather and will not be being withdrawn until RNP approaches can equal or better its effectiveness.[2]

2.8. Departures

2.8.1. LBA currently has Standard Instrument Departures (SIDs), i.e. formerly charted departure procedures that have undergone the rigours of an Instrument Flight Procedure (IFP) design. However, these SIDs utilise conventional navigation that relies upon ground-based navigation aids. Relying on such means results typically in a broader swathe of tracks over time as the routes are not flown as precisely as the charted procedure. The current departure routes rely upon two ground-based aids, one of which will be withdrawn from use in December 2022 as part of a UK NAVAID Rationalisation Project[3]. LBA, like many airports, are required to remove any dependency on these before December 2022.[4]

2.8.2. Our SIDs are depicted at Figure 3. The blue lines represent individual flights with the track data being extracted from the LBA Noise and Track Monitoring System (NTMS). The traffic data presented represents three months from the busier, summer period of 2019 (pre-pandemic). Whilst LBA has not yet returned to these traffic figures, this will be more representative of future expectations as we emerge from the global pandemic.

[2] The ILS allows aircraft to descend to a lower 'minimum' (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] Doppler VHF Omni Directional Range Finder (DVOR) and Distance Measuring Equipment (DME) at Gamston (GAM).
[4] It is recognised that a stop-gap may be required to ensure operational continuity. CAA CAP1781 refers https://publicapps.caa.co.uk/docs/33/DVOR%20DME%20NDB%20Rationalisation%20(CAP1781).pdf

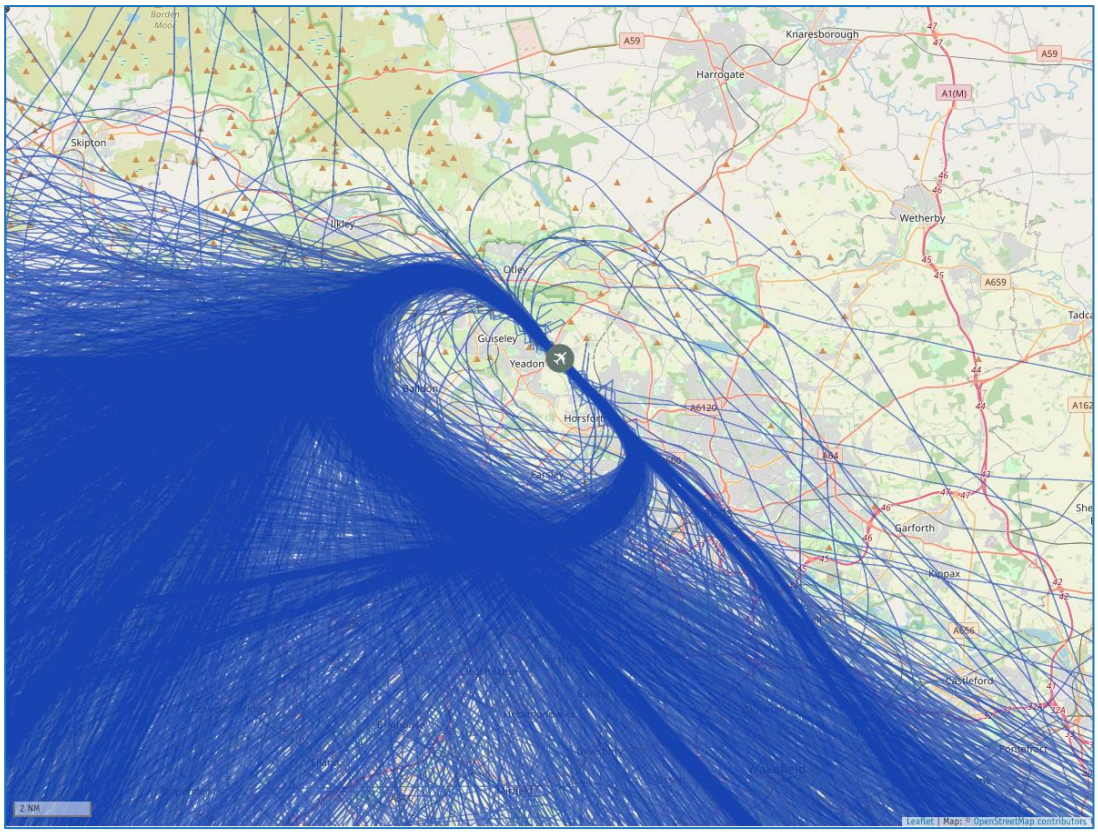


Figure 3: LBA Standard Instrument Departure Track Data

2.8.3. Each departure is managed tactically by the LBA Radar Controller, in co-ordination with the ATCC, taking into consideration other vectored, holding, and transit traffic in the Yorkshire CTA; and en-route traffic in the route network. Some departures can route directly to their designated VOR or 'Waypoint' with continuous climb; whereas others are instructed to fly headings and/or are required to climb in steps to achieve separation against other aircraft. This extended routing on headings often requires the LBA Radar Controller to use all the available controlled airspace.

2.8.4. To modernise and systemise the airspace, the link between the Airport and the 'Gateways' into the en-route system can be designed to PBN standards. These standardised satellite-based navigation SIDs will form part of this ACP.

2.9. Noise & Track Keeping

2.9.1. A new Noise and Track Monitoring System (NTMS) and associated infrastructure was installed in 2014. The NTMS provides a valuable noise management and complaint handling functions. There have been various upgrades and improvements to this system since the initial installation.

2.10. Noise Action Plan and Noise Preferential Routings

2.10.1. The LBA Noise Action Plan (NAP) brings together all our noise management activities into one living document. This includes specific actions that will be implemented by LBA to manage the effects of noise arising from airport activities, in order to minimise, as far as

reasonably practicable, any adverse impact on the local communities surrounding the airport. The current NAP is for the period 2019-2023 and can be found here.

2.10.2. Noise Preferential Routes (NPRs) are in force to ensure that, wherever possible, departing jet aircraft fly over the least populated areas. All departing jet aircraft are required to follow the NPRs, the only exceptions being for safety or operational reasons, such as the avoidance of adverse weather. It is important to note, there are no established NPRs for arriving aircraft and turboprop aircraft are exempt. The NPRs are detailed in the UK AIP[5] and can be seen depicted with cyan blue swathes at Figure 4.

2.10.3. In the case of LBA, the NPRs are defined by the Local Authority under a Section 106 planning agreement as the swathe. The NPR swathe, therefore, illustrates a containment area within which all departing jet aircraft should remain, until the end is reached (at 3.5 DME). Whilst NPRs are published in the Aeronautical Information Publication (AIP), at LBA their ownership and enforcement is the responsibility of the Local Authority and not the CAA.

2.10.4. The introduction of PBN in the future will improve the accuracy and compliance with the NPR.

[5] https://www.aurora.nats.co.uk/htmlAIP/Publications/2021-10-07-AIRAC/html/index-en-GB.html AD2.21 para 2

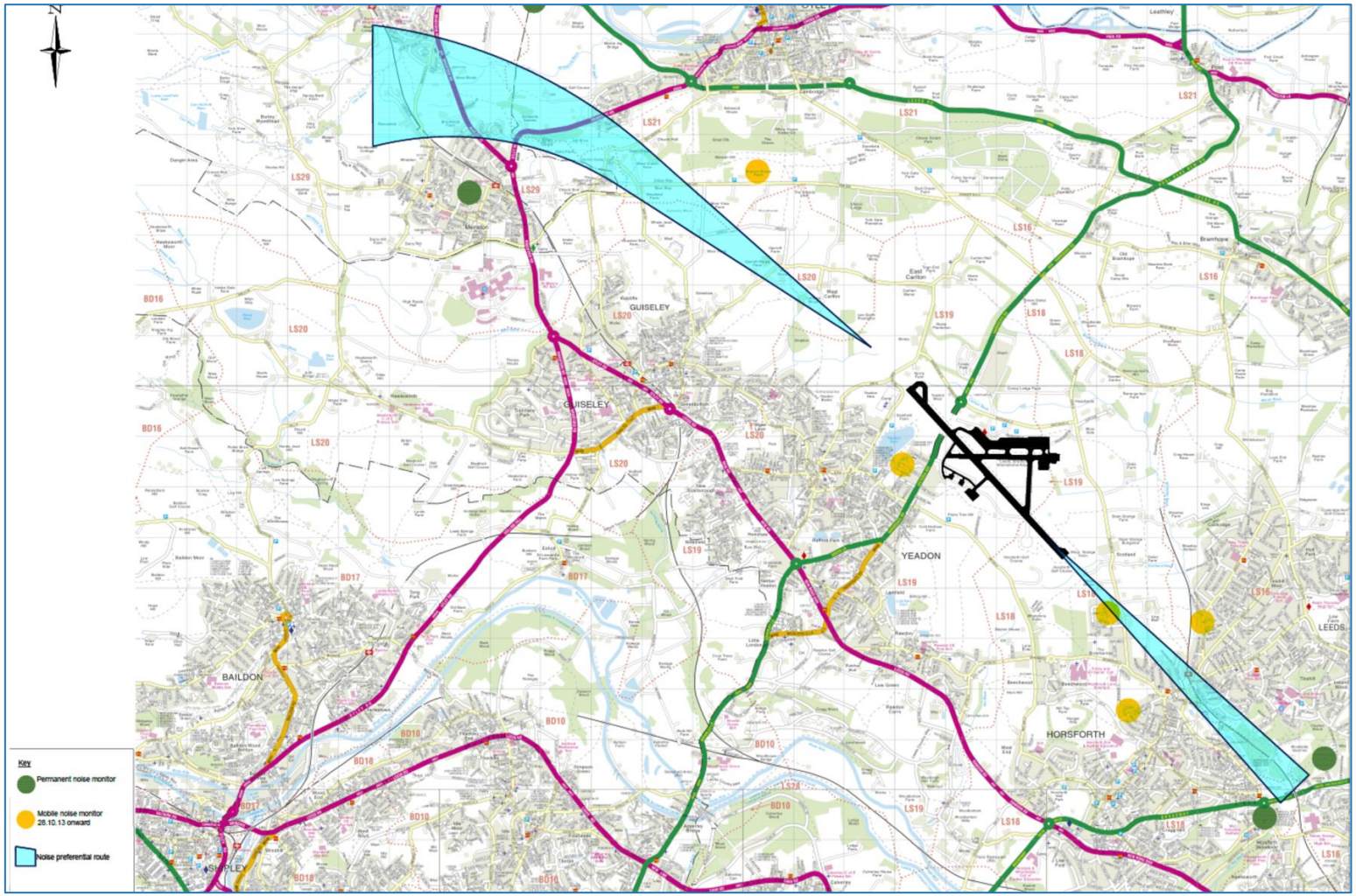


Figure 4: LBA NPR

2.11. Noise Contours

2.11.1. In 2017, the Government set out its environmental objectives in relation to airspace change in a document called the 'Air Navigation Guidance 2017'. The document stated the following at paragraphs 3.4-3.5:

'…one of the government's three key environmental objectives is to limit and, where possible, reduce the number of people in the UK significantly affected by adverse impacts from aircraft noise.

For the purpose of assessing airspace changes, the government wishes the CAA to interpret this objective to mean that the total adverse effects on people as a result of aviation noise should be limited and, where possible, reduced, rather than the absolute number of people in any particular noise contour. Adverse effects are considered to be those related to health and quality of life. There is no one threshold at which all individuals are considered to be significantly adversely affected by noise. It is possible to set a Lowest Observed Adverse Effect Level (LOAEL) that is regarded as the point at which adverse effects begin to be seen on a community basis. As noise exposure increases above this level, so will the likelihood of experiencing an adverse effect. In line with this increase in risk, the proportion of the population likely to be significantly affected can be expected to grow as the noise level increases over the LOAEL. For the purposes of assessing and comparing the noise impacts of airspace changes, the government has set a LOAEL of 51dB $L_{Aeq16hr}$ for daytime noise and 45dB L_{Aeq8hr} for night-time noise and the CAA should ensure that these metrics are considered.'

2.11.2. The Noise Contour chart shown at Figure 5 depicts the average daytime aircraft noise from summer 2016 (published in Sep 2019 and used in our most recent ACP). The contour lines depict the areas surrounding the Airport that fall within a given daytime average noise level. The chart provides a good indication of what communities fall within the 54db $L_{Aeq\ 16\ hour}$ contour. Unfortunately, it does not show the 51dB $L_{Aeq\ 16\ hour}$ contour. If it did, the contour would be further away from the airport than the 54dB $L_{Aeq\ 16\ hour}$ contour.

2.11.3. As the 51dB $L_{Aeq\ 16\ hour}$ contour is now recognised by the government as the LOAEL, we propose to use this benchmark within our Design Principles. Future contour charts will depict the 51dB $L_{Aeq\ 16\ hour}$ contour of existing noise and the noise associated to potential change options.

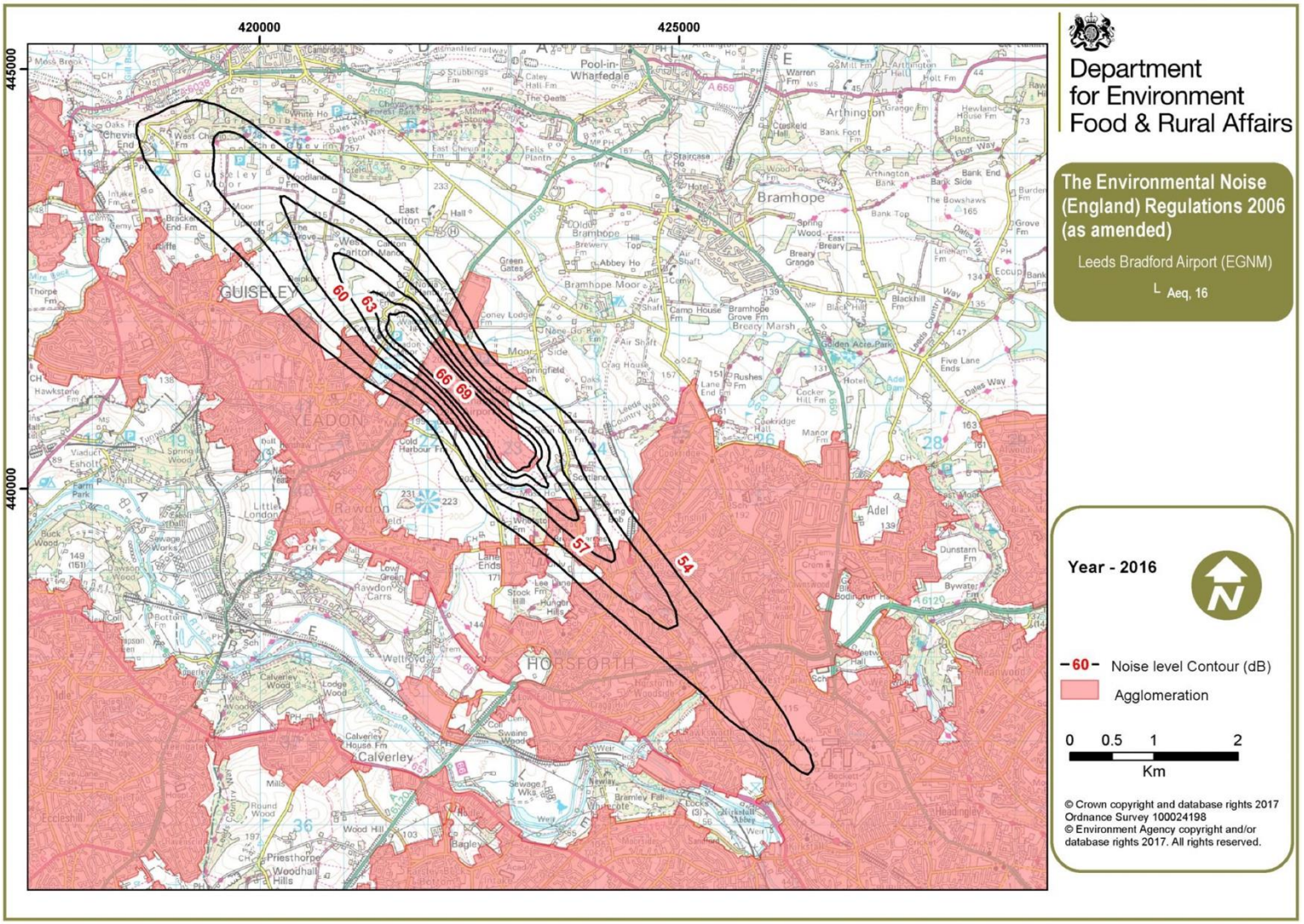


Figure 5: Airborne Noise Contours Summer 2016 Average Daytime

3. What have we learned from our most recent ACP?

3.1. Overview

3.1.1. LBA conducted an ACP in September 2016 under the previous CAP725 process notified as CAA reference ACP-2015-10. The CAA's decision was made on 30 May 2019; whilst that application was not successful, the lessons learned from that ACP are summarised below.

3.2. Local Resident Feedback

3.2.1. The main emphasis of the concerns from residents can be summarised as follows:

- The introduction of new procedures would lead to an increase in noise and pollution; and
- The expansion would benefit airlines at the detriment to residents.

3.2.2. LBA is committed to ensuring that any new procedures aim to reduce noise and pollution as much as possible, whilst working with local stakeholders to achieve the best solution for all. In addition, LBA based operators have reduced the number of older aircraft based, with new aircraft being quieter and more environmentally efficient. Further, any developments will be in line with the LBA Environmental Policy Statement.

3.3. General Aviation (GA) Community Feedback

3.3.1. The main emphasis of the concerns from the GA community can be summarised as follows:

- The dimensions of the suggested CAS construct were considered disproportionate to the requirements of LBA, and the forecast growth predictions was questioned;
- The base of the proposed CAS was too low to facilitate soaring and cross- country flights;
- The new CAS design would produce a funnelling effect as aircraft avoid and go around CAS rather than transit through which has safety implications including an increased risk of mid-air collision (MAC);
- The new CAS design was too complicated and would lead to more airspace infringements; and
- The impact on the sustainability of local gliding clubs was unacceptable and would specifically impact upon Burn Gliding Club's ability to continue to operate.

3.3.2. Modifications to the airspace proposal were made in light of the consultation responses.

3.3.3. LBA is committed to ensuring should any extra airspace be deemed to be required, we shall only request the minimum necessary to ensure a safe operation, whilst minimising the impact on our stakeholders. In addition, the CAP1616 process ensures that we work with our stakeholders to achieve the best solution for all.

4. Draft Design Principles

4.1. Categories

4.1.1. CAP1616 categorises DPs into the following aspects:

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

4.2. Starting Point

4.2.1. We have drafted some DPs for consideration and review, some of which carry over from the previous ACP. 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.

4.3. Safety

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

4.4. Environmental

4.4.1. **DP2 – Overflight** – The new procedures should not increase the number of people overflown by aircraft (below 7,000 feet) using the Airport.

4.4.2. **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.

4.4.3. **DP4 – Tranquillity** – Implementation should minimise disturbance to the adjacent National Parks and the nearby Areas of Outstanding National Beauty (AONB) by aircraft below 7,000 feet.

4.4.4. **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.

4.5. Operational

4.5.1. **DP6 – Operational Requirements** – The new procedures should address the needs of most operators at LBA.

4.5.2. **DP7 – Airspace Dimensions** – The airspace design should afford only the appropriate volume of controlled airspace to contain and support Continuous Climb Operations and Continuous Descent Operations by Commercial Air Transport whilst enabling safe, efficient access for other types of flying operation.

4.5.3. **DP8 – Airspace Availability** – Sufficient controlled airspace should be available to support LBA operations independently.

4.5.4. **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.

4.6. Technical

4.6.1. **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.

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

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

4.6.1. **DP13 – Arrival Transitions** – The arrival transition designs shall seamlessly integrate with new RNP Instrument Approach Procedures at LBA and if possible, the existing ILS approach procedures.

4.6.2. **DP14 – Departure Procedures** – The Standard Instrument Departures (SIDs) shall terminate at the agreed 'Gateways' into the route network and should be deconflicted from the arrival transitions.

4.6.3. **DP15 – Approach Procedures** – The Instrument Approach Procedures (IAPs) shall replicate the existing conventional approach procedures as closely as possible.

4.6.4. **DP16 – Coordination** – The new procedures should result in a reduction in the amount of tactical coordination required by ATCOs.

4.7. Economic

4.7.1. **DP17 – Cost of Change** – The new procedures shall be implemented in a cost-effective manner.

4.7.2. **DP18 – Operational Cost** – Provided it does not have an adverse impact of community disturbance, procedures should be designed to optimise fuel efficiency.

4.8. Strategic Policy

4.8.1. 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 is accords with the CAA's published Airspace Modernisation Strategy (CAP1711) and any future plans associated with it. LBA 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.

4.8.2. **DP19 – AMS Realisation** – This ACP must serve to further, and not conflict with, the realisation of the AMS.

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'.

4.8.3. **DP20 – PBN** – The new procedures should benefit from 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.

5. What we need from you?

5.1. Identified Stakeholders

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

5.1.2. LBA believes that the ACC represents the local community. In addition, the Airport has included:

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

5.1.3. 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. LBA will consider all the feedback it receives.

5.2. Survey

5.2.1. 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.

5.3. How to respond

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

5.3.2. Accepting that there may be some not able to do an online response, a written version of the survey is to be found at Annex A. Responses to the questions may be submitted by email to the following address: ACP@lba.co.uk or to the following postal address:

Airspace Change,
Leeds Bradford Airport,
LS19 7TU

5.3.3. 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.

5.4. Timescale

5.4.1. The engagement period on Design Principles shall run for 30 days and shall close at 1700hrs on 03 December 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 MS Form online 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 LBA 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-Q25) **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 the impact upon the neighbouring National Parks and the nearby 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) **DP6 – Operational Requirements** – The new procedures should address the needs of most operators at LBA.

- Q12) **DP7 – Airspace Dimensions** – The airspace design should afford only the appropriate volume of controlled airspace to contain and support Continuous Climb Operations and Continuous Descent Operations by Commercial Air Transport whilst enabling safe, efficient access for other types of flying operation.

- Q13) **DP8 – Airspace Availability** – Sufficient controlled airspace should be available to support LBA operations independently.

- Q14) **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.

- Q15) **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.

- Q16) **DP11 – Aircraft Category** – The new procedures shall be technically flyable by all aircraft types in approach Speed Categories A through D.

- Q17) **DP12 – Equipage and Approval** – The new procedures shall be flyable by the majority of LBA commercial aircraft operators.

- Q18) **DP13 – Arrival Transitions** – The arrival transition designs shall seamlessly integrate with new RNP Instrument Approach Procedures (IAPs) at LBA and if possible, the existing ILS approach procedures.

- Q19) **DP14 – Departure Procedures** – The Standard Instrument Departures (SIDs) shall terminate at the agreed 'Gateways' into the route network and are deconflicted from the arrival transitions.

- Q19) **DP14 – Approach Procedures** – The Instrument Approach Procedures (IAPs) shall replicate the existing conventional approach procedures as closely as possible.

- Q20) **DP15 – Coordination** – The new procedures result in a reduction in the amount of tactical coordination required by ATCOs.

- 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) **DP21 – 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

LBA Consultative Committee (ACC)	
ACC Chair	Bramhope & Carlton Parish Council
Yorkshire Local Councils Association - Leeds Branch 1 of 2	Burley in Wharfedale Parish Council
Yorkshire Local Councils Association - Leeds Branch 2 of 2	Otley Town Council
Leeds City Council (CON)	Rawdon Parish Council
Leeds City Council (LAB)	Pool In Wharfedale Parish Council
Calderdale Council	Horsforth Town Council
Wakefield Council	Local Resident Rep - Horsforth End of Runway
North Yorkshire County Council	Baildon Town Council
Harrogate District Chamber of Commerce	Local Resident Rep - Yeadon
Trades Union Congress - Yorkshire & The Humber	City Of Bradford MDC
LBA Support Group	Aireborough Neighbourhood Forum
Menston Parish Council	Inner North West Community Committee
Transdev	Vale of York Gliding Clubs

Local Councils#	
Mayor of West Yorkshire	Craven District Council
Leeds City Council	Doncaster Council
Barnsley Council	Harrogate Borough Council

Local Councils[#]	
Bradford Council	Kirklees Council
Calderdale Council	Selby District Council
Pendle Borough Council	Wakefield Council

[#] Some Councils are represented within the ACC.

B.2. Environmental Stakeholders

Environmental Bodies	
Natural England	National Trust
Peak District National Park Authority	Yorkshire Dales National Park Authority

B.3. Technical Stakeholders

Air Navigation Services Providers/ATC	
NATS En-Route Ltd (NERL)*	Doncaster Sheffield ATC (ATCSL)
RAF Leeming ATC*	Teesside ATC
Manchester ATC	

* Represented within NATMAC

Aircraft Operators	
Aurigny	Jet2
KLM	Multiflight
British Airways (BA Cityflyer)	EasyJet
Eastern Airways	Ryanair

B.4. Local Aviation Stakeholders

Neighbouring Airports/Airfields/Flying Clubs	
Breighton Aerodrome	Humberside Airport Flying School
Burn Gliding Club	Humberside POM Flying Club
City Airport and Heliport	LAC Flight School
Cleveland Flying School	NPAS
Crosland Moor Airfield	Sandtoft Airfield
Doncaster Sheffield Airport	Sheffield Aero Club
Flight Academy Manchester	Sherburn Aero Club
Full Sutton Airfield	Warton Aerodrome
Heli-Jet Aviation	West Yorkshire Police
Humber Flying Club	Yorkshire Air Ambulance
Leeds East Airport	Hields Aviation

B.5. Statutory Aviation Stakeholders

National Air Traffic Management Advisory Committee	
Airlines UK	British Parachute Association (BPA)
Airspace4All	General Aviation Alliance (GAA)
Airspace Change Organisation Committee (ACOG)	Honourable Company of Air Pilots (HCAP)
Airfield Operators Group (AOG)	Helicopter Club of Great Britain (HCGB)
Aircraft Owners and Pilots Association (AOPA)	Light Aircraft Association (LAA)
Aviation Environment Federation (AEF)	Low Fare Airlines

National Air Traffic Management Advisory Committee	
British Airways (BA)	Military Aviation Authority (MAA)
BAe Systems	Ministry of Defence - Defence Airspace and Air Traffic Management (MoD DAATM)
British Airline Pilots Association (BALPA)	NATS
British Balloon and Airship Club	PPL/IR (Europe)
British Gliding Association (BGA)	UK Airprox Board (UKAB)
British Helicopter Association (BHA)	UK Flight Safety Committee (UKFSC)
British Microlight Aircraft Association (BMAA) / General Aviation Safety Council (GASCo)	

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