



LONDON  
BIGGIN HILL  
AIRPORT

BUSINESS | TRAVEL | COMMUNITY

# Noise Action Plan



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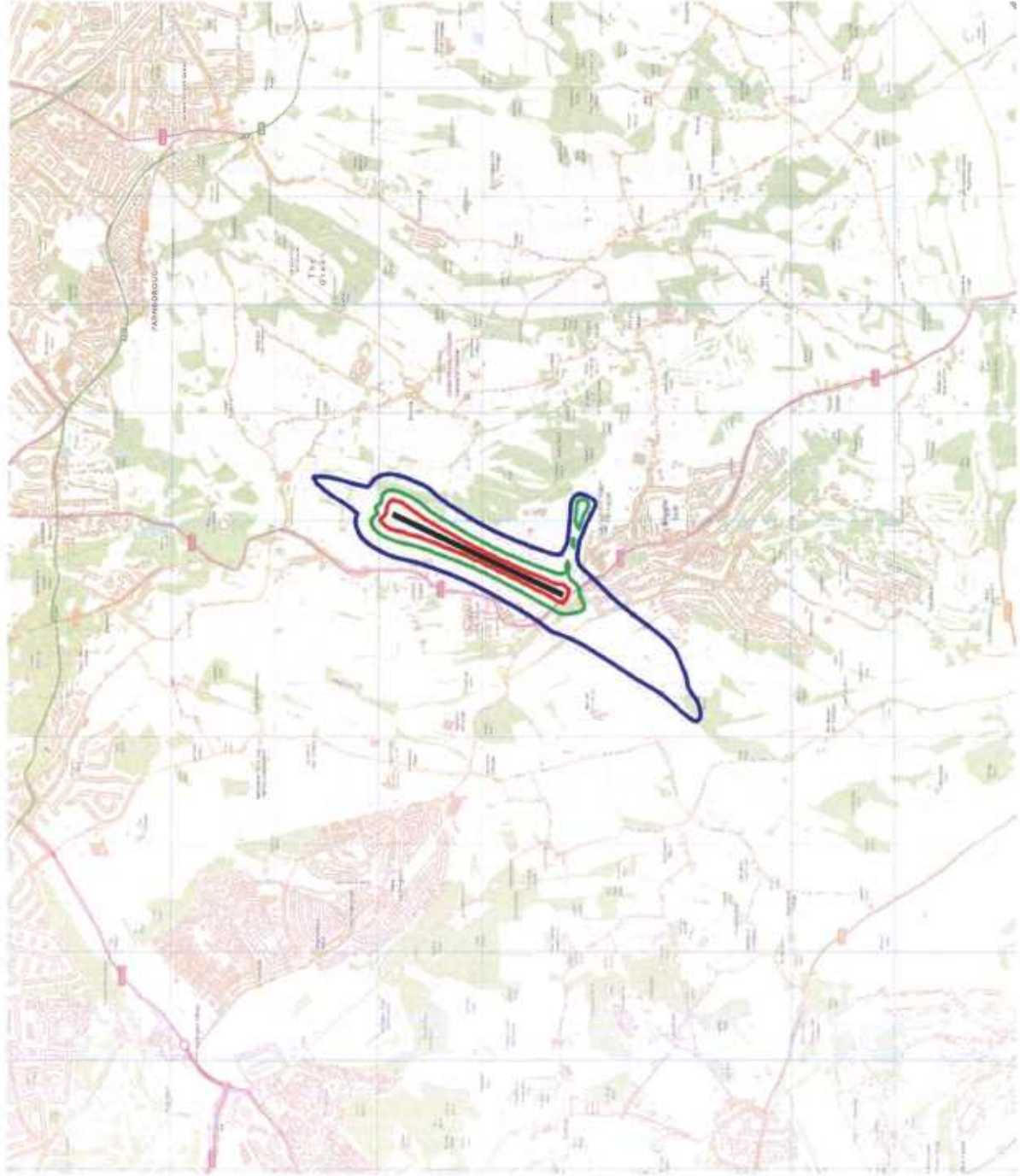
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## 1.0 Introduction

- 1.1 In order to make best use of this long established aviation facility, London Biggin Hill Airport plans to develop in order to attract more companies and this will require changes in operations as the Airport moves towards undertaking a more modern corporate and general aviation role. As part of this process the opportunity has been taken to update noise management measures at the airport.
- 1.2 The current controls were put in place over 20 years ago and are contained in the Operating Criteria of the Lease between the London Borough of Bromley and the airport. This requires that aircraft using the airport must comply with the Council's approved noise criteria set in 1994 which followed the most stringent ICAO Chapter 3 industry standards for modern turbo jets and turbo fans and used industry noise measurement limits for Side line, Take off and Approach. They also included a list of older and specifically approved aircraft, some of which are still in service. These earlier noise controls will be updated and the Airport has drawn on best industry practice to produce this voluntary Noise Action Plan (NAP). The aim is to ensure the Airport operates as quietly as possible and so has minimal effect on neighbours and has a process of regular reviews and improvements in place.
- 1.3 The key elements of the Plan relate to clarifying existing and future noise levels combined with measures to manage and monitor noise levels. Local stakeholders will be actively involved in the implementation of this NAP.
- 1.4 The NAP has been prepared taking into account the requirements of section 18 of the Environmental Noise (England) Regulations 2006 (as amended). These regulations transposed the EU Environmental Noise Directive (2002/49/EC), known as END, into UK legislation. Detailed guidance is available on the Defra website on preparation of a NAP. Many UK airports have produced a NAP, and many have already been reviewed. Such reviews are intended to occur on a five year basis.
- 1.5 The NAP is designed to manage noise issues and effects arising from aircraft departing from and arriving at an Airport. The NAP process involves airports considering the noise impact of their operations together with the current control measures they have in place.

## 2.0 Current Noise Levels

- 2.1 The current noise levels can be quantified by both production of airport noise contours and consideration of community responses as delineated by the comments received by the Airport. The latter are regularly evaluated by a specialist sub-committee of the Airport Consultative Committee. After their evaluation of the comments and the actions taken by the Airport, a report is given by the Chairman of that Noise and Safety sub-committee to the Airport Consultative Committee. The Biggin Hill Airport Consultative Committee meets four times each year and minutes of the meetings are published on the airport website.
- 2.2 Past contouring has considered various future scenarios, and adopted as baselines noise contours for 1997, 2004, 2008 and 2009. In the latter year there were about 58,000 movements, of which Aero Club and Private movements formed 80% of the total. In 2013, the overall annual movements had reduced to about 41,500, and the Aero Club and Private constituted 70% of the total. In that period the business aviation element increased from 10,081 to 11,487 movements. On a simple basis the noise contours at the airport now, specifically in 2014, would be expected to be similar to those in 2009. That simple basis takes into account a possible rise in noise of less than a decibel, due to increased business aviation traffic, and a theoretical reduction of 1.5 dB, due to the overall reduction in aircraft activity of 40%. On the basis that the contours of 2014 are similar to 2009, the latter produced taking into account many more details of the actual traffic, the current noise impact area will approximate to that shown in Figure NAP 1.



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Legend Noise Contours

- 57 dB
- 63 dB
- 69 dB

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**Biggin Hill Airport  
Planning For Change**

Current Summer - 2013  
57, 63 & 69 dB L<sub>night</sub>1hr

DRAWN: EV      CHECKED: DC

DATE: 29/09/2014      SCALE: 1:50000@A4

FIGURE No:

**A9780 Fig NAP1**

- 2.3 Adopting the usual assessment criteria relating to aviation noise impact, the current noise impact at London Biggin Hill Airport shows that the contour representing high levels of annoyance, 69 dB  $L_{Aeq,16h}$ , is completely contained within the operational boundaries of the airport except at the southern end of the main runway where it extends to the A233 but does not impinge on any residential properties. The contour representing moderate levels of annoyance, 63 dB  $L_{Aeq,16h}$ , is also largely contained within the airport site although it does extend to the south across the A233. Some properties on the A233 abut this contour.
- 2.4 The contour representing the onset of low community annoyance, 57 dB  $L_{Aeq,16h}$ , extends to south of Holwood Farm to the north of the airport. To the south-west of the airport it extends beyond Norheads Farm. In doing so it includes a number of properties (approximately 92), most of which are in Biggin Hill Village.
- 2.5 The relatively small size of the 2013 (based on 2009) contours and their location over largely uninhabited areas is compatible with the low level of public reaction to the airport's activities. In 2013 the airport received 30 comments relating to its activities. Given that in that year there was about 41,500 movements this rate of response is about 0.7 comments per thousand movements indicating an acceptable situation. As shown in Table 1.0, by comparison at London Luton Airport in 2013 there were 1022 complaints from 97,615 movements, approximately 10.5 complaints per thousand. At London City Airport, over the five year period (2009-2013) typically 60 complaints were recorded annually; approximately 0.8 per thousand movements. At Farnborough Airport, which specialises in business aviation, there were in 2013, 220 complaints and annual movements of 22,754; 9.7 complaints per thousand movements.
- 2.6 These other Airports would indicate that their noise emissions produce acceptable situations, acknowledging some impact.

Table 1.0 Community Reaction near London Area Airports serving Business Aviation (B.A.)

Airport (Annual 2013 Movements)	No. Of Complaints (Annual 2013)	Population exposed to Daytime 57 dB $L_{Aeq,16h}$ and above
London Luton (97,615)	1,022	7,128
Farnborough (22,754)	220	0
London City (74,006)	90	13,600
London Biggin Hill (41,500)	30	245

- 2.7 Table 1.0 also includes the populations within the contour representing the onset of low community annoyance at each airport. This highlights the much higher exposed populations at London Luton and in particular London City Airport compared with London Biggin Hill.

2.8

Figure NAP 1 indicates the approximate extent of the noise impacted area. The contours shown include the 57 dB  $L_{Aeq,16h}$  contour which is used to represent the onset of significant community annoyance for major airports. This applies to busier airports unlike Biggin Hill where there is considerable activity during daytime and night-time. Used at Biggin Hill, it may exaggerate the impacted area.

### 3.0 Future Predicted Levels

3.1 Future noise will relate to the type of operations undertaken, the aircraft used, the activity levels, and the details of how aircraft are operated into and from the Airport.

3.2 In order to better understand the future noise climate at the airport the following changes are assumed:

- a slight increase in operating hours;
- maintaining a cap on circuit flying at weekends;
- an increase in business aviation that will operate more quietly as newer types are introduced and older noisier types are removed from our authorised list.
- a progressive reduction in the noise of individual aircraft types;
- a specific noise requirement to apply to aircraft operated in the “*new shoulder hours*” in the early morning, and late evening; and
- a significant reduction in the noise impacted area from that adopted in the Bromley UDP (policy ER8) for land use planning.

3.3 The Airport acknowledges that as at any Airport some noise intrusion occurs. From consideration of the comments received it appears that the majority of the intrusions relate to the Aero Club and Private movements, especially at the weekends and from occasional noise events with either an older business jet (now mainly replaced), or from the unusual arrival procedure that is currently necessary when the wind is from the north or east. On these days, aircraft approach the airport from the north east, and using the airports guidance systems, and then depart from that system and carry out a visual circuit to the west of the airport, circling to the south west before turning north to land on Runway 03. Pilots following that procedure are not following any set airfield or automatic guidance system and therefore height and track of aircraft will vary and be affected by the pilots experience of Biggin Hill and weather conditions. This procedure gives rise to occasional noise intrusion in Keston, Tatsfield and Warlingham in particular.

3.4 To minimise the use of noisier aircraft it is proposed to incentivise operators to use quieter aircraft and to phase out previously approved noisier types from January 2015. The airport already adopts the most stringent Chapter 3 noise standards. For the “*new shoulder hours*” between 06:30 and 7:00 in the morning and 22:00 and 23:00 in the evening, the airport will only allow operations by aircraft that meet Chapter 3 standard. It will exclude all aircraft during this period defined as “*marginally compliant aircraft*” i.e. those which cannot fully comply with the Chapter 3 standards. These aircraft are defined under EU Directive 2002/30/EC dated 26 March 2002. They are jet aircraft:



“... that meet the certification limits laid down in Volume 1, Part II, Chapter 3 of Annex 16 to the Convention on International Civil Aviation by a cumulative margin of not more than 5EPNdB (Effective Perceived Noise in decibels), whereby the cumulative margin is the figure expressed in EPNdB obtained by adding the individual margins (i.e. the differences between the certificated noise level and the maximum permitted noise level) at each of the three reference noise measurement points as defined in Volume 1, Part II, Chapter 3 of Annex 16 to the Convention on International Civil Aviation.”

- 3.5 Aircraft have become much quieter and recently new business aviation aircraft using Biggin Hill, for instance the Bombardier Global 5000, have a cumulative margin of 23dB below the current aircraft noise limits (see Table 2.0).
- 3.6 To illustrate the improvement in aircraft noise performance since 1994, the margin of cumulative noise from typical business jets using the airport today compared with the cumulative noise authorised in the Operating Criteria section of the Airport Lease is shown below.

Table 2.0 Margin re Biggin Hill Noise Limit

Aircraft Type	Cumulative Margin v Biggin Hill Noise Limit
<b>Modern Aircraft</b>	
Bombardier Global 5000	23 dB better
Gulfstream V	20 dB better
Falcon 7X	18 dB better
Hawker 750	14 dB better
Challenger 604	24 dB better
Citation Excel	30 dB better
Lear jet 60	39 dB better

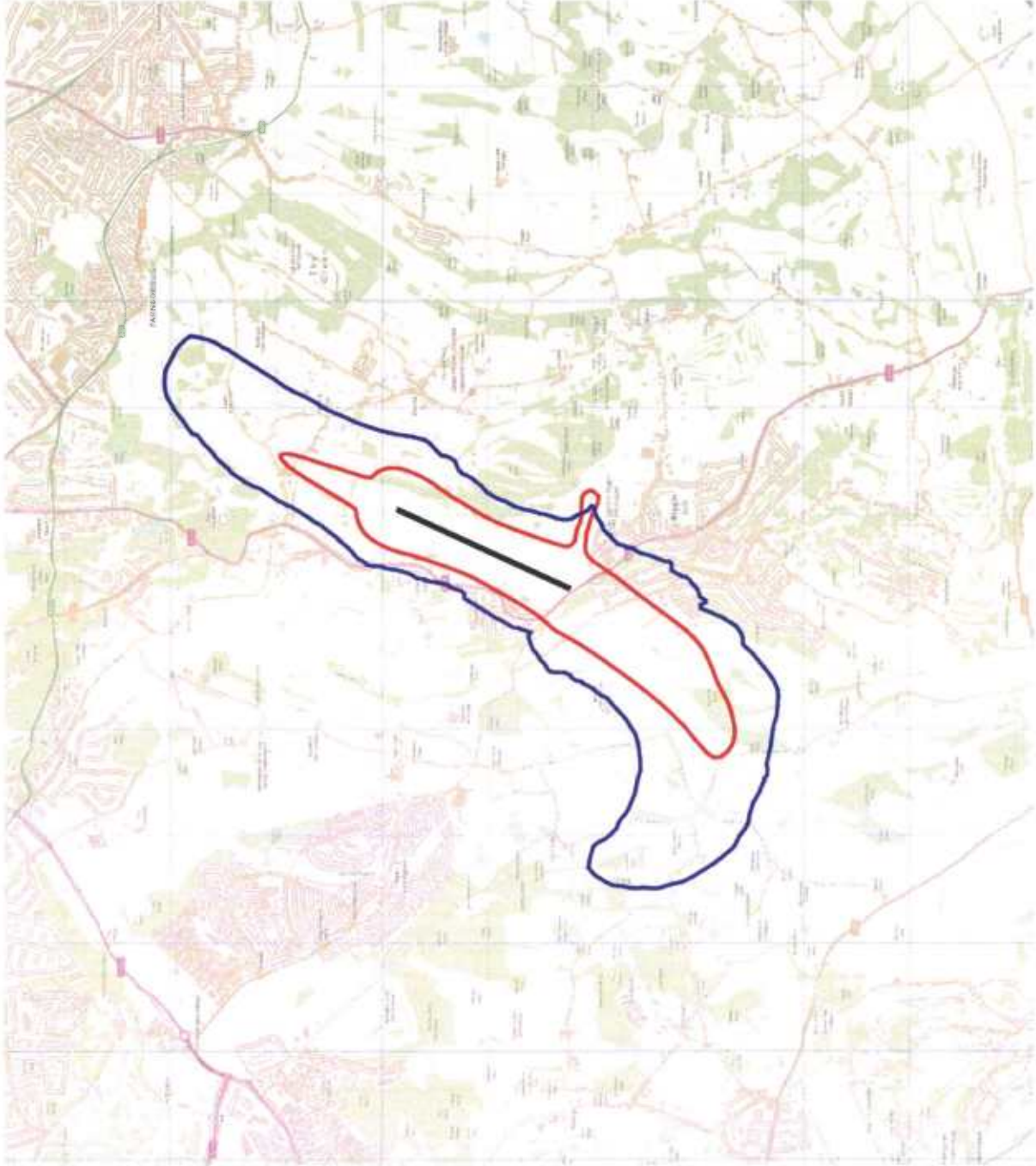
- 3.7 A preliminary assessment has been made of the future noise in 2025 and Figure NAP 2 compares the area and extent of that contour against the earlier UDP contour. The future contour takes into account the growth in overall activity, and the specific increase sought in business aviation. As shown by the Figure the future noise impact is considerably less than that forecast to arise for the UDP.
- 3.8 The contour representing the onset of community annoyance extends to Holwood Farm and at the other end of the Airport to south of Norheads Farm. It includes a number of properties in Biggin Hill Village.
- 3.9 The eventual contour for 2025 is likely to be smaller than that shown in Figure NAP 2, as no account has been taken of the expected benefits of the noise reduction measures proposed in the NAP, and later versions of the NAP. It will also benefit from improved aircraft noise performance as manufacturers produce quieter aircraft.
- 3.10 Responses to stated levels of noise, e.g. 57  $L_{Aeq,16h}$  are sometimes difficult to understand in practice. To assist Tables 3.0 and 3.1 rates common situations and the noise climate expressed using the same unit.

Table 3.0 Continuous average noise levels, Examples in terms of noise traffic.

Road Traffic External Noise Levels Noise Level	Description
78 dB(A)	Façade noise level in a very busy town street or a dwelling immediately next to a major road (Recently proposed Central Government criterion for retrospective soundproofing of housing near major unaltered highways).
68 dB (A)	Typical noise level at urban or rural property set back a little from the kerb on a busy street, or a property about 100m from a Motorway.
63 dB(A)	Level typical of many dwellings on fairly busy roads or with a clear view of a main road. Also typical of dwellings about 200m from a Motorway.
58 dB(A)	Typical of the back through streets of a town or dwellings fringing a main road or those on a quieter road.
48 dB(A)	Rural noise level or well screened suburban area away from heavily trafficked routes.
38 dB(A)	Unusually quiet.

Table 3.1 Quasi-continuous sound internal examples

Experience within Buildings	Level, dB(A) $L_{eq, T}$
Nightclub Dance Floor	105
Nightclub Bar	95
Noisy Pub Bar	85
Theme Restaurant	75
Posh Restaurant	65
Open plan office (busy)	55
Open plan office (night shift)	45
Cinema (before showing)	35



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57 dB L<sub>day,even</sub> Noise Contours

UDP  
2025 Forecast

REVISIONS

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**Comparison of 2025 Daytime Noise Contour  
with UDP Noise Contour**

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DATE: 29/09/2014      SCALE: 1:50000@A4

FIGURE No: **A9780 Fig NAP2**

## 4.0 Noise Reduction Measures

- 4.1 As part of this NAP, LBHA will continue with certain noise control measures and introduce a number of new measures to manage noise levels generally at the airport and more specifically to ensure the area affected by aircraft noise (defined by the area within the 57dB(A)  $L_{Aeq,16h}$  contour) is much less than that set in the UDP contour. Overall these measures will represent a significant improvement on the noise control regime contained in the existing lease between the London Borough of Bromley and the airport.
- 4.2 The proposed measures will include regular monitoring and reporting of operations as well as active management of the types of aircraft able to use the airport and procedures associated with take-off and landing.
- 4.3 A large number of the new measures can be introduced in the short-term while others will require further investigation and the support of external stakeholders such as NATs. The airport is currently engaged in various background studies and is working closely with these external parties and is committed to the introduction of the measures set out below.

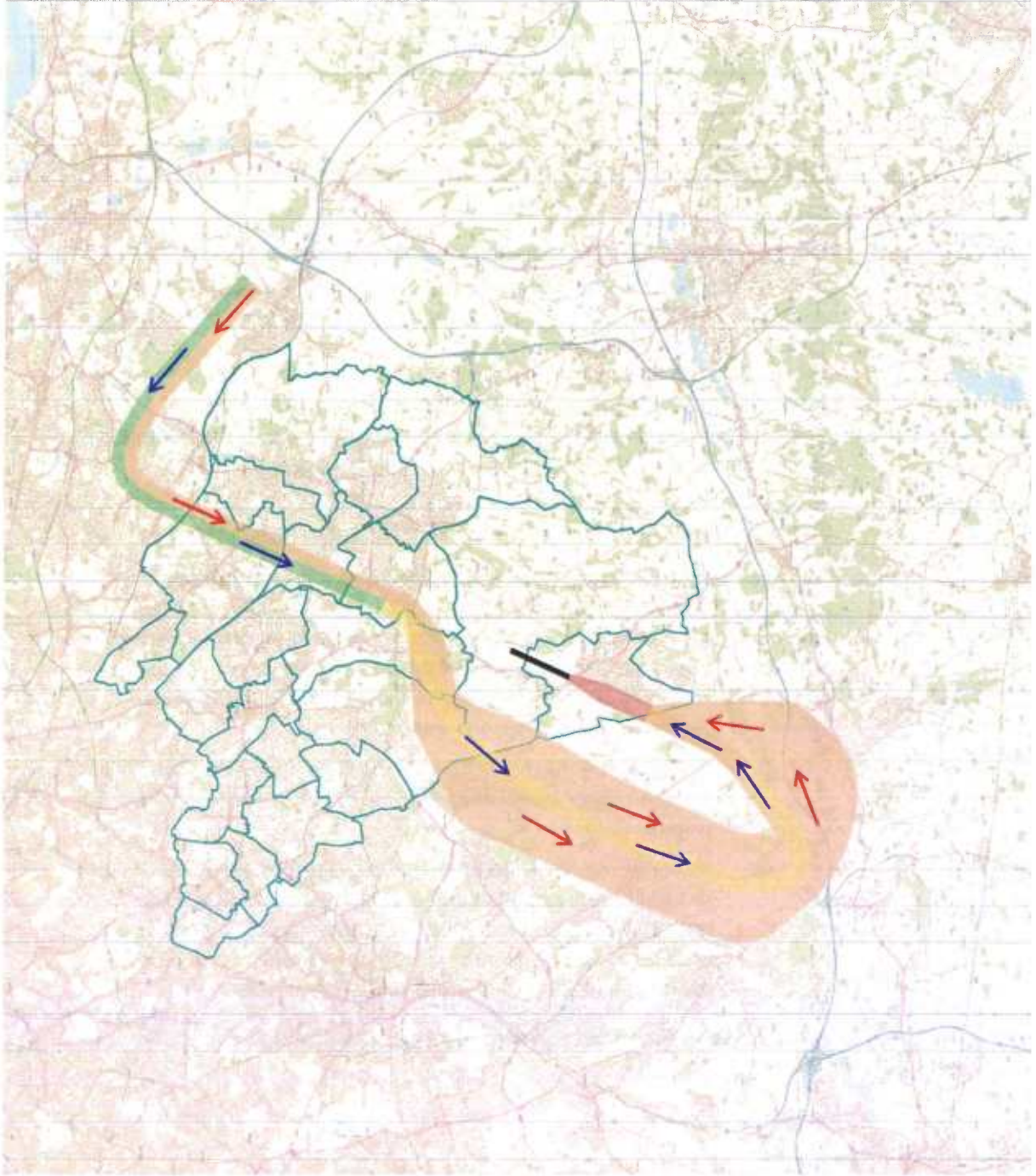
- **Noise monitoring and reporting**

- The airport will undertake regular analysis of aircraft activity and noise to identify where a review of procedures may help minimise disturbance.
- Community visits to investigate complaints will be continued.
- To continue to investigate, log, record on the radar tracking system and respond to all complaints, reporting quarterly to the Airport Consultative Committee.
- To continue to provide radar recording of all arrivals and departures at Biggin Hill so as to provide evidence for the community.
- Monitor compliance with procedures given in the UK Aeronautical Information Publication (AIP) to minimize noise, i.e. EGKB AD 2.21 Noise Abatement Procedures.
- Monitor the noise characteristics of aircraft with regard to their ICAO noise certification levels, to ensure full compliance with the original Biggin Hill Noise Limits and the need to minimise operations by marginally compliant Chapter 3 aircraft.
- Produce every five years Airport noise contours, and assess progress towards reducing the noise impacted area to 50% of that approved in the previously adopted contours included in the UDP.
- Produce noise information for sites agreed with London Borough of Bromley.
- Monitor and report progress against the NAP actions to the Airport Consultative Committee.

- Monitor and report on the number of movements in the early morning/late evening and obtain details of the aircraft used and their noise performance so ensuring any operations in those periods are only carried out by those aircraft rated as fully Chapter 3 compliant.
- Work with the London Borough of Bromley to install, monitor and report on noise generated by the airport and submit reports to the Airport Consultative Committee when required.
- Monitoring noise management at other comparable airports, and investigate whether any innovations used elsewhere could usefully be applied so ensuring industry best practice is applied at Biggin Hill.
- Report, as now, the number of departures and arrivals on each runway per quarter, and annually so demonstrating compliance with annual limits.
- **Control on types of aircraft permitted to use the airport**
  - New engine and airframe designs are delivering major reductions in noise. To ensure the local community benefits from this it will work with operators to phase out noisier aircraft currently on the list approved as part of the lease. The noisier aircraft will be identified by consideration of whether they are marginally compliant to Chapter 3 standards and where their actual noise affecting the local community is found unacceptable.
- **Controls on flying training**
  - The airport will work with operators of light and training aircraft to incentivize installation of noise suppression equipment, such as silencers and/or improved propellers, or aircraft replacement, to ensure Biggin Hill aircraft fleet is as quiet as practicable.
  - The airport will work with operators to agree new permitted operating hours for flying training flights that involve repetitive circuits of the airport and to seek agreement to minimise these at periods over weekends.
- **Working with existing operators to reduce noise levels**
  - The airport will continue its regular liaison with operators to ensure adherence to existing operational procedures and encourage innovation.
  - The airport will keep under review the Standard operating procedures for both aircraft and helicopter operations and whether new procedures would produce significant benefit.
  - The airport will produce with operators a code of practice to minimise noise impact from Business Aviation and General Aviation operations, in particular formalise "no fly zones" to protect local settlements where safe and practicable.

- **Introduction of Global Positioning System (GPS) based runway guidance system**
  - The airport will continue its investment and application for the installation of a new specific GPS based runway guidance system for all aircraft using the northern runway 03 in which both height and track guidance is provided to the pilot.
  - The airport will work with NATS to introduce as soon as practical improved aircraft guidance procedures for all arriving and departing aircraft, on both the 03 and 21 runways such as the highly accurate GPS based Area Navigation system (RNAV) that improve both track and height guidance for pilots.
  
- **Changing the height of arriving and departing aircraft**
  - Wherever practicable and safe and allowed by NATS, the airport will adopt appropriate operational procedures to raise the height of all aircraft arriving and departing at Biggin Hill in order to secure a reduction in noise. To ensure the local community benefits from this the airport will work with NATS and the Airport Consultative Committee, as part of the London Airspace Management Plan (LAMP) , for better airspace arrangements for Biggin Hill traffic and particularly raising the height of arriving and departing aircraft, whenever safe and practicable.
  
- **Changing the "03-Instrument Approach"**
  - The airport will continue to seek the provision of a new approach procedure for runway 03. It will work with NATS to introduce as soon as practicable the new procedure to replace the present visual procedure that gives rise to varied tracks and heights for arriving aircraft when the northern runway is in use. Such a system would produce a number of benefits in relation to noise reduction including:
    - (a) the arrivals for runway 03 over Farnborough Hospital would be at a higher level (almost 3,000 ft above sea level) with the related reduction in noise; and
    - (b) the area overflowed to the west of the airport would be markedly reduced during the easterly approaches and aircraft would be at a higher level (over 2,000 ft above sea level) and slowly descending as opposed to maintaining a lower height with the related reduction in noise.

4.4 Figure NAP3 shows a schematic of the current arrival procedure and that sought by the airport.



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Altitude above sea level:

- 3000ft and above
- 2000 ft - 3000 ft
- 1000 ft - 2000 ft
- 0 ft - 1000 ft

Arrival routes:

- Current
- Proposed

NO.	DESCRIPTION	DATE

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**Biggin Hill Airport  
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**Current and Proposed  
Runway 03 Arrivals Routes**

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DATE: 08/10/2014 SCALE: 1:150000@A4

FIGURE NO:

**A9780 Fig NAP3**

- **Controls during the new shoulder hours period**
  - New engine and airframe designs are delivering major reductions in noise. To ensure the local community benefits from this it will cap the number of flights in the '*new shoulder hours*' and introduce a system of control over the allowable noise performance of aircraft in these new '*shoulder hours*' between 0630hrs and 0700hrs and after 2200hrs which will involve only allowing fully compliant Chapter 3 aircraft.
  
- **Restricting noise sensitive development close to the airport**
  - There is evidence that residential and other noise sensitive developments are being developed close to airports throughout the Country. This exposes such development and their populations to noise and can give rise to objections to airport operations. The airport believes the best way to minimise noise exposure is to ensure it does not take place at locations identified as subject to current and predicted airport noise in the first place. The airport will therefore discourage residential and other noise sensitive development close to the airport boundary or areas likely to be affected by aircraft noise, in liaison with Local Authorities.
  
- **Sanctions for non-compliance with noise abatement measures**
  - The airport will introduce a system of fines and controls for aircraft not complying with its airport noise abatement regulations.
  
- **Relocating the VOR beacon**
  - Biggin Hill Airport is the location of one of four holding areas or '*stacks*' used by aircraft in busy periods seeking to land particularly at London Heathrow Airport and arriving from the south east. Biggin Hill Airport has for the past 50 years had a beacon, known as a VOR located centrally within the airport. It is this beacon which provides the location of the '*hold*' or stack. Aircraft enter this area as high as 17,000 ft but then descend in circles to as low as 9,000 ft, sometimes lower. Aircraft are held vertically above each other and as the lowest departs for landing then other aircraft reduce their height. This means that at any one time many large passenger aircraft can be circling over the stack and therefore contribute to the ambient noise climate of the airport. This has resulted in a situation where noise associated with this operational procedure is often wrongly attributed to aircraft using the airport.



- This beacon is due to be removed from the airport in the next 5 years as the system of 'stacks' is being replaced by Continuous Descent Procedures that will keep aircraft much higher and quieter avoiding circling as before. Such a procedure requires less engine thrust than level flight and provides noise attenuation by keeping aircraft higher for longer thereby offering noise reduction benefits. To ensure this happens the airport will continue to work with NATs and others to secure the early removal of the VOR beacon at Biggin Hill in order to remove such overflying. Such relocation will make an important contribution to reducing noise at the airport.
- An extract from a consultation on London Airspace by Gatwick Airport and NATs visually expresses the scale of the issue.

