



Blackbushe Airport Consultation

Introduction of Instrument Flight Procedures

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1, The Bullpens, Manor Court, Herriard, Basingstoke, RG25 2PH
01420 520200 / enquiries@ospreycl.co.uk
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About this Consultation

Blackbushe Airport is proposing to invest in the provision of new defined flight paths in order to improve certainty of operations for aircraft using the airport. The new Instrument Approach Procedures (IAPs) are aimed at reducing the number of diversions due to weather and will help us ensure that the airport keeps up with advances in navigation technology. We have drawn up our proposal for the new IAPs and we would like to consult the local community, including our neighbours, local councils and the aviation community.

The consultation period ends on 6th October 2017.

Once we have analysed the responses, Blackbushe Airport will consider making changes to the proposal and then submit a final scheme for consideration by the Civil Aviation Authority (CAA).

This Consultation Document is an important part of the regulatory process and is designed to give you enough information to decide how the changes might affect you individually. Here we explain what RNAV is, how it works and provide a description of the tracks flown by aircraft using the IAPs.

There is a feedback form at the back of this document; we welcome your questions, comments and thoughts. Osprey Consulting Services Ltd (Osprey) is managing the consultation on our behalf and the contact details for you to submit your response to are on the form.

The Deadline for responses is Friday 6th October 2017

On behalf of Blackbushe Airport and Osprey, thank you very much for taking the time to read and respond to this consultation. We look forward to hearing from you.

Mick Lambert

Aerodrome Manager, Blackbushe Airport

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1 Introduction

1.1 About Blackbushe Airport

Blackbushe Airport is located near Camberley on the borders of Hampshire, Berkshire and Surrey; perfectly located for quick access to central London, the Thames Valley and the south of England. This makes us an attractive option for private and business jet users, being convenient, quick and more cost-effective than the other London Airports.

For those with an aspiration to learn to fly, we have flying schools offering fixed wing and helicopter training. We also have superb facilities for aircraft owners and visiting groups.

Our runway is aligned southwest-northeast with the north-easterly runway designated as Runway 07¹: aircraft land and take off from this runway on a bearing of 071°. Aircraft generally land and take off into the wind and so if the wind favours it, aircraft use the runway in the south-westerly direction, designated Runway 25 on a bearing 251°. Due to prevailing winds, the majority of our traffic takes off on Runway 25.

Blackbushe Airport recognises it has a duty of care to the communities affected by our day-to-day operations and we are particular about noise. The villages of Bramshill, Hazeley, Eversley, Yateley, Blackwater and Hartley Wintney are all marked as exclusion zones on our airport information; these are areas that we require pilots, including visitors, to avoid flying over except in an emergency.

1.2 What is in this document?

This section is **Section 1** the introduction and we aim to describe the document and what you will find inside.

Section 2 gives an overview of what Area Navigation (RNAV) is and what the benefits of it are to the aviation industry. It also sets out the scope of the consultation; what is included and what is excluded.

Section 3 explains why we are consulting the community; Blackbushe Airport is committed to engaging with our neighbours and there are legislative processes we are required to follow that can help us to do this.

Section 4 tells you who we are consulting and how you can participate. You can attend our public drop in session at the airport or submit your comments in writing; this section tells you when the meeting is, how to get there and where to send your comments if you cannot make it in to see us.

Section 5 presents the options we considered. We could do nothing, but we feel that RNAV is a technology worth investing in to improve safety, efficiency and certainty for our users.

¹ The runway designator is the two digit number painted on the threshold (or touchdown point) at the end of each runway. It can easily be seen from the air and indicates the runway bearing to the nearest 10°.

Section 6 presents the proposed RNAV procedures. You can see the routes that some aircraft will use to land at Blackbushe. You can also see images relating to the interaction of these routes and the operations of other aerodromes and airports in the area.

Section 7 contains the information that most of our neighbours will be interested in: Noise. We have also included some information on other environmental considerations, CO₂ emissions and visual impact for example.

There are two Annexes to this report: **Annex A1** includes information on who we are consulting. **Annex A2** contains the draft RNAV procedure charts; these will form the basis for the publication of the routes for all aviation users.

2 What is this consultation about?

2.1 Overview

This consultation concerns the introduction of new Instrument Approach Procedures (IAP) for aircraft flying into Blackbushe Airport. In lay-terms, IAPs are a published series of predetermined flight manoeuvres conducted through reference to flight instruments (on-board the aircraft). The IAPs we wish to introduce provide defined paths to be flown by aircraft on the final stage of flight when they approach and land at the destination airport. Missed Approach Procedures² associated with the new IAPs and a hold pattern will also be published.

The changes are primarily concerned with the manner in which aircraft navigate the routes from an on-board system point of view. More information on how this works is given in the paragraphs below.

2.2 RNAV – What is it and why is it better than traditional navigation?

New technology known as Area Navigation (RNAV) is available to aircraft that enables them to fly far more accurate and consistent routes into airports in the UK and globally. Changes to UK legislation are driving the implementation of this technology. There are many benefits associated with RNAV routes, to the airlines, the economy and the environment; faster turnaround times, fewer miles flown and less fuel burned. The industry hopes that increasing the efficiency of flying operations using the new technology, will ultimately contribute to reduced CO₂ emissions.

As well as the legislative changes, there are funding opportunities available to aircraft operators to encourage the implementation of the new navigation technology, and airports across the UK are implementing the new types of route in order to service RNAV equipped aircraft. Blackbushe Airport would like to do the same; the new IAPs would enable aircraft to land safely at Blackbushe in lower visibility conditions, thus improving the certainty of operations for aircraft based at the Airport.

Traditionally, aircraft navigate a route by flying to, or away from a sequence of ground-based navigation beacons. When they reach the destination airport, they pass over the beacon located at the airfield, flying a tear-drop shaped path to turn around and make their final approach to the runway.

RNAV – aRea NAVigation allows an aircraft to navigate using Global Navigation Satellite Systems (GNSS) instead of the ground-based beacons. GNSS refers to a constellation of satellites providing signals from space that provide positioning and timing data to GNSS receivers. The receivers then use this data to determine location. We are all familiar with ‘GPS’ and many of us use this system on our mobile phones

² A Missed Approach Procedure is the procedure a pilot follows if he is unable to continue with an approach; it is a published track to follow with climb instructions.

and ‘satnavs’ every day; the USA’s NAVSTAR Global Positioning System (GPS) is an example of GNSS.

Figure 1 presents a simple illustration of the difference between navigation using ground based beacons, and navigation using the principles of RNAV. The blue line shows the point to point navigation via beacons with the tear-drop shaped IAP in a blue dashed line; the yellow line shows a direct route ending in a T-bar shaped RNAV IAP. RNAV procedures are typically T-bar shaped allowing approaches from either side of the runway.

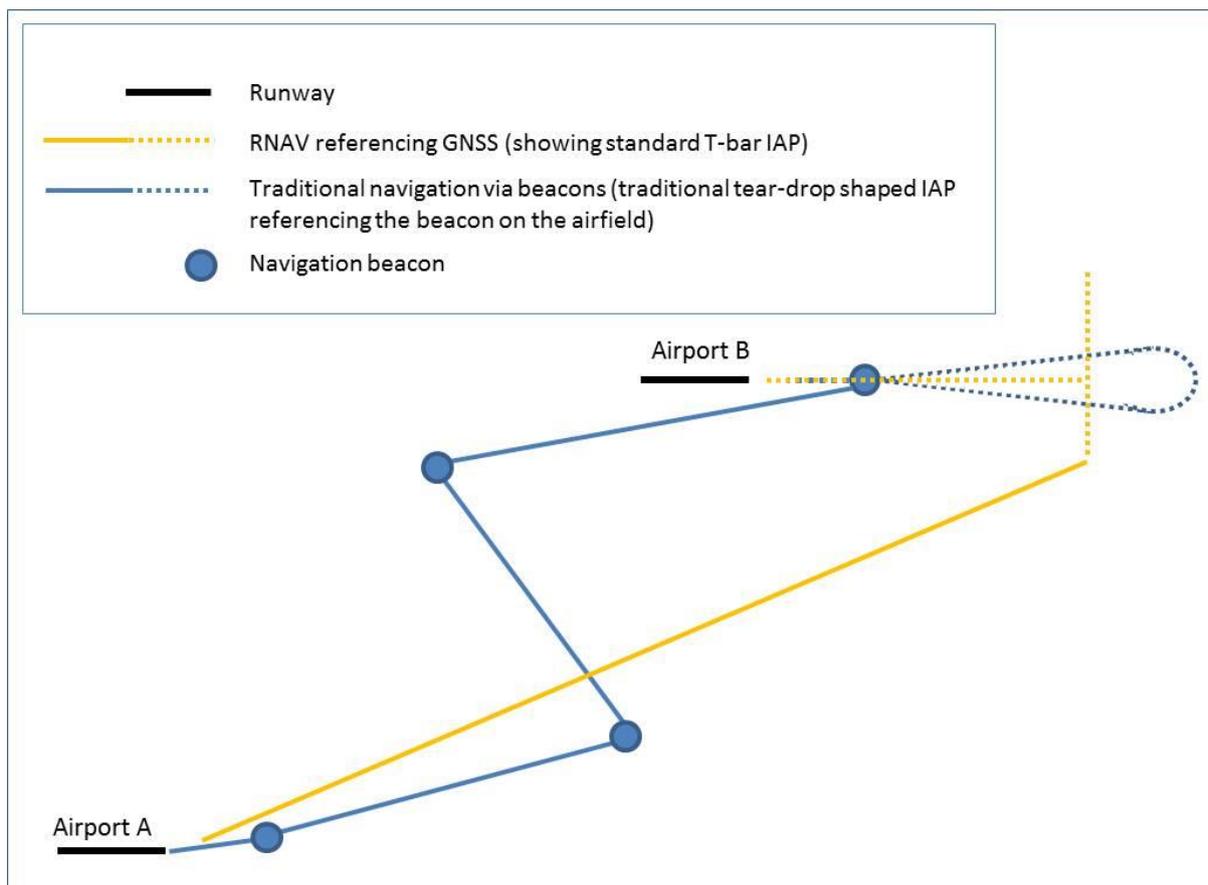


Figure 1 Ground-based beacon navigation versus RNAV illustration

2.3 Where to find more information on RNAV

Detailed technical information on the principles of RNAV and other Performance Based Navigation (PBN) concepts is available on the EUROCONTROL website at:

- <http://www.eurocontrol.int/articles/performance-based-navigation-pbn-applications>

and via the CAA Website at:

- <https://www.caa.co.uk/Commercial-industry/Airspace/Future-airspace-strategy/Performance-based-navigation/>

and via the European Global Navigation Satellite Systems Agency (GSA) which explains more about GNSS and its application to various business sectors:

- <https://www.gsa.europa.eu/european-gnss/what-gnss>

Information for private and general aviation aircraft pilots on flying RNAV procedures is available here in CAA Publication CAP773:

- <https://publicapps.caa.co.uk/docs/33/CAP773FINAL.pdf>

2.4 Why implement RNAV flight procedures

The move to RNAV technology is in accordance with national and international initiatives to improve the navigational performance of aircraft.

Airspace is a limited resource in the UK and Ireland, and the initiative will ensure that all airspace users including military, civil airlines (freight carriers and passenger transport) and leisure flyers can continue to share and benefit from this resource efficiently and safely. The CAA Future Airspace Strategy (FAS) sets out the plan to modernise UK and Irish airspace by 2020 in line with the legislative framework of the Single European Sky³ – a move to simplify and harmonise the airspace and air traffic control use throughout Europe.

There are inherent safety and cost benefits to the use of RNAV:

- Safer and more efficient Air Traffic Control (ATC) services; less controller intervention to separate and re-route aircraft that have come into conflict with one another.
- More accurate routes are flown making it easier to predict flight patterns, and offering greater stabilisation of aircraft on approach. Stabilised approaches are safer and can generate less noise as aircraft perform fewer corrections to their navigation profile.
- Greater operational efficiency; accurate track keeping means less fuel burned, fewer flying hours and lower CO₂ emissions.

2.5 Where can I see the new routes?

The new routes are described in Section 6 of this document, entitled 'The Proposal'. Maps are provided, which may enable you to check if the routes pass over your house, and larger maps and tools will be available at the public drop in session at Blackbushe Airport on 7th August 2017; please see the invitation on our website at <http://www.blackbusheairport.co.uk/consultation>.

2.6 What is this consultation NOT about?

This consultation is not about changes to operating hours, airport buildings, infrastructure, or access to the Airport. It is also not about increases in air traffic, road traffic or expansion of the airport.

³ More information on the Single European Sky can be found at <http://www.eurocontrol.int/dossiers/single-european-sky>

The introduction of RNAV does not influence or change the number of aircraft able to use the airport and traffic numbers are not expected to increase as a consequence of the change.

2.7 Summary

This consultation is about the following:

- Two approach procedures for aircraft arriving at Blackbushe Airport – one per each end of the runway - including missed approach procedures and a holding pattern.

3 Why consult?

3.1 Overview

Blackbushe Airport is keen to ensure that benefits delivered in support of the airport operations should not have a detrimental effect on the local community and aviation stakeholders.

We endeavour to balance the needs of all parties during the development of our proposal, but there may be some aspect of the local environment affected by these changes that we are not aware of. We are, therefore actively seeking the views of those that might be affected to ensure we have a full understanding of the implications of the proposed changes and can minimise any adverse impacts, should it be within our power to do so.

3.2 Consultation requirements and legislation

In order to introduce RNAV IAPs, Blackbushe Airport is implementing the mechanisms provided in CAA Civil Aviation Publication 1122 *Application for Instrument Approach Procedures to Aerodromes without and Instrument runway or Approach Control* [Reference 1]. For reasons pertaining to the complexity of the local airspace environment, Blackbushe Airport is also required to follow 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 proposal that we submit to the CAA for approval.

In determining whether to approve the proposal, 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 2012⁴. 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;
- Facilitate the integrated operation of air traffic services provided by or on behalf of the armed forces of the Crown.

⁴ <https://www.caa.co.uk/Our-work/Corporate-reports/Strategic-Plan/Our-statutory-duties/> [Accessed 7th February 2017].

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

3.3 Consultation Process Concerns

The CAA's Safety and Airspace Regulation Group will oversee this consultation to ensure Blackbushe Airport 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 you should not use these contact details to respond to the consultation: they are for **non-adherence to the consultation process complaints only**. Send your comments on the consultation content (the proposed procedures) direct to Blackbushe Airport; Section 4 of this document contains details of how to respond to the consultation.

4 Who is being consulted and how do I participate?

4.1 Aim

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.

We are making this consultation document available to stakeholders on the Airport website, advertising it through local media outlet Get Hampshire, and providing hard copies by post on request. Details of the proposal will be available at a public drop in session at the Airport.

4.2 Who is Being Consulted?

In meeting the Airport's aim to consult as many affected stakeholders as possible, we are approaching those that use the airspace surrounding Blackbushe Airport and those that live in the surrounding area. Annex A1 contains a full list of the individual organisations that we are contacting directly. In summary, the following organisations or stakeholder groups have been included:

- Farnborough International Airport
- Popham Airfield
- Local and general aviation aerodromes
- Local Councils:
 - Hart District Council
 - Eversley Parish Council
 - Yateley Parish Council
 - Yateley Town Council
- Aircraft owners and flying schools at Blackbushe Airport
- Principal airspace users and stakeholders as represented on the National Air Traffic Management Advisory Committee (NATMAC)

4.3 How do I Submit my Response?

4.3.1 Options

There are several ways to submit your response:

- Email: through a dedicated email address, and via our website
- Post
- In person: at our public drop in session

4.3.2 Email

The dedicated email address for consultation responses, and for any questions is as follows:

Blackbushe@ospreycl.co.uk

Please use this phrase in your email subject field: **Consultation Response.**

4.3.3 Post

Osprey Consulting Services Limited (Osprey CSL) is supporting Blackbushe Airport in our consultation activities and in submitting the proposal to the CAA. Please send your postal response to:

Blackbushe Consultation Coordinator

Osprey Consulting Services Ltd
1 The Bullpens
Manor Court
Herriard
Basingstoke
RG25 2PH

4.3.4 Public drop in session

We are hosting a public drop in session at the Airport to present information on the proposal. The submission of written feedback during these meetings would be very welcome. The date for the public drop in session is **7th August 2017** and you are welcome to come and see us **between 2pm and 7pm**. Details of where it is being held, how to get there, and what to expect is included on the invitation at:

<http://www.blackbusheairport.co.uk/consultation>

4.3.5 Aviation Stakeholder Meetings

If you are a tenant at Blackbushe Airport, or the owner/operator of an aircraft, aerodrome or airport that might be affected, you should have received a separate invitation via email or our notice boards to an Aviation Stakeholders Meeting at Blackbushe Airport. This meeting is scheduled during early August and if you believe you should have received an invite but have not seen it please email us urgently on blackbushe@ospreycl.co.uk.

You are also very welcome to attend the public drop in session on 7th August between 2pm and 7pm.

4.4 What do I Include in My Response?

We would 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 we have reached a representative proportion of consultees, so a 'no comment' is very useful to us.

4.5 What will happen to my Response?

We will treat all responses confidentially and details of respondents will be shared only with our consultants, Osprey CSL, and with 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 submission.

We will record, collate and analyse all responses in order to identify the key issues and themes that emerge. An assessment will determine if the proposal can be modified to take these issues into account.

We will respond to all comments or questions received by 5pm on the last day of the consultation period - see section 4.5 for deadline.

4.6 How will I know the Result of the Consultation?

We will publish a Feedback Report on the Airport website within 1 month of the closure date of the Consultation Period.

4.7 Deadline for Responses

This Consultation will close at 5pm on **Friday 6th October 2017** and we request that all responses be delivered by this date.

5 Options considered

5.1 Option 0: Do Nothing

Current operations at Blackbushe Airport are all Visual Flight Rules (VFR) i.e. the pilot must look out of the window to avoid other traffic, and use visual reference points to navigate and to line up for the runway. Instrument Flight Rules (IFR) allows the pilot to navigate using on-board instruments, thus enabling flight in low visibility conditions.

Blackbushe airport has annual movements of between 40,000 and 50,000⁵. The majority of these are training flights associated with the flying schools based at Blackbushe however, around 300 of the planned arrivals are very light jet aircraft operating in the air taxi role. These aircraft and the air taxi services are provided by a commercial organisation.

There around 30 weather diversions per year (10%) i.e. the aircraft has to land at a different airfield due to impaired visibility conditions that prevent a VFR recovery, and lack of instrument procedures at Blackbushe. Around 20 of these are planned diversions, i.e. the weather conditions are known in advance with the rest being unplanned. A diversion, depending on the available diversion aerodrome can cost in the order of £1000-1500.

Customers fly to Blackbushe Airport because shortly after landing they can be in a car and off to their final destination, often west London. Farnborough, in particular at weekends is prohibitively expensive as a diversion, or not available because of planning restrictions, and so the common options are Southampton, Biggin Hill, or Luton. From a customer's point of view, these diversions, particularly unplanned diversions, affect the appeal of using the air taxi service to Blackbushe owing to the additional road travel time to west London. Diversions also have a negative impact on the environment as of result of the additional fuel burn.

The 'do-nothing' option has been discounted on economic and environmental grounds.

5.2 Option 1: Full Instrument Landing System

Blackbushe Airport discounted the option for installing an Instrument Landing System (ILS) to enable full instrument approaches in (almost) all weather conditions as this option would be prohibitively expensive for an Airport of the size and aspiration of Blackbushe.

⁵ One movement is equal to either a single departure or a single arrival event.

5.3 Option 2: Introduce RNAV Procedures

Introducing an RNAV (GNSS) approach at Blackbushe could safely deliver an aircraft in instrument meteorological conditions to a point at which it can obtain the necessary visual reference to make a safe landing, or carry out a missed approach climbing to a safe en-route altitude.

The use of RNAV will convert at least some of the 30 weather diversions into successful landings at Blackbushe. Given the likely achievable aerodrome operating minima, some of these flights will still be planned to land at other aerodromes for example when there is fog or very low cloud base at Blackbushe.

The RNAV procedures would initially only be used by commercial operations currently based at the airport and would not be used in good weather or for training purposes. It is therefore likely that the proposed IAPs will be used less than 30 times per year thus minimising any perceived impacts on other aviation users.

Option 2 has the additional benefit of preparing Blackbushe Airport for the increasing use of RNAV technology beyond the UK. The implementation of RNAV procedures is being part-funded by the European Union, encouraging aircraft owners and airport operators to make use of the new technology across Europe.

Current expectations in the industry are that RNAV will gradually displace traditional navigation methods and technology in the years to come, and Option 2 would ensure that Blackbushe Airport is prepared.

Option 2 is our preferred solution.

6 The Proposal

6.1 The New RNAV Flight Procedures

Blackbushe Airport is seeking to introduce two RNAV IAPs specifically the establishment of GNSS based procedures for aircraft categories A and B only, for runway 07 and 25.

6.2 Procedure Design Overview

Blackbushe Airport has employed the services of a CAA-approved procedure design organisation, gCAP Ltd to develop the IAPs. The procedures are compatible with existing VFR procedures and have been designed in accordance with criteria detailed in ICAO PANS-OPS Doc 8168 Vol II [Reference 3].

6.3 Airspace Environment

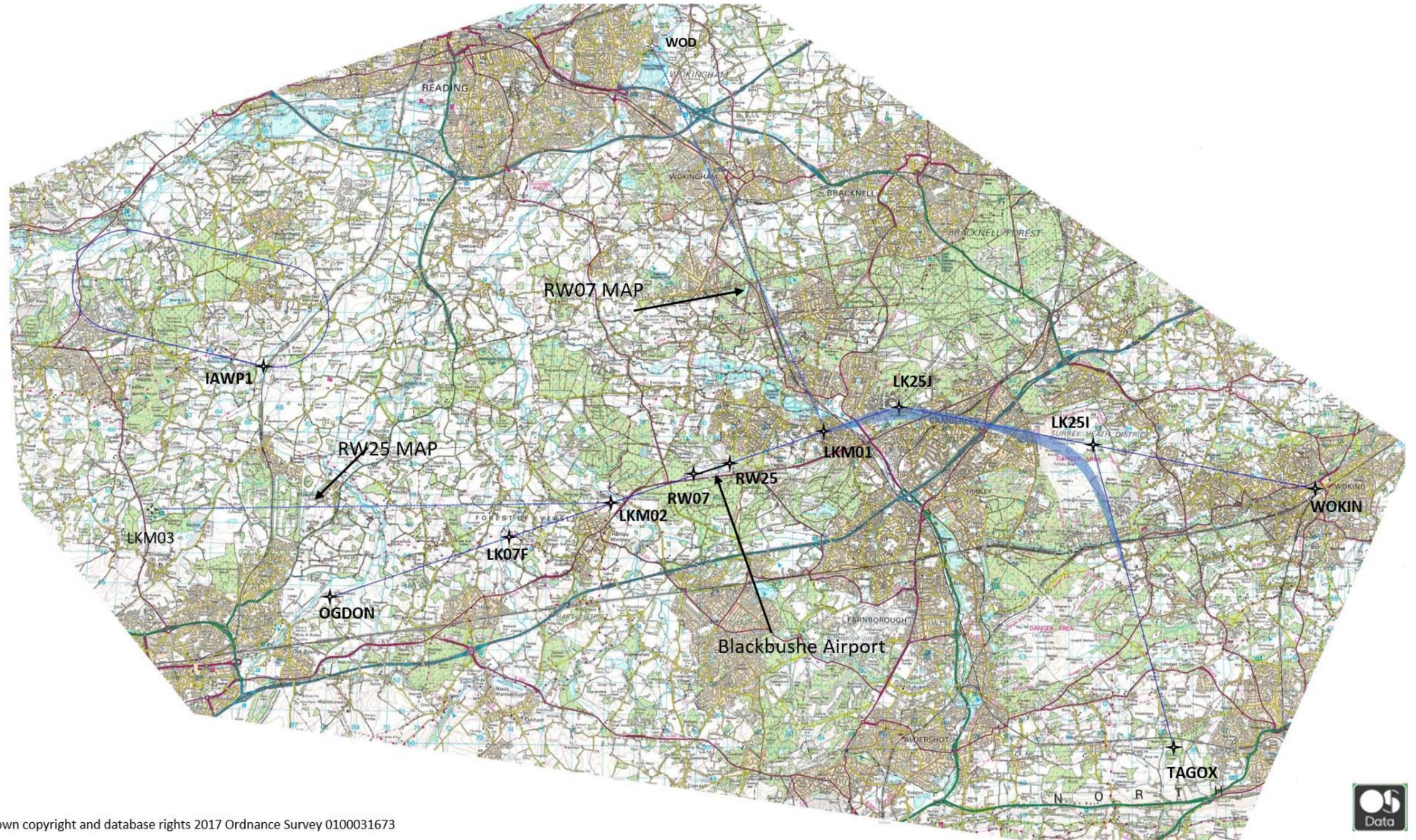
Airspace in the UK is divided into 3-dimensional blocks classified from Class A to Class G. The classifications determine the flight rules that apply and the minimum Air Traffic Services (ATS) that are to be provided. Classes A-E are areas of Controlled Airspace designed to protect its users (mostly commercial airliners) and therefore any aircraft wishing to enter these areas must be equipped to a certain standard. Pilots must be suitably qualified and they must obtain permission (clearance) to enter such airspace and follow instructions from Air Traffic Controllers (ATC).

The airspace around Blackbushe Airport is Class G, Uncontrolled Airspace, which means there are no restrictions on who can fly here, what equipment they must carry, what route they must take and there is no requirement to obtain an ATS. However, discussions with Farnborough International Airport indicate that the majority of IFR traffic using the Class G airspace in the Farnborough vicinity does so under an ATS from Farnborough or from Odiham for military traffic.

In order to protect operations at the airport, Blackbushe has an established Aerodrome Traffic Zone (ATZ), of radius 2.5 NM centred on runway 07/25. The ATZ is a cylinder that extends from the surface up to 2,000ft above ground level (agl). The ATZ is an area around the Airport that aircraft must avoid unless they have established two-way communication with the Blackbushe Flight Information Service Officer (FISO) in the Control Tower.

The airspace above Blackbushe Airport is Class A Controlled Airspace London Terminal Airspace (LTMA) above 3500ft. Class A is the most strictly controlled and regulated airspace class; only IFR flights are permitted, and aircraft are separated from all other traffic. It is typically implemented at busy airports such as Heathrow and in the en-route airways. The users of this airspace are mainly major airlines and business jets.

6.4 The New Procedures



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Figure 2 Illustration of proposed RNAV procedures.

6.5 Interaction with Farnborough Airport procedures and airspace

Surveillance based Air Traffic Services (ATS) are routinely provided to Blackbushe inbound and outbound aircraft by Farnborough ATC.

The current design of the IAP for runway 25 is in proximity to a portion of the London Control Zone (CTR) delegated to Farnborough ATC. The track of the IAP remains outside the CTR however the containment area associated with the IAP infringes on that portion of the London CTR.



Figure 3 Interaction of proposed RNAV IAP and local Farnborough Airspace

Blackbushe Airport is actively seeking a review of our relationship with Farnborough ATC during the course of the consultation period and we welcome all comments from Farnborough International Airport.

6.6 Interaction with other aerodromes

6.6.1 RAF Odiham

A portion of the Runway 07 IAP passes through the RAF Odiham Military Air Traffic Zone (MATZ) as shown in Figure 4 below. Aircraft descend from 2300 feet at OGDON to 1500 feet at LK07F; these are the two waypoints inside the MATZ.

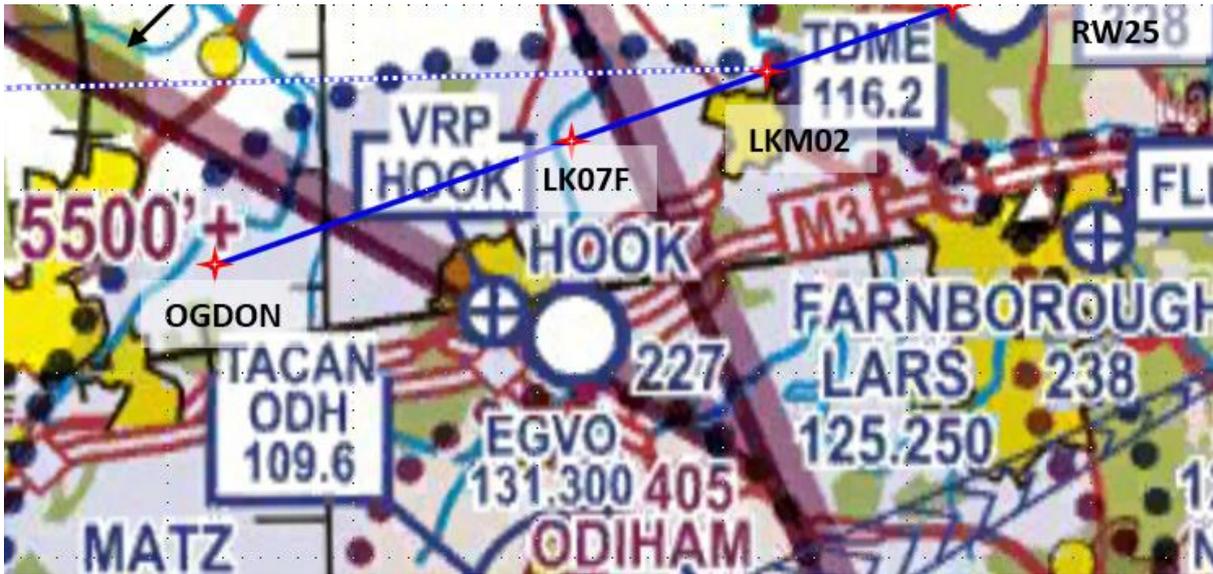


Figure 4 Interaction of proposed RNAV IAP and Odiham MATZ

Blackbushe Airport is keen to understand any impact of the new IAPs on Odiham operations and we welcome all comments and questions from Odiham ATC. Please come along to our aviation stakeholder meeting.

6.6.2 Popham Airfield

Popham Airfield is approximately 16 NM southwest of Blackbushe Airport. We welcome any comments and questions from the owners and operators at Popham. Please come along to our aviation stakeholder meeting.

6.6.3 Hook Airstrip

Hook Airstrip is approximately 4.5NM southwest of Blackbushe Airport and is understood to have a grass runway of 800mx20m oriented 08/26. We welcome any comments and questions from the owners and operators of Hook Airstrip; please come along to our aviation stakeholder meeting. You are also welcome to attend the public meeting.

7 How could the change affect me?

7.1 Overview

Blackbushe Airport is committed to eliminating or reducing the impacts of any change to its operations on other aviators and those that live close to the Airport. Those impacts could be environmental, economic or operational.

7.2 Environmental Impacts

The environmental impacts of aviation are generally assessed within three categories:

- Noise
- Emissions
- Air quality

Visual intrusion and tranquillity can also be a concern.

7.3 Noise

7.3.1 Overview

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 CAP725 [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} noise exposure contour. The contours are displayed on a map and show the places where people experience the same level of noise energy – L_{eq} – from aircraft⁶. 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 2017 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.

7.3.2 Noise Assessment Methodology

⁶ The abbreviation L_{eq} – The L represents noise Level and the eq subscript is an abbreviation of ‘equivalent’.

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 1]:

- 51-72 dBA Leq contours (plotted at 3 dB) intervals for the existing aircraft movements during a 16hour summer day 2017.

The L_{eq} contours were calculated using the latest recorded traffic data for a typical summer's day Blackbushe (16th June – 15th September, 0700-2300 local time).

Aircraft data inputs

Blackbushe Airport is a busy General Aviation (GA) airfield, which operates mixed aircraft types including business jets, helicopters and GA and where a high percentage of recreational flying takes place. The L_{eq} contours were based on the best available aircraft traffic data for two separate summer week periods (19th June – 26th June 2017 and 03rd July – 10th July 2017). These figures were annualised to calculate an 'Average Summer's Day' at Blackbushe Airport. For the purposes of Noise Modelling, the summer day period is considered to be between 16th June and 15th September, between the hours of 0700-2300 local time.

Route inputs

The study completed in AEDT included full details of the aircraft flight profiles, and differentiation was made between arrival and departure aircraft. For those specific aircraft models not contained within the AEDT database, a comparative aircraft model was selected.

Since Blackbushe Airport does not have any published Standard Instrument Departures (SIDs) or Standard Arrival Routes (STARs), for the purposes of the modelling, the assumption was made that inbound aircraft follow a straight approach path from approximately 8 Nautical Miles (NM), and that outbound aircraft follow the published Noise Preferential Routes (NPRs).

The distribution statistics for each runway direction were calculated and applied to the total summer time period daytime traffic. This enabled the modelling of an average '100% westerly' and '100% easterly' summer day for 2017, i.e. what would have happened if all of the traffic had operated in a single runway direction. This allowed us to combine the single mode results with the runway modal split to produce average mode contours.

Night Flights

Blackbushe Airport does not operate any night flights (night flights are considered to take place between 2300 and 0700) and therefore no Sound Exposure Level (SEL) footprints were required. The CAA state that Department of Transport research has shown [Reference 2] that residents tend to be woken by a single noise event (i.e. noise from a single aircraft as measured by SEL footprints) rather than by aggregation of noise events measured by L_{eq} .

7.3.3 Results

The modelling showed that with the existing flight profiles, and with no forecast increase in traffic at Blackbushe Airport as a result of the introduction of RNAV procedures, the L_{eq} noise contours do not extend beyond approximately 2.55

Kilometres (km) beyond the end of Runway 07 threshold and approximately 1.75 km from the Runway 25 threshold.

The 2017 L_{eq} noise contours modelled against current aircraft movements are shown in Table 1 with the estimated population and number of households exposed to each L_{eq} . The population database used in the model is derived from the 2016 update of the 2011 Census supplied by CACI Ltd, and the figures are rounded to the nearest 50⁷.

Leq (dBA)	Population	Households
>54	150	50
>57	<50	<50
>60	<50	<50
>63	<50	<50
>66	<50	<50
>69	<50	<50
>72	<50	<50

Table 1 Blackbushe Airport 2016 Leq Contours with existing aircraft flight profiles

Figure 5 below shows the noise contour model produced for Blackbushe Airport based on extant traffic levels and types of aircraft utilising the aerodrome which are not predicted to change. The data depicts an average summer day at Blackbushe Airport.

⁷ Please note that in some cases only 1 household was affected but we are still required to state this as <50.

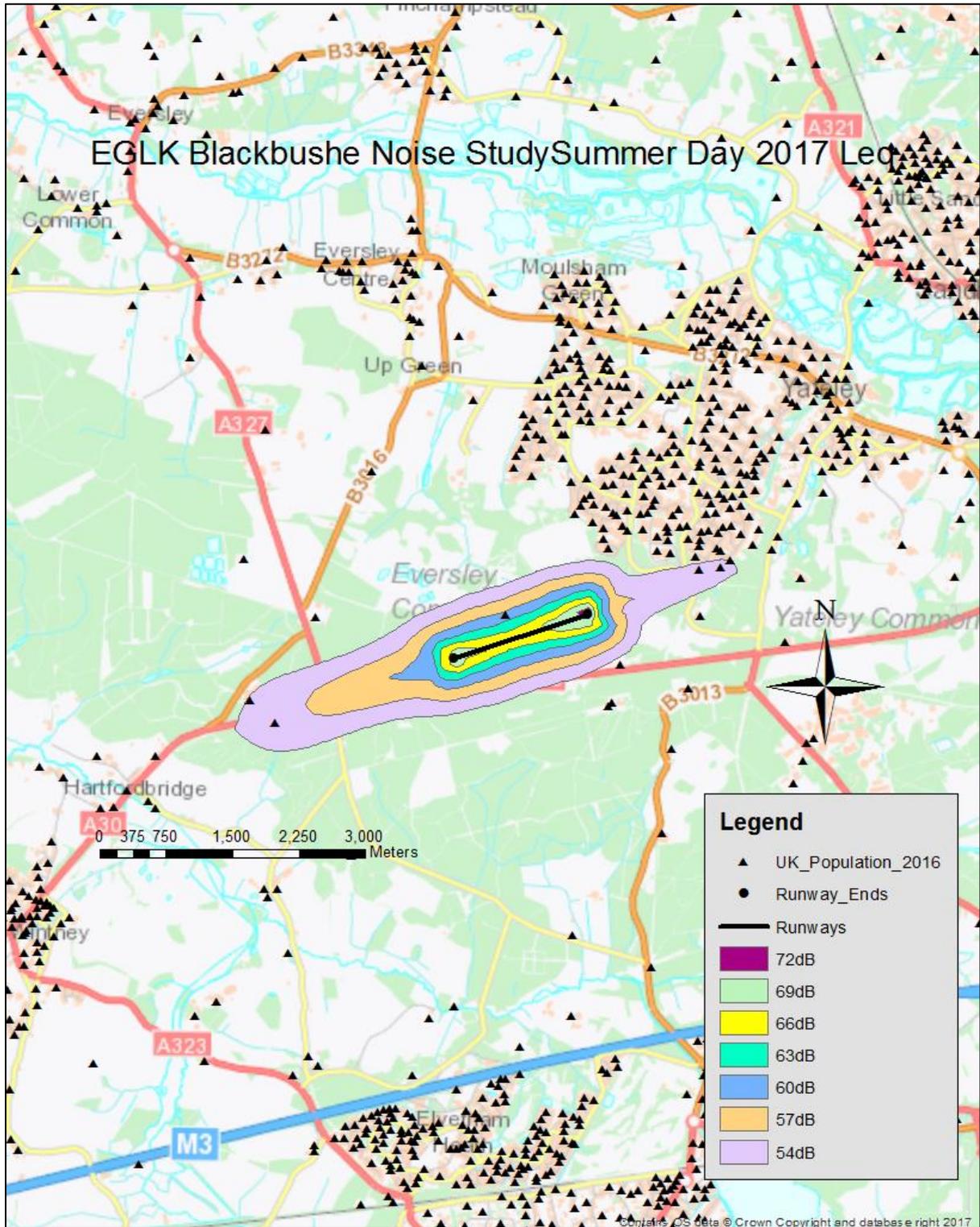


Figure 5 Blackbushe Airport summer day 2016 Leq

7.3.4 Noise Conclusions

The introduction of RNAV procedures at Blackbushe Airport is not anticipated to introduce a change in existing traffic levels or to the type of aircraft operating at the airport. The RNAV procedures are used for approaches the airport only, aircraft will continue to depart on the existing Noise Preferential Routes that avoid the villages and towns⁸ close to the airport. Since all aircraft must establish on a final approach path usually within approximately 4 NM of the touchdown point (which they do currently) in order to maintain a stable approach, the new RNAV procedures are not predicted to alter the noise exposure levels currently experienced at Blackbushe Airport.

7.3.5 Emissions

One of the benefits of introducing RNAV procedures is that aircraft flying these routes theoretically follow comparatively more accurate tracks, which can lead to less fuel being used and a corresponding reduction in emissions of CO₂.

The implementation of RNAV procedures is not a driver to increase traffic at Blackbushe Airport. As a consequence, it is anticipated that there will be no change to the level of emissions and no environmental benefit is claimed as part of this proposal.

7.4 Local air quality

Any change in air quality is generally driven by an increase in aircraft numbers or significant change in performance characteristics through the production of unburned hydrocarbons and smoke during the landing and take-off cycle. The implementation of RNAV procedures is not a driver to increase traffic at Blackbushe Airport; therefore it is anticipated that there will be no change, benefit or adverse impact to local air quality.

7.5 Visual intrusion and tranquillity

Government policy for minimising the impact of aircraft at low-level is to concentrate flights in a narrow corridor. By replicating as close as possible the extant VFR routes, the implementation of RNAV procedures at Blackbushe Airport is not predicted to effect any change in visual or tranquillity impact to those living in and enjoying the amenities in the airport vicinity.

7.6 Economic impacts

In the short term the introduction of these new procedures can be expected to have no significant economic effect on Blackbushe Airport as the new procedures are designed to be used by existing users of the airfield.

⁸ The villages of Bramshill, Hazeley, Eversley, Yateley, Blackwater and Hartley Wintney are marked as exclusion zones on airport information sources.

However, the implementation of RNAV procedures will contribute to the long term economic safeguarding of commercial operations, by reducing the number of weather diversions for the air taxi services in particular. The air taxi services are provided by the Airport's biggest customer, employing around 45 people at Blackbushe Airport.

The benefits of RNAV to the aircraft operator include safer, more efficient operations through improved track keeping. RNAV can regulate capacity and improve access to runways at airports, leading to efficient turnarounds for aircraft. Satellite navigation frees aircraft from reliance on ground-based navigational aids and allows flexible and optimised routing. It is preferable for many pilots to adopt a single navigational method for a given flight, so the availability of an RNAV approach procedure at the end of a flight navigated by RNAV is preferable. All of these benefits facilitate more direct routes and shorter flight times across the overall route, which can lead to reduced fuel burn and operating cost benefits.

7.7 Operational impacts

7.7.1 Visual Flight Rules (VFR) traffic at the Airport

All operations at Blackbushe Airport are currently VFR and the Airport provides a safe environment for VFR traffic. No benefit or change is expected for traffic continuing to operate under VFR following the introduction of the new instrument procedures.

Some operators, i.e. the air taxi services, currently operate Instrument Flight Rules (IFR) en-route to Blackbushe Airport, receiving an air traffic service from Farnborough ATC. They then contact Blackbushe control tower and fly VFR to land on the runway unless visual conditions are poor and they have to divert.

7.7.2 Introduction of an IAP

The new procedures enable the air taxi service and other RNAV equipped aircraft to land in almost all weather conditions at Blackbushe. While the RNAV IAPs are intended to be used only where weather conditions prevent VFR operations at the airport, they still represent a significant operational benefit in terms of the reduction in weather diversions.

7.7.3 Other aviators

The new RNAV procedures are not anticipated to have any adverse impact on other aviators. Farnborough ATC provides and will continue to provide Air Traffic Services to aircraft in the vicinity of the new procedures, and Blackbushe FISO will continue to provide information relating to a crossing of the Blackbushe ATZ.

This proposal does not require a change in airspace classification; the procedures will be operated within Class G Uncontrolled Airspace. Blackbushe Airport has a number of agreements in place with local aerodromes (some of which are outlined at Section 6) and it is intended to review and revise if necessary these agreements prior to implementation of the RNAV procedures.

8 References

Reference	Title	Origin
1	CAP1122 CAA Application for Instrument Approach Procedures to Aerodromes without an Instrument Runway and/or Approach Control Version 1 29 th May 2014	CAA
2	CAP 725 CAA Airspace Change Process Guidance Document Version 4.1 March 2015	CAA
3	ICAO PANS-OPS Doc 8168 Volume II Construction of Visual and Instrument Flight Procedures	ICAO

A1 Consultees

A1.1 Aviation Stakeholders

A1.1.1 Airport tenants and based aircraft

We are consulting with all of our tenants and users of the airport, including flying schools, based pilots and aircraft owners and corporate jet operators. Posters are being displayed on our notice boards in order to maximise our chance of reaching these stakeholder groups.

A1.1.2 Local Aerodrome and Aviation Organisations

We are consulting with a number of local airports and airfields including, but not limited to:

- Farnborough International Airport
- Odiham
- Popham Airfield
- Hook

A1.1.3 National Organisations (NATMAC)

We are consulting with National Air Traffic Management Advisory Committee (NATMAC) in accordance with advice from the regulator. This stakeholder group includes representation from other aerodromes, the MOD and other military aviation organisations, civilian national and regional air traffic service providers.

A1.1.4 Civil Aviation Authority (CAA)

The CAA is being consulted at various stages of the proposal, in line with requirements of the process we are required to follow.

A1.2 Local Councils

Local Councils have been invited to participate and pre-consultation meetings have been held with the Airport Consultative committee which includes current representation from the following councils and organisation:

- Blackwater and Hawley
- Bramshill Parish
- Eversley Parish
- Hampshire County
- Hart District
- Hartley Wintney Parish
- Rushmore Borough



- Sandhurst Town
- Yateley Parish
- Yateley Town
- Yateley Common Joint Management Committee
- Yateley Society

A2 Draft RNAV Approach Plates

A2.1 RNAV (GNSS) RWY07 chart

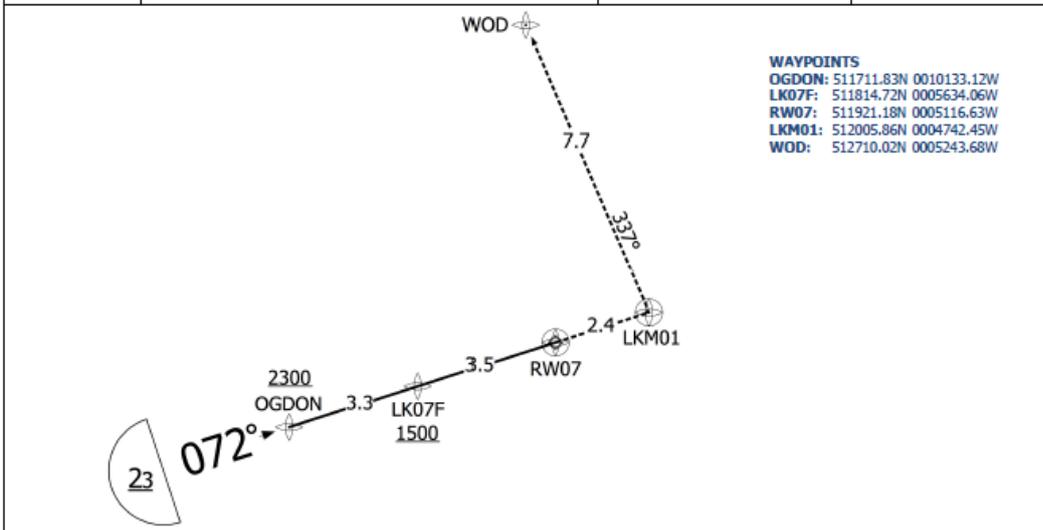
UNITED KINGDOM AIP

AD 2-EGLK-8-1
dd month yy

INSTRUMENT APPROACH CHART - ICAO

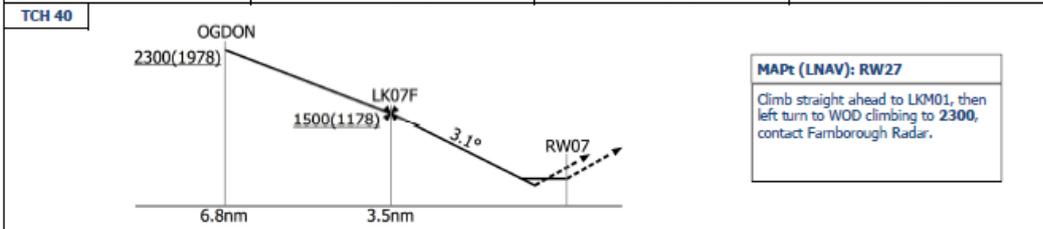
**BLACKBUSHE
RNAV (GNSS)
RWY 07**
(ACFT CAT A,B)

	AFIS 122.300	BLACKBUSHE RADIO	AD ELEVATION 325
	RAD 134.350	FARNBOROUGH RADAR	THR ELEVATION 322
			OBSTACLE ELEVATION
			BEARINGS ARE MAGNETIC
			TRANSITION ALTITUDE 6000



RECOMMENDED PROFILE LPV - VERTICAL PATH ANGLE 3.1° (LNAV 5.4%), 326 FT/NM

NM to RW07	3	2	1
ALT(HGT)	1340(1018)	1010(688)	690(368)



Aircraft Category	A	B	Rate of descent	G/S KT	130	120	100	80	70
OCA (OCH)	LPV	572(250)	572(250)	FT/MIN	710	650	540	430	380
	LNAV	670(348)	670(348)						
VM(C)OCA (OCH AAL)	Total Area	760(435)	820(495)						

NOTE

- 1 Procedure only available to authorised operators, use by non-authorised operators subject to reporting action.
- 2 Caution, procedure within Odiham MATZ.
- 3 Self-positioning to OGDON only from tracks 342° through to 162° to ensure a track change of no more than 90° at OGDON.
- 4 Aircraft being radar vectored for the final approach or self-positioning to the final approach track must intercept the final approach track at or prior to OGDON.
- 5 Procedure restricted to 160 KIAS, MAP restricted to 140 KIAS (due to close proximity of London CTR).

CHANGE: INITIAL ISSUE

AERO INFO DATE dd month yy

Civil Aviation Authority

AMDT AIRAC mm/yy

A2.2 RNAV (GNSS) RWY25 chart

