Leeds Bradford Airport

Leeds Bradford Airport Airspace Change Proposal

Consultation Document

29th June 2017

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Reviewer	Leeds Bradford Airport	Alan Siddoway

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Foreword by the Chief Executive Officer

"Welcome to our consultation on proposed changes to the airspace around Leeds Bradford Airport. This consultation is taking place in order to outline amendments to the routes aircraft fly when arriving and departing from the Airport. These amendments are mirroring the benefits being proposed as part of a consultation that is currently taking place separately by government on UK Airspace Policy. The proposed amendments provide a range of environmental benefits including reduced noise impact on local communities, reduced CO2 emissions and fuel savings to airlines.

As outlined in our "Route to 2030: Strategic Development Plan" our vision is to be an 'outstanding regional airport, connecting Yorkshire with the world'. Delivering more accurate aircraft routes outlined within this consultation will meet the requirements of both national and regional policies, and directly contribute towards the Airport's objectives as outlined in the Strategic Development Plan.

The UK is an island trading nation with an aviation industry which contributes nearly £50bn to GDP and employs nearly 1m people. However, the airspace infrastructure on which it relies is struggling to keep pace with forecast growth of 40% by 2030. The new UK Airspace Policy being consulted on by Government, 'sets the direction for how the planning, management and regulation of UK airspace should develop to maintain and improve the UK's high levels of safety while addressing the many different requirements on the airspace system'.

Modernising the airspace at Leeds Bradford Airport will link into the government's national consultation, and will ensure that we can handle the forecast growth in air traffic, whilst reducing the environmental impact on both communities below flight paths and globally.

Change can be unsettling which is why we propose to minimise the modifications by using modern technology to achieve the benefits to both local residents and airlines. Departure routes will not change, but aircraft will achieve greater height quicker, reducing disruption to those under the flight paths. By publishing more efficient arrival routes aircraft will fly fewer miles again reducing the disruption to local communities. In order to provide improved spacing between arriving and departing aircraft and greater efficiency of operation, the new procedures require additional airspace to manoeuvre aircraft within.

We have been working hard with local aviation organisations and other airfield operators, to make arrangements to allow access to the airspace in an equitable manner. Considerable time and effort has been invested in developing these procedures. The interactions with national airspace and adjacent airports have been challenging, but we encourage you to participate in this consultation process. By working together, we can continue to ensure that our plans are mutually supportive for the shared benefit of the region."

David Laws
Chief Executive Officer

What is this Consultation About?

The Airport needs to update flight procedures and airspace. This section provides an overview of the changes that are planned, both by the Airport, and as a result of proposed changes by NATS under the FASI (Future Airspace Initiative) North project associated with LBA.

Overview

Most airports have standard arrival and departure routes that aircraft use; this provides predictability for crews and air traffic controllers, allows robust planning of operations and effectively manages the environmental impacts of aircraft operations. For many years Leeds Bradford Airport (LBA) has not had standard arrival routes. The airspace delegated, in the early 1980s in order to protect aircraft operating from and near the Airport, is insufficient in size and volume to allow such arrival routes to be deconflicted with those of the departure routes, without short-notice intervention from Air Traffic Control (ATC). The number of aircraft movements within, and around, the LBA delegated airspace has steadily increased and this intervention is reaching the limit, impacting controller capacity for the traffic volume that can be safely managed. Changes to the procedures and protective, delegated airspace are required in order to maintain the current safe levels of service for greater numbers of aircraft, to meet modern demands for aircraft operations and to future-proof functions at the Airport.

Departure Procedures

Departures from LBA are required to follow a Noise Preferential Route (NPR), which has been in place for many years under a clause in the Section 106 Planning Approval from Leeds City Council. In order to minimise the impacts of change on our neighbours, we have decided not to change these procedures. The current routes will be replicated to use modern navigational techniques.

Arrival Procedures

At present, we do not use Standard Arrival Routes (STARs), but handle each aircraft individually, and its routing will be dependent on where it has been presented by the en-route ATC agency, NATS, based at the Prestwick Air Traffic Control Centre (ATCC), and the positions of other air traffic that the Airport is already handling. It is highly beneficial for ATC and aircraft operators alike to have a degree of predictability of the route to be flown and how the aircraft will be required to descend on its approach to the Airport. The majority of aircraft operating from LBA now use Performance Based Navigation (PBN), which provides accurate three-dimensional information base on satellite data; this is similar to, but more accurate than, your car or device Global Positioning System (GPS) utilising the Global Navigation Satellite System (GNSS). This change proposes to introduce satellite-based STAR procedures for LBA; these routes will automatically introduce separation from departures, reducing controller interventions and will build in methods to sequence multiple simultaneous arrivals to improve efficiency and effectiveness. In addition, changes are being proposed separately to this project by NATS under a project known as Future Airspace Initiative (FASI) North. The new designs for LBA are intended to complement these changes. Full detail of these proposed changes associated with LBA are contained within Section 8.

Approach Procedures

The approach procedures 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 approach procedures utilise ground-based navigation beacons, which are on the verge of obsolescence. To cater for aircraft operators needs and to future-proof operations at the Airport, we intend to introduce satellite-based GNSS approach procedures. These approach tracks will not differ from those currently flown by aircraft on their last 10 NM before landing.

Airspace

We operate under a licence issued by the Civil Aviation Authority (CAA) and are bound by national regulations and policies. We operate a Control Zone (CTR) and Control Areas (CTA) of 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 situation occurs or weather requires it, or if the pilot specifically makes a request[1]. In order to contain aircraft when they are flying the new approach and arrival procedures, the dimensions of the LBA CAS will need adjusting.

What is Not Within this Consultation?

LBA is proposing new procedures and airspace to meet national policy and the programmed withdrawal of national infrastructure in the form of ground-based navigation beacons (more detail on these can be found in Section 0). The Government's Future Airspace Strategy (FAS) and adoption of PBN are not included within this consultation, nor is the NATS programme to de-commission obsolescent navigation beacons.

This consultation is not about changes to operating hours, or Airport buildings or infrastructure, or access to the Airport.

Summary

This consultation is about the following:

- New arrival procedures (including changes implemented by FASI North associated with LBA);
- New airspace structure;
- GNSS approach procedures that replicate the current approach procedures;
- PBN departure procedures that replicate the current departure routes.

[1] Civil Aviation Publication (CAP) 493 *Manual of Air Traffic Services Part 1* [Reference 4] Section 1, Chapter 6 paragraph 13A.3.

Why Consult?

> *Whilst LBA needs to change its procedures and airspace, the plans must be balanced by the needs of other airspace users and those affected by aircraft operations. To strike that balance, we need to know your views.*

Overview

As outlined in the LBA Strategic Development Plan[2] [Reference 1], sustainable growth can only be achieved in partnership with our regional stakeholders, to ensure that our plans are mutually supportive for the shared benefit of the region. Benefits delivered in support of the Airport should not have a detrimental effect on stakeholders. Whilst every care has been taken to balance the needs of all parties during this proposal development, we are realistic in that there may be aspects of which we are not aware. We are therefore actively seeking the views of those that might be affected to ensure that we have a full understanding of the implications of the proposed changes, and that we can minimise any adverse impacts, should there be any.

Consultation Requirements

In developing this Airspace Change Proposal, LBA are following a detailed process laid down by the CAA within CAP 725 *CAA Guidance on the Application of the Airspace Change Process* [Reference 2]. Stage 4 of that process requires the Airport to consult widely, allowing a minimum of 12 weeks for written consultation. Feedback from this consultation will inform the final designs submitted to the CAA for approval.

In determining whether the proposal should be approved, the CAA must also follow legislation and guidance set by the Government, through the Department for Transport. Its principal functions and duties are set out in primary legislation within the Civil Aviation Act 1982, the Airports Act 1986, the Transport Act 2000 and the Civil Aviation Act 2012[3]. In exercising its air navigation functions, the CAA must give priority to maintaining a high standard of safety in the provision of air traffic services in accordance with those statutory duties, particularly concerning Section 70(1) of the Transport Act 2000. This requires the CAA to:

- Secure the most efficient use of airspace consistent with the safe operation of aircraft and the expeditious flow of air traffic;
- Satisfy the requirements of operators and owners of all classes of aircraft;
- Take account of any guidance on environmental objectives; and
- Facilitate the integrated operation of air traffic services provided by or on behalf of the armed forces of the Crown.

In addition, the CAA will also consider Government policies on the future development of air transport.

In order for the CAA to make an informed decision on how equitable and viable the LBA proposal is by assessing its benefits and impacts, the views of those affected must be presented.

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[2] Leeds Bradford Airport *Route to 2030: Strategic Development Plan* March 2017. Available at http://www.leedsbradfordairport.co.uk/media/2522/masterplan-2017-update.pdf

[3] https://www.caa.co.uk/Our-work/Corporate-reports/Strategic-Plan/Our-statutory-duties/ [Accessed 4 October 2016].

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Consultation Process Concerns

The CAA's Safety and Airspace Regulation Group will oversee this consultation to ensure that LBA follows government guidelines and the process detailed within CAP 725. Should you have any complaints regarding our adherence to the consultation process, they should be referred to:

Airspace Regulator (Coordination)

Airspace, ATM and Aerodromes

Safety and Airspace Regulation Group

CAA House

45-59 Kingsway

London

WC2B 6TE

Email: airspace.policy@caa.co.uk

Please note that these contact details should only be used to submit a complaint about non-adherence to the consultation process. Responses to the consultation content (the proposed procedures and airspace) should be sent to LBA; details of how to do so are provided within Section 0.

Who is Being Consulted and How Do I Participate?

> *Our aim in this consultation is to reach as many people that may be affected by our proposals and to make it as simple as possible to provide views and opinions of any potential impacts.*

Who is Being Consulted?

It is the Airport's aim to consult with as many affected stakeholders as possible. This includes both those that use the airspace surrounding LBA and those that live in the surrounding area. A full list of the individual organisations being contacted directly is provided at Annex A1. We intend to make the consultation document available to other stakeholders through the Airport website (advertised through local media), public meetings and hard copy by post, on request.

How do I Submit my Response?

There are several ways to submit your response:

- Through a dedicated email address (also available through the website);
- By post;
- During public meetings.

1.1.1 Email

Osprey Consulting Services Limited (CSL) are supporting LBA deliver the Airspace Change. They have created a dedicated email address for responses, as follows:

Lbaconsultation@ospreycsl.co.uk

Please entitle your email LBA Consultation Response.

You can also submit your response directly through the website at:

http://www.leedsbradfordairport.co.uk/about-the-airport/airspace-change-proposal-consultation

1.1.2 Post

Please send your response to:

LBA Consultation Response

Osprey Consulting Services
Office 21
Think Tank
Ruston Way
Lincoln
LN6 7FL

1.1.3 Public Meetings

A series of public meetings will be held to present information on the proposals. The submission of written feedback during these meetings is welcome.

What Should I Include in my Response?

We welcome any comments you have to make on the proposals, both positive and negative. We would also like to know if you have read the consultation material, but have no comments to make; we need to be sure that we have reached a representative proportion of consultees.

What Will Happen to my Response?

All responses will be treated confidentially and details of respondents will be passed only to our consultants, Osprey CSL, and to the CAA, which requires a full report on the consultation process and its results, together with copies of responses from all key stakeholders as part of the formal Airspace Change Proposal submission.

All responses will be recorded, collated and analysed in order to identify the key issues and themes that emerge. An assessment will be made to determine if the proposal can be modified to take these issues into account.

How will I know the Result of the Consultation?

The results of the Consultation will be collated within a Feedback Report, which will be published on the Airport website within a month of the closure date of the Consultation Period.

Deadline for Responses

This Consultation will close on **29th September 2017** and we request that all responses are submitted by that date.

Why Change?

We recognise that change is disruptive and do not propose changes to the Airport's procedures and airspace without considerable thought. There are a combination of factors that drive the need for change.

Overview

Increased air traffic levels, changes in regulatory guidance, improved aircraft performance and enhanced navigational system accuracy (through satellite-based systems), combined with national infrastructure projects, have all contributed to the need for a re-design of the Instrument Flight Procedures (IFPs) operated by LBA and the airspace controlled by the Airport to contain those procedures. Although current operational issues are handled safely on a tactical basis by LBA ATC, any future increase in traffic may result in overload situations as controllers try to accommodate more aircraft in a limited volume of airspace to the west of the Airport.

Drivers for Change

1.1.4 Safety

The current IFPs and limited airspace environment surrounding LBA affect arrival and departure operations at the airport and this has led to reportable safety events, as detailed at Annex A2.

1.1.5 Modernisation

LBA are fully committed to meeting the UK's FAS. This requires the replacement of routes flown by aircraft through use of obsolescent, conventional ground-based navigation beacons to PBN routes based on satellite data. In embracing modern technological developments, LBA seeks to address existing issues with procedures and the surrounding airspace. One such issue is the lack of full containment of arrivals to Runway 14; warnings are issued to pilots within the Aeronautical Information Publication (AIP) [Reference 3] that:

> *"Due to controlled airspace constraints, aircraft may temporarily leave controlled airspace in the base turn."*

As identified at Section 0, the CAA's CAP 493 [Reference 4] directs that an aircraft is not to be vectored outside CAS and LBA intends to resolve this anomaly in procedures that currently requires aircraft to leave CAS.

1.1.6 Interaction with the En-route Structure

Once aircraft leave the airspace that immediately surrounds LBA, they enter the en-route airspace structure and ATC services are provided by NATS at the Prestwick ATCC. In order to meet the UK's FAS, NATS are undertaking an extensive redesign of northern UK en-route airspace through a programme previously known as the Prestwick Lower Airspace Systemisation (PLAS), but now referred to as Future Airspace Initiative North (FASI North). This programme seeks to significantly enhance efficiency using PBN routes, and departure and arrival procedures that allow continuous climb or descents. LBA procedures will need to change to integrate with the new en-route structure.

1.1.7 Withdrawal of Infrastructure Supporting Current Procedures

NATS is undertaking a programme to withdraw, due to their age, 27 of the 46 Doppler Very High Frequency (VHF) Omni-directional-Range (DVOR) beacons it has historically operated across the UK. Many airports use the data from these DVOR in the construction of their departure and/or arrival procedures. LBA makes use of the DVOR at Gamston for some of its departure procedures. The Gamston DVOR is due to be withdrawn from operation in early 2018, requiring LBA to take action to provide procedures for aircraft departing the Airport to the south and south-east.

1.1.8 Environmental Concerns

Whilst environmental factors were not a direct driver for the change to the existing procedures and airspace, the design process was conducted with the environmental effects in mind. ATC interventions due to inefficient and out-dated procedures at LBA result in extra track miles flown by arriving and departing Commercial Air Transport (CAT) (predominantly airliners). Whilst this intervention may still be required with the new procedures above FL 70 (approximately 7,000 ft), the new airspace and designs are aimed at minimising this intervention.

Section 9 of this document contains full details about the proposed changes and the environmental effects of those changes.

Options Considered

LBA has undergone a very lengthy design process in an effort to accommodate the needs of as many other airspace users and local residents as possible. This section outlines some of the considerations that have shaped the various iterations of the procedure and airspace designs.

Overview

The initial list of options considered the potential to:

- Do nothing;
- Do minimal; or
- Utilise other airspace classifications.

These options were ultimately discounted, and once it was decided to pursue a course of action to produce new procedures and Class D airspace designs, several iterations were produced to minimise the impact on other stakeholders.

Option 0. Do Nothing

At the outset of the project, in challenging the need for any change at all, we considered the effects of doing nothing. The principle factor in assessing the need for change is preservation of the safe operations. The need for controller intervention in sequencing and separating aircraft is already presenting significant challenges, with a resulting increase to pilot workload at critical stages of flight and route changes at short notice. Such lack of predictability produces planning difficulties and inefficiency for aircraft operators and ATC, and results in an environmental impact that should be reduced.

The changes to airspace and ground equipment structure being driven by external agencies, over which LBA has very little influence, mean that current procedures will become unusable within 2 years, leaving the Airport with no departure options to the south and south-east.

For these reasons, the “Do Nothing” option was not considered viable.

Option 1. Do Minimal

We fully understand that changing the routes that aircraft fly and the airspace required to contain those new routes will have an effect on those outside the Airport. In order to minimise those impacts we considered how we might make smaller adjustments to the way we operate to achieve the aims of the project. During 2014, we worked extensively with Prestwick ATCC to develop new ways of working to improve efficiency and reduce the workload for controllers at both units and for aircraft operators. These new ways of working realised several improvements without having an adverse impact on outside agencies. However, they were unable to resolve all the issues faced by LBA and, once again, the capacity of these new methods is now being tested as the traffic levels at the Airport increase.

The benefits gained from revised practices are now exhausted and there are no further improvements that can be realised within the current airspace infrastructure limitations. The “Do Minimal” option is, therefore not considered viable.

Option 2. Other Airspace Constructs

We have established that new procedures are required for LBA, which will result in a corresponding change to the airspace structure; we therefore next considered the classification of airspace that was most appropriate. The classifications of airspace considered potentially appropriate to meet the needs of LBA were Class D and Class E.

Within Class E airspace, pilots operating under Visual Flight Rules (VFR) have no obligation to speak to ATC and are permitted to fly within the airspace, taking their own visual separation from aircraft that are operating under Instrument Flight Rules (IFR). Commercial Air Transport (CAT) aircraft (i.e. passenger-carrying aircraft, our 'carriers') operate to and from LBA under IFR and would not be provided with standard vertical or horizontal separation from VFR aircraft; they would be reliant on the pilots of the VFR traffic seeing and avoiding them. One of the main issues that LBA is trying to resolve by making a change to the operating practices for air traffic is the preservation of the safety of operations by the prevention of safety-related incidents, which occur due to the congestion and complexity of air traffic operations. We assessed that it is necessary to provide greater protection to our carriers, particularly in the busiest periods.

Class D airspace requires pilots to request entry clearance, regardless of the flight rules under which they are operating. This allows ATC to maintain a much better situational awareness of the traffic within the airspace immediately surrounding the Airport and provide separation between all aircraft operating within their airspace.

Class E was considered unsuitable to meet the needs of the Airport; a Class D airspace design was taken forward.

Option 3. Initial Concept

The initial concept for the new procedures and airspace to contain them was extremely ambitious. It was proposed to have departures routing to each of the 4 compass cardinal points and separate routes for jet aircraft and turbo-prop aircraft in order to increase the rate at which aircraft can depart. Arrivals would also be able to use procedures routing from multiple directions, with a new hold proposed to the east of the Airport. Charts showing the initial concept are provided at Annex A3.

We considered these initial designs to be too complex and the airspace demands for their containment would produce a disproportionate adverse impact on other airspace users. These initial concepts were discounted.

Option 4. Simplified and Consolidated Arrival and Departure Procedures

To reduce the volume of airspace required to contain the new procedures, we re-tested our initial assumptions. It was determined that the ground infrastructure and the need to backtrack aircraft on the runway meant that the increased rate of departures afforded by having separate turbo-prop and jet departures, Option 3, was unlikely to be met. The separate turbo-prop procedures were discounted and the routes amalgamated with those for jet aircraft. Whilst the new departure routes would reduce the distance flown by aircraft, particularly those transiting to the east and southeast, changing the routes would change the distribution of aircraft noise to those living beneath the routes and would be contrary to current Section 106 planning approvals from the Leeds City Council. We therefore decided to discount these draft departures, whilst introducing arrival routes; this would still meet the overall aims of the project, but would minimise the volume of changes and disruption. The proposed arrival routes developed at this stage are shown in charts at Annex A4.

Allied to the new arrivals routes was the positioning of the holding pattern. To improve efficiency further, we wanted to move the aircraft hold from overhead the Airport. However, the initial conceptual drafts showed that moving the hold to the east would require a large volume of airspace for its containment. A hold west or south of the Airport was unviable due to procedures operated by Manchester Airport and Doncaster Sheffield Airport respectively, and a hold to the north was considered inappropriate due to presence of the Yorkshire Dales National Park. The location of the hold needed further consideration.

Option 5. Replication of Current Departures and Rationalisation of Airspace Requirements

To comply with planning agreements and minimise disruption to the local community, our preferred option is to replicate the initial portion of the current departure procedures, shown at

Figure 1 and Figure 2, which remains within the current Noise Preferential Routes. This will allow aircraft to fly the same tracks as they do now, but will utilise modern satellite-based navigational data and techniques to fly them.

Significant volumes of additional airspace would have been required to the north of the Airport to accommodate arrivals through the reporting point GASKO. Therefore, this procedure was adjusted to keep aircraft higher for longer, within the existing en-route structure, before descending as part of another arrival route, thus reducing the amount of additional CAS being requested. Furthermore, it was identified that there was potential for aircraft to descend below the en-route structure on this procedure; rather than re-design the existing airspace, we assessed the likely usage of this route and determined that descent through controller instruction was both supportable and preferable to lowering the base of CAS over a wider area.

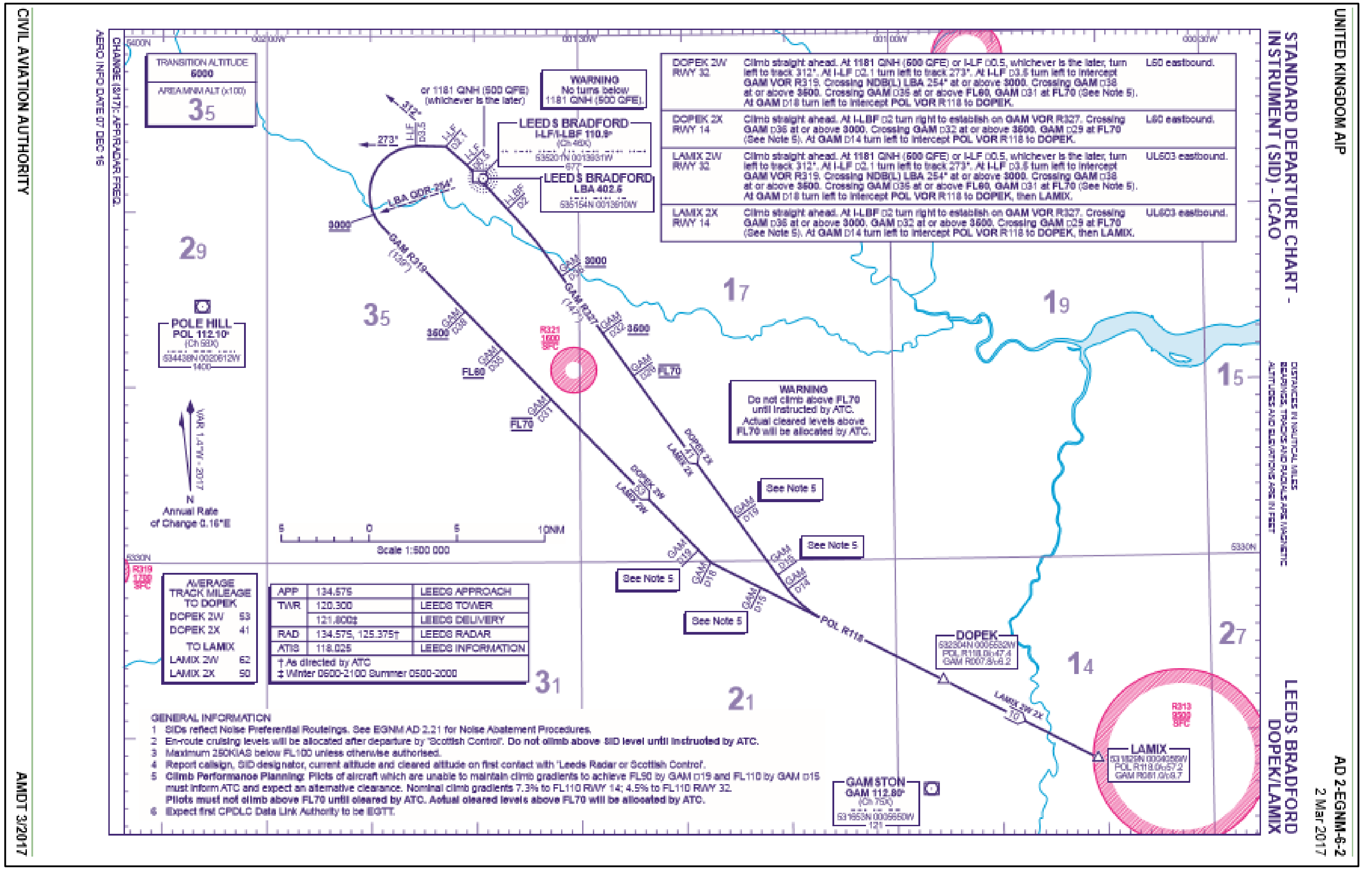

Figure 1. Current Standard Instrument Departures – DOPEK/LAMIX
(Available at http://www.ead.eurocontrol.int/eadbasic/pamslight-0EA5010DC20CC86C50175510792BC9F9/7FE5QZZF3FXUS/EN/Charts/AD/AIRAC/EG_AD_2_EGNM_6-2_en_2017-03-02.pdf)

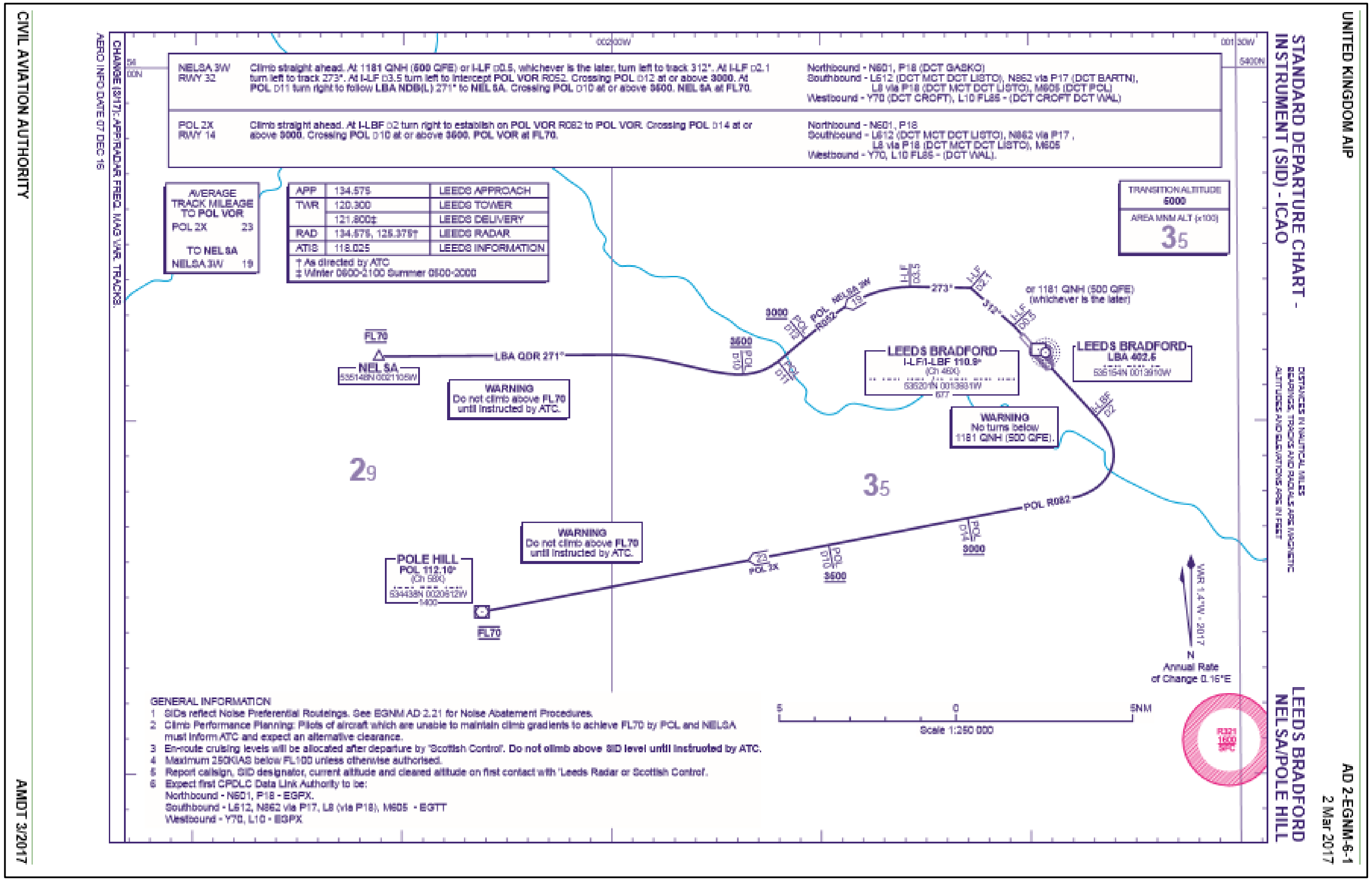

Figure 2. Current Standard Instrument Departures – NELSA/POLE HILL

(Available at http://www.ead.eurocontrol.int/eadbasic/pamslight-0EA5010DC20CC86C50175510792BC9F9/7FE5QZZF3FXUS/EN/Charts/AD/AIRAC/EG_AD_2_EGNM_6-1_en_2017-03-02.pdf)

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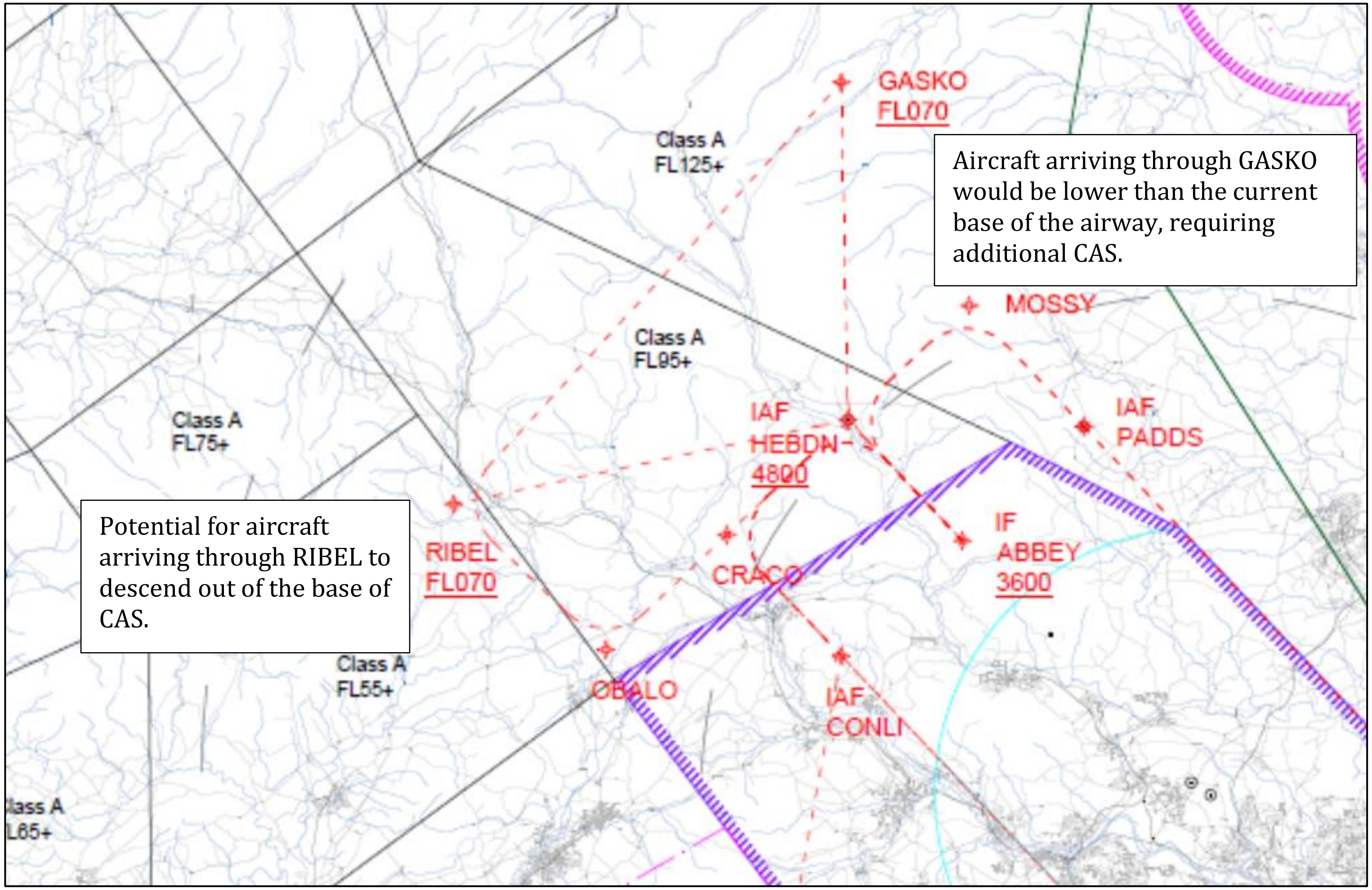

Figure 3. Design Iteration for Arrivals Direct from GASKO Inbound to Runway 14

The Proposal

> *The Proposal contains new arrival and final approach procedures, new departure procedures (albeit closely following the current departure tracks) and Class D airspace to contain them.*

Overview

The procedure and airspace designs have taken almost 6 years to develop. The initial concepts were too complex and ambitious, and would have had a significant disproportionate adverse impact on other airspace users, as well as affecting a much wider area of residents local to the Airport. This section presents our solution to meet the needs of the Airport and provides the rationale behind the proposed designs.

Key Influences on the Design

The primary aim of the proposal is to enhance safety and improve efficiency. In meeting those aims, the key influence has been the interaction with the en-route airways structure. Initial concepts were judged to be unmanageable by NATS Prestwick Centre and extensive work has been undertaken to develop, through modelling and simulation, procedures that interact safely with the en-route architecture. This work has been further complicated by the ongoing projects to review and modernise UK airspace; Prestwick Centre is undertaking a project, FASI North, working with airports within and surrounding the Manchester Terminal Control Area including Manchester, Liverpool, Birmingham, East Midlands, Newcastle and Doncaster Sheffield Airports. Achieving procedure designs for LBA that are compatible with new procedures at surrounding airports has been a long and intensive process, but we are pleased that this proposal has been developed in full cooperation with NATS Prestwick Centre.

The second key influence on the procedure designs was the volume and dimensions of the airspace that would be required to contain them. As outlined within the Options Considered, several adjustments were made to the procedure designs to minimise the additional airspace that would be required in order to reduce the adverse impact on other airspace users who use the current Class G uncontrolled airspace.

Departure Procedures

The draft RNAV 1 Standard Instrument Departure (SID) procedures are provided at Figure 4 and Figure 5. These have been developed to utilise the current NPRs as outlined in the IAIP EGNM [Reference 3] AD 2.21.

The LAMIX/DOPEK SIDs replicate current conventional SIDs, although the intention is to truncate them at points NMS03 and NME12 on Figure 4, at FL 70. In reality, aircraft are frequently able to climb above FL 70 on the current departures. However, for planning purposes, the operators are required to load sufficient fuel that assumes the aircraft will follow the full procedure and remain lower for longer. By truncating the SIDs, less fuel can be loaded, reducing the weight of the aircraft, thus producing efficiencies. NATS Prestwick Centre has developed link routes to join these departures to the en-route structure, which are detailed at Section 8.

The NELSA SID directly replicates the track of the current, conventional SID.

The new SID to be introduced is for Runway 14 departures to ELEND, which replaces the current POLE HILL SID. The initial stages of the departure have been carefully developed to ensure that aircraft will remain within the current NPR. The new waypoint ELEND (53

41 33.23 N, 001 35 33.39W) will be used at the request of Prestwick Centre in order to ease congestion around the area of POLE HILL, which is used in procedures at other airports.

Arrival Procedures

In order to provide a degree of deconfliction with departures, almost all of which route to the west of the Airport, we initially developed procedures that allow the option of routing arriving aircraft to the east of the Airport. Overviews of the tracks to Runways 14 and 32 are provided at Figure 6 and Figure 7 respectively. These procedures show that from each key arrival reporting point, ATC has the option during intensive periods, to route aircraft to either the east or west of the Airport. It is intended that the most direct route shall be used whenever available, but if this should conflict with departing traffic, the alternate arrival route will be adopted.

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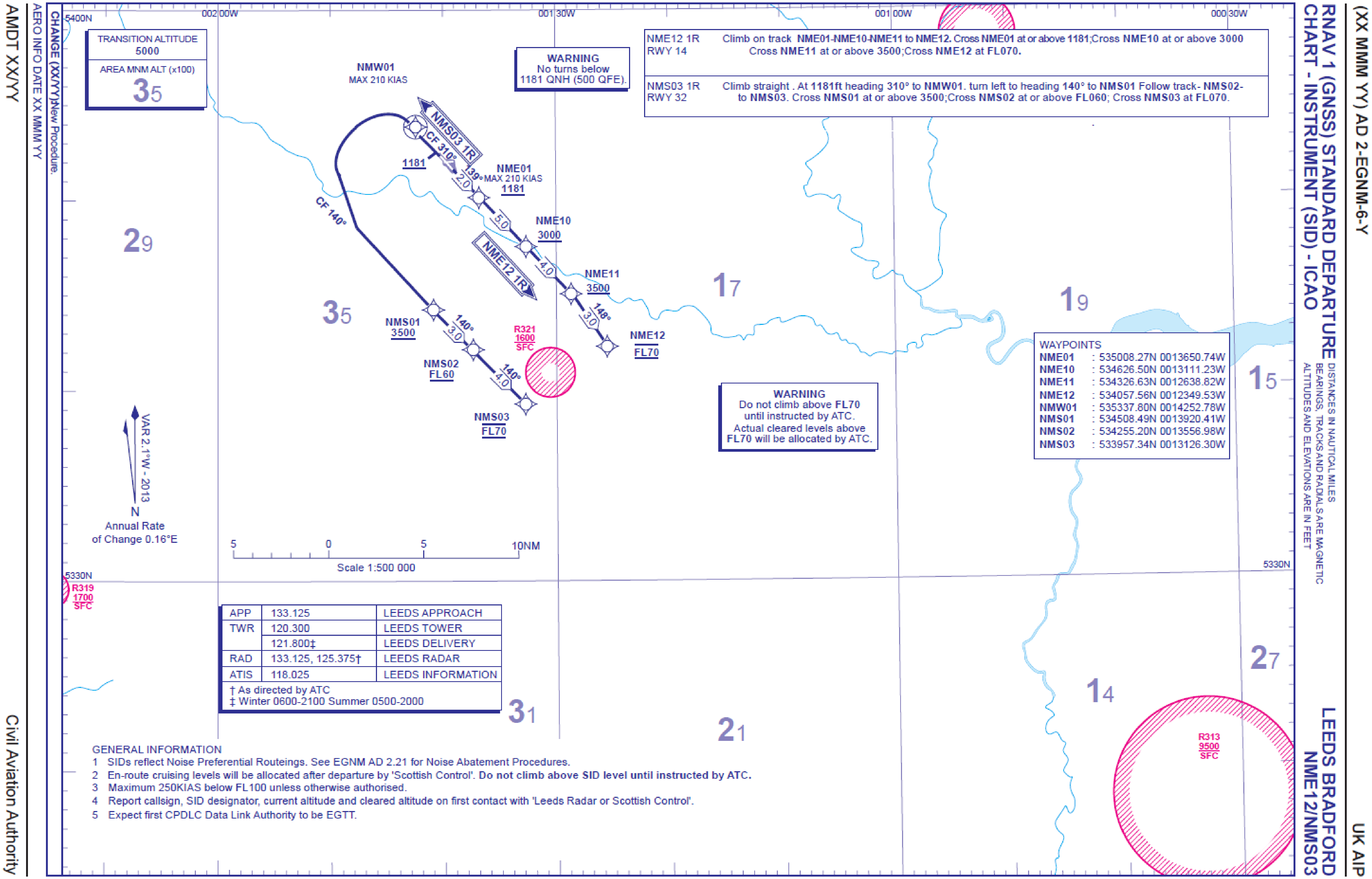


Figure 4. Draft GNSS Standard Instrument Departures – Truncated DOPEK/LAMIX

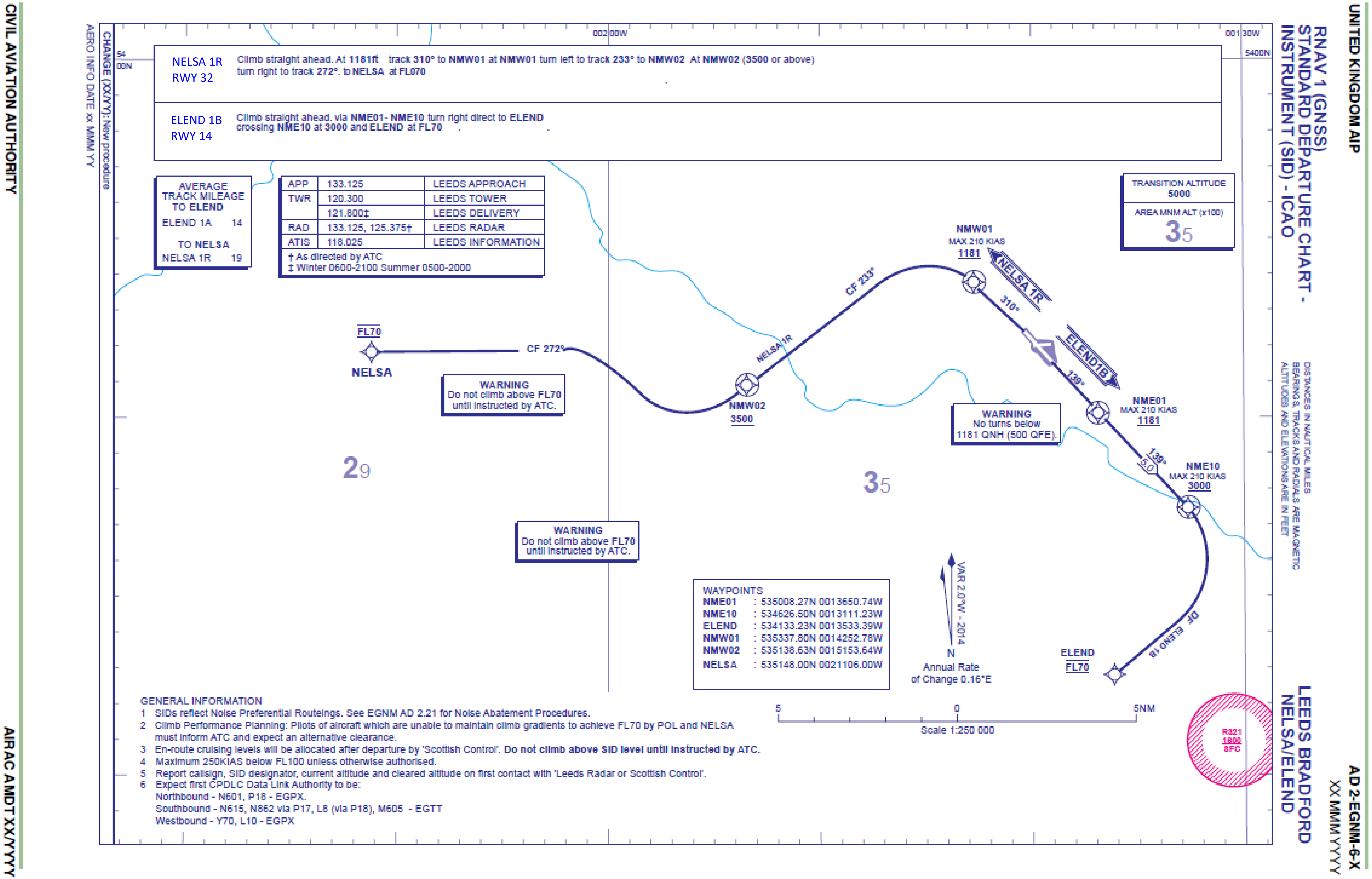


Figure 5. Draft GNSS Standard Instrument Departures – NELSA/ELEND

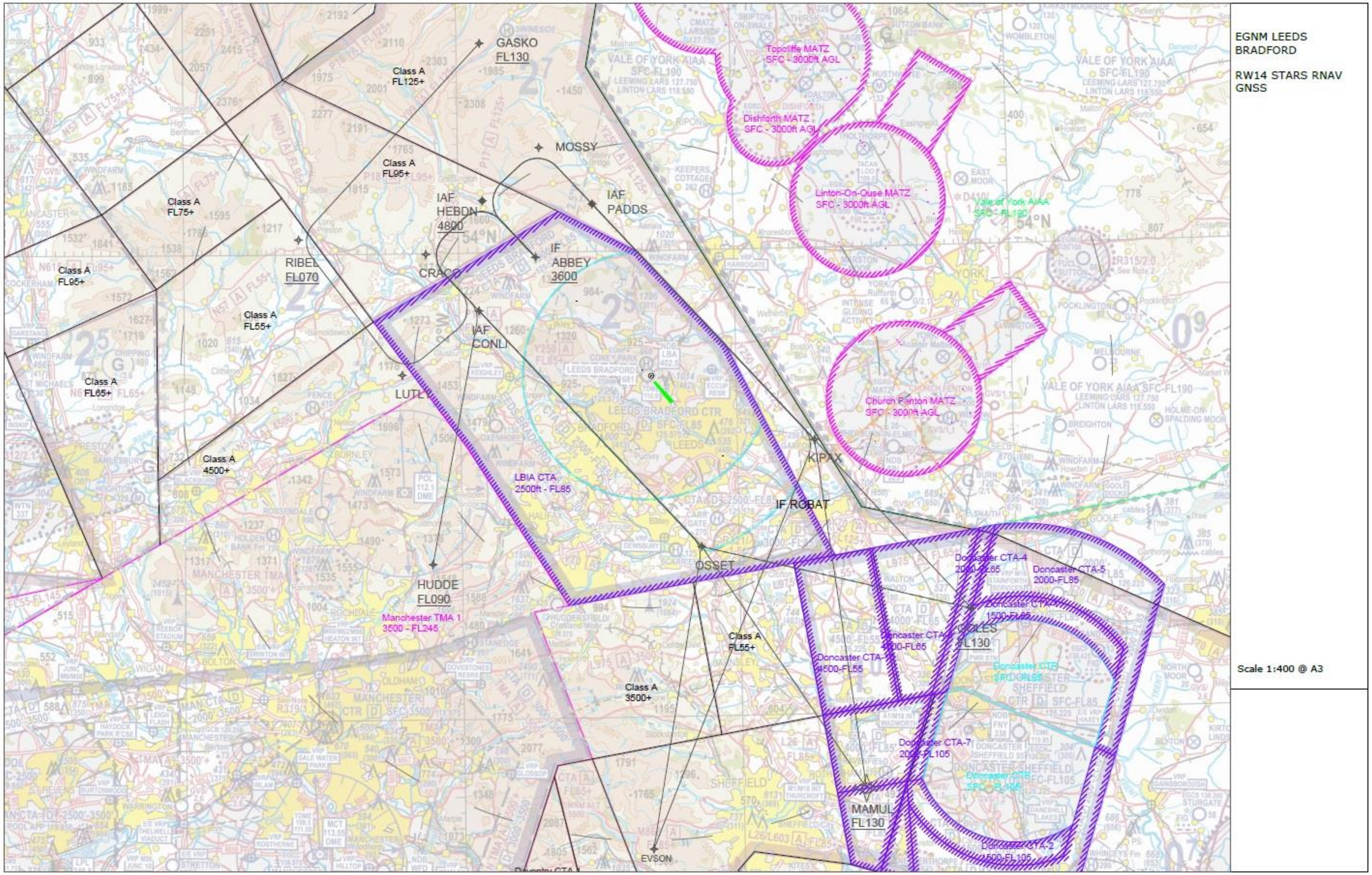


Figure 6. Draft Arrival Routes to Runway 14

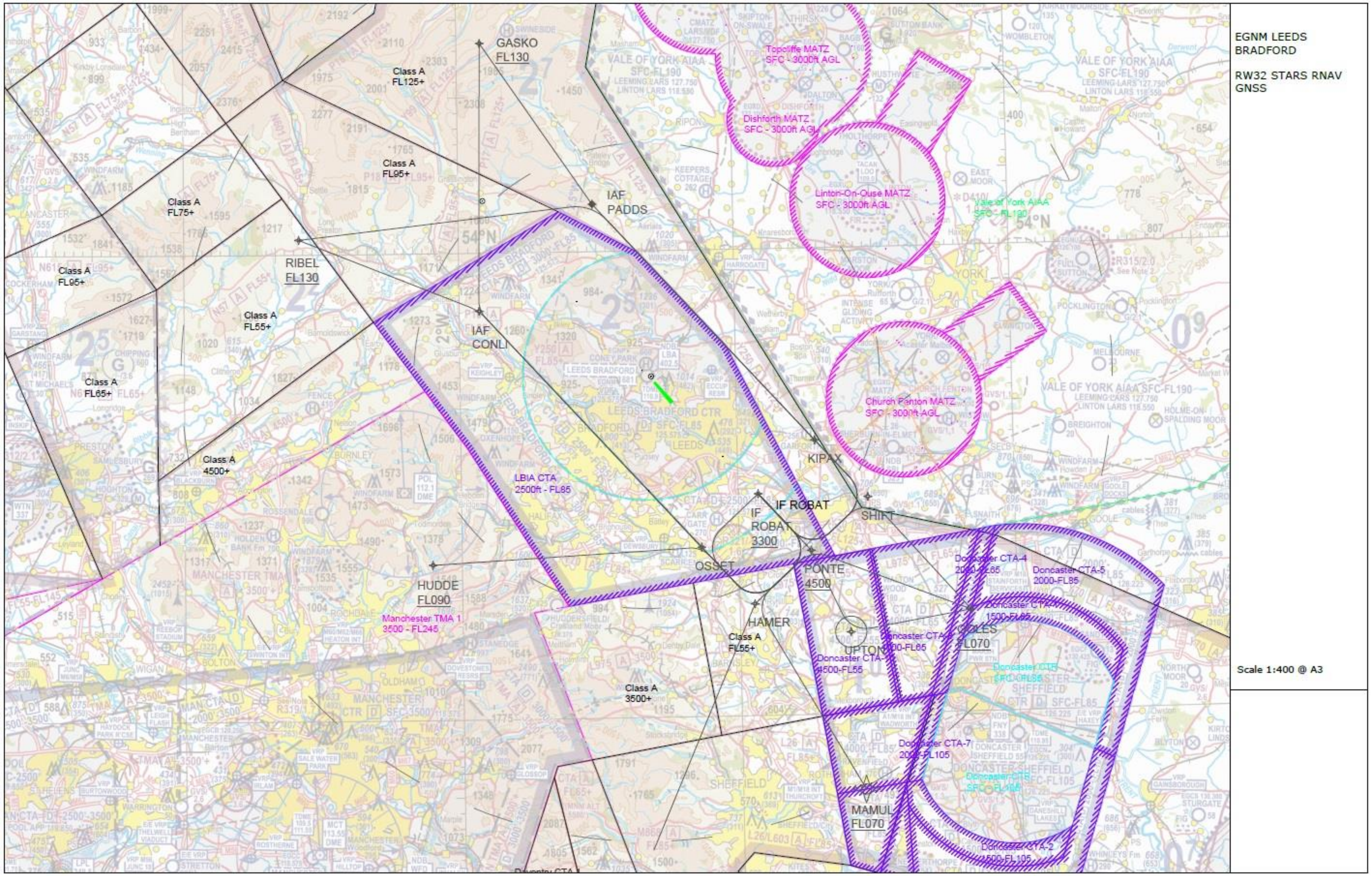


Figure 7. Draft Arrival Routes to Runway 32

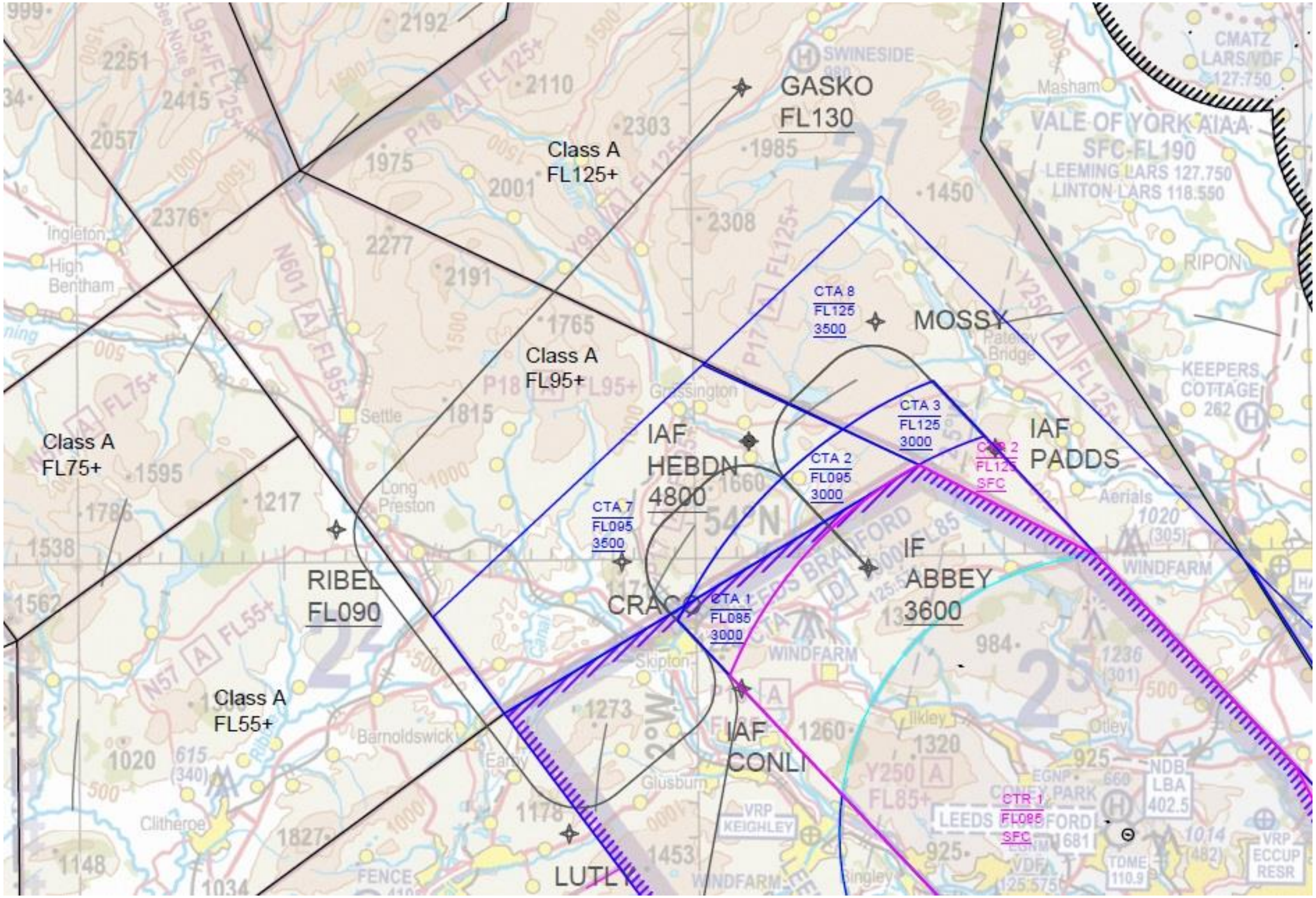


Figure 8. Draft Arrival Routes from the North to Runway 14

Figure 8 provides a close-up view of the Initial Approach Fixes (IAFs) for approaches to Runway 14 – CONLI, HEBDN and PADDS. These IAFs, combined with the Intermediate Fix (IF) ABBEY and the reporting points CRACO and MOSSY, form a rectangle. This layout allows controllers to adopt the shortest route for an aircraft (i.e CONLI-ABBEY or PADDS-ABBEY), or delay an aircraft to achieve greater distance between it and the aircraft in front by using route CONLI-CRACO-HEBDN-ABBEY or PADDS-MOSSY-HEBDN-ABBEY.

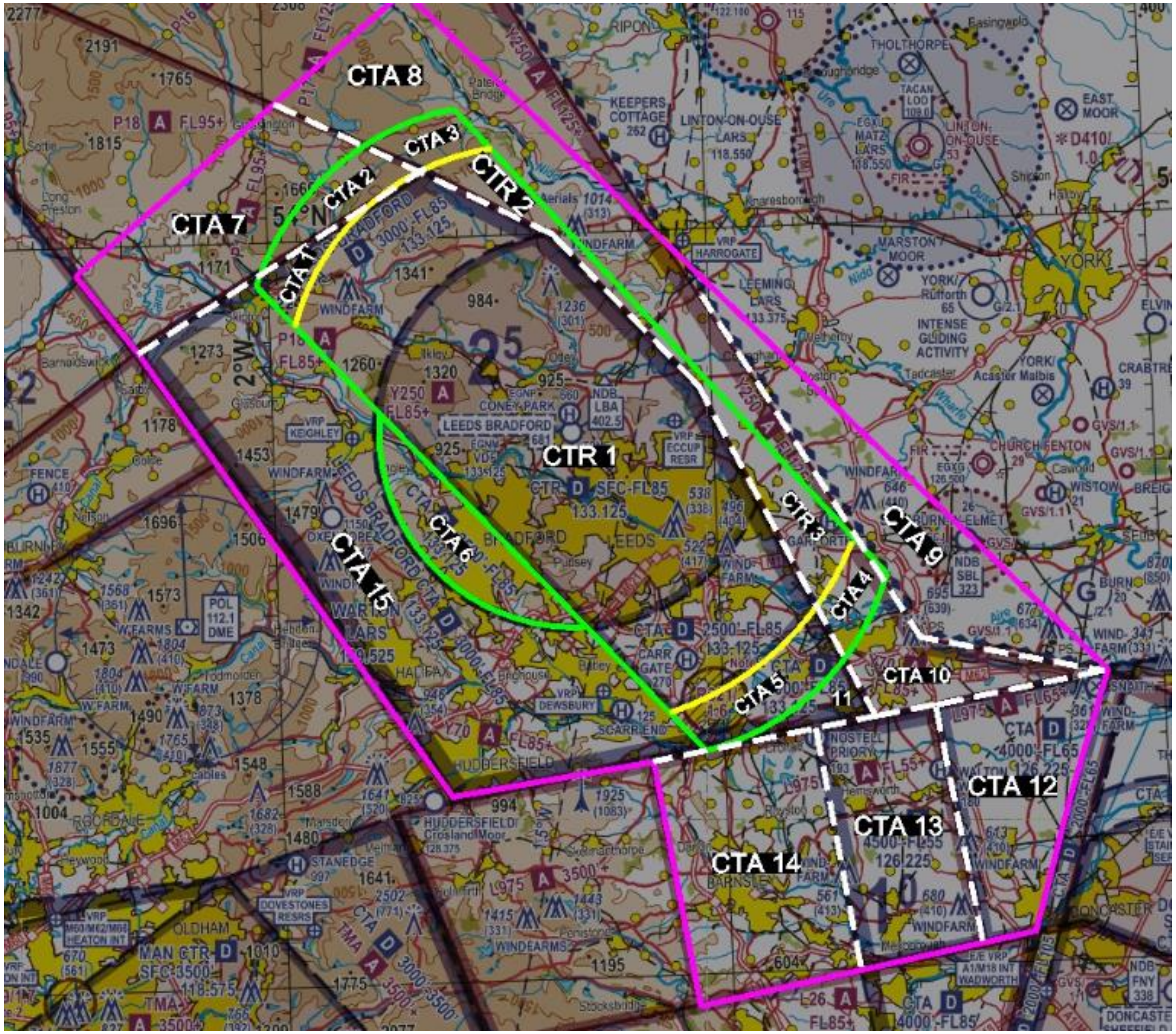
A mirror of this layout is used for Runway 32 and can be seen at Figure 7. The IAFs of KIPAX, OSSET and PONTE combine with the IF ROBAT and reporting points SHIFT and HAMER to form a rectangle. This provides options for the short routes of OSSET-ROBAT or KIPAX-ROBAT for aircraft arriving from the north, or the longer routes OSSET-HAMER-PONTE-ROBAT or KIPAX-SHIFT-PONTE-ROBAT. For aircraft arriving from the west, south or east, the layout of these reporting provides other options for controllers to achieve the required spacing between aircraft on final approach.

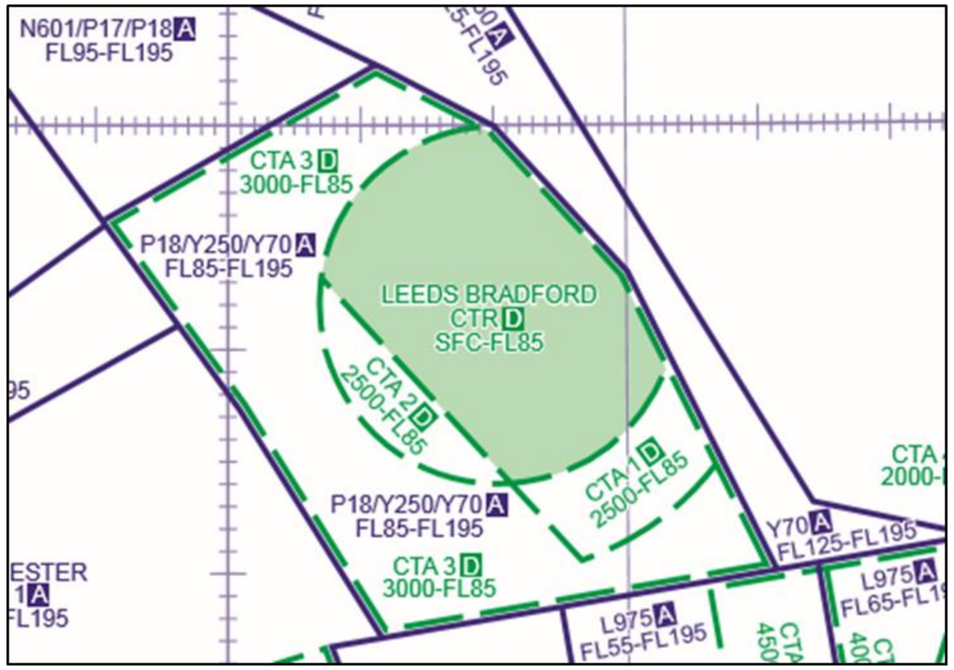
Figure 8 further shows the measures taken to reduce the volume of airspace required to support the new arrival procedures. Initially, the plan was for aircraft arriving from the northeast to route through point GASKO and directly onto the approach tract through IAF HEBDN or IF ABBEY. However, the altitude at which the aircraft would need to be at GASKO to allow it to descend sufficiently to safely establish on the approach would have been below the existing Class A CAS, whose base level is FL 125. To contain this procedure in CAS would have required either the base level of the Class A to be lowered, or a further portion of Class D airspace to be established. The number of aircraft that arrive at LBA through GASKO (approximately 2-6 daily) was considered to be too few to justify such a large magnitude of additional CAS, so the procedure was modified to keep aircraft higher for longer, although increase the distance they would have to fly by routing them through reporting point RIBEL.

Airspace

The current flight procedures at LBA are not fully contained by CAS, so any change to the airspace was always likely to increase its lateral and/or vertical dimensions. However, we have worked hard to minimise the additional airspace that will be required to accommodate the new procedures, as established above and in Figure 8.

The proposed airspace is shown at Figure 9. A list of the co-ordinates used to form the proposed airspace is at Annex 6.





Current airspace structure shown for comparison

Figure 9. Proposed Airspace – Aviation chart background

The airspace in the vicinity of the proposed CTAs 9, 10, 12, 13 and 14 is liberally utilised by the General Aviation community and local gliding clubs, as well as for military flights of aircraft operating from RAF Linton-on-Ouse. We are aware that extending the airspace controlled by LBA into these areas may be considered restrictive to operations of other airspace users, so we carefully assessed how we might reduce the potential impact. The main feedback received from other airspace users during the development of this proposal was that the base level of the proposed airspace was restrictively low.

LBA experiences high intensity operations first thing in the morning and in the evening, with another, slightly less-busy period just after lunch. These busy periods demand options for ATC to separate and sequence multiple aircraft arriving simultaneously, as described in Section 0.

In order to reduce the volume of airspace required to support LBA operations and raise the base of the proposed airspace, we intend to restrict the availability of specific routes outside the intensely busy arrival and departure periods at LBA. This will allow the base of the proposed airspace to be at a higher altitude during the day (0900-1800 local), but lower in the evening and overnight (1800-0900 local), as outlined at Table 1. Whilst not the ideal solution for LBA operations, as the “lunchtime rush” will require careful management with less airspace and less flexibility, we felt that this was the best course of action to compromise over competing airspace demands.

Airspace	Upper Limit	Lower Limit 0900 – 1800 local	Lower Limit 1800 – 0900 local
CTR 1	FL85	Surface	Surface
CTR 2	FL125	Surface	Surface
CTR 3	FL125	Surface	Surface
CTA 1	FL85	3,000 ft	3,000 ft
CTA 2	FL95	3,000 ft	3,000 ft
CTA 3	FL125	3,000 ft	3,000 ft
CTA 4	FL125	3,000 ft	3,000 ft
CTA 5	FL85	3,000 ft	3,000 ft
CTA 6	FL85	2,500 ft	2,500 ft
CTA 7	FL95	3,500 ft	3,500 ft
CTA 8	FL125	3,500 ft	3,500 ft
CTA 9	FL125	FL055	3,500 ft
CTA 10	FL125	4,000 ft	3,500 ft
CTA 11	FL85	3,500 ft	3,500 ft
CTA12	4,000 ft	Not required	3,500 ft
CTA 13	4,500 ft	4,000 ft	3,500 ft
CTA 14	FL55	4,000 ft	3,500 ft
CTA15	FL85	3,000 ft	3,000ft

Table 1 Upper and lower limits of proposed airspace at LBA

NATS Link Routes

The proposed airspace change will need to complement new routes to allow aircraft to join the en-route airspace structure as expeditiously as possible. This section details the work undertaken by NATS to create link routes to facilitate the proposed departure and arrival procedures.

Overview

Traditionally SIDs and STARs terminate and commence at reporting points within the en-route CAS structure. Working closely with the FASI North Team at NATS Prestwick Centre, we have explored the more efficient option to truncate the SIDs and introduce STARs. Until the FASI North project delivers the full scope of airspace revisions under development, link routes to connect the LBA departures and arrivals to airways will be required. Whilst the en-route service provider would usually conduct the consultation for new link routes, it is considered most effective to include the routes within the LBA ACP consultation in order to present the proposed solution as a full package.

Departures

Figure 10 shows the proposed link routes and anticipated levels to join the new LBA SIDS with the airways structure at reporting points DOPEK, POL, CROFT and NOKIN; magenta lines show the tracks of the SIDs, the light blue lines provides the link routes.

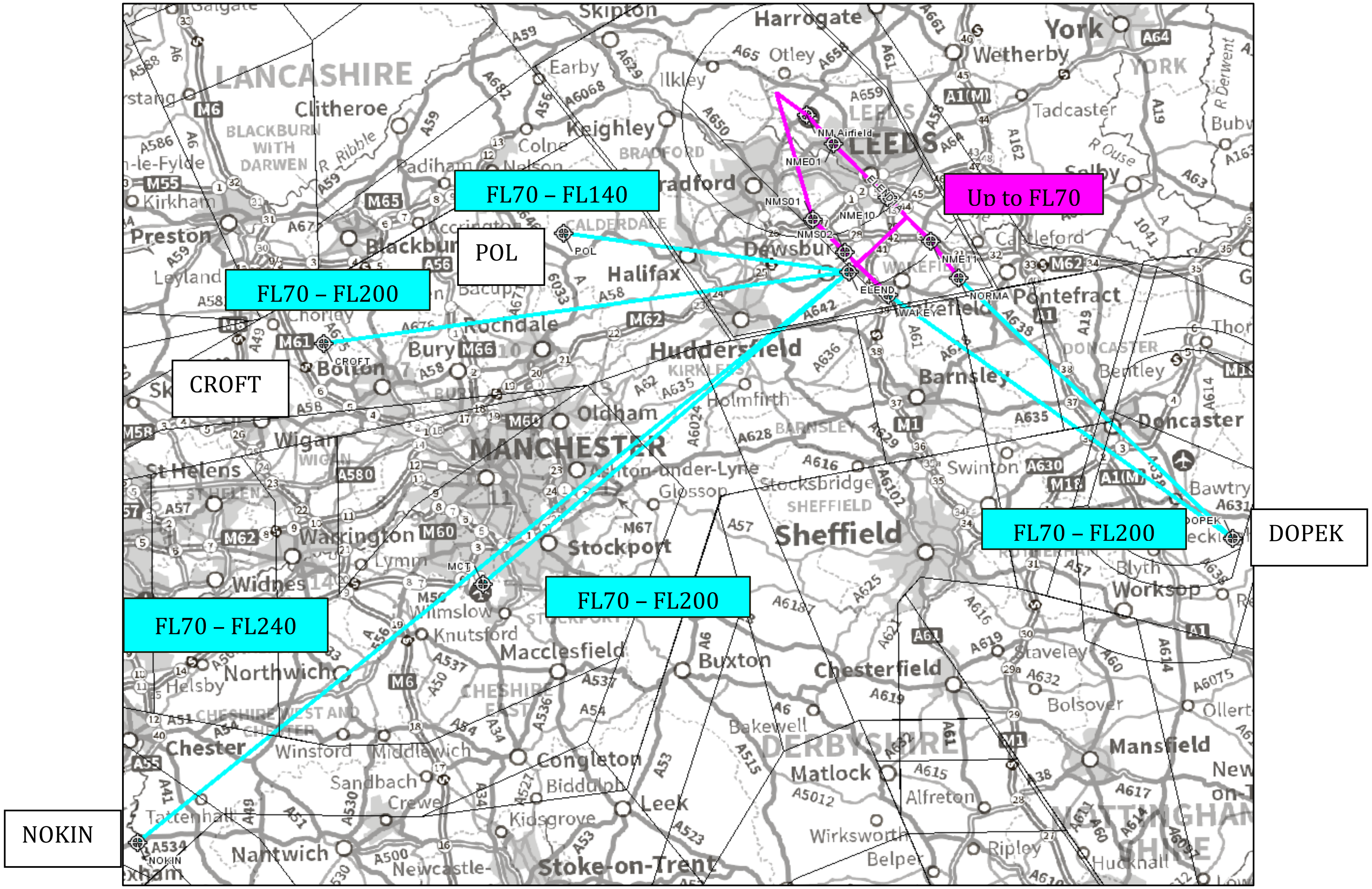


Figure 10. FASI North Additions to LBA ACP – New SIDs, Departure Link Routes and Anticipated Levels

Arrivals

Figure 11 provides details of the existing routes that will be utilised under the proposal (green), and the new routes that will be required (red). The dotted red line indicates a route that will be adopted once the wider Manchester Control Area revision is complete.

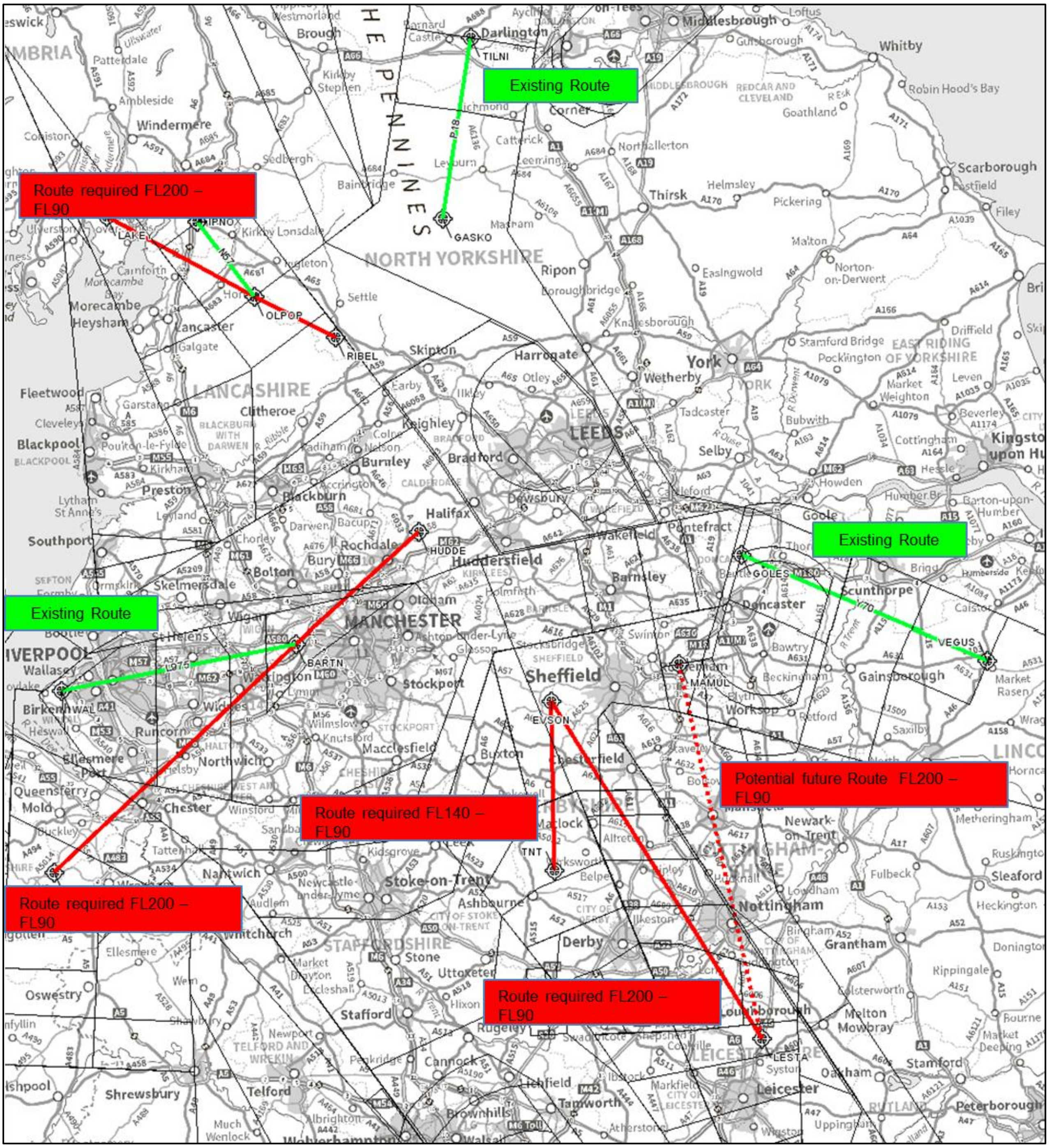


Figure 11. FASI North Additions to LBA ACP – New Arrival Routes

How Could the Change Affect Me?

The proposed airspace change will affect different people, with differing concerns in different ways. This section seeks to outline the potential effects to residents near the Airport and to other airspace users.

Overview

In general, three main aspects of impact to the environment may be assessed in relation to an airspace change proposal; disturbance from noise, effects on local air quality and changes in fuel burn/carbon dioxide (CO_2) emissions. In relation to LBA, the driving factor in the local air quality is local road traffic within the city centres; the proposed change to the aircraft operating procedures will have a negligible effect on local air quality. We present here the results of assessments of the impacts of aircraft noise and the likely changes in fuel burn resulting from the ACP. We also consider operational impacts on other airspace users.

Effects That May be Experienced by Local Residents

1.1.9 Noise

Noise pollution is widely recognised as being the most important consideration for those living close to an airport and in areas frequently overflown by aircraft at low level.

The regulatory process in CAA CAP 725 [Reference 2] governing this consultation document, states that the most commonly used method for portraying aircraft noise impact in the UK is the L_{eq}[4] noise exposure contour. Research has indicated that the L_{eq} is a good predictor of a community's disturbance from aircraft noise. The noise contours look similar to height contours on a traditional land map.

Conventional noise contours are calculated based on an average summer day at the given airport – a 16-hour day within the period 16th June to 15th September between 0700hrs and 2300hrs local time. Airports are generally busier in summer and aircraft climb less efficiently in hot weather, contributing to higher L_{eq} values in summer than in winter.

L_{eq} is measured in dBA – 'decibels A-weighted' matching the frequency response of the human ear. The established threshold for nuisance noise (onset of significant community annoyance) is currently set at 57dB L_{eq} 16hour noise exposure.

1.1.10 Noise Assessment Methodology

Noise contours have been calculated using the FAA Aviation Environment Design Tool (AEDT) (version 2c) in order to meet the requirements of CAP 725 [Reference 2]:

- 54-69 dBA Leq contours (plotted at 3 dB) intervals for the existing aircraft movements during a 16 hour summer day 2016.

The L_{eq} contours were calculated using LBA recorded traffic data for the 92-day summer period (16th June – 15th September 2016, 0700-2300 local time).

[4] L_{eq} – The L represents noise Level and the eq is an abbreviation for 'equivalent'.

Aircraft data inputs

Aircraft type and performance data were input to AEDT. For those specific aircraft models flying at LBA that are not contained in the AEDT database, a representative aircraft model was used.

1.1.11 Results

RNAV technology allows aircraft to follow the specified tracks more accurately than by conventional means. This results in a reduction in the number of people that experience noise, but those that are exposed to noise are likely to find it becomes more concentrated.

The 2016 L_{eq} noise contours modelled for proposed procedures and current procedures with the estimated population and area affected are shown in Table 2 below:

Contour (LA_{eq}, 16hr)	Proposed Procedure		Current Procedure	
	Population (1,000s)	Area (km^2)	Population (1,000s)	Area (km^2)
54 dB	16.5	16.2	16.4	15.9
57 dB	5.6	9.0	5.4	8.9
60 dB	1.7	5.0	1.6	4.9
63 dB	0.3	2.7	0.3	2.6
66 dB	<0.1	1.5	<0.1	1.4
69 dB	<0.1	0.9	<0.1	0.8

Table 2 Table of Noise Contours for Current and Proposed Procedures

A comparison of the proposed procedures and sample radar tracks for runway 32 and 14 used for noise contour modelling can be seen at Annex A5.

Figure 12 below shows the noise contour model for LBA based on existing traffic levels and aircraft type using the aerodrome:

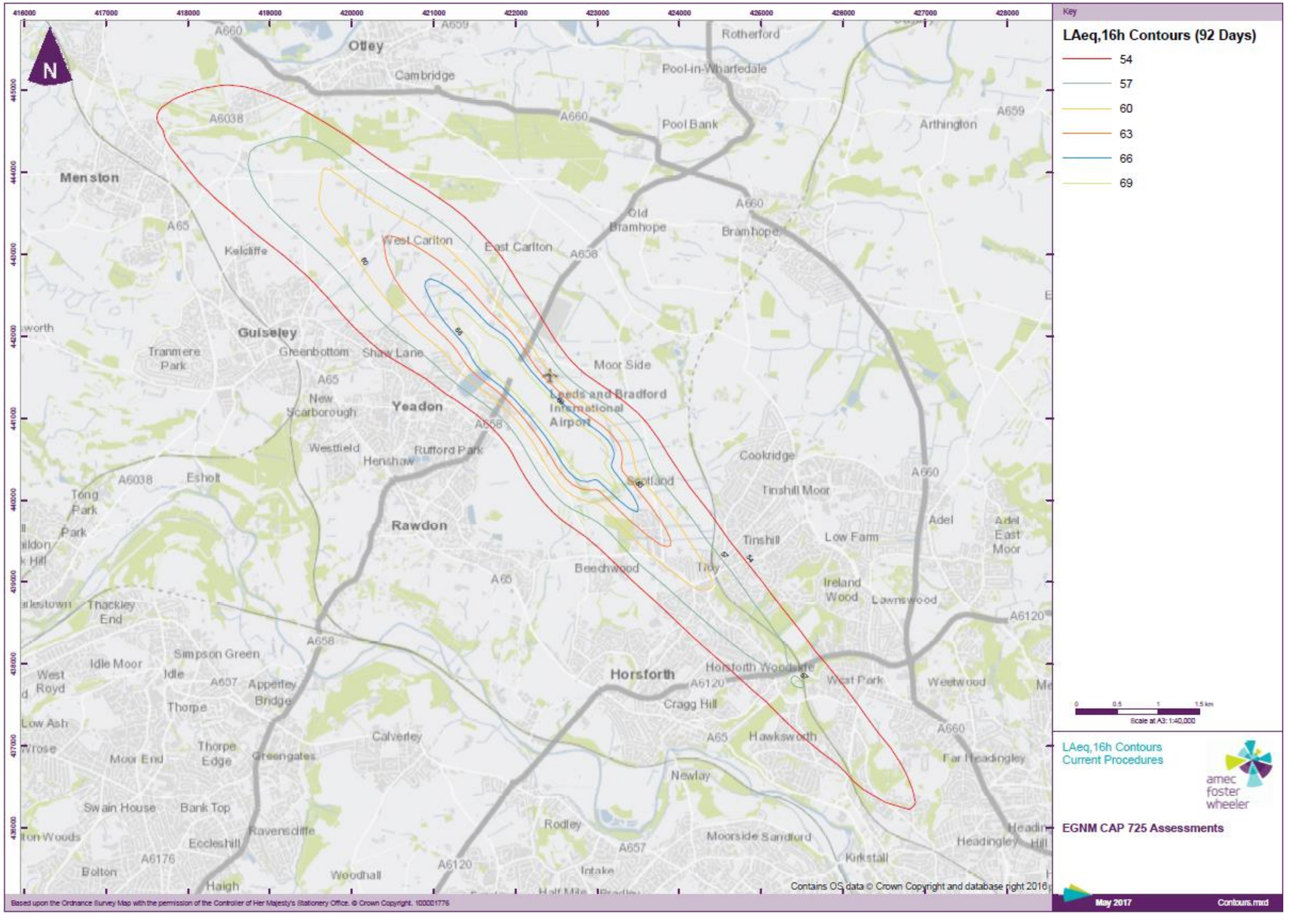


Figure 12 - Noise Contours for Existing Traffic Levels.

Figure 13 below shows the noise contour for LBA based on existing traffic levels and aircraft types using the aerodrome, utilising the new procedures:

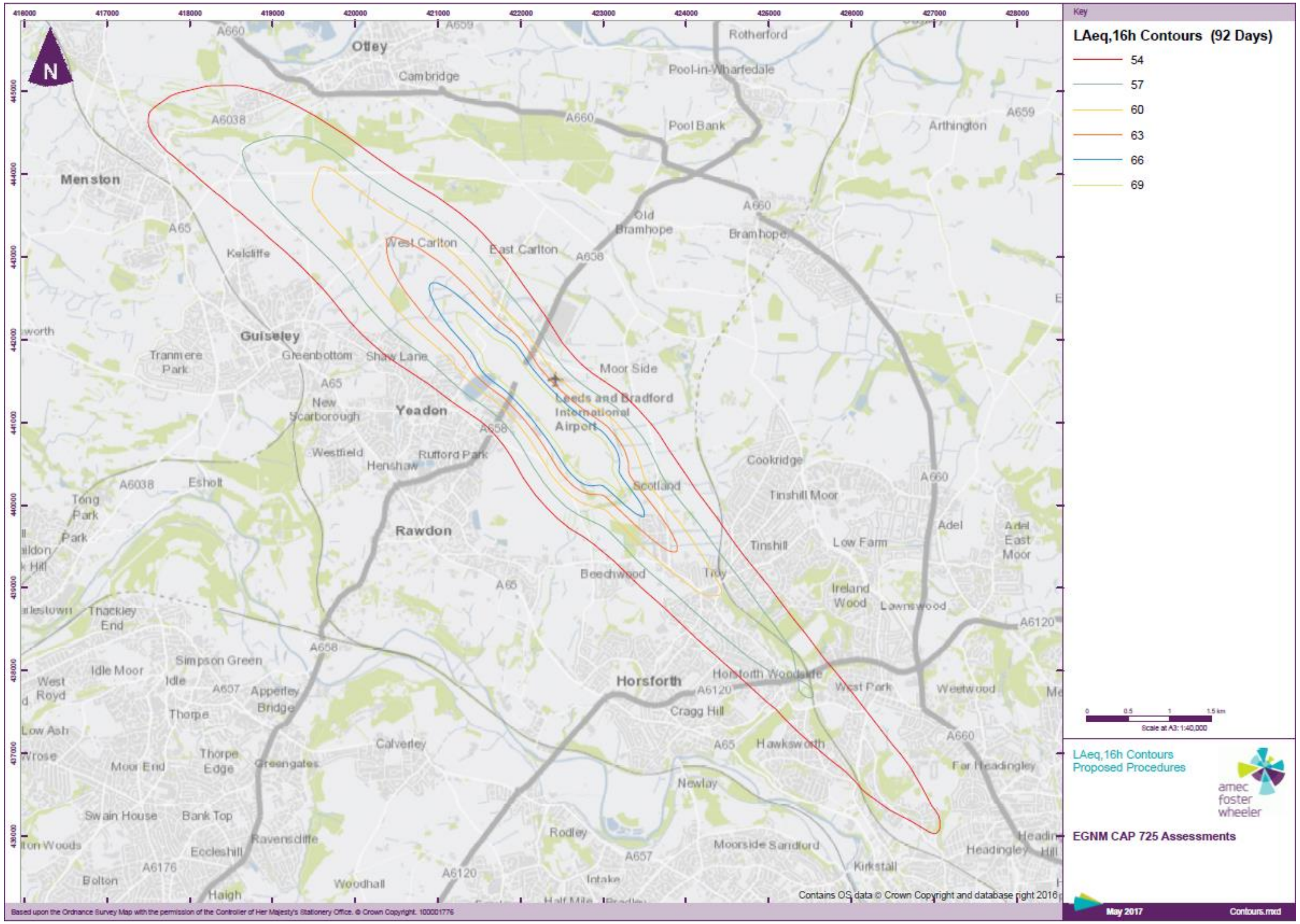


Figure 13 - Noise Contours for Existing Traffic Levels with New Procedures.

1.1.12 Noise Conclusions

The introduction of new procedures at LBA will not introduce a change in existing traffic levels or types of aircraft operating at the airport (whilst traffic levels are expected to increase, that increase is part of the overall growth of the Airport and not specifically as a result of this proposal). As can be seen from the modelling data above there will be almost no change in the number of people affected by aircraft noise above 54 dB; there is a marginal increase (approximately 200 m) in the extent of the 54 dB contour.

1.1.13 Fuel Burn and Emissions

Assessments have been conducted by an LBA-based airline on the potential fuel burn that will be achieved by utilising the new procedures. For a Boeing 737-800 aircraft, an estimation of 110 kg per minute of fuel burn was used to compare the new departure routes with the current SIDs. The benefit provided is that the SIDs terminate closer to the Airport, allowing significantly improved flexibility in achieving direct flight to en-route points and can potentially provide unrestricted climb. This reduces track miles per flight and therefore less time on the SID burning 110 kg per minute. Currently not all aircraft fly the full SID. The assessments have been conducted assuming a full SID is flown and against the realistic saving against the flight planned route. The potential estimated fuel savings per flight are identified at Table 3:

Current SID	Proposed SID	Distance reduction / NM	Fuel saving (SID) / kg	Fuel saving (Flight Plan) / kg
NELSA 3W	NELSA 1R	0.5	10-15	10-15
POL 2X	ELEND 1B	10	275	110-220
LAMIX 2W	NMS031R	23	500	150-200
LAMIX 2X	NME 12R	37	80-1000	100-200

Table 3 Potential Fuel Savings Achieved by the New SIDs

Assuming a saving of 200 kg of fuel saved per aircraft, the introduction of the new procedures would reduce CO_2 emissions by 1,900 tonnes per year.

1.1.14 Local Air Quality

When considering air quality, it is normally only the concentrations at ground level (or more precisely, 1.5 m above ground level) that are of concern, since this is the normal human breathing zone. It is customary for airport air quality studies to include the whole aircraft landing and take-off cycle, including operations on the ground and in the air up to 3000 ft (or 1000 m) above ground level. However, it is generally considered that emissions from aircraft become negligible, in terms of their effect on air quality, once the aircraft are more than around 100–200 m above the ground. There are two reasons why elevated aircraft emissions are expected to be less significant than ground-level emissions:

- There is a greater degree of mixing and dispersion before the pollutants reach the ground. This is the same reason that large point sources such as industrial installations discharge from tall chimney stacks; and
- As well as being higher, aircraft are more spread out spatially as they follow different routes at elevation, so emissions are more diffuse.

An unpublished study carried out by Amec Foster Wheeler for Heathrow Airport carried out a literature review and dispersion modelling to investigate in detail how aircraft emissions at height affect ground-level concentrations. This study concluded that once departing aircraft are more than 120 m above the ground or arriving aircraft are more than 20 m above the ground, their emissions make a negligible contribution to ground-level concentrations of pollutants. Typically aircraft below these altitudes are within the airport boundary — when aircraft are flying over the boundary fence they are high enough to have negligible impact on ground-level concentrations. The impact continues to drop off as heights increase.

Given that the proposed LBA airspace changes are at altitudes substantially greater than these, there is negligible impact from the emissions on local air quality and the changes will have an imperceptible effect on local air quality.

Effects on Other Airspace Users

During the development of this proposal, we shared our plans and sought input from a range of other local aviation organisations. We outline here the potential effects and mitigations arranged to minimise any impacts of the change.

1.1.15 Warton Aerodrome

Warton Aerodrome is located on the west coast of the UK near Preston. It is run by BAE Systems and is used extensively for Research, Test and Development of several military aircraft types. Air Traffic Controllers at Warton have special permission to control aircraft through CAS for extended distances, and frequently control aircraft in the vicinity of LBA. We have discussed Warton's requirements with them and we are developing a Letter of Agreement (LoA) that will allow Warton controllers to operate autonomously within LBA CAS, under specified conditions.

1.1.16 RAF Linton-On-Ouse and RAF Leeming

RAF Linton-on-Ouse is located within the Vale of York, east-north-east of LBA and provides pilot training. The extension of airspace to the east of LBA has the potential to limit the vertical space available for RAF Linton-on-Ouse controllers to use for the safe separation and sequencing of their aircraft. The raising of the base level of CTA9 during the hours of 0900-1800 local will alleviate these issues. Furthermore, a LoA is being developed that will allow RAF Linton-on-Ouse controllers to control aircraft within LBA airspace under specified conditions to allow greater flexibility when the full extent of CTA9 is active.

RAF Leeming is also located within the Vale of York, north-north-east of LBA, and operates Hawk T1 and Tutor aircraft. The extension of airspace to the north-east of LBA will partially subsume one of the flight procedures that RAF Leeming uses to hold aircraft prior to recovery to the airfield. A LoA is being developed to allow RAF Leeming controllers to provide services to aircraft within LBA CAS.

We have also identified that there is potential for a portion of LBA airspace to be delegated to RAF Linton-on-Ouse or RAF Leeming when LBA is operating on Runway 32, as indicated (red) in Figure 14. This potential remains under discussion and will need to be subject to safeguarding considerations for the LBA procedures before the boundary shown in Figure 14 can be verified.

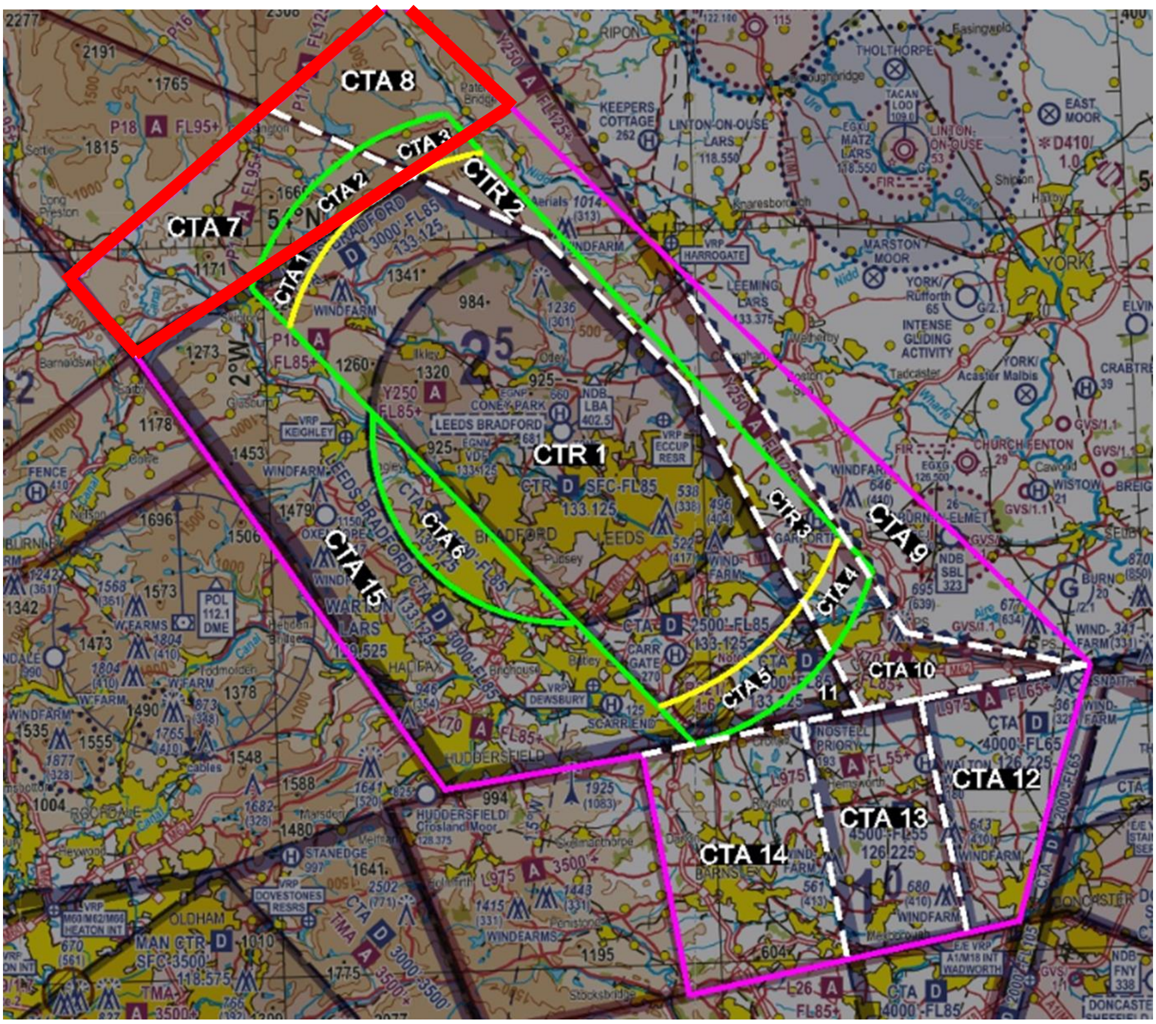


Figure 14. Airspace (outlined in red) That Could be Delegated to the RAF when LBA is Using Runway 32, if required.

1.1.17 Sherburn-in-Elmet and Leeds East Airports

Sherburn-in-Elmet Aerodrome is the home of the Sherburn Aero Club, a large flying club and flying training school. Leeds East Airport occupies the site of the former RAF Church Fenton; at present it provides services to privately-owned aircraft, with aspirations to develop a passenger service. Both aerodromes lie to the east of LBA are developing GNSS procedures. We have been in discussion regarding how LBA might support these aerodromes through the provision of radar services and to ensure that our procedures de-conflict.

1.1.18 Doncaster Sheffield Airport

Some of the lower airspace immediately south of LBA's current airspace is controlled by Doncaster Sheffield Airport (DSA). Although DSA is the controlling authority, currently LBA traffic routinely transits through the airspace, with DSA approval. The combined number of aircraft movements for both airports through this airspace is significant. We have discussed our future plans with DSA to ensure that their ATC would continue to support LBA aircraft transiting through its airspace. Our plans were positively received and some relatively minor amendments were made to the approach tracks to ensure deconfliction with DSA procedures within the vicinity of UPTON.

1.1.19 Local Gliding Clubs

A large number of gliding clubs operate in the airspace surrounding LBA. The nature of glider flight means that glider pilots are unable to comply with instructions to maintain a set course or altitude, making adherence to a CAS crossing clearance problematic. Additionally, the majority of gliders are not fitted with radios, or the glider pilots do not possess a licence to operate a radio. This results in the boundaries of CAS being viewed as "barriers in the sky" by glider pilots and an extension of CAS restrictive to their operations.

Several meetings have been held with local gliding clubs to identify the principle elements of the proposal that cause them concern. There were two main areas identified as being particularly restrictive to their instructional or recreational flights, as follows:

- CTAs 12,13 and 14 – the lower altitude of 3,500 ft proposed for these areas would restrict climbs within thermals to facilitate transits, effectively cutting off glider transits north/south on the east of the UK;
- CTAs 9 and 10 – the lower altitude of 3,500 ft would restrict north/south transits. Additionally, the airspace proposed for CTA 9 is currently utilised for wave soaring flights in excess of 8,000 ft.

As described at Section 0 and Table 1, LBA is proposing to restrict the use of some of the procedures to the south-east of the Airport in order to raise the base level of the airspace during the hours of 0900 – 1800 local. Whilst this will not raise the base altitudes/levels to those required to support the full scope of flying requested by the gliding community, we believe it is the best compromise that we are able to achieve.

What Happens Next?

Overview

Once the consultation process closes, we will produce a report that will analyse the results and necessary changes, as far as practicable, will be made to the proposal to reflect solutions to the consultation themes and issues that have arisen. Although unlikely, should the issues identified require major changes; a further consultation on the revisions will be required. The Consultation Report will be made available for public viewing through the Airport website.

The proposal will then be submitted to the CAA, including the full procedure and airspace designs, safety assessments to demonstrate that the changes will be safe, results of the consultation, to demonstrate that the proposal is balanced in meeting all stakeholder requirements, and a full quantitative environmental assessment of the impact (both positive and negative) of the changes.

CAA Actions

The CAA will use a team of experts to scrutinise the documentation that LBA submits throughout a period likely to last at least 16 weeks. We will remain responsive throughout this period in submitting further supporting documentation, should it be requested, to provide a picture that is as accurate as possible. Once the CAA has made their decision on whether the submission is appropriate and proportional, they will inform us and publish the results.

References

Reference	Name	Origin
1	Leeds Bradford Airport Route to 2030 Strategic Development Plan March 2017	LBA
2	CAP 725 CAA Guidance on the Application of the Airspace Change Process Fourth edition 15 March 2016	CAA
3	UK Integrated Aeronautical Information Package (AIP) AIRAC 05/2017	NATS AIS
4	CAP 493 Manual of Air Traffic Services – Part 1 Sixth Edition, Amendment 1, Corrigendum, 2 April 2015	CAA

Table 4 Table of References

Stakeholders

Aviation Consultees

National Organisations – to be contacted through NATMAC	
Consultee	**Also Known As**
Aircraft Owners and Pilots Association	AOPA UK
Airport Operators Association	AOA
Aviation Environment Federation	
British Airline Pilots' Association	BALPA
British Air Transport Association	BATA
British Association of Balloon Operators	BABO
British Balloon and Airship Club	BBAC
The British Business and General Aviation	BBGA
British Gliding Association	BGA
British Hang Gliding and Paragliding Association	BHPA
British Helicopter Association	BHA
British Microlight Aircraft Association	BMAA
British Model Flying Association	BMFA
British Parachute Association	BPA
Euro UAV Systems Centre Ltd	
Guild of Air Pilots and Air Navigators	GAPAN
General Aviation Safety Council	GASCo
Guild of Air Traffic Control Officers	GATCO
Helicopter Club of Great Britain	HCGB
Light Aircraft Association	LAA
Low Fares Airlines	

National Organisations – to be contacted through NATMAC	
Consultee	**Also Known As**
Ministry of Defence	MoD[5]
NATS En-Route Ltd	NERL
UK Airprox Board	UKAB
UK Flight Safety Committee	UKFSC

Airport Operators	
Consultee	**Consultee**
Airport Consultative Committee	Flybe
AirEuropa	Jet2.com
Aurigny	KLM
Austrian Airlines	Monarch
Aer Lingus	Multiflight
Balkan Holidays	Ryanair
British Airways	SiAvia
Carpatair	Thomas Cook
Eastern Airways	Thomson

Other Aerodromes / Local Flying Schools	
Consultee	**Consultee**
Addingham Moorside	Humberside Humber Flying Club
Bagby	Humberside POM Flying Club
Barton Aerodrome	Keepers Cottage
Barton Flight Academy	Manchester International Airport

[5] See E.4 for full details of MoD bodies to be consulted.

Other Aerodromes / Local Flying Schools	
Consultee	**Consultee**
Barton LAC Flying School	Netherthorpe
Breighton	Oxenhope Moor
Burn (gliders)	Preston (Chipping) (gliders)
Camphill (gliders)	Doncaster Sheffield Airport
Carr Gate	Rufforth (gliders)
Coney Park	Salmsbury (gliders)
Crossland Moor	Sandtoft
Dales Hang gliding and Paragliding Club, Ilkley Moor and Baildon Moor	Sherburn-in-Elmet
Durham Cleveland Flying School	Tong
Elvington	Walton Wood
Full Sutton	Yorkshire Gliding Club, Sutton Bank
Huddersfield/Crossland Moor	

Non-Aviation Consultees

National Bodies	
Consultee	**Point of Contact**
UK Association of National Park Authorities	126 Bute Street Cardiff Bay Cardiff CF10 5LE
Campaign to Protect Rural England	Mr J Denham Yorkshire and Humber Region Branch Secretary Ogley Lumb Lane Almondbury Huddersfield HD4 6TA

National Bodies	
Consultee	**Point of Contact**
Friends of the Earth	Friends of the Earth 26-28 Underwood Street LONDON N1 7JQ
National Trust	yne.customerenquiries@nationaltrust.org.uk Yorkshire Branch York Consultancy Hub Goddards 27 Tadcaster Road York YO24 1G
Natural England	Consultations@naturalengland.org.uk Natural England Consultation Service Hornbeam House Electra Way Crewe Business park Crewe Cheshire CW1 6GJ
Yorkshire Dales National Park Authority	Head of Planning, Yorkshire Dales National Park Authority Yoredale, Bainbridge Leyburn, North Yorkshire, DL8 3EL

District / County Councils	
Consultee	**Consultee**
Barnsley Council	Harrogate Borough Council
Calderdale Council	Kirklees Council
City of Bradford Metropolitan District Council	Leeds City Council
City of Wakefield Metropolitan District Council	North Yorkshire County Council

District / County Councils	
Consultee	**Consultee**
Craven District Council	Wakefield Council
Doncaster Council	

Parish and Town Councils	
Barnsley Council	
Consultee	**Consultee**
Shafton Parish Council	
Calderdale Council	
Consultee	**Consultee**
Wadsworth	
City of Bradford Metropolitan District Council	
Consultee	**Consultee**
Bingley	Ilkley
Bingley Rural	Keighley Central
Bolton & Undercliffe	Keighley East
Bowling & Barkerend	Manningham
Bradford Moor	Shipley
City	Thornton & Allerton
Clayton & Fairweather Green	Tong
Craven	Wharfedale
Heaton	Windhill & Wrose
City of Wakefield Metropolitan District Council	
Consultee	**Consultee**
Ackworth, North Elmsall and Upton	Pontefract North

Altofts and Whitwood	Pontefract South
Crofton, Ryhill and Walton	Stanley and Outwood East
Featherstone	Wakefield North
Horbury and South Ossett	Wakefield Rural
Knottingley	Wakefield West
Normanton	Wrenthorpe and Outwood West
Ossett	
Craven District Council	
Consultee	**Consultee**
Appletreewick	Grassington
Bolton Abbey	Hebden
Bradleys (both)	Linton
Cononley	Lothersdale
Draughton	Skipton (Town)
Embsay-with-Eastby	Sutton-in-Craven
Farnhill	Threshfield
Doncaster Council	
Consultee	**Consultee**
Askern Town Council	Norton Parish Council
Moss & District Parish Council	Thorpe-in-Balne Parish Council
Harrogate Borough Council	
Consultee	**Consultee**
Allerton Mauleverer with Hopperton (Meeting)	Little Ribston
Arkendale, Coneythorpe and Clareton	Long Marston
Bewerley	Lower Washburn
Bilton in Ainsty with Bickerton	Markenfield Hall (Meeting)

Cattal, Hunsingore and Walshford	Menwith with Darley
Felliscliffe	Mid Wharfedale
Follifoot and Plompton	Newall with Clifton
Goldsborough and Flaxby	North Deighton
Green Hammerton	North Rigton
Hampsthwaite	Sicklinghall
Hartwith Cum Winsley	Spofforth with Stockeld
Haverah Park and Beckwithshaw	Thornthwaite with Padside (Meeting)
Hewick and Hutton	Thruscross (Meeting)
Kearby with Netherby	Tockwith and Wilstrop
Kirk Deighton	Washburn
Kirk Hammerton	Weeton
Kirkby Overblow	Whixley
Knaresborough (Town)	Wighill
Kirklees Council	
Consultee	**Consultee**
Holme Valley	
Kirkburton	
Leeds City Council	
Consultee	**Consultee**
Aberford and District	Kippax
Alwoodley	Ledsham
Arthington	Mickelfield
Bardsey cum Rigton	Morley (Town Council)
Barwick in Elmet and Scholes	Otley (Town Council)
Boston Spa	Pool in Wharfedale

Bramhope and Carlton	Scarcroft
Collingham with Linton	Shadwell
Drighlington	Swillington
East Keswick	Thorner
Gildersome	Thorp Arch
Great and Little Preston	Walton
Harewood	Wetherby (Town Council)
Horsforth (Town Council)	

Information Organisations

Members of Parliament	
Consultee	**Constituency**
Andrew Jones	Harrogate & Knaresborough
Alec Shelbrooke	Elmet and Rothwell
Andrew Stephenson	Pendle
Barry Sheerman	Huddersfield
Craig Whittaker	Calder Valley
Dan Jarvis	Barnsley Central
Imran Hussain	Bradford East
Andrea Jenkyns	Morley & Outwood
Edward Miliband	Doncaster North
Fabian Hamilton	Leeds North East
Richard Burgon	Leeds East
Alex Sobel	Leeds North West
Judith Cummins	Bradford South
Hilary Benn	Leeds Central
Thelma Walker	Colne Valley

Members of Parliament	
Consultee	**Constituency**
Julian Smith	Skipton & Ripon
Jon Trickett	Hemsworth
John Grogan	Keighley
Stephanie Peacock	Barnsley East
Tracy Brabin	Batley & Spen
Nigel Adams	Selby & Ainsty
Philip Davies	Shipley
Stuart Andrew	Pudsey
Paula Sherriff	Dewsbury
Naz Shah	Bradford West
Angela Smith	Penistone & Stocksbridge
Holly Lynch	Halifax
Mary Creagh	Wakefield
Rachel Reeves	Leeds West
Yvette Cooper	Normanton, Pontefract & Castleford

Leeds Bradford Airport

Reportable Safety Events

Event	Date	LBA Ac Affected	Location from LBA	Nature of Event	Comment
1	08/05/06	Approach DHC8	10NW (CTR)	A/C descended below assigned altitude.	DHC8 was cleared to descend to 3000ft, which it read back correctly. Later, DHC8 was observed approaching 2000ft. The crew report states that "ALT SEL" was not selected. This was partly due to multiple changes to altitude clearances and the requirement to expedite the descent. There was clear view of the ground in good VMC.
2	06/06/06	B737	10S (TMA)	A/C climbed above assigned level. Pilot error in read back was not detected by ATC.	B737 issued with a climb to FL90, crew read back. Crew noted traffic at FL100 and had slowed climb rate until clear of traffic. Standard separation maintained. ATC training in progress. The crew report that during a busy stage of flight, the clearance was misheard by both pilots and not corrected by ATC.
3	22/06/06	B737	(CTR)	A/C climbed above assigned level on POL1W SID.	B737 given a POL1W SID, which stops climb at 4000ft. Pilot called on frequency passing 4500ft. ATC queried with crew. Standard separation maintained.
4	17/08/06	Unknown A/C	5E (CTR)	Infringement of the LBA CTR.	Infringed by an unidentified A/C squawking 7000. Traffic info given. Standard separation maintained.
5	23/09/06	B737 Pitts Special	6S (CTR)	Infringement of the LBA CTR.	Infringed by a Pitts Special squawking 7000 at 1500ft. B737 given vectors to avoid the A/C. Standard separation maintained.
6	10/10/06	Approach EMB145 Military A/C	18 NW (Class G)	AIRPROX. EMB145 and a military A/C at 3500fton approach to LBA.	UK AIRPROX 153/2006. The details of the event have been publicised within the ATS Department and ATC has been reminded of the option of using the hold for A/C as an alternative to an extended radar pattern routing, which makes it necessary to vector A/C outside CAS. The unit has formed a small working group to rationalise approach operations.
7	13/10/06	Outbound C550	10SW (TMA)	Loss of separation between a C550 outbound from LBA and an EMB145 inbound to Manchester. Avoiding action given. STCA activated.	Occurred during an unusual weather and holding situation. The North controller had expected a good rate of climb from the C550 and the fact that this did not happen took him by surprise as he was concentrating on other traffic at the time. When alerted to the situation he issued an avoiding action turn as well as an instruction to expedite the climb but separation was lost.
8	07/03/07	Outbound	(TMA)	A/C climbed above assigned level on POL1W SID.	C525 departed on POL1W SID (max. altitude 4000ft) and was seen passing through FL52. ATC queried with the pilot who believed he was cleared FL60. Standard separation maintained.

Event	Date	LBA Ac Affected	Location from LBA	Nature of Event	Comment
		C525			
9	23/05/07	C525	(CTR)	A/C climbed above assigned level.	ATC cleared C525 to FL60, which is the cleared level for LBA. ATC then observed C525 climbing to FL110. Standard separation maintained.
10	27/08/07	Inbound C525	15 SW (TMA)	A/C observed deviating significantly off track with Mode C. Altimeter pressure setting error.	C525 cleared in descent to FL70 by DENBY. On reaching DENBY, A/C cleared direct to the LBA. ATC queried cleared flight level with the pilot, who responded descending to 7000ft. ATC informed the pilot he was cleared FL70 on 1013mbs. A/C climbed to FL70.
11	21/10/10	Outbound C550	(CTR)	A/C climbed above assigned level on POL1X SID.	C550 on a POL1X SID was observed passing FL50 for FL60. The standard clearance for a POL1X is 4000ft. Standard separation maintained.
12	11/12/07		(TMA)	Controller coordination issue between MACC North and LBA ATC.	MACC North Radar workload increased when LBA departed A/C on POL 1W SID climbing to 4000ft without coordination against an A/C operating at not above 5000ft under LBA control. Standard separation maintained.
13	31/01/08	MAP FK100 EMB135	5NNW (CTA)	FK100 climbed above cleared level following the MAP.	Following go-around, FK100 climbed above its cleared FL70 and came into potential conflict with an EMB135 at FL80. Traffic info and precautionary turn given to EMB135. Standard separation maintained.
14	10/08/08	Outbound ATR72	(TMA)	A/C climbed above cleared level on WAL1W SID.	ATR72 given a WAL 1W SID which was read back correctly with an initial stepped climb of 4000ft. ATC observed A/C's Mode C passing 5000ft. Standard separation maintained.
15	13/08/08	Outbound BE200	(CTR)	A/C climbed above cleared level on NELSA2W SID. Pilot confusion over ATC clearance.	BE200 on a NELSA 2W SID with a stepped climb to 5000ft. When ATC gave climb to FL100, pilot believed he was already cleared to FL130 by LBA ATC, A/C was then at FL75. Standard separation maintained - A/C allowed to continue. A/C was also on the wrong squawk at time of transfer.
16	03/09/08	EMB145 B737	(CTR)	Potential conflict between outbound aircraft lined-up for departure and LBA inbound B737, leading to an aborted take-off and a go-around for the B737.	After EMB145 entered R/W32 via Hold D1, ATC requested it to expedite the backtrack, due to a B737 on finals for R/W32 at 7nm. As EMB145 lined up ATC issued an amendment to its clearance and, when lined up, issued a further amendment to the clearance. At this point, B737 called stating they were at 2.5nm. EMB145 was then cleared for take-off. Shortly after commencing take-off run, ATC instructed EMB145 to hold position and instructed B737 to go-around. A low speed RTO was carried out. The incident is assessed as being attributable to the delayed departure of the EMB145 ahead of the B737 on final approach due to the requirement to pass a late change to the departure clearance.

Event	Date	LBA Ac Affected	Location from LBA	Nature of Event	Comment
17	19/09/08	PA32	18SE (CTA)	Infringement of the LBA CTA.	Infringement of the by PA32 squawking 7000 at 3400ft. Traffic info and avoiding action given. Standard separation maintained.
18	21/09/08	Bell206	4NW (CTR)	Infringement of the LBA CTR.	Infringement of the CTR by a Bell 206 squawking 7000 at 800ft. Standard separation maintained.
19	22/09/08	Military A/C	6S (CTR)	Infringement of the LBA CTR.	Infringement of the CTR by a military A/C at 2500ft. A/C had lost two way RT with Linton. D&D alerted. Traffic info given. Standard separation maintained.
20	26/09/08	MD902 Microlight	(Class G)	AIRPROX. MD902 and a Microlight A/C at 450ft, 10nm SE of LBA.	UK AIRPROX 136/2008. Conflict in Class G airspace resolved by the actions of the MD902 pilot.
21	26/01/09	Outbound MD87	(CTR)	A/C climbed above cleared level on NELSA SID.	MD87 on a NELSA SID with a stop altitude of 5000ft was observed climbing through FL53. Pilot reported descending, maximum level reached was FL56. ATC observed that the A/C appeared to be flying an incorrect SID. Two incorrect readbacks also received from crew.
22	10/02/09	Skyranger	7N (CTR)	Infringement of the LBA CTR.	Infringement of the LBA CTR by a Skyranger at 2500ft. Traffic info given.
23	19/03/09	C404	13WNW (CTA)	Infringement of the LBA CTA.	Infringement of the LBA CTA by a C404 at 3700ft. Traffic info given. Standard separation maintained.
24	24/03/09	Slingsby T67M	8NNW (CTR)	Infringement of the LBA CTR.	Infringement of the LBA CTR by a Slingsby T67M at 1100ft. Traffic info given. Standard separation maintained.
25	09/05/09	Outbound LJ35	(Class A)	A/C climbed above cleared level on LAMIX SID. No level readback on departure.	LJ35 on a LAMIX SID to FL70. A/C observed climbing through FL73. Pilot believed he was cleared to FL110. Standard separation maintained. The RT tape indicates that the pilot failed to quote his cleared level on departure. The controller failed to query this omission.
26	09/06/09	R44	3E (CTR,)	Infringement of the LBA CTR.	Infringement of the LBA CTR by an R44 at 1300ft. Standard separation maintained.
27	28/06/09	Saab 2000	8NW (CTA)	A/C descended below cleared altitude.	Saab 2000 given descent to 5000ft. A/C's first call on 123.75 was descending through 5000ft. ATC stopped descent at 4000ft. Standard separation maintained.
28	11/07/09	Unknown	9S (CTA)	Infringement of the LBA CTA.	Infringement of the LBA CTA by an unknown A/C at 2500ft. Standard separation maintained.
29	12/07/09	T6 Harvard	10S (CTA)	Infringement of the LBA CTA.	Infringement of the LBA CTA by a T6 Havard at an estimated 2800ft. Traffic info given.

Event	Date	LBA Ac Affected	Location from LBA	Nature of Event	Comment
30	14/07/09	C525	(CTR)	Incorrect approach profile flown by the C525.	Due to weather activity C525 elected to make a procedural ILS approach to R/W14, but failed to follow correct profile for approach. When queried C525 reported being at 6000ft instead of 4000ft. Standard separation maintained.
31	09/08/09	Jodel D120	(CTR)	Infringement of the LBA CTR.	Jodel D120 squawking 7000 allegedly infringed the LBA CTR twice. Standard separation maintained.
32	25/08/09	Bell 206	5NW (CTR)	Infringement of the LBA CTR.	Infringement of the LBA CTR by a Bell 206 squawking 7000 at 1000ft. Bell 206 on return journey again infringed the CTR. Standard separation maintained.
33	13/08/09	C421	14S (CTA)	Infringement of the LBA CTA by a C421 at 3400ft, 14nm South.	The C421 pilot contacted Leeds Radar, however, two way comms were not established. The A/C was instructed to squawk ident and remain outside CAS. Squawk 7000 was then observed to enter the CTA. Two way comms established 10nm South of Leeds/Bradford and the A/C issued with a VFR clearance.
34	07/11/09	SA350	(CTR)	Infringement of the LBA CTR.	Infringement of the Nottingham East Midlands and LBA CTR by an SA350 squawking 7000. Traffic info given. Standard separation maintained.
35	02/02/10	SA365	4S (CTR)	A/C climbed above cleared altitude.	SA365 cleared to climb to 3500ft. ATC then observed A/C climbing to 4000ft. A/C instructed to descend and maintain 3500ft. Standard separation maintained.
36	07/03/10	PA28	(CTA)	Infringement of the LBA CTA.	Infringement of the LBA CTA by a PA28 squawking 7000 at 3800ft. Traffic info given.
37	25/03/10	JS41	12NNW (CTA)	Infringement of the LBA CTA by a JS41 at FL60. Coordination issue between LBA and military ATCO.	Standard separation maintained. LBA had coordinated with a military ATC unit for the JS41 to avoid CAS and the controller was twice requested to remain outside CAS with the A/C. On the second occasion, the military controller was requested to go left with the JS41 but the A/C turned right and entered CAS.
38	27/03/10	PA28	7NW (CTR)	Infringement of the LBA CTR.	Infringement of the LBA CTR by a PA28 squawking 7000 at 2500ft. Standard separation maintained.
39	28/03/10	Military A/C	9W (CTA)	Infringement of the LBA CTA.	Infringement of the LBA CTA by a military A/C at 3500ft. Adverse weather conditions.
40	12/05/10	PA46	7/8SE (CTA)	Infringement of the LBA CTA.	Infringement of the LBA CTA by a PA46 at 3500ft. Standard separation maintained.

Event	Date	LBA Ac Affected	Location from LBA	Nature of Event	Comment
41	14/05/10	C182	(CTR)	A/C climbed above cleared altitude. Altimeter pressure setting error.	C182 cleared to 2000ft. ATC observed A/C at 2900ft.ATC questioned pilot who stated A/C was at 2300ft on QFE 984mb. Leeds QNH 1008mb. Standard separation maintained.
42	15/05/10	Bell 206	5SE (CTR)	Infringement of the LBA CTR.	Infringement of the LBA CTR by a Bell 206 squawking 7000 at 1500ft. Standard separation maintained. Pilot admitted to a navigational error.
43	20/05/10	R22	5NE (CTR)	Infringement of the LBA CTR. LBA departures were stopped.	Infringement of the LBA CTR by an R22 squawking 7000 at 2000ft. Standard separation maintained. Navigational error with an instructor on board.
44	27/05/10	Military A/C	7N (CTR)	Infringement of the LBA CTR.	Infringement of the LBA CTR by a military A/C at 4500ft. Standard separation maintained.
45	04/06/10	R400	11SE (CTA)	Infringement of the LBA CTA.	Infringement of the LBA CTA by a Robin 400 squawking 7000 at 3000ft. Pilot had previously requested a Basic Service and told to remain outside of CAS which was acknowledged.
46	10/07/10	EMB190	(CTR)	Controller coordination failure between MACC East and LBA.	'MACC East failed to coordinate A/C with Leeds and transferred the A/C to Manchester Approach descending to FL60 (within the LBA CTR). Manchester Approach informed Leeds Radar that the A/C was descending into their airspace, they stated they had nothing to affect.
47	13/07/10	AgustaA109	(CTA/CTR)	Infringement of the LBA CTA/CTR.	A/C squawking 7000 at 3000ft infringed the LBA CTA. A/C then descended and entered the CTR at 2000ft
48	02/08/10	Vans RV6	6.5W (CTA)	Infringement of the LBA CTA.	Infringement by a Vans RV6 squawking 7000. Standard separation maintained.
49	05/08/10	R44	8S (CTR)	Infringement of the LBA CTR.	Infringement by an R44 squawking 7000. Standard separation maintained.
50	22/08/10	C206	10S (CTA)	Multiple infringements of the LBA CTA.	Infringements by a C206 para-dropping A/C squawking 7000 at 3700ft. Standard separation maintained.
51	01/09/10	B737 Balloon	(CTR)	Balloon drifted through the LBA approach.	B737 received information from the Tower controller that a balloon was observed Southeast drifting through the approach. Crew were visual with the balloon and manoeuvred to increase separation.
52	20/09/10	C425	6SE (CTA)	Infringement of the LBA CTA by a C425 at 5000ft.	On leaving CAS, A/C was instructed to resume its own navigation and remain outside of CAS, contacting Doncaster Radar. The A/C was observed to re-enter CAS before turning E to leave again.

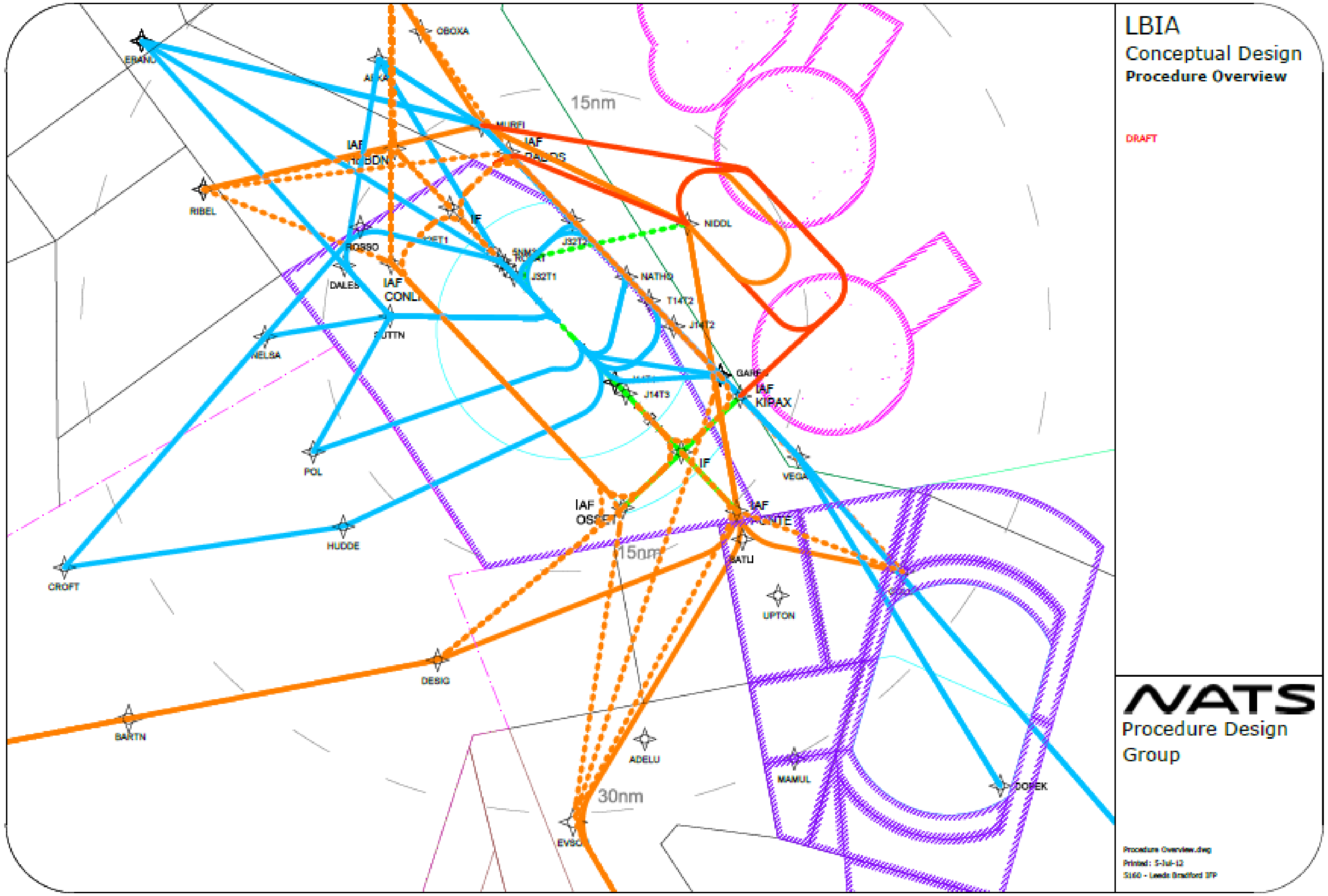
Event	Date	LBA Ac Affected	Location from LBA	Nature of Event	Comment
53	20/10/10	Military A/C	11NW (CTR)	Infringement of the LBA CTR.	Military A/C squawking 7000 infringed at 4300ft. A/C entered CAS 17nm from LBA and then turned NE to leave CAS. Standard separation maintained.
54	20/11/10	R44	8NW (CTR)	Infringement of the LBA CTR.	An R44 infringed at 1800ft, squawking 7000. Traffic info passed and standard separation maintained.
55	14/12/10	Military A/C X2	16SW (CTR)	Infringement of the LBA CTR by two military A/C climbing out of low level due bad weather.	To avoid departing traffic from R/W32, military A/C instructed to make a tight turn to the E, not above 4000ft. One A/C complied with the clearance, handed over to Doncaster. The second A/C was seen making a wide right turn and climb to 5000ft. It then squawked a Scottish military code, left the zone to the S, re-entered and left to the E.
56	24/02/11	Unknown A./C	12NNW (CTA)	Infringement of the LBA CTA.	Unknown A/C squawking 7000, infringed the CTA at 4000ft. Standard separation maintained.
57	08/03/11	Inbound DHC8 EMB135	6SE (CTA)	Loss of separation between inbound DHC8 and EMB135 A/C.	Whilst sequencing BE76 for ILS R/W32, separation was lost with inbound DHC8 and EMB135. Traffic info given. Leeds Approach Radar position was being operated by a mentor/trainee. The mentor did not realise the situation.
58	27/03/11	Outbound B737		A/C climbed above cleared level on POL SID. Crew were confused following a SID change.	B737 climbed to FL70 on POL SID against the SID climb restriction of 4000ft. The crew had initially briefed for the LAMIX SID at FL70 but were actually offered a POL SID with a stop altitude of 4000ft. Crew fatigue noted as a contributory factor.
59	08/04/11	PA28	11SE (CTR)	Infringement of the LBA CTA.	PA28 squawking 7000, infringed at 2900ft. Traffic info given. Standard separation maintained.
60	09/04/11	RV7	15S (CTA)	Infringement of the LBA CTA.	CTA infringed by a RV7 squawking 7000 at 4300ft. Two blind calls were made but no response. Standard separation maintained.
61	20/04/11	C404	8N (CTA)	Infringement of the LBA CTA.	Infringement by A/C squawking 0401 at FL80. Traffic info given and standard separation maintained. Inbound traffic given tactical deconfliction heading. Leeming advised they were providing a B/S and the A/C had been instructed to keep clear of the LBA CTA.
62	30/04/11		(CTR)	Heavy Tower Controller workload reported.	Reporter believed the controller to be overloaded, during which time there was callsign confusion and instructions included ‘expedite’. It was assessed that the RT loading was considered normal for the operation. The unit followed up the investigation with recommendations to only use "expedite" when there is a significant reason for doing so.

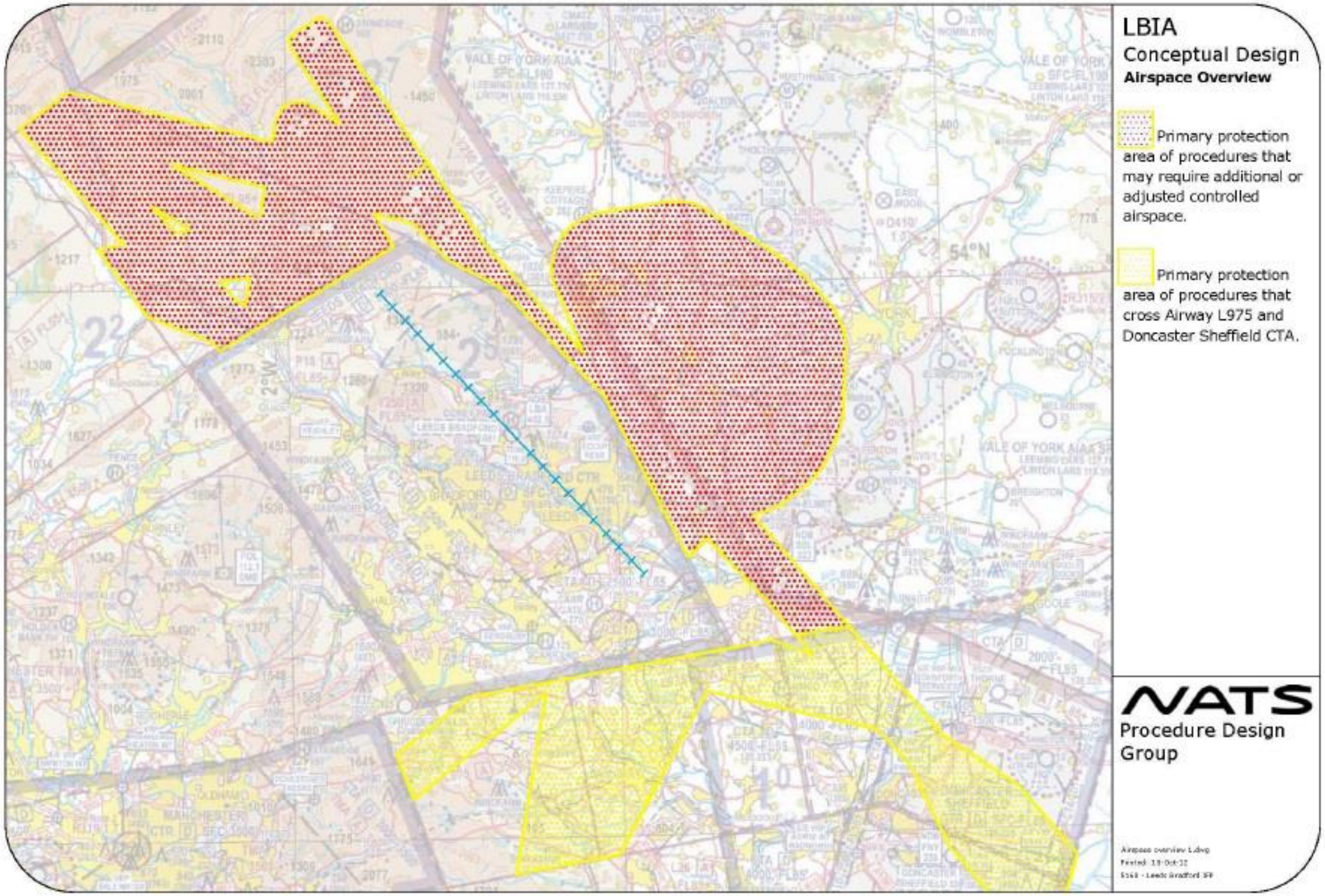
Event	Date	LBA Ac Affected	Location from LBA	Nature of Event	Comment
63	24/06/11	Inbound B737 AA5	(CTR)	Infringement of the LBA CTR. Inbound B737 broken off approach to R/W32.	Infringement by a Grumman AA5 squawking 7000 at 2700ft. Standard separation maintained. A/C instructed on Westerly track to avoid R/W32 final approach and other traffic.
64	31/08/11	PA28	3W (CTR)	Infringement of the LBA CTR.	A/C infringed the CTR, squawking 7000 at 2000ft. Standard separation maintained.
65	05/10/11	Inbound B737	15S (CTR)	ScACC controller coordination error. A/C cleared to descend below standard level.	B737 cleared to descend to FL80 was observed descending to FL60. Standard separation maintained. ScACC controller mistakenly descended the A/C to FL60, instead of FL80 as coordinated with the LBA controller.
66	03/02/12	Grumman AA5	4N (CTR)	Infringement of the LBA CTR.	A/C at 2000ft squawking 7000, infringed the CTR. Pilot informed of position. Standard separation maintained.
67	04/04/12	C206	15SE (CTR)	Infringement of the LBA CTR.	C206 infringed LBA CTR at 3500ft. Pilot requested CAS transit and told to remain outside CAS. On squawking 2677 A/C was identified inside CAS. Pilot informed, standard separation maintained.
68	25/05/12	DHC8	10NW	A/C descended below assigned altitude on approach.	DHC8 cleared descent to 3500ft. ATC observed A/C's Mode C showing 3300ft descending and queried. A/C was under vectors to the ILS R/W14. ATC then instructed to maintain 3000ft and, when LOC established, descend further with the glidepath.
69	28/05/12	DHC8		A/C descended below assigned altitude.	A/C turned to intercept extended centreline for R/W14, cleared to 3500ft. Descending to 3000ft, APP controller queried their descent altitude.
70	20/06/12	R44	12NW (CTA)	Infringement of the LBA CTA.	LBA CTA infringed by R44 at 3200ft squawking 0401. RAF Leeming were contacted.
71	29/06/12	A320	(TMA)	A/C climbed above cleared level on POL1X SID.	At 2700ft A/C, transferred from ADC, reported POL1X SID departure, climbing FL70, however, SID limit is 4000ft. ATC instructed A320 to maintain 4000ft on reaching.
72	14/07/12	Inbound B737 BE35	10S (CTA)	Separation lost between B737 descending through FL94 and BE35 westbound overflying at FL90. Controller coordination error.	PC North recognised the BE35 on track to FIWUD could come into conflict with the B737 LBA inbound. PC North coordinated inbound radar release on the B737 at FL100 subject to the BE35. B737 transferred to LBA Radar in the descent to FL100. When Leeds Radar judged 3nm between the A/C, the B737 was given further descent. Leeds Radar was not aware that PC required 5nm.
73	21/07/12	Unknown A/C	(CTR)	Infringement of the LBA CTA.	Unknown A/C squawking 7000 infringed LBA CTA, A/C indicating 3800ft. Standard separation maintained.

Event	Date	LBA Ac Affected	Location from LBA	Nature of Event	Comment
74	01/11/12	AS355	8N (CTR)	Infringement of the LBA CTA.	A/C infringed at 1800ft, squawking 7000. Blind call elicited a response. Standard separation maintained.
75	06/12/12	B737	6SW (CTA)	A/C descended below cleared altitude. Altimeter setting error.	A/C cleared descent to 3500ft on QNH of 996mb, observed indicating 3000ft Mode C. Standard separation maintained. Altimeter set on the standard setting, 1013mb.
76	08/01/13	Military A/C	12NNW (CTA)	Infringement of the LBA CTA, resulting in avoiding action for a LBA outbound A/C.	Military A/C infringed LBA CTA at 3500ft. ATC attempted to make contact with the military A/C to no avail. Separation minima was maintained.
77	17/02/13	PA28	13SE (CTA)	Infringement of the LBA CTA.	PA28 infringed at 3600ft. Pilot advised and given transit clearance. Standard separation maintained.
78	19/01/13	Military A/C	12NW (CTR)	Infringement of the LBA CTR.	Military A/C indicating 3800ft, infringed the LBA CTR 12 miles NW. Standard separation maintained.
79	19/02/13	Military A/C	12NW (CTR)	Infringement of the LBA CTR.	Military A/C infringed the LBA CTR at 4400ft. Standard separation maintained.
80	31/03/13		(CTA)	Infringement of the LBA CTA.	A/C infringed at 4000ft. Over an hour later, the same A/C infringed in the same area. The A/C was instructed to leave CAS. Separation minima was maintained.
81	18/04/13	Inbound MAP B737	(CTR)	B737 climbed above cleared level following the MAP. Altimeter pressure setting error.	Following a go-around, the B737, cleared to FL80, climbed to reach approx FL85. The incorrect QNH was noted, the pilot had omitted to 'set standard'. The B757 was unable to land at Leeds and had been diverting. Contributory factors cited as additional ATC exchange coupled with high workload.
82	01/05/13	R44	12NW (CTA)	Infringement of the LBA CTA.	An R44 infringed at 3400ft. Pilot was informed of the infringement. No other A/C were in the area.

Leeds Bradford® Airport

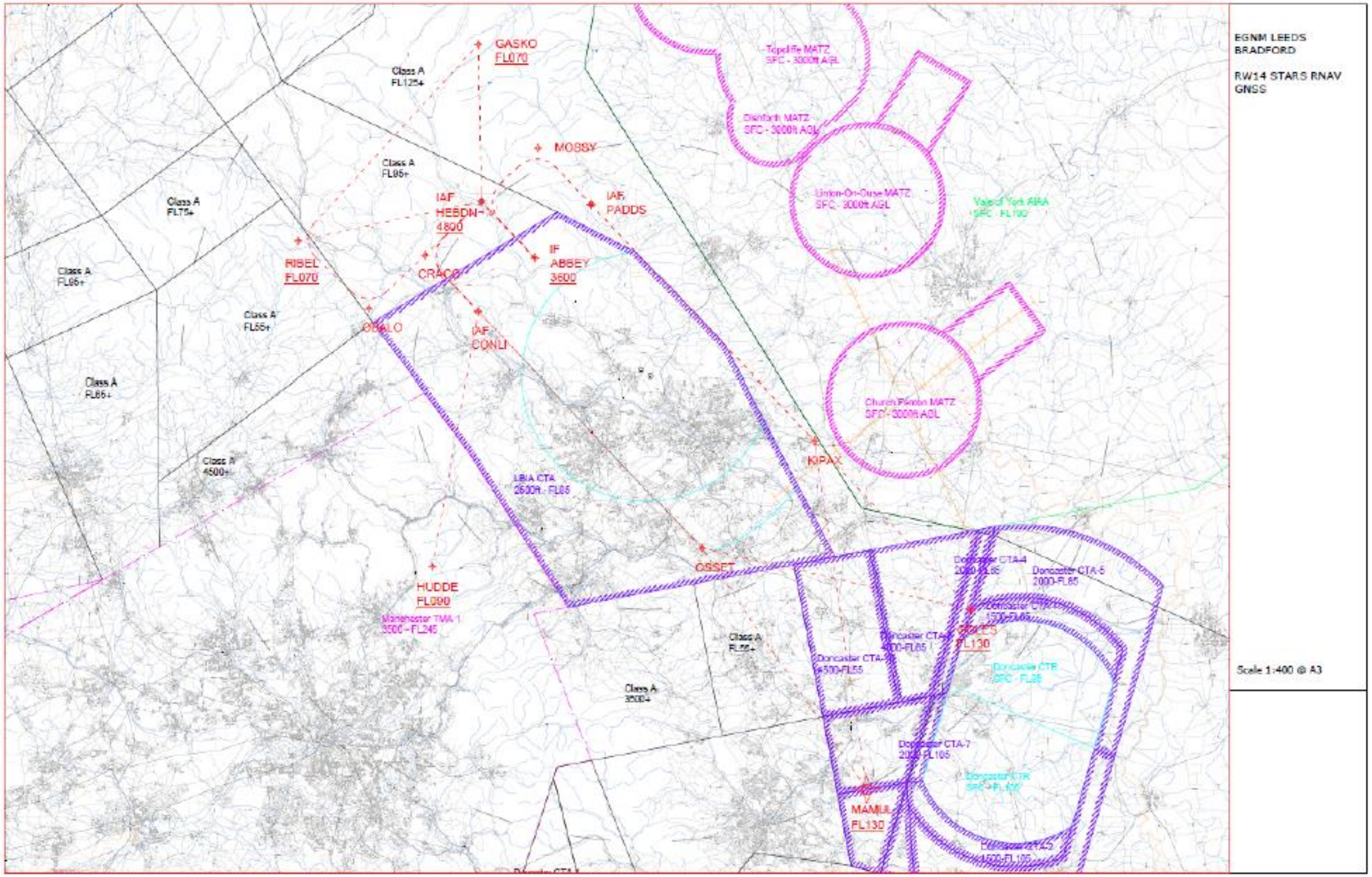
Initial Conceptual Designs

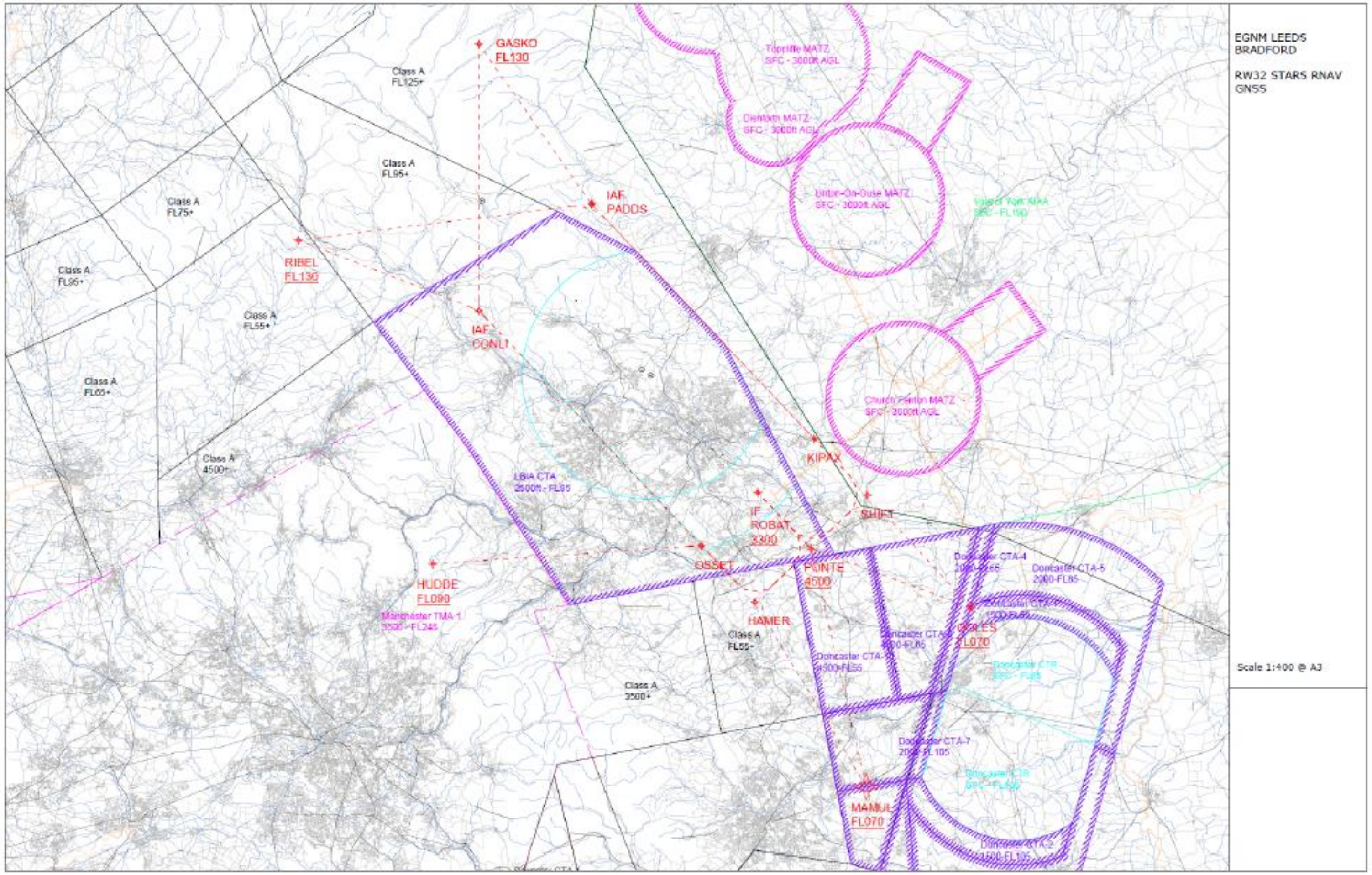



LBIA
Conceptual Design
Airspace Overview
Primary protection area of procedures that may require additional or adjusted controlled airspace.
Primary protection area of procedures that cross Airway L975 and Doncaster Sheffield CTA.
NATS
Procedure Design Group

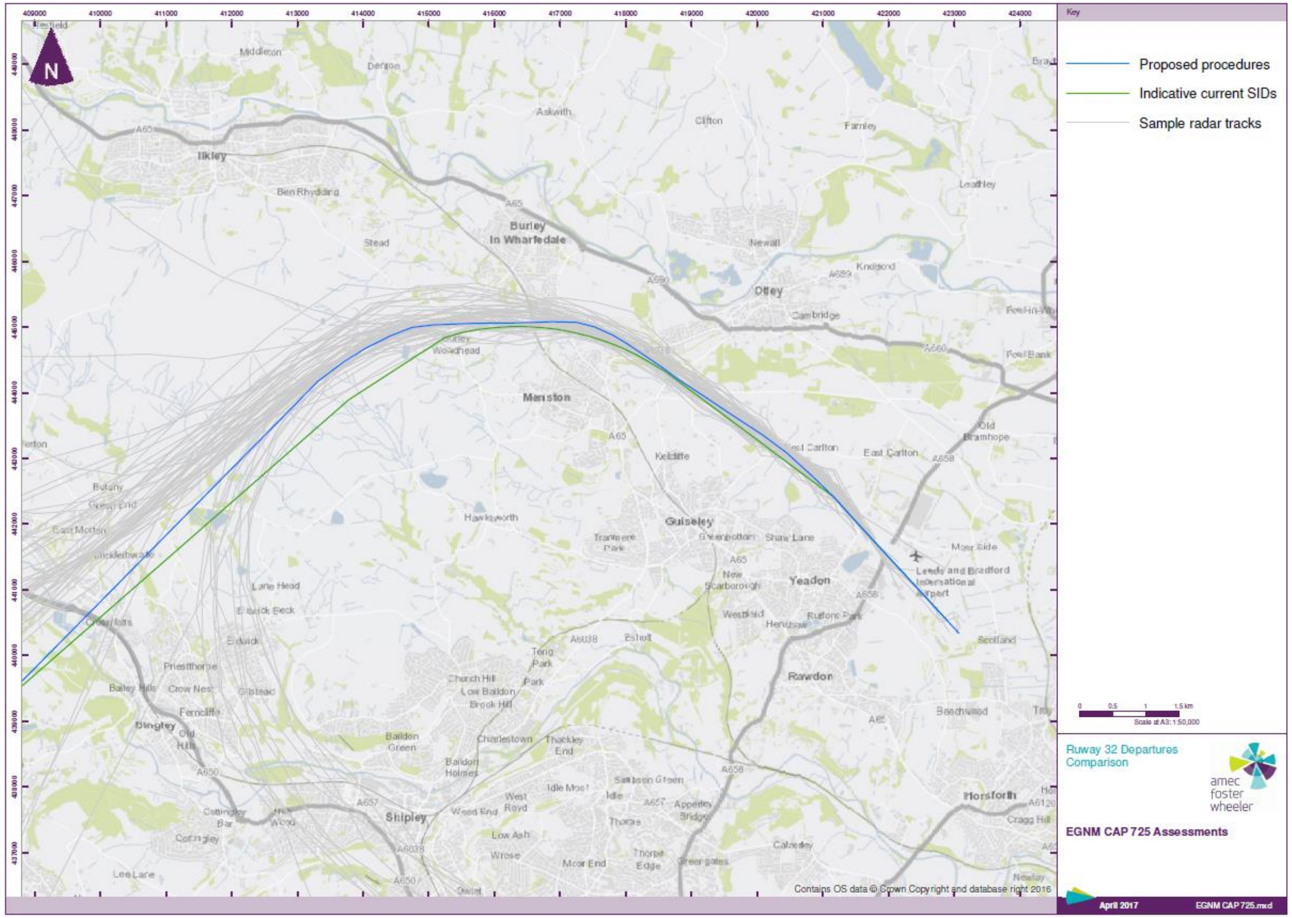
Leeds Bradford Airport

Interim Designs

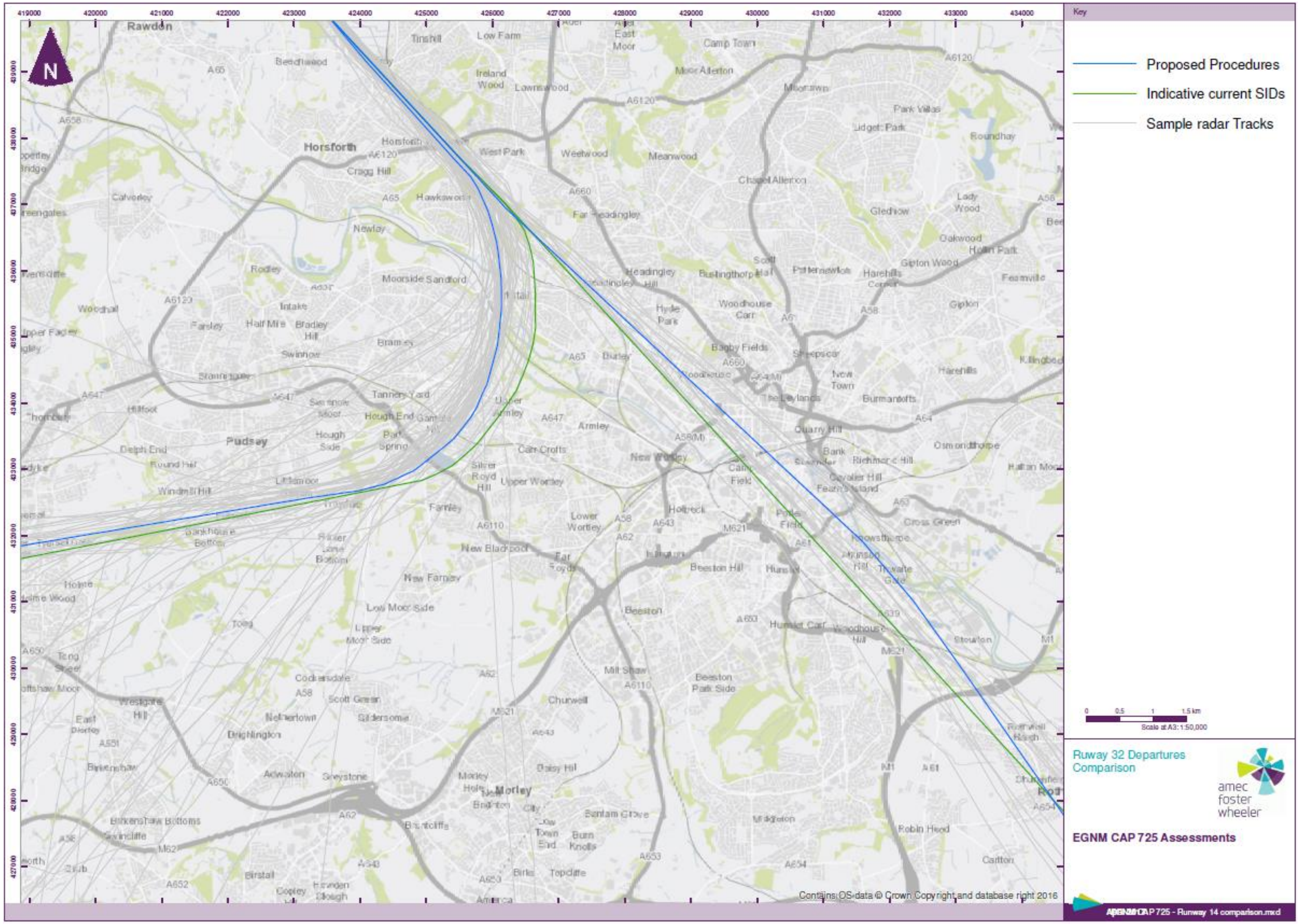



EGNM LEEDS BRADFORD
RW32 STARS RNAV GNSS
Scale 1:400 @ A3
GASKO
FL130
IAF
PADDS
RIBEL
FL130
IAF
CONLI
KIPAX
IF
ROBAT
3300
OSSET
PONTE
4500
HUDDE
FL090
HAMER
MAMUL
FL070
LBIA CTA
2500ft - FL85
Class A
FL125+
Class A
FL95+
Class A
FL75+
Class A
FL95+
Class A
FL55+
Class A
FL65+
Class A
4500+
Class A
FL55+
Class A
3500+
Topcliffe MATZ
SFC - 3000ft AGL
Dishforth MATZ
SFC - 3000ft AGL
Linton-On-Ouse MATZ
SFC - 3000ft AGL
Church Fenton MATZ
SFC - 3000ft AGL
Manchester TMA 1
Doncaster CTA-4
Doncaster CTA-5
Doncaster CTA-7

Proposed Procedure Models



Proposed Procedures vs Sample Radar Tracks for Runway 32.



Proposed Procedures vs Sample Radar Tracks for Runway 14.

Airspace Co-ordinates

Please note:

All coordinates will be rounded as appropriate when converting from degrees decimal to degrees, minutes and seconds, and vice versa. It should be noted that straight lines between points may be subject to minor variance in ground track when plotted on charts of differing projections, due to the curvature of the surface of the earth. Every effort has been made to ensure the accuracy of the information provided within these limitations.

CTR 1

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	54.043333	-1.816667	SFC	FL85	
2	53.998611	-1.674167			
3	53.896667	-1.516667			
4	53.745494	-1.39079			
5	53.866023	-1.66077			Arc clockwise 12 NM
6	53.675606	-1.559308			
7	53.944247	-1.972539			
8	53.866023	-1.66077			Arc clockwise 12 NM
1	54.043333	-1.816667			

CTR 2

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	54.056422	-1.762791	SFC	FL125	
2	53.998611	-1.674167			
3	54.043333	-1.816667			
4	53.866023	-1.66077			Arc clockwise 12 NM
1	54.056422	-1.762791			

CTR 3

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	53.896667	-1.516667	SFC	FL125	
2	53.78688	-1.350256			
3	53.866023	-1.66077			Arc clockwise 12 NM
4	53.745716	-1.390972			
1	53.896667	-1.516667			

CTA 1

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	54.043333	-1.816667	3,000 ft	FL85	
3	53.866023	-1.66077			Arc anticlockwise 12 NM
4	53.944247	-1.972539			
5	53.970981	-2.013813			
6	53.866023	-1.66077			Arc clockwise 14 NM
7	53.978093	-2.007494			
1	54.043333	-1.816667			

CTA 2

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	54.060717	-1.878072	3,000 ft	FL95	
2	54.043333	-1.816667			
3	53.978093	-2.007494			
4	53.866023	-1.66077			Arc clockwise 14 NM
1	54.060717	-1.878072			

CTA 3

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	54.083191	-1.803904	3,000 ft	FL125	
2	54.056422	-1.762791			
3	53.866023	-1.66077			Arc anticlockwise 12 NM
4	54.043333	-1.816667			
5	54.060717	-1.878072			
6	53.866023	-1.66077			Arc clockwise 14 NM
1	54.083191	-1.803904			

CTA 4

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	53.78688	-1.350256	3,000 ft	FL125	
2	53.76011	-1.309433			
3	53.866023	-1.66077			Arc clockwise 14 NM
	53.712889	-1.363699			
6	53.745716	-1.390972			
7	53.866023	-1.66077			Arc anticlockwise 12 NM
1	53.78688	-1.350256			

CTA 5

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	53.745494	-1.39079	3,000 ft	FL85	
2	53.712889	-1.363699			
3	53.866023	-1.66077			Arc clockwise 14 NM
4	53.648873	-1.518334			

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
5	53.675606	-1.559308			
6	53.866023	-1.66077			Arc anticlockwise 12 NM
1	53.745494	-1.39079			

CTA 6

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	53.886667	-1.883056	2,500 ft	3,000 ft	Lies beneath CTA 15
2	53.733056	-1.646389			
3	53.866023	-1.66077			ARC anticlockwise of 8 NM
1	53.886667	-1.883056			

CTA 7

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	54.092687	-1.991079	3,500 ft	FL95	
2	54.060717	-1.878072			
3	53.866023	-1.66077			Arc anticlockwise 14 NM
4	53.978093	-2.007494			
5	53.9275	-2.155278			
6	53.973889	-2.211944			
1	54.092687	-1.991079			

CTA 8

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	54.171667	-1.843889	3,500 ft	FL125	
2	53.992861	-1.550971			
3	53.76011	-1.309433			

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
4	54.083191	-1.803904			
5	53.866023	-1.66077			Arc anticlockwise of 14 NM
6	54.060717	-1.878072			
7	54.092687	-1.991079			
1	54.171667	-1.843889			

CTA 9

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	53.992861	-1.550971	3,500 ft	FL125	Lower Limit FL055 0900-1800
2	53.694167	-1.064444			
3	53.692787	-1.078774			
4	53.719003	-1.270858			
1	53.992861	-1.550971			

CTA 10

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	53.758353	-1.310978	3,500 ft	FL125	Lower Limit 4,000 ft 0900-1800
2	53.719003	-1.270858			
2	53.692787	-1.078774			
3	53.668611	-1.326944			
4	53.712889	-1.363699			
5	53.866023	-1.66077			Arc anticlockwise of 14 NM
1	53.758353	-1.310978			

CTA 11

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	53.712889	-1.363699	3,500 ft	FL85	
2	53.668611	-1.326944			
3	53.648873	-1.518334			
4	53.866023	-1.66077			Arc anticlockwise of 14 NM
1	53.712889	-1.363699			

CTA 12

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	53.694167	-1.064444	3,500 ft	4,000 ft	Airspace released 0900-1800
2	53.605703	-1.111486			
3	53.592906	-1.241262			
4	53.675	-1.263889			
1	53.694167	-1.064444			

CTA 13

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	53.675	-1.263889	3,500 ft	4,500 ft	Lower Limit 4,000 ft 0900-1800
2	53.592906	-1.241262			
3	53.579239	-1.37843			
4	53.661389	-1.401389			
1	53.675	-1.263889			

CTA 14

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	53.661389	-1.401389	3,500 ft	FL55	Lower Limit 4,000 ft 0900-1800
2	53.579239	-1.37843			
3	53.561111	-1.560833			
4	53.642711	-1.584939			
1	53.661389	-1.401389			

CTA 15

Point	Lat (dec)	Long (dec)	Lower Limit	Upper Limit	Notes
1	53.978093	-2.007494	3,000 ft	FL85	
2	53.866023	-1.66077			ARC anticlockwise of 14 NM
3	53.970981	-2.013813			
4	53.648873	-1.518334			
5	53.620278	-1.808333			
6	53.790556	-1.986944			
7	53.9275	-2.155278			
1	53.978093	-2.007494			