Sponsor Consultation Document

London Biggin Hill Airport –
Airspace Change Proposal

LONDON BIGGIN HILL AIRPORT

BUSINESS | TRAVEL | COMMUNITY

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Abbreviations

	Airports referenced in this document
LCY	London City Airport
LGW	London Gatwick Airport
LHR	London Heathrow Airport
LBHA	London Biggin Hill Airport
	Other airports are referenced by their unabbreviated names.

3-D	3-Dimensional
aal	Above Aerodrome Level
ACP	Airspace Change Proposal
ADC	Aerodrome Control
amsl	Above Mean Sea Level
ANSP	Air Navigation Service Provider
AONB	Area of Outstanding Natural Beauty
APC	Approach Control (Procedural)
APD	Approved Procedure Designer
APV	Approaches with Vertical guidance
AQMA	Air Quality Management Area
ATC	Air Traffic Control
ATM	Air Traffic Management
ATS	Air Traffic Services
ATZ	Aerodrome Traffic Zone
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
CAS	Controlled Airspace
CAT	Commercial Air Transport
CTA	Control Area
CTR	Control Zone
DME	Distance Measuring Equipment
FAF/FAP	Final Approach Fix/Point
FAS	Future Airspace Strategy
FMS	Flight Management Systems

GA	General Aviation
GNSS	Global Navigation Satellite Systems (space-based navigation aid, e.g. GPS)
IAIP	Integrated Aeronautical Information Package
IAP	Instrument Approach Procedure
IAS	Indicated Air Speed
IAWP	Initial Approach Way Point
ICAO	International Civil Aviation Organisation
IF	Intermediate Fix
IFR	Instrument Flight Rules
ILS	Instrument Landing System
Km	Kilometre
kts	Knots – Nautical Mile per Hour
LAeq	Equivalent Noise Level
LAMP	London Airspace Management Programme
LoA	Letter of Agreement
LTCC	London Terminal Control Centre
LTMA	London Terminal Control Area
MAP/MAPt	Missed Approach Procedure/Point
MDH	Minimum Descent Height
NATS	The en-route and terminal Air Navigation Service Provider (Previously National Air Traffic Services)
NERL	NATS En-Route Limited
NM	Nautical Mile
PBN	Performance Based Navigation
RAF	Royal Air Force
RNAV	Area Navigation
RotAR	Rules of the Air Regulations
RTF	Radio Telephony
SARG	Safety and Airspace Regulation Group (of the UK CAA)
SID	Standard Instrument Departure
SSSI	Sites of Special Scientific Interest
TMA	Terminal Control Area
VOR	VHF Omni-Directional Radio Range (ground-based navigation aid)
VPA	Vertical Path Angle

References

[1] Cabinet Office Code of Practice on Consultation

[2] CAP725 CAA Guidance on the Application of the Airspace Change Process

[3] ICAO Doc 8168 (PANS-OPS) Volume 2 Construction of Instrument and Visual Flight Procedures

[4] CAP785 Approval of Instrument Flight Procedures

[5] CAA Policy Statement - *The Application Of ICAO Airspace Classifications In UK Flight Information Regions (13 November 2014*)

[6] CAP1184 The Transition to Performance Based Regulation

[7] Implementation of Performance-Based Navigation in the UK

[8] ICAO Doc 9613 Performance Based Navigation Manual

[9] CAA Future Airspace Strategy

[10] CAA Policy Statement - *Policy for the Application of PBN in UK and Irish Airspace*

[11] CAA Policy Statement - *Significant Point Name Codes (5LNC) (14 October 2013)*

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1. About This Sponsor Consultation

1.1. What is this Sponsor Consultation about?

1.1.1. This consultation is about the proposed introduction of new Instrument Approach Procedures (IAPs) to Runway 03[1] at London Biggin Hill Airport (LBHA) to enable all-weather operations to be conducted safely and expeditiously and with reduced environmental impact. These IAPs are published by the United Kingdom (UK) Civil Aviation Authority (CAA) in the UK Integrated Aeronautical Information Publication (IAIP) for use by aircraft arriving at LBHA.

1.1.2. The introduction of the new procedures will provide a full instrument approach capability - which does not currently exist - to Runway 03. The current IAPs require that, when Runway 03 is in use, aircraft must make an instrument approach to the reciprocal Runway 21 followed by a circling manoeuvre to reposition onto final approach to land on Runway 03. A minimum height/altitude to fly this procedure is depicted on the relevant IAP chart. This is explained in detail, together with the options that have been considered, in the main text.

1.2. Arrangement of this Sponsor Consultation Document

1.2.1. Section 1 comprises background information and explains the requirement for a Sponsor Consultation, including:

- Why is the Sponsor Consultation being carried out?
- Who is being consulted?
- Conduct of the Sponsor Consultation
- Results of the Sponsor Consultation
- What this Sponsor Consultation is NOT about.

1.2.2. Section 2 provides context and covers LBHA Operations:

- A brief aerodrome History
- Current operations and future development
- Local Airspace
- Type of Air Traffic Services
- Airport Development
- Air Traffic Movements and Forecasts
- Timetable Drivers.

[1] Airport runways are referenced by a 2-digit number which is derived from the orientation of the runway relative to magnetic north. For example, if the runway is orientated on a bearing of 033/213°, the designation given to it would be 03/21. Runway 03 would require aircraft to depart/arrive on a north-easterly track (i.e. about 030°) and Runway 21 would require aircraft to depart/arrive on a south-westerly track (i.e. about 210°). Where a runway orientation lies between 030° and 034° the designation is rounded down to 03. If the orientation lies between 035° and 039° the designation would be rounded up to 04. As magnetic variation changes annually, the runway orientation is reviewed and referenced accordingly, and from time to time the runway designation needs to be changed.

1.2.3. Section 3 covers:

- What are IAPs?
- How are IAPs used at the Airport?
- What changes are being proposed?
- How are the IAPs designed?
- What options have been considered?
- RNAV GNSS Proposal in detail
- The Effect on other Aerodromes and Local Airspace Activity
- Summary.

1.2.4. Sections 5 covers the environmental impact of the proposal, including:

- Areas under the IAP Profiles
- Noise – General
- Noise – Comparisons
- Fuel Burn and CO2
- Visual intrusion and
- Local Air Quality.

This Section contains a number of maps which would be best viewed using the zoom feature in your software.

1.2.5. Finally, in Section 6, details are given about:

- Responding to the Sponsor Consultation
- The Focal Point for Responses to this Sponsor Consultation
- Queries on the proposed procedures
- What Happens Next?
- Confidentiality
- UK CAA Oversight.

1.2.6. Whether you are an aviation or community stakeholder or a member of the general public we welcome your contribution to our consultation.

1.2.7. The Sponsor Consultation document is supported by a number of Annexes**,** including a Glossary of Terms (Annex A) explaining, as simply as possible, some of the technical terminology used.

1.2.8. Whilst we have endeavoured to explain the proposed IAP procedures so that it may be understood by the layperson, it is expected that some consultees may not be familiar with aviation terminology, particularly with the technical aspects of IAP design. Thus the offer is made for them to seek clarification, preferably by e-mail query, if they so desire. How you can make enquiries is explained in paragraph 6.2.1.

1.3. Why is the Sponsor Consultation being carried out?

1.3.1. The CAA requires that where there is a significant change to procedures or the distribution of air traffic in the vicinity of an airport, a consultation must be carried out by the airport

operator concerned. The consultation must be with both the airspace users who may be affected by the change and organisations representing those who may be affected on the ground by the potential environmental impact of the change.

1.3.2. Whilst current regulations do not require that a formal consultation be undertaken for the introduction of new IAPs at LBHA, in this case, it has been agreed with the CAA that it would be prudent to complete a consultation to demonstrate transparency of the requirement and to ensure that appropriate due process is exercised. Moreover, such a consultation (carried out by the airport operator) enables the CAA to meet its obligations under the Transport Act 2000 and the Directions given to the CAA by the Secretary of State for Transport.

1.4. Who is being consulted?

1.4.1. In the first instance, the affected parties from the aviation fraternity comprising commercial and private aircraft operators based at or using LBHA are consulted. In addition, operators of adjacent aerodromes and other aircraft operators who might routinely operate in the airspace in the vicinity of LBHA (and might be affected by the change) are being consulted.

1.4.2. In the second case, the non-aviation affected parties comprising County, Borough, District and Parish Councils over whose areas the proposed nominal track of the procedures lie are being consulted. In addition, certain specific environmental organisations are also consulted. We also welcome the views of the general public and other interested parties who may be affected by the proposed changes.

1.4.3. Finally, the Airport has formed an Airport Consultative Committee (ACC) which meets routinely every 3 months. The ACC and its composition is included in the list of consultees shown at Annex B.

1.5. Conduct of the Sponsor Consultation

1.5.1. The CAA requires that the consultation is conducted in accordance with the principles set out in the Cabinet Office Code of Practice on Consultation (Reference [1]) and the Airspace Change Process (ACP) is detailed in Civil Air Publication (CAP) 725 - CAA Guidance on the Application of the Airspace Change Process (Reference [2]).

1.5.2. As required by CAP 725, LBHA staff attended a Framework Briefing given by the Safety and Airspace Regulation Group (SARG) - a division of the UK CAA - to obtain advice and guidance on the process to be followed. The Airport Management has appointed Cyrrus Limited to manage and co-ordinate the consultation process on its behalf. Cyrrus Limited is an independent aviation management consultancy company with extensive experience of managing ACPs and other airspace issues to meet the CAA's requirements.

1.5.3. This consultation document encompasses both the aviation and the environmental aspects of the proposed adoption of an IAP to LBHA's Runway 03.

1.5.4. The preferred methodology for consultation is through the LBHA Website, where a special page has been established dealing with this project and to enable consultees and other interested parties to respond. This method of consultation is entirely acceptable to the CAA and compliant with Government guidelines. Notwithstanding that, individual copies of the consultation document can be distributed to consultees upon request. Consultees who

prefer that the Sponsor Consultation document be sent in hard-copy should make the request to the focal point detailed in paragraph 6.1.1. Instructions on responding to this Sponsor Consultation are at Section 6.

1.5.5. In Section 3 of this Sponsor Consultation document we explain in detail the limited options available to us in providing an effective and regulatory-compliant IAP to serve Runway 03.

1.5.6. In accordance with the Cabinet Office Code of Practice on Consultation and the CAA's requirements, a period of 12 weeks is normally allowed for consultation. However, as this consultation will span the December festive season, the period of consultation shall be 13 weeks. Thus the Consultation period starts on 18 November 2015 and is planned to close on 17 February 2016.

1.5.7. Within this period we ask you, or the organisation you represent, to consider the proposed changes and the options that we have considered and submit your responses to us. Even if you have no comment to make on the proposed changes, we would still appreciate a response to that effect. Details of how to respond are shown on the website at www.bigginhillairport.com/acp and at paragraph 6.1.

1.6. Results of the Sponsor Consultation

1.6.1. We will be monitoring the responses as they come in to us. If we need clarification of any comments you have made, we will contact you.

1.6.2. LBHA will consider all relevant feedback received taking into account the guidance from Government and the CAA and the various CAA policy requirements. A summary of the key issues raised in the consultation and conclusions drawn from the responses, together with further details of the next steps will be provided in a feedback report which will be published on the LBHA ACP project website page after the end of the Sponsor Consultation. The report will form part of the formal ACP to be submitted to the CAA.

1.6.3. All of the feedback from the Sponsor Consultation will be made available to the CAA as part of the ACP. This will allow the CAA to assess independently whether we have drawn the appropriate conclusions from the feedback received whilst, at the same time, complying with the procedure design and consultation requirements.

1.6.4. However, it is essential to note that whereas some changes may be individually desirable from a community point of view, they may not be feasible for technical design or operational reasons or may be outweighed by disadvantages to other communities.

1.6.5. It will be the CAA's decision whether or not to approve the procedures that are submitted following this consultation. In reaching that decision the CAA staff will assure themselves that the procedures submitted are safe and in compliance with procedure design criteria and that LBHA has fulfilled the requirements of the consultation process. It is anticipated that the proposed procedures would be introduced around Quarter 4/2016 in accordance with international requirements for the promulgation of aeronautical information.

1.7. What this Sponsor Consultation is **NOT** about

1.7.1. Finally, it is appropriate to tell you what is not included in the scope of this Sponsor Consultation:

- This Sponsor Consultation is not about any aspect of Government Airports Policy nor the future development of infrastructure or the business model at LBHA.
- This Sponsor Consultation is not about addressing any perceived safety concerns about air operations in general in the locale which might be harboured by the public. Such concerns, if they exist, should be directed separately to the appropriate CAA department as safety of the air traffic management system is regulated by the CAA.
- This Sponsor Consultation is not about departing aircraft, Noise Abatement Procedures or Noise Preferential Routes.
- This Sponsor Consultation is not about controlled airspace (CAS) or the establishment thereof. However, in designing the proposed IAPs we are cognisant of CAS and the air operations of other aerodromes in the vicinity of LBHA and we have to take these factors into account.
- We are aware that a number of consultations have been carried out in recent time by London Gatwick (LGW) and London Heathrow (LHR) Airports and by NATS about the establishment of CAS associated with the London Terminal Control Area (LTMA) and over the south-east region in general. Many of our consultees will have been involved in those consultations. This Sponsor Consultation is not associated with any other airspace consultation, specifically the NATS-sponsored London Airspace Management Programme (LAMP)2, on which the consultation period has closed. However, it should be noted that the IAP on which this Sponsor Consultation is being conducted has been coordinated with the LAMP Development Team and is fully integrated into that project. Consequently, if/when the LAMP procedures become operational there will be no adverse 'knock-on' effect to this proposed IAP.

1.7.2. Any comments on the above issues which may be included in your responses will be noted but discounted from the analysis. Notwithstanding, such comments may be forwarded to the regulatory authorities in their original form and without further attachment or opinion being expressed by the Sponsor.

[2] The LAMP is a major airspace change project to be implemented over a number of years to meet the objectives of the CAA's Future Airspace Strategy (FAS). Phase 1a of LAMP involves changes to the way aircraft inbound to LBHA, London City and London Southend Airports are handled and includes changes to departure procedures from London City Airport, London Southend Airport, London Stansted Airport and LBHA. Information about NATS' LAMP project, including outcome of the NATS consultation, can be found at www.londonairspaceconsultation.co.uk and information about the FAS can be found at www.caa.co.uk/fas.

2. LBHA Operations

2.1. History

2.1.1. London Biggin Hill Airport is now a business and general aviation airport located in the London Borough of Bromley, situated 12 NM (22 km; 14 mi) south-southeast of Central London. The Airport is currently operated by Regional Airports Limited and has a CAA Ordinary Licence (Number P804) that allows flights for the public transport of passengers or for flying instruction as authorised by the licensee. The aerodrome was formerly Royal Air Force (RAF) Biggin Hill, and is best known for its role during the Battle of Britain in the Second World War.

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Image 1: Rearming a Spitfire during the Battle of Britain in 1940

2.1.2. After the war, LBHA was briefly used by RAF Transport Command, and then became a base for both regular and reserve fighter squadrons until 1958 when RAF Biggin Hill ceased to be an operational RAF station. Much of the civilian light aviation from the original London Airport at Croydon relocated to the aerodrome in 1956 and it became a joint civilian and military Airport from that time. Croydon closed completely in 1959, at which time Biggin Hill became a mainly civilian Airport with only occasional military flying taking place.

2.2. Current operations and future development

2.2.1. Today the Airport specialises in the general and corporate aviation niches, handling a growing spectrum of traffic from light private aviation to business jets of all types.

2.2.2. The Airport has two runways, aligned roughly north-south and east-west, which intersect at their respective southern and western ends, forming an unusual L shaped configuration. The longer north-south oriented runway (03/21) is 1,820 metres in length and Runway 21 is equipped with an Instrument Landing System (ILS) that allows approaches to be made successfully in weather conditions when cloud-base is as low as 200ft above the runway and/or the visibility is as low 800m in the vicinity of the landing threshold. The Airport layout is at Figure 1.

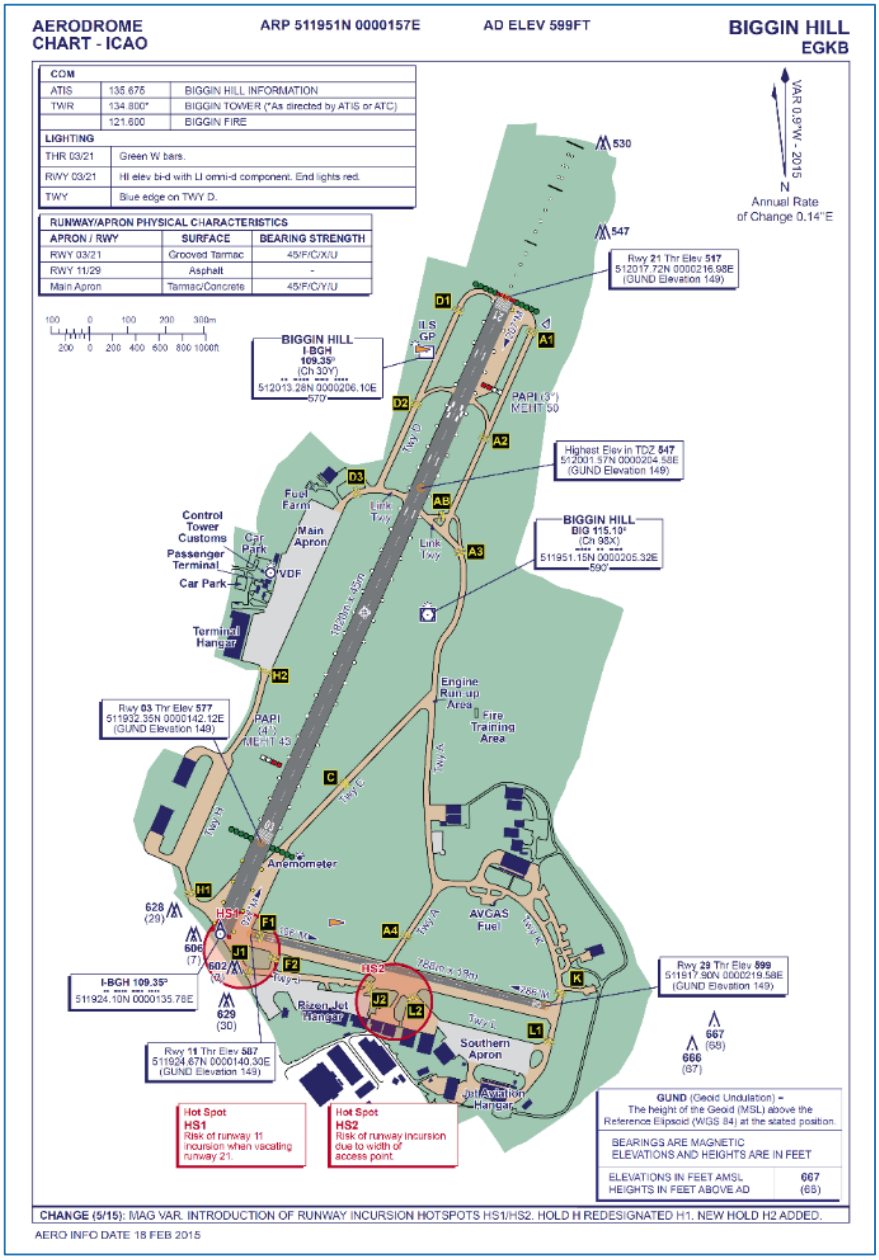

Figure 1: LBHA Aerodrome Layout

2.2.3. Procedural Approach (APC) and Aerodrome (ADC) Air Traffic Control (ATC) services are provided by the Airport itself and ATC surveillance services are provided under contract by NATS under the auspices of 'Thames Radar' at the London Terminal Control Centre (LTCC) located at Swanwick in Hampshire. LBHA is now used for a significant number of corporate

flights by business jets and similar sized aircraft. The Airport has a small passenger terminal suitable for business aviation which provides facilities for such flights as well as customs and immigration facilities.

Image 2: An Embraer Legacy Corporate Jet – Typical of the type of aircraft that now use LBHA

2.2.4. Future development plans at the Airport include, *inter alia*:

- Building more hangars and office accommodation;
- Developing an aviation-orientated training college;
- Building a hotel to cater for visiting overseas flight crews, personnel attending the training college and the general public;

The above developments are projected to create 2,300 new jobs over the next 15 years and have already been subject to a major local consultation process that resulted in an overwhelmingly supportive response from Bromley Borough and surrounding residents *(LBB council consultation - 40,000 responses with 76% public support)*

2.2.5. In concert with the development articulated in the previous paragraph, the Airport's management has undertaken to reduce environmental impacts on the Airport's local populace to the maximum extent practicable. Details of the consultation, results obtained and the Airport management's very public commitment to improving the environment in the locale can be found on the LBHA website that can be accessed at:

- www.bigginhillairport.com/airport-information/noise-restriction/
- www.bigginhillairport.com/about/the-environment/

2.3. Local Airspace

2.3.1. An explanation of the classification of UK airspace is provided at Annex A.4, how it is applied within the UK is at Reference [5] and a précis is at Annex C.

2.3.2. LBHA is situated outside of CAS (i.e. in Class G airspace). The airspace in the immediate vicinity of the Airport is protected by an Aerodrome Traffic Zone (ATZ) of 2.5 nautical mile (NM) radius and to a height of 2000ft aal. Pilots of aircraft must obtain permission from LBHA ATC to enter the ATZ.

2.3.3. Although outside CAS itself, LBHA lies in very close proximity to the Class A and Class D CAS that is established around and protects: LGW, LHR and London City (LCY) Airports. As a result, traffic arriving at LBHA through the airways system is treated as though it was a LCY arrival and Thames Radar, located at LTCC Swanwick, handles the traffic as such and then provides radar vectors to position aircraft onto the LBHA ILS IAP, rather than onto final approach at the LCY. This arrangement will continue after the introduction of LAMP Phase 1A that sees major and more efficient changes being introduced to the arrival procedures at LCY. Additionally, the airspace above LBHA is designated as LTMA and is Class A CAS. Consequently, LBHA is located within a 'tunnel' of un-controlled airspace formed by the 'walls' and a 'ceiling' of CAS. The division of airspace is shown in Figure 2.

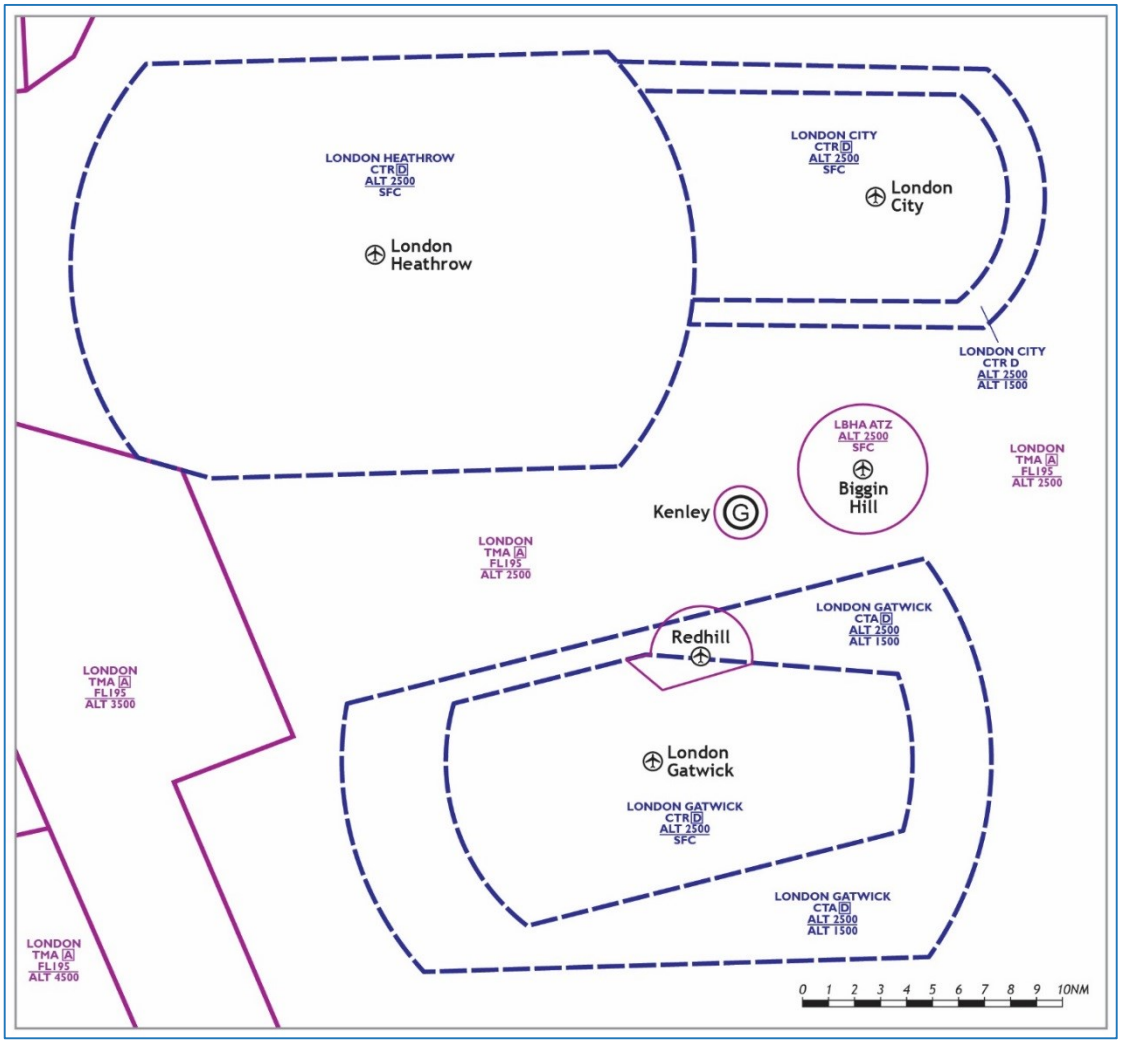

Figure 2: Simplified Representation of the airspace around and above LBHA.

2.3.4. The LBHA Management initially intended to propose the introduction of radio mandatory airspace as part of this submission to ensure that the aircraft engaged in conducting this IAP

under IFR could be, at least, made aware of the presence of other aircraft flying in their immediate proximity. However, the feedback from the General and Sport and Recreational Aviation Focus Group sessions was such that this option has not been incorporated into this submission on the basis that the change being proposed to the airspace arrangements (i.e. establish IAP within Class G airspace) is not unusual and exists at several similar airfields throughout the UK, for example at Exeter, London Oxford, Gloucester and Cranfield. Notwithstanding, the case for radio mandatory airspace will be reviewed at the Post Implementation Review Stage of the ACP process (Stage 7).

2.3.5. The presence of CAS over and around the major London airport encourages pilots who do not wish to avail themselves of an ATC service to transit though the local area using Class G airspace. Provided the LBHA ATZ is avoided, there is no requirement for pilots to be in contact with any ATC unit, but their flight must be conducted in accordance with the Air Navigation Order. Through good airmanship, many pilots contact LBHA ATC to make them aware of their presence, but some do not and conduct their flight on the 'see and avoid' principle. The presence of the IAP for Runway 03 is not anticipated to make any difference to the type and level of itinerant traffic transiting through local airspace and, as mentioned, in the previous paragraph, there are several UK airfields that have similar airspace arrangements established which operate safely and effectively.

2.4. Type of Air Traffic Services

2.4.1. Air Traffic Services (ATS) are provided by LBHA under an Approval from the CAA. The ATS comprise ADC (callsign: "Biggin Tower") and APC (callsign: "Biggin Approach"). The ADC Service provides the ATS to aircraft on the ground and in the immediate vicinity of the aerodrome. The APC Service provides the ATS to arriving and departing IFR and VFR flights and to transit aircraft where requested so to do.

2.4.2. LBHA has no indigenous ATS Radar Surveillance capability. Thus the ATS provided is "Approach Control Procedural Service". Under this type of service, aircraft are separated vertically or by time intervals based on position reports given by pilots, instructions given by ATC and the expectation that pilots will adhere to the notified Instrument Flight Procedures. However, as noted at paragraph 2.3.3, Thames Radar, located at LTCC Swanwick can and does provide radar services to LBHA under contract and is, effectively, LBHA's radar approach control service provider.

2.5. Airport Development

2.5.1. As noted in section 2.2, LBHA has seen a diversification of operation towards business and executive operations that require a greater level of sophistication to support regularity of operations. A number of associated works are also taking place at the Airport to ensure that the appropriate supporting infrastructure is available. These improvements include the installation of approach lighting on Runway 03, changes to the runway reference code from 'non-instrument' to 'instrument' criteria, the associated equipment updates and routine amendments to the Airport's Safety Management System and Manual of Air Traffic Services. These changes will be coordinated with this project and completed in a phased manner so as to compliment the introduction of the new IAPs to Runway 03.

2.6. Air Traffic Movements and Forecast

2.6.1. Flying Training once provided the mainstay of the traffic movements with over 200,000 annual aircraft movements being the norm in the mid to late 1980s. Whilst flying training activity is still undertaken by various companies at LBHA, the Airport now also handles corporate and business jet transports that have no requirement or desire to conduct numerous 'circuits and bumps' that previously characterised flying training operations at LBHA. Consequently total annual aircraft movements have fallen to circa 45,000 in 2014.

Year	Type		Rwy 21	Rwy 03	Rwy 29	Rwy11	Total	%
2009	IFR Arrivals		5036	659	14	8	5717	19.66
	% IFR By Rwy		88.09	11.53	0.24	0.14		
	VFR Arrivals						23370	80.34
	Total Arrivals						29087	
2010	IFR Arrivals		4809	869	14	5	5697	22.87
	% IFR By Rwy		84.41	15.25	0.25	0.09		
	VFR Arrivals						19215	77.13
	Total Arrivals						24912	
2011	IFR Arrivals		5804	536	12	2	6354	26.26
	% IFR By Rwy		91.34	8.44	0.19	0.03		
	VFR Arrivals						17841	73.74
	Total Arrivals						24195	
2012	IFR Arrivals		5816	435	8	4	6263	28.94
	% IFR By Rwy		92.86	6.95	0.13	0.06		
	VFR Arrivals						15380	71.06
	Total Arrivals						21643	
2013	IFR Arrivals		5103	850	7	4	5964	28.75
	% IFR By Rwy		85.56	14.25	0.12	0.07		
	VFR Arrivals						14780	71.25
	Total Arrivals						20744	
2014	IFR Arrivals		5551	336	3	2	5892	25.91
	% IFR By Rwy		94.21	5.70	0.05	0.03		
	VFR Arrivals						16847	74.09
	Total Arrivals						22739	

Table 1: Aircraft Movements (Arrivals) 2009-2014

2.6.2. Despite the economic downturn, the number of aircraft movements at LBHA has recently remained fairly constant as evidenced by the figures for the last 6 years as set out in Table 1. However, the number of IFR arrivals has increased from circa 20% in 2009 to circa 26% in 2014. This gradual increase reflects the airport's gradual transition from locally based flying training operations predominantly conducted under VFR to the Corporate and Business niche where operations are more routinely conducted under IFR.

2.6.3. Under the current operational arrangements, all of the IAPs make an approach on Runway 21 even when operating on Runway 03, or the much shorter Runways 29/11. The total IAPs have been sub-divided to the 4 runways to give an indication of how many aircraft fly approaches that result in a landing on runways other than Runway 21. Note that the figures do not cover those aircraft that have landed on Runway 21 with a tailwind, when their pilots' preference would have been to conduct a straight-in landing on Runway 03, had the option been available. If the change proposal is approved, it can be seen that there is potential for a significant reduction in the number of instrument approaches made to Runway 21 which will be to the immediate benefit of residents of Farnborough, Crofton and Petts Wood.

2.7. Timetable Drivers

2.7.1. LBHA Management is keen to progress this Project as part of its formal Noise Action Plan and to further enhance safe operations at the Airport. Clearly, LBHA wishes to introduce these advances in the shortest possible timeframe. However, due process – dictated by this consultation and regulatory requirements of CAP 725 – has to be followed and this, together with the necessary infrastructure changes and promulgation timescales to ensure that the worldwide aviation industry is notified of changes to procedures at any airport (typically up to 84 Days), means that the new IAP is unlikely to be operational before the last quarter of 2016.

3. Instrument Approach Procedures

3.1. What are IAPs?

3.1.1. IAPs are procedures by which arriving flights, operating under the IFR, can carry out a prescribed set of manoeuvres which will place the aircraft in a suitable position on the final approach path to the runway from which a safe landing can be completed. Such procedures are published by the CAA, for all airports in the UK where they are applicable, in the UK IAIP.

3.1.2. IAPs may be based on a variety of ground-based or space-based navigation aids. In the case of LBHA, the previously mentioned VOR/DME coded "BIG" located on the Airport (that may be used on its own) and an ILS currently provide the focal points for the procedures and the terminal holding facility. The existing IAPs are shown at Figure 3. It should be noted that, significantly, the VOR facility is not owned nor operated by LBHA, but by NATS (NATS En-Route Limited [NERL]) and that NERL has recently announced that the BIG VOR is to be withdrawn from service – and not replaced - in 2019.

3.1.3. No IAPs are currently published for Runway 03 which explains why all instrument approaches to LBHA are currently initially flown to Runway 21. The proposed introduction of IAPs to Runway 03 therefore gives rise to this consultation.

3.2. How are IAPs used at LBHA?

3.2.1. LBHA does not have a Surveillance Radar capability which would provide radar-directed routing of inbound aircraft towards the final approach track. The absence of a surveillance radar capability at the Airport means that this type of service provision is outsourced to Thames Radar, located at LTCC Swanwick, which can and does provide radar vectors to position aircraft onto the ILS IAP. However, it is still necessary, on a regular basis, for arriving traffic operating under Instrument Flight Rules (IFR) to carry out the whole of the published IAP in full. Separation of successive IFR flights inbound to LBHA and separation of inbound flights from outbound flights is achieved by LBHA Approach, in coordination with Thames Radar, issuing instructions to aircraft based on position reports given by the pilots of participating aircraft in accordance with established UK ATC procedures.

3.2.2. Runway selection at most airports is determined by the wind direction and speed. At LBHA, Runway 21 is used approximately 70% of the time and Runway 03 at most other times and Runways 11 and 29 even less so. Because all of the current IAPs are aligned on Runway 21, when the prevailing weather conditions require Runway 03 to be used for landing, the pilot must carry out a Circling Approach. The use of the Circling Approach procedure is dependent on the cloud base and visibility being acceptable (i.e. within defined criteria) and requires the pilot to maintain sight of the aerodrome environment and then carry out visual manoeuvres below cloud to reposition onto the final approach to Runway 03; see Figure 5.

3.2.3. The minimum height at which the visual manoeuvre can be carried out is dependent on the category (size and performance capability) of the aircraft and, for smaller aircraft, may be as low as 550ft above the aerodrome. Although safe, this manoeuvre is an inefficient method of operating, particularly in poor weather, and can lead to extensive delays to successive inbound flights and to aircraft awaiting departure.

Figure 3: Current ILS/DME/VOR IAP – Runway 21

Figure 4: Current VOR/DME IAP – Runway 21

3.2.4. To obviate this situation, the LBHA management wish to introduce 'balanced all-weather operations' that will enable reliable operations to be undertaken under instrument conditions to Runway 03 to support the Airport's long-term viability. The IAP is to be based on modern A**R**ea **NAV**igation (RNAV) techniques utilising Global Navigation Satellite Systems (GNSS); the best known GNSS to the public is the US Military's Global Positioning System (GPS), although this is only one of several such systems now available.

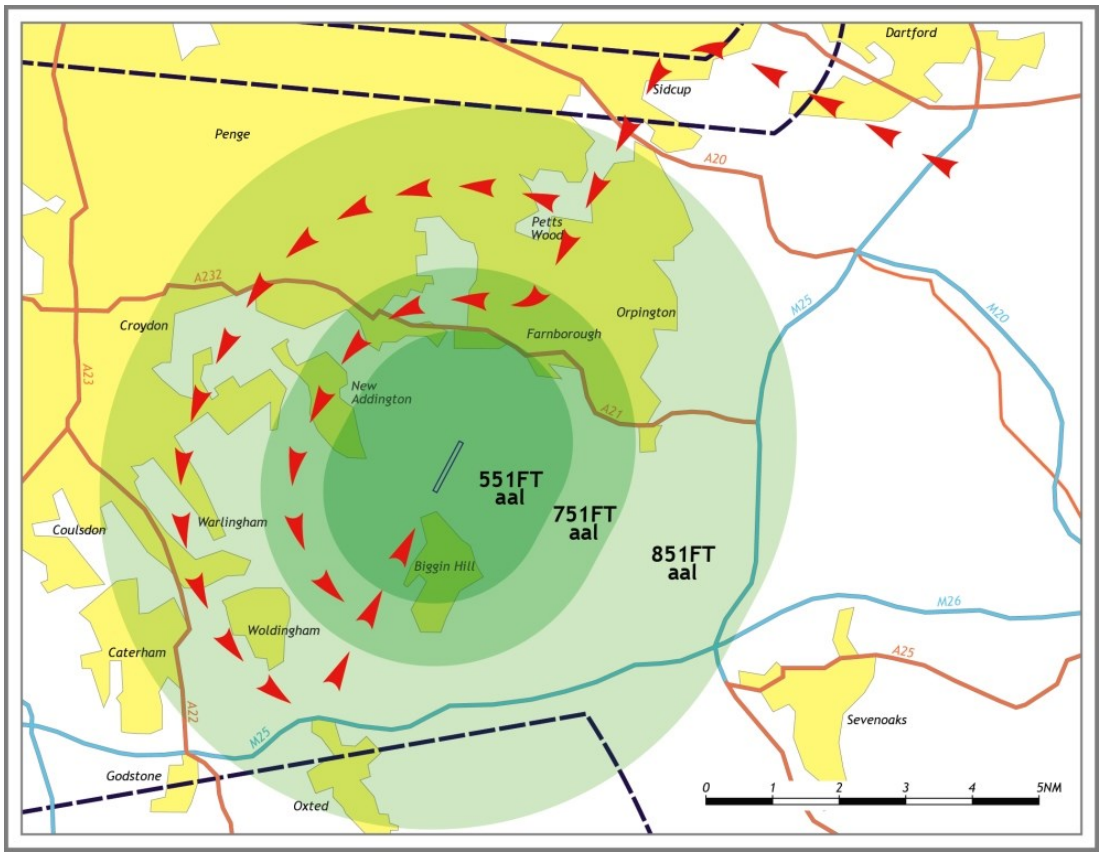

Figure 5: Simplified Representation of Circle-to-land Procedure and Areas Affected.

3.2.5. The introduction of RNAV (GNSS) IAPs to Runway 03 brings the following advantages:

- It would enhance safety. Current IFR procedures to Runway 03 comprise completing a downwind[3] ILS or VOR/DME[4] approach to Runway 21, circling to land on Runway 03 in potential meteorological conditions that might otherwise preclude flight under Visual Flight Rules (VFR). The minimum height i.e. above aerodrome level (aal) for conducting this procedure is circa 550ft for small aircraft, increasing to circa 850ft for the larger corporate jets and business aircraft as they will require more airspace volume in which to manoeuvre. Although entirely safe and an internationally recognised and legitimate type of approach, this procedure is also generally acknowledged within the aviation industry as the least preferred method

[3] Whilst the general rule is that aircraft should land and take-off into the wind, the current situation is that this initial approach has to be made with the wind *behind* the aircraft - "downwind".
[4] Very High Frequency Omni-directional Radio Range and Distance Measuring Equipment: Types of terrestrial navigational aids.

of instrument approach. Additionally, some pilots' operations manuals advocate landing on Runway 21 from an IFR approach, accepting a slight tail-wind component (circa 5 kts) in preference to conducting a circle-to-land procedure. Again, landing with a slight tailwind is not prohibited, but it is generally acknowledged that risk to aircraft operations is slightly increased by the use of this technique;

- The current conventional circling approach procedure to Runway 03 is perceived as inappropriate for use in IFR weather conditions and attracts a disadvantageous operational penalty for the modern high-performance executive and business aircraft that use the Airport. The introduction of IAPs to Runway 03 would effectively address concerns expressed by some aircraft operators with respect the use of less-than-optimal circling approaches;

- The local environmental impact and the 'startle factor' of business and executive aircraft performing circling to land procedures (which is an intrinsically noisy procedure, conducted in a high-drag, high-power and therefore high-noise configuration) would be reduced;

- It obviates an operational issue experienced by LTCC (Thames Radar) operating the Runway 21 – circle-to-land Runway 03 – procedure.

3.2.6. Circling to land is considered more difficult to fly and not as simple as a straight-in landing, especially when the cloud base is low and visibility poor. This is because the aircraft (whatever its size) has to fly at a relatively low altitude and must remain within a short distance (often only a few thousand metres) from the airport in order to be assured of obstacle clearance. In any case, the pilot must maintain visual contact with the aerodrome environment at all times as loss of visual contact means that the pilot can no longer continue the approach and will result in an immediate climb to the published safe altitude.

3.2.7. The adoption of 'straight-in' RNAV Approaches with Vertical guidance (APV) IAPs would allow the benefits of vertical as well as lateral guidance to be realised and will improve accuracy, achieve lower minima while further enhancing safety and reducing noise and emissions by providing automated 3 Dimensional (3-D) guidance. The introduction of an APV IAP would therefore be operationally highly desirable. A workable RNAV non-precision and APV IAP has been developed but a number of airspace issues require to be addressed through consultation before it can be introduced.

3.2.8. There is a further and far reaching unwelcome side effect of the circle-to-land on Runway 03 procedure. An aircraft conducting a circle-to-land procedure initiating a Missed Approach Procedure (MAP) or 'go-around' would be in a head-to-head confliction with any subsequent approaching aircraft. Consequently, Thames Radar or Biggin Approach cannot clear another aircraft to commence its approach until the preceding aircraft has landed. As a result, even a short sequence of Runway 03 arriving IFR traffic can result in the arrival sequence 'backing-up' into the LTMA. As LBHA shares arrival procedures with the busier LCY operation, traffic into LCY can also be backed-up, requiring aircraft to start holding when inbound to that airport. This, in turn, can cause a highly undesirable 'ripple effect' into the greater LTMA that is obviously operationally unacceptable and NATS is extremely keen to obviate the cause of such potential delays.

3.2.9. Holding is normally used when one or more aircraft need to wait for an improvement in the weather to enable a landing or if the runway becomes obstructed. Also, training aircraft sometimes need to practice holding and this occasionally happens at LBHA. The holds are depicted on the IAP charts shown at Figure 3 and 4.

3.2.10. No changes to the holding patterns or the procedures for entering the hold are required as the design of the new procedure is predicated on the current footprint of the hold and uses existing holding procedures.

3.3. What changes are being proposed?

3.3.1. The proposal by LBHA is to introduce a new RNAV IAP to support IFR operations on Runway 03. RNAV procedures, using space-based navigation technology, are common-place throughout Europe and are progressively being introduced at aerodromes around the UK as selected ground-based navigation facilities are withdrawn in accordance with established international and UK navigation policies; see References [6] to [10]. The RNAV procedures offer improved aircraft operating efficiencies and better utilisation of the airspace as well as environmental benefits by allowing more efficient profiles to be flown.

3.3.2. In the case of the proposed RNAV (GNSS) IAP to Runway 03, it will enable pilots of inbound IFR flights to fly a conventional 'straight-in', and therefore more stable approach to the runway and will permit a low-power, low-drag (and therefore low noise) configuration to be adopted. The use of modern technology IAPs can provide suitably equipped aircraft with safer 3-D guidance, resulting in lower approach minima. This operational benefit greatly improves the probability of pilots visually acquiring the runway and reducing the potential for Missed Approaches or 'go-arounds' and the possible subsequent need to divert.

3.3.3. A crucial benefit of introducing IAPs to Runway 03 is that it will eliminate the need for visual manoeuvring by aircraft at low-level after completion of an instrument approach to Runway 21. The introduction of the proposed new IAP will therefore significantly reduce noise impact of aircraft operations on communities in the immediate vicinity of the Airport when weather conditions dictate the use of Runway 03. In particular, traffic over Petts Wood, Farnborough, Crofton, Keston, New Addington, Woldingham and Warlingham will be substantially reduced with periods without any traffic over these areas whenever Runway 03 is in use (historically circa 30% of the time).

3.4. How are the IAPs designed?

3.4.1. IAPs are designed by specialist Approved Procedure Designers (APDs) in accordance with internationally specified design criteria (Reference [3]) which assure safe flyability by all categories of aircraft using the procedures together with safe clearance from obstacles and terrain. Both the specialist procedure designers and the procedures themselves are approved by the CAA. Whilst in some cases there is flexibility in the "style" of the procedures available for a given navigation aid, within each "style" the design parameters are tightly defined.

3.4.2. In determining what we believe to be the best options for the development of the proposed IAP, we are required to consider in detail both the operational and the environmental effects of all of the options available and reach a balanced judgement as to which are the most suitable. Environmental considerations are considered more fully in Section 5.

3.4.3. In consideration of the design, we have taken particular account of the built up areas surrounding LBHA and the adjacent CAS as described in paragraph 2.3 *et seq*.

3.4.4. It is important to emphasise that the diagrams depicting the procedures represent the nominal track of the procedure. There are navigational tolerances associated with each navigational aid and it should be recognised that there are also other variable factors to be accounted for such as:

- Individual aircraft size and speed;
- Weather conditions pertaining at the time;
- Aircraft equipment.

Thus, there may be some variation in the actual path across the ground that successive aircraft may follow; but it will always be within the tolerances for the safe operation of the aircraft. RNAV GNSS IAPs such as those being proposed are intended to be used 'auto-coupled' to the aircraft's autopilot through the Flight Management System (FMS) to reduce human error inputs. Consequently, the accuracy and therefore repeatability of track-keeping of RNAV IAPs has proven to be exceptionally good.

3.5. What options have been considered?

3.5.1. There are limited options available to LBHA Management to achieve the Operational Requirement of providing a method of conducting an instrument approach to Runway 03. Most require a significant investment in ground based infrastructure, together with associated ongoing running/maintenance costs. These options fall into 2 distinct categories: Precision and Non-precision approaches. The former provides electronic line-up (azimuth) and vertical (glidepath) information, achieving the aim of providing far more accurate information, allowing the use of lower minima. Non-precision approaches only provide azimuth guidance and are less accurate, and therefore attract higher minima. The reduction in accuracy is difficult to accommodate within the busy and congested LTMA environment.

Non-Precision - Non-Directional Beacon (NDB) IAP

3.5.2. A NDB (with or without an allied DME) is a very old (1920s) technology and suffers from various inherent operational weaknesses. Consequently, this type of equipment is being phased out, as the systems on aircraft improve and reliance on this type of ground-based installation diminishes. The accuracy of this procedure is such that high minima result and it is unlikely that an 'in-line' procedure could be designed, due to the availability of suitable sites. Moreover, LBHA is not currently equipped with this equipment and, therefore, a NDB would have to be purchased, installed, commissioned, flight checked and then subsequently maintained. As a result, this option was rejected and not pursued further.

Non-Precision - VOR/DME IAP

3.5.3. LBHA is cognisant of the fact that the airport-sited VOR could provide acceptable navigational accuracy for an IAP design based on that facility and serious consideration has been given to the introduction of a VOR/DME approach to Runway 03. However, the siting of the facility precludes the design of an approach aligned with the runway. Moreover, the accuracy of a VOR/DME IAP is not as good as that of a RNAV GNSS procedure and cannot provide any vertical descent guidance. These 2 factors would conspire to produce approach minima that

would be significantly higher than that achieved with the in-line RNAV GNSS approach. Most importantly however, the VOR facility is a NERL installation and is not owned nor operated by LBHA and the VOR is to be withdrawn in 2019 as it is no longer required for en-route or terminal airspace navigational purposes. Thus LBHA Management has taken the decision not to proceed with the introduction of a VOR-based procedure.

Precision - ILS IAP

3.5.4. Although currently the mainstay of precision approach procedures, ILS is based on late 1940's/early 1950's technology and has effectively reached the end of its development potential, although this equipment's capability remains impressive and accurate. Therefore, an ILS approach was a serious consideration and even some preliminary design work carried out. However, introducing an ILS-based IAP would require the installation of extensive - and expensive - ground equipment as well as introducing an obstacle environment within the runway Flight Strip safety zones. Moreover, ILS installations are very sensitive to siting constraints and there is no guarantee that a successful installation could be introduced at LBHA. Additionally, even if an installation proved viable, the best minima that could be obtained would only be 100ft better (at the very best 200ft above the runway) than that which will be applicable to the proposed RNAV GNSS IAP, which should realise a minimum descent height (MDH) of 300ft above the runway. Additionally, the installation of an ILS would accrue extensive on-going maintenance costs that includes the requirement to flight calibrate the equipment twice a year; this process involves a specially equipped aircraft flying numerous unusual flight procedures for about 2 hours to check that the ILS is operating within its specified parameters. The business case for an ILS installation cannot currently be justified when the use of Runway 03 is so much less frequent than Runway 21; consequently, the Airport Management has opted not to pursue this option.

3.6. Do Nothing

3.6.1. The current IAPs published to make an approach and land on Runway 03 were designed for earlier generation aircraft and are not really suitable for today's business and executive fleets which place greater reliance on sophisticated navigation capability in the cockpit. It is not possible to replicate the conventional procedures with 'overlays' of the latest RNAV design criteria and requirements. Consequently, it is not possible to 'Do Nothing' and rely upon procedures unsuited to modern aircraft operations. Moreover, the environmental advantages and safety enhancements accruing from the adoption of an IAP to Runway 03 are such that the 'Do Nothing' option is not accepted as a long-term situation.

4. RNAV GNSS Proposal

4.1. Overview

4.1.1. For the reasons outlined in paragraph 3.3, the adoption of an in-line IAP with lower minima has distinct operational benefits for the Airport as well as significant overall environmental benefits to local residents. Approaches will be initiated from a higher initial altitude and be conducted in a low-drag, low-power configuration to lower minima with a concomitant higher 'landing success rate' that should reduce even further the rare occasions when aircraft will have to initiate a MAP or 'go-around'. This will be as a direct result of the proposed IAP presenting the aircraft established on a stabilised approach, allowing the pilot to monitor instrumentation to ensure that the correct flight path is being followed accurately, rather than manually flying the aircraft around in limited airspace on varying pilot defined tracks with only visual references to assist.

4.1.2. In the previous section, the options for terrestrial-based procedures were explored and discounted. The most relevant option to meet the operational, safety and environmental requirements is the introduction of an RNAV IAP. The proposed RNAV GNSS IAP is shown (in a similar format to that at Figure 3 and Figure 4) at Figure 6. The same ground track is overlaid on a scaled drawing – to show the relationship of the IAP to ground features - at Figure 7.

4.1.3. It is pertinent to note that, whatever IAP is adopted to meet LBHA's Operational Requirement to provide an IAP to serve Runway 03, under CAP 725 Requirements the LBHA Airport Management would still have to follow the ACP process.

4.2. Detailed Description of the Proposed IAP

Airways Direct Arrival Prior to the IAP

4.2.1. For traffic arriving via the UK en-route (airways) system, the procedure starts at an existing position/waypoint called ALKIN. Associated with ALKIN is a holding pattern that is utilised should the aircraft need to hold, either because of traffic sequencing or waiting for a weather improvement to enable an approach to be safely initiated. It is emphasised that ALKIN is a *long established* position and holding pattern as can be seen by comparing the position and holding criteria between Figure 3 and that proposed in Figure 6. Additionally, it should be noted that, for this procedure, aircraft position at ALKIN at 3000ft amsl to ensure containment within CAS that has a base of 2500ft amsl in this area.

4.2.2. In most circumstances when LBHA is on Runway 03, LGW is likely to be operating on Runway 08, although this not always the case. From ALKIN it would be preferable for arrivals to route to the east of LBHA and position onto final approach from the south-east as this provides the shortest track distance. However, if aircraft positioned in this way, it would put them in direct confliction with Runway 08 departures from LGW with no means of safely resolving the situation without unacceptably affecting the flow of traffic out of LGW. Therefore, the IAP takes the traffic in the same anti-clockwise traffic flow as LGW (and LHR), to approach LBHA from the south-west.

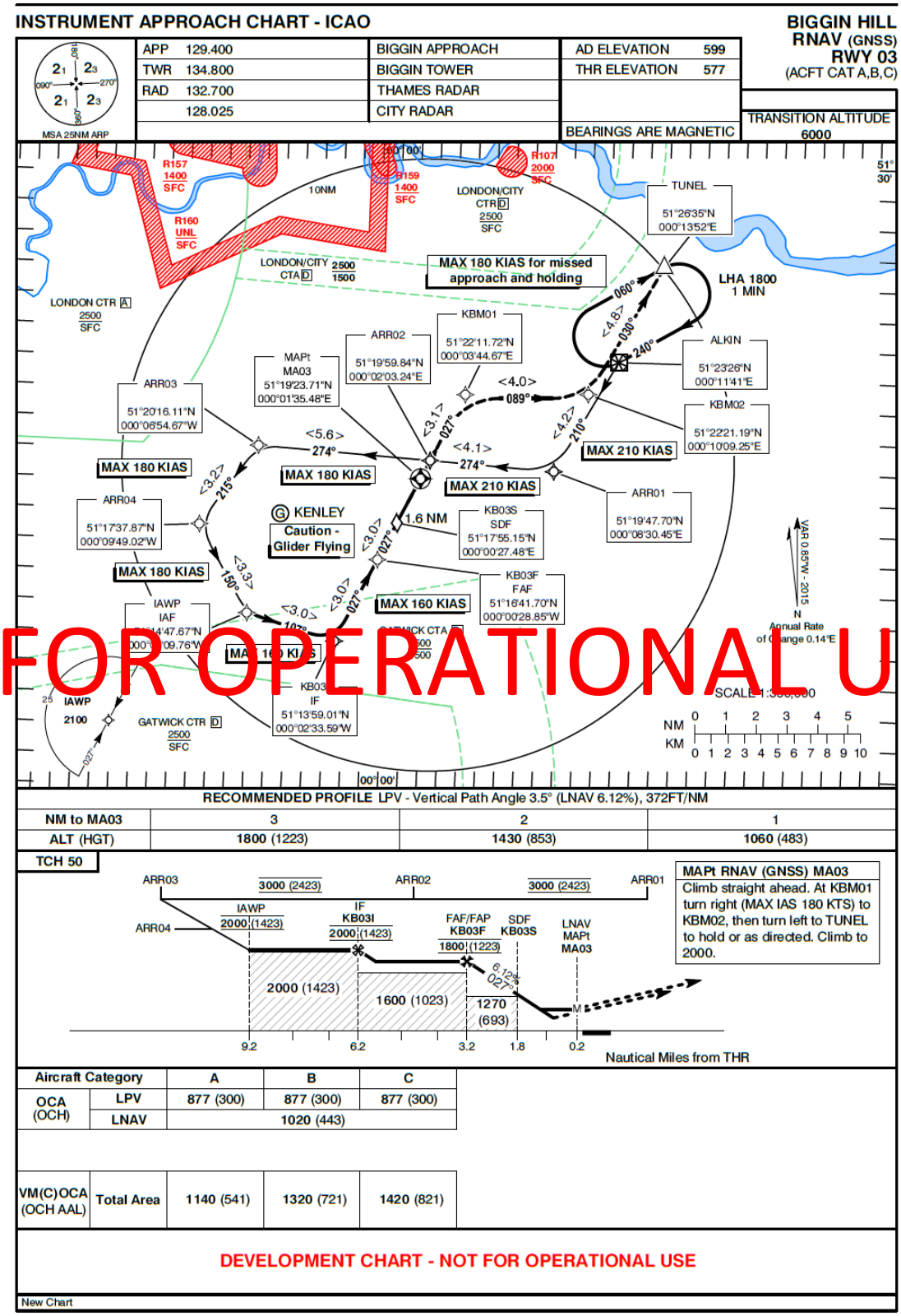

Figure 6: Proposed RNAV GNSS IAP – Runway 03

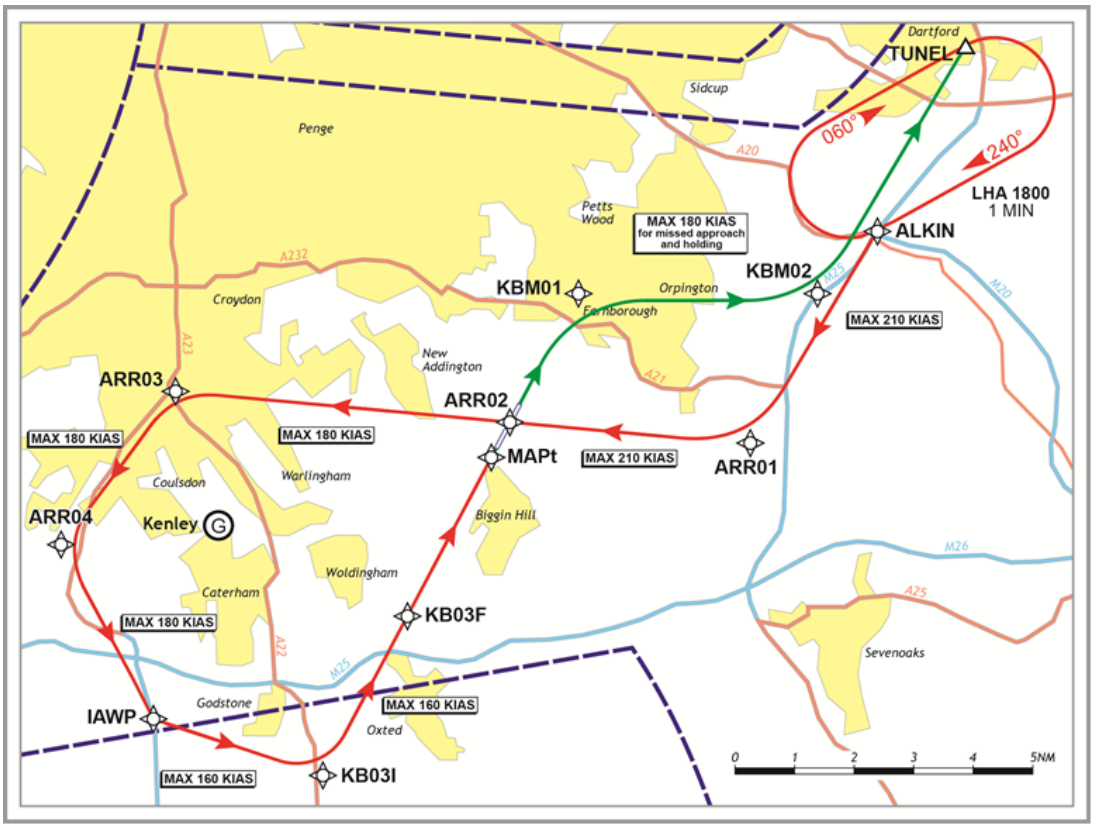

Figure 7: Proposed RNAV GNSS IAP – Runway 03

This, in turn, allows the aircraft to maintain 3000ft amsl for this 'Direct Arrival' portion of the procedure which keeps the aircraft within CAS (base 2500ft amsl) so that LBHA arrivals are not vectored to avoid itinerant transit traffic – the intentions of which are unknown - operating in the uncontrolled (Class G) airspace below 2500ft amsl. Consequently, the track can be very predictable and therefore repeatable. Furthermore, at 3,000ft amsl a typical business jet in clean configuration would be audibly imperceptible from the ground.

4.2.3. In order to avoid other routes in the LTMA used by LHR, LCY, London Southend, London Stansted and London Luton, the preferred track from ALKIN would be via the LBHA overhead. However, this would mean direct overflight of significant residential areas such as Orpington and Farnborough. Whereas the type of aircraft flying this IAP are inherently quiet, the opportunity has been taken to route east and south of the Orpington conurbation over relatively open countryside by introducing a turning waypoint designated ARR01 (the designation of this and other similarly-designated positions may change later) positioned overhead the M25 Junction 4; the minor increase in track distance occasioned by introducing this 'dog-leg' is considered acceptable when compared with the reduction in overflight and reduction in potential disturbance to densely populated suburban areas. From ALKIN to overhead LBHA (waypoint ARR 02) the aircraft maintains 3000ft amsl.

4.2.4. Subsequently, the aircraft continues on the same westerly track to a waypoint currently designated ARR03 where the aircraft turns south-westerly. The purpose of this leg is to provide some displacement to the west of LBHA so that the aircraft has enough space to turn onto final approach and descend without the procedure becoming 'rushed', possibly resulting in an unstable approach. Until the turn at ARR03, the aircraft will have been

maintaining 3000ft amsl at no more than 180 kts indicated airspeed (IAS); this is slow enough to enable the aircraft's turns to be of relatively small radius while allowing the aircraft to maintain a 'clean', low-drag, low noise configuration (e.g. no slats, flaps or landing gear deployed) allowing low power settings to be used thereby reducing noise to the absolute practical minimum. Additionally, maintaining the aircraft within CAS at 3000ft amsl eliminates any interaction between the Gliding and General Aviation activities at Kenley Aerodrome as these operations have to be conducted outside of CAS. Therefore, there is no impact on operations at Kenley and no change to the status quo for that aerodrome.

4.2.5. Ideally, it would be preferable and beneficial to intercept the final approach track at, and commence final descent from, 3000ft amsl. However, this is not possible due to interactions with arrivals and departures at all the other airports and aerodromes served by the LTMA, but predominantly from LGW. It should be appreciated that the operations and track separation between all the aircraft operating in the LTMA are finely honed with no airspace wasted[5]. The LGW departures are constrained to 3000ft amsl due to LHR departures at 4000ft and 5000ft amsl above, and arriving traffic at altitudes above that. Consequently, descent has to be initiated from 3000ft amsl to 2000ft amsl and at 180 kts IAS when the LBHA inbound aircraft turns - clear of Kenley - after ARR03 to ensure that the standard 1000ft vertical separation between the LBHA inbound and outbound LGW departures is established. The length and specified speed of this south-westerly segment also means that most aircraft can also remain in a low drag, low noise configuration with the associated benefit to the noise footprint. Consultees should also note that this leg has been designed to overfly the mean line of the busy A/M23 to reduce further any potential noise impacts on local communities and delivers the aircraft at an appropriate speed and altitude at the IAP's Initial Approach Way Point (IAWP). This south-westerly leg ending at the IAWP completes the Airways Direct Arrival element of the IAP.

The IAP - Initial Approach

4.2.6. RNAV GNSS IAPs are normally of "T" or "Y" Initial Approach Segments, as shown in the design applied to the GNSS procedures in service at Exeter Airport (see Figure 8). For the IAP APD, the options for the design, prior to joining the final approach track, at LBHA are limited by the adjacent CAS serving LGW and the other London Airports. Consequently, with the sanction of the CAA, the LBHA IAP comprises only one leg of a standard "T" Bar design, which is the 5NM long, 106°M track segment from the 'IAWP' point (likely to re-designated as a 5-letter Name Code – see Reference [11]) to the KB03I (Intermediate Fix -IF) point . Such a truncation of an IAP is not an unusual solution to an IAP design problem and in no way detracts from the safety or effectiveness of the proposed procedure that is fully compliant with Reference [3].

[5] It should also be appreciated that these 'procedural' vertical separation standards are provided as an initial 'fail-safe' basis in the event that aircraft cannot establish 2-way radio (Radio Telephony – RTF) contact quickly with ATC, itself a very rare event. Once 2-way RTF contact is established, ATC can effect more efficient lateral separation using radar vectoring techniques to get aircraft climbing and descending in a more effective 'real-time' scenario.

Figure 8: Exemplar Standard T shape RNAV GNSS IAP Layout

4.2.7. The IAP therefore commences at the IAWP and it is here that aircraft not arriving via the airways system can join the procedure. At the IAWP, aircraft have to be at 2000ft amsl (set by obstacle clearance criteria) and at, or reducing, to 160kts IAS; these are entirely normal parameters for this stage of flight. It is noteworthy that the accuracy of the navigational guidance delivered to the aeroplane is very accurate. The graphics at Figure 9 and Figure 10 are the technical read-out of a specially equipped calibration aircraft that undertook initial trials of RNAV approaches in 2001. Even to the non-technical observer, the accuracy and lack of deviation from the required track is clear and it can be anticipated that the majority of aircraft will follow the nominal approach track depicted in Figure 7 with a high level of repeatability.

4.2.8. During this segment of the approach, aircraft will commence initial configuration for landing and deploy flaps, but only to an initial high-lift/low drag 'stage 1' position. However, it should be noted that the aircraft's track is predominantly over open ground and routes between Godstone and Bletchingley, thereby minimising environmental impact to residents of those locations.

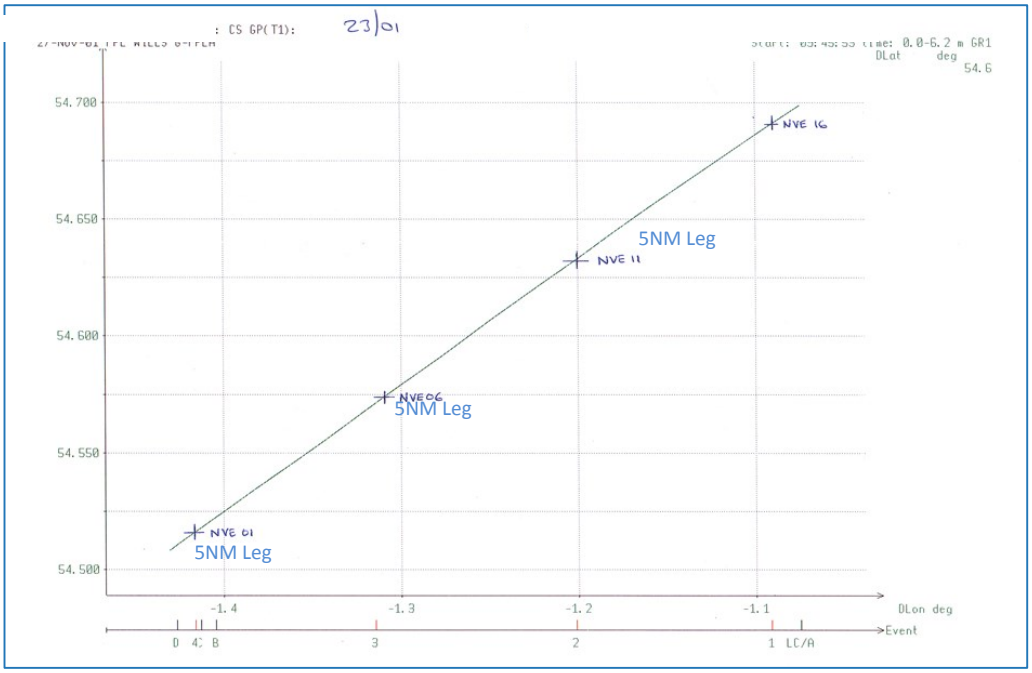

Figure 9: Technical Analysis of Lateral Track Keeping Accuracy of an Aircraft Flying a Straight-in RNAV GNSS IAP

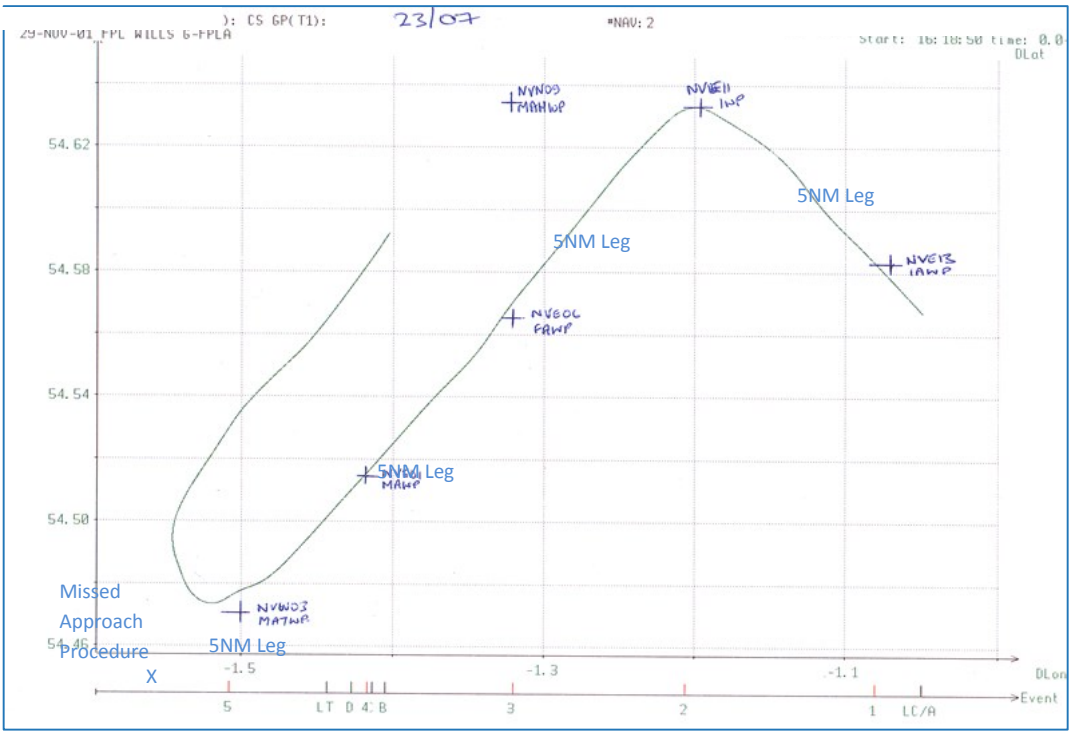

Figure 10: Technical Analysis of Lateral Track Keeping Accuracy of an Aircraft Flying an RNAV GNSS IAP via an IAWP

The IAP - Intermediate Approach

4.2.9. The aircraft RNAV navigational equipment and FMS, in conjunction with the autopilot anticipates the turn at KB03I (the IF) and positions the aircraft onto the Final Approach Track, turning inside and avoiding overflight of Oxted and/or Limpsfield and remains well to the east of Woldingham. Again, due to the airspace constraints occasioned by the presence of LGW, the IAP has to be designed to meet minimum Intermediate and Final segment lengths (3NM) to fit into the available volume and minimise impact on LGW while remaining flyable and compliant to International Civil Aviation Organisation (ICAO) design Regulations.

4.2.10. The UK CAA require the Final Approach Fix/Point (FAF/FAP) – i.e. where the aircraft intercepts the final descent glidepath, to occur at a 'whole hundred foot' altitude. Therefore, the lowest altitude/glidepath intercept altitude becomes 1800ft amsl, due to the obstacle environment in the final approach and intermediate segments. Consequently, the aircraft has to descend 200ft from 2000ft amsl to 1800ft amsl in the turn onto final approach. The reduction in power, and therefore noise, which might be otherwise achieved by this small descent will be offset somewhat as the aircraft will now need to deploy slats and second stage flaps on this leg; nonetheless there will not be a noticeable increase in noise required to overcome the increased drag of the aircraft. Whilst it would be desirable to remove this small height adjustment prior to final approach to introduce a continuous decent from 2000ft, technical design and airspace constraints prevent such consideration.

The IAP - Final Approach

4.2.11. The aircraft would be, by now, established and correctly configured on final approach at 1800ft amsl with speed reducing to final approach speed (different for all aircraft types, weight, weather, wind speed, etc) and will intercept the final descent point at the FAF/FAP

(as shown at Figure 6) where final aircraft configuration will usually take place i.e. landing gear and final landing flap selection. Due to the presence of several obstructions in the Intermediate and Final Approach segments, a 3.5° Vertical Path Angle (VPA) has to be employed to ensure appropriate clearance over obstacles is achieved. This is slightly steeper than the more usual 3° VPA, but is within the 'standard' range of VPA allowed by Reference [3] and is not unusual; see Figure 8 where the VPA is also specified at 3.5° for similar reasons of terrain clearance.

4.2.12. The approach continues until the aircraft reaches its MDH, which for this design cannot be lower than 300ft above the runway threshold elevation. At this point the pilot will determine if the required visual references in the vicinity of the runway threshold have been achieved and the aircraft is in a suitable position and attitude, then a landing can be effected. If, however, the required visual references have NOT been achieved or the aircraft is NOT in a suitable position and attitude to complete a landing, then the pilot has to initiate the MAP, otherwise known as a 'go-around'.

The IAP - Missed Approach Procedure

4.2.13. A MAP is NOT an emergency action but is a specified, controlled and pre-planned course of action that keeps the aircraft safely separated from ground obstacles and other traffic, routing an aircraft to a pre-determined location or fix where it can hold or re-commence another approach. In this case the MAP commences with a climb to 2000ft amsl - initially straight ahead - to a waypoint, KBM01. At this point a right turn is made to position away from LCY Runway 09 arrival procedures and to minimise overflight of Farnborough and Orpington to the maximum practical extent, commensurate with IAP design criteria compliance (Reference [3]).

4.2.14. The MAP then repositions the aircraft back towards ALKIN at 2000ft amsl where the aircraft can enter the hold, 1000ft below any other aircraft waiting to make its approach, or from where the procedure can be re-commenced.

4.2.15. A MAP is a rare event and will not be a regular feature of operations. For example, LHR reported 'go-arounds' for 2010 represented no more than 0.24% of the total arrivals.

4.3. Effect on other Aerodromes and Local Airspace Activity

General

4.3.1. In considering the operational aspects of the proposed IAPs and the options available, we are required to consider the implications for the operations of other aerodromes in the locality and their operating procedures.

4.3.2. Under the airspace operating rules notified under the Rules of the Air Regulations (RotAR), aircraft are permitted to operate freely in Class G airspace without reference to any ATC Unit. Many airspace activities take place in Class G airspace including flying training, gliding, hang-gliding and other leisure aviation activities as well as commercial and military flights. Many pilots elect to participate in radar surveillance services provided by suitably-equipped ATS Units and will thus be made aware of aircraft in their proximity which may be operating under the IFR; however, such services are not available from LBHA.

4.3.3. Similarly there are many IAPs notified in Class G airspace for aerodromes which do not have the benefit of the protection of CAS. Aerodromes in Class G airspace having notified IAPs are annotated on aeronautical charts so that the pilots of itinerant aircraft are aware that such procedures exist and can take them into account in planning and conducting their flights. Consequently, it is expected that good airmanship will prevail and that pilots would be vigilant and keep a good look out when transiting through the nominal flight path of a notified IAP.

4.3.4. LBHA is conscious of the wide range of aviation activity which takes place below and in proximity to the nearby CAS and has taken this into account in the design of the proposed procedures. As noted in paragraphs 4.2.3 to 4.2.5, the Airways Direct Arrival segment of the procedure is retained at 3000ft amsl within the LTMA (with base level 2500ft amsl) for the maximum extent practical to avoid impinging on the uncontrolled Class G airspace below the LTMA CAS and especially the operations at Kenley aerodrome.

4.3.5. VFR flights passing close to LBHA on an east/west routing may often use the M25 Motorway as a navigational line feature, keeping the Motorway on the left in accordance with Rule 5 of the RotAR. The M25 motorway lies approximately 1NM outside the LBHA ATZ. Whilst there is no statutory requirement for such flights to communicate with "LBHA Approach", provided they remain outside the ATZ, good airmanship dictates that the majority of transit flights should so communicate. Therefore, it must be recognised that where the final approach flight-path of the Runway 03 IAP crosses the M25 motorway it is possible that the aircraft will cross the path of the itinerant traffic. Similar encounters exist every day in the UK, but the 'see and avoid' principle is readily employed. The IAP will be published in the authoritative document (UK IAIP) and on topographical "VFR" aeronautical charts so pilots will be able to self-brief about the possibility of such encounters and either be extra vigilant in their lookout and/or contact LBHA ATC for traffic information. Moreover, the modern business and executive aircraft are fitted with 'collision avoidance systems' which provide an additional safety aid to pilots. It is anticipated that air traffic using the 03 IAP will benefit from information regarding local traffic passed either by Thames Radar or by Biggin Approach using air traffic monitor (ATM) advance uses.

4.3.6. LBHA considers that the risk associated with potential conflict in marginal weather conditions would be reduced with the availability of the proposed IAP to Runway 03 in comparison with the current procedure of visual manoeuvring after an approach to Runway 21. In the current scenario, the pilot's concentration would be very much focussed on visual reference to the runway itself rather than on lookout for other unknown aircraft. Moreover, the new procedure would permit pilots of itinerant aircraft to anticipate with some predictability and accuracy where aircraft on final approach to Runway 03 will be and, therefore, be able to concentrate their lookout in that area to undertake 'see and avoid' operations or alternatively, arrange their flight to remain clear of the approach path entirely.

NATS

4.3.7. The CAS around the London Airports, the LTMA, is managed from the LTCC at Swanwick. The LTCC airspace is sub-divided into various Sectors with specific responsibilities, such as arrivals and departures to LCY/LBHA, LGW and LHR. NATS staff were involved in a specific Focus Group to ensure that the IFP was developed co-operatively. This process is continuing and will establish the necessary practices and Standard Operating Procedures to assure effective integration with the current airspace arrangements.

London Gatwick

4.3.8. LGW is a major UK airport handling commercial air transport flights. In the main, all flights inbound to and outbound from LGW are contained wholly within CAS. The juxtaposition of LBHA and LGW, allied to the need for the LBHA IAP to penetrate, for however briefly, the LGW Control Zone (CTR) CAS will require detailed coordination to ensure that safe operations are effectively harmonised. To that end LBHA Management is in detailed discussion with LGW and NATS to ensure that all the interrelated procedures are coordinated. These discussions are likely to result in minor editorial changes to the specified minimum climb gradient to some of the published Standard Instrument Departures (SIDs) at LGW to ensure standard separation criteria are achieved and that safety standards are preserved; however, it is anticipated that these changes will not affect LGW operations as the required climb gradients are already being achieved in practice.

Kenley Aerodrome

4.3.9. The former RAF aerodrome at Kenley is a gliding site situated to the west of LBHA and conducts Service and civilian gliding activity including long range cross-country flights. Such flights routinely operate below CAS over a wide area. The risk of encounter between gliders and powered aircraft outside CAS (whether or not the powered aircraft are carrying out IAPs) is considered acceptable by the CAA and collision avoidance is effectively managed through the application of the RotAR. As explained in paragraph 4.2.4, the profile of the new IAP remains clear of the routine Kenley flying activities. It is proposed that a Letter of Agreement (LoA) is entered into between LBHA and the glider operators to provide a basic form of flying coordination to ensure that all parties are aware of each other's activities on a day-to-day basis.

Redhill Aerodrome

4.3.10. Redhill Aerodrome is situated just a few miles north of LGW and beneath the LGW Control Area (CTA) where the base level is 1500ft amsl. It is a licensed grass airstrip operating between 0900-1700 in summer and 0800-1800 local in winter. A number of locally-based light aircraft and helicopters operate from Redhill and aircraft up to light-twin (e.g. PA-31 Navajo) can be accommodated. To assist pilots in remaining outside LGW (Class D) airspace, specific arrival and departure routings based on four Visual Reference Points (VRPs); M23/M25 Motorway Junction, Godstone, Godstone Rail Station and Buckland Lake are already in place and these share the same airspace as the proposed IAP. However, within the Redhill ATZ aircraft must operate according to Visual Flight Rules (VFR); fixed-wing aircraft must have a minimum in-flight visibility of at least 5000m and a cloud ceiling of 1300ft aal; helicopters are required to have an in-flight visibility of at least 2000m and a cloud ceiling of 500ft aal. Outside of the ATZ the National VFR criteria applicable to Class G airspace apply. These criteria are considered adequate to ensure that pilots operate in conditions that enable visual separation based on the 'see and avoid' principle to be safely undertaken. Nonetheless, it is considered prudent that a LoA is entered into between LBHA and Redhill Aerodrome Management to ensure operations are aware, and facilitate safe integration, of their respective operations.

Other Local Flying Facilities

4.3.11. The operators of nearby private flying strips/sites listed in this paragraph are specific consultees to this Sponsor Consultation and will be made aware of the introduction of the new IAP. Pilots of radio and non-radio equipped aircraft operating to/from these would be aware of the existence of the proposed IAPs through notification in the UK IAIP and by specific briefing by the aerodrome/helicopter/microlight operators.

- Hurley Lodge helicopter site: Hurley Lodge helicopter site is a privately operated unlicensed helicopter landing site approximately 2NM southeast of LBHA. The nominal final approach track of the proposed IAP to Runway 03 at LBHA lies approximately 1.75NM west of Hurley Lodge. Hurley Lodge will be marked on the IAP chart (as shown in Figure 3) to warn pilots flying the approach of the potential of helicopters operating in the vicinity. Moreover, as an existing operational consideration, there is already a good relationship between LBHA and pilots of helicopters regularly operating in the vicinity of Hurley Lodge and procedures already exist in the LBHA Manual of Air Traffic Services Part 2 to cover operations to and from this helicopter landing site. IFR flights using the existing Runway 03 visual approach already pass close to this site.

- Green Dragons parascending and Hang Gliding near Warlingham: Parascending and Hang Gliding activities take place at Warlingham 3NM south-west of LBHA, just outside the LBHA ATZ at a distance of less than 1NM from the final approach track to Runway 03 at LBHA. Appropriate procedures are to be put in place between the Green Dragons Hang Gliding Centre and LBHA ATC for the exchange of information on their operations in the vicinity of LBHA. The hang gliding site will be marked on the IAP charts to warn pilots flying the approach of the potential of hang gliding and parascending operations in the vicinity. Thus an adequate means to pass appropriate traffic information to IFR flights conducting IAPs to Runway 03 will exist. IFR flights using the existing 03 visual approach already pass close to this site.

- East Haxted microlight site: East Haxted is an unlicensed grass airstrip lying approximately 10nm south of LBHA and is within the LGW CTR. The site is used rarely and all operations are conducted under VFR and under the jurisdiction of LGW ATC.

- Staffhurst Woods: Staffhurst Woods is a privately owned unlicensed grass airstrip sited approximately 10nm south-south-west of LBHA and within the LGW CTR. It is understood that this site is used only occasionally and that all operations are conducted under VFR and under the jurisdiction of LGW ATC.

Safety

4.3.12. Subject to the results of this Sponsor Consultation process, any proposals taken forward will be subject to the formal aviation-related Safety Management System processes that involve Hazard Identification and the application of the necessary remedial action. These actions will ensure, specifically, that effective procedures are in place to separate safely arrivals at LBHA, (following the new procedure) and departures (following promulgated SIDs) from LGW and LHR. The SARG division of the UK CAA will have final oversight that the respective airports' operations are safely integrated.

4.4. Summary

4.4.1. The proposed new IAP will significantly improve the operation of flights when weather conditions dictate that Runway 03 is in use. The new IAP reduces environmental impact to local residents, especially in the vicinity of Orpington, Farnborough, Petts Wood, Woldingham, Caterham and Warlingham whilst – operationally - reducing the requirement for conducting less-than-optimal visual manoeuvring at low level below cloud in repositioning to land on Runway 03 from an approach to Runway 21.

5. Environmental & Economic Assessment

5.1. Overview

5.1.1. The CAA guidance material contained within CAP 725 requires that the Sponsor undertakes an Environmental Assessment in order to assess the potential environmental impact attributable to the proposed change to the airspace arrangements. Whilst the CAP 725 specifies particular assessments defining traffic forecasts, effects of noise, change in the fuel burn/CO2, effect on local air quality and economic valuation of the environmental impact, not all of these categories can be adequately assessed for this proposal and this is explained further in this section.

5.1.2. Notwithstanding, Appendix B of CAP 725 expects the following:

- Where the ACP entails changes to an arrival route for traffic below 4,000ft agl then Leq contours must be produced;
- SEL Footprints must be produced when the proposed airspace includes changes to the distribution of flights at night below 7,000ft agl and within 25 km of a runway.

Currently, landings at LBHA do not take place at night but if they did the SEL calculations are included for completeness.

5.1.3. In addition, for completeness of the CAP 725 process, comment is made on the economic impact at paragraph 5.9.

5.2. Noise – General

5.2.1. The very nature of lining up on the extended centreline for Runway 03 will mean that potential exposure to aircraft noise on the approach will become more localised but not necessarily louder or more intrusive. There have been a number of studies into aircraft noise and the noise levels that emit from aircraft in flight and it is probably helpful to provide some comparative values and remove some of the false impressions that might exist about jet and turbine engines.

5.2.2. For those aircraft not making approaches to LBHA noise will continue to be transitory and variable. These aircraft are not the subject of this ACP and, in any event, their movements are too random to be able to discern their environmental impact in any quantitative way.

5.2.3. It should be noted that there are no changes to the routes used currently by aircraft departing LBHA and, therefore, these are not considered in this proposal.

5.2.4. There is a misconception that all jets are noisier than all turboprops which, in turn, are noisier than all reciprocating-powered aircraft. If estimated noise data from the US Federal Aviation Authority (*source FAA Advisory Circular April 2002 AC No 36-3H*) is evaluated it can be found that, for aircraft taking-off, the most popular training aircraft (Piper PA28 Cherokee) is twice as noisy as the quietest business jet (Cessna Citation Encore).

5.2.5. However, this consultation is about the establishment of approach procedures, a phase of flight when aircraft are not flown with engines at full power. Table 2 provides some comparative noise values derived from the same FAA Advisory Circular but for arriving aircraft which were estimated at 2000m (approximately 1.25miles) from the end of the runway when the aircraft would have been approximately 350ft or more above the ground. Clearly the noise levels experienced at greater distances from the end of the runway will be much less and maybe even inaudible if there is an ambient background noise. Closer towards touchdown, it is accepted that the aircraft will be closer to the ground and may be louder; however, this is no different to the position that aircraft find themselves in at the moment when positioning visually to final approach to land; therefore, in this respect there will be no change to the status quo.

5.2.6. The data in the Table 2 is provided to give the consultee an indication of the typical noise emitted by the subject aircraft flying the new IAP on Runway 03. By way of comparison against everyday usage of basic items, evidence suggests that a motor lawnmower emits a noise of 90 dB(A), a vacuum cleaner emits a noise of 75 dB(A) and if standing 5m from an HGV on the motorway it would emit a noise of approximately 95 dB(A).

5.2.7. The jet aircraft shown in Table 2 are typical of those using LBHA. The most frequent visitors are Citation (in all variants), but the others shown are seen at least once or twice a week. The 2 propeller-driven aircraft are shown for comparison.

Aircraft Type		dB(A)	Aircraft Type		dB(A)
Piper Cherokee		61	Gulfstream IV & V		81
Jetstream 31		74	Falcon 900		81
Citation Jet		78-80	Learjet		81
Challenger		80	Hawker 800		81

Table 2: Comparative Noise Levels on Approach – 2000m from Threshold

5.2.8. The noise levels shown in the third and sixth columns of Table 2 are Lmax (peak noise levels) which would be experienced at approximately one nautical mile from the runway end. It can be noted that the dB(A) values across the range of business and executive jets are not dissimilar (between 78-81 dB(A)). Generally, given that the jet and turboprop aircraft will fly

at an approach speed greater than 100 kts IAS any transient noise emitted by the aircraft should pass in no more than 15-20 seconds.

5.2.9. As a result of introducing an IAP to Runway 03 at LBHA, it is clear that a few households will experience overflights as aircraft are required to be lined up with the extended centreline of the runway up to 6.2NM from the threshold. Currently aircraft line up at distances out to approximately 4 NM from the 03 threshold and at power settings that may be significantly higher than those employed when following a prescribed IAP. Notwithstanding, the type of aircraft that will routinely be seen at LBHA are relatively quiet and will be using flight techniques that minimise the chance of noise annoyance. The Sponsor believes that any noise impact will be minimal and localised, especially in the context of the local ambient noise level, but will to the benefit of the majority of local community Stakeholders.

5.3. Areas under the IAP Profiles

5.3.1. The effect of introducing the new IAP will be to bring some regularity to the routes flown towards Runway 03 and the profile has been developed to minimise disturbance to those on the ground by keeping aircraft as high as possible for as long as possible. The IAP has been designed to minimise overflight of residential areas wherever possible with the airways Direct Arrival route circumnavigating Orpington. Parts of South Croydon and Coulsden would be overflown by aircraft during the initial part of the procedure; but this will be at 3000ft amsl and in a 'clean and relatively quiet' configuration. To minimise the potential effect, the south-westerly leg of the procedure has been deliberately positioned overhead the inherently noisy A/M23 main arterial road. The west to east 'base-leg' of the IAP has been positioned to minimise noise intrusion on Caterham, Blechingley and Godstone.

5.3.2. The final approach, when descent from 1800ft amsl is made, is situated over a relatively open landscape that minimises the numbers of the public that may be affected. Moreover, once descent is initiated, power and therefore noise is reduced and this noise reduction is further assisted by the slightly steeper than standard descent (3.5° vs 3°) that requires less power to maintain. As the aircraft is positioned for a stable, in-line approach there should be no requirement for sudden and sometimes intrusive power changes that are frequently required when flying the manual circle-to-land procedure. Consequently, simple inspection of the route reveals there will be far fewer people adversely affected by noise than is currently the case.

5.3.3. Runway selection was explained in paragraph 3.2.2 and at LBHA Runway 21 is currently used for about 70% of the time. In Table 1, we provided data on aircraft arrival movements at LBHA during the past 5 years and identified the number of IAPs that would have made a Circling Approach to Runway 03. Introduction of the new procedure will reduce the amount of traffic flying the Runway 21 final approach and descending as low as 1050ft amsl before manoeuvring visually for runway 03 by circa 30% which will bring an immediate benefit to residents of Petts Wood, Crofton, Farnborough, Keston, Chelsham, New Addington, Woldingham and Warlingham.

5.4. LEQ Contours

5.4.1. The latest current (2014) and future (2020) summer daytime noise contours were produced, allowing for local terrain, during 2015 to inform the LBHA Noise Action Plan. These contours (known as 57 dB $L_{Aeq,16h}$) are based on the existing procedures and given that:

- There are minor differences between the existing and proposed tracks in the contour area;
- The ACP is restricted to arrivals using the less frequent runway in use; and
- That departures contribute the most to the contours.

It is calculated that there will be no significant changes to future contour as a result of introducing the new procedure. It is noteworthy that these L_{Aeq} contours (associated with the runway) are contained within a swathe 1000m east/west about the runway and no more than 3km from the runway ends; consequently, the Leq contours are considered to be a measurement for impact 'locally'. The contours are depicted at Figure 11.

5.4.2. The areas and population within the future contours are expected to be as those given in the Noise Action Plan. Tables 3 and 4 which are taken from a specialist environmental impact report which informed the Noise Action Plan define the contour area (in square kilometres) and the population count in hundreds of persons. The population data shown in Tables 4 and 6 have been determined from a database provided by CACI Limited.

Contour $L_{Aeq, 16h}$	Contour Area (sq km)		
	Current (2014)	Future (2020)	NAP Limit
57 dB	2.1	2.9	4.3
63 dB	0.8	1.0	n/a
69 dB	0.3	0.4	n/a

Table 3: Leq Contour Areas

Contour $L_{Aeq, 16h}$	Population figures (rounded to nearest hundred)		
	Current (2014)	Future (2020)	NAP Limit
57 dB	200	400	n/a
63 dB	0	0	n/a
69 dB	0	0	n/a

Table 4: Leq Contour Populations

5.5. Sound Exposure Level (SEL) Footprints

5.5.1. SEL footprints are often developed to provide quantitative data to assimilate the effects of arriving aircraft landing at 'night'. Whilst night-time operations do not take place at LBHA, it is a useful exercise to establish the footprints for the loudest and most common aircraft types (Learjet and Cessna Citation) forecast to arrive in the early morning period. The SEL footprints for 80 and 90 dB (A) have been modelled for the existing Circling Approach procedure and for the new proposed route allowing for local terrain.

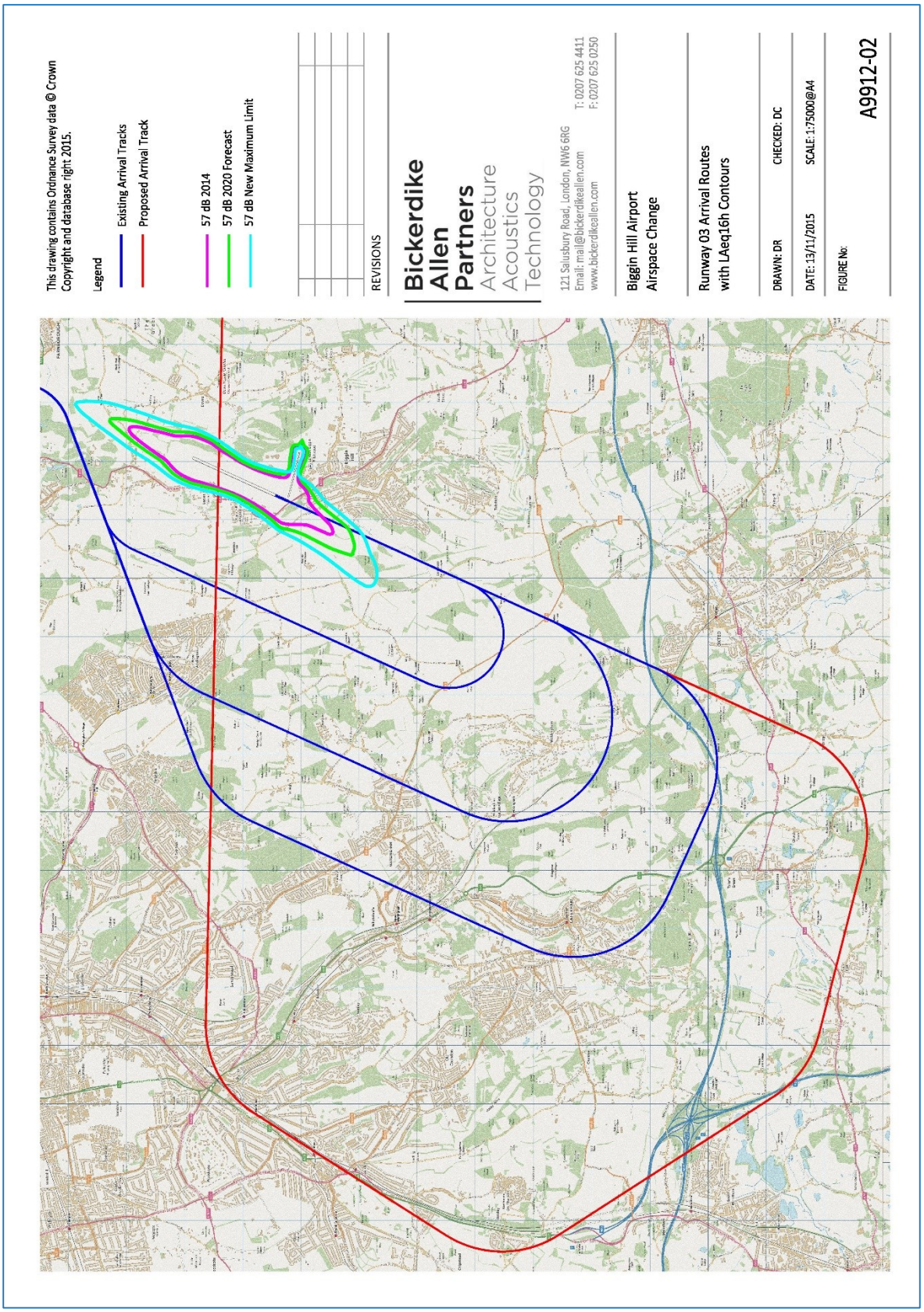

Figure 11: LAeq16h Contours (with new IAP included)

5.5.2. When comparing the 90 dB(A) SEL footprints of the existing procedures with the proposed procedure there is a modest reduction in the size of the footprints about the new procedure which stems from a small increase in aircraft heights in the final kilometres before touchdown. Comparing the 80 dB(A) SEL footprints of the 2 procedures, it is shown that the footprint associated with the new procedure is much smaller. This can be seen by comparing Figure 12 (existing Circling Approach to land Runway 03 procedure) with Figure 13 (RNAV GNSS IAP Runway 03).

5.5.3. This reduction is due to the existing procedure having aircraft in level flight at 1,200ft amsl for several kilometres before reaching final approach during which time there is a prolonged production of 80 dB(A) SEL on the ground in places. In comparison, the proposed aircraft flying the RNAV IAP remain at or above 2,000ft amsl until the final approach commences, thereby reducing very significantly the area exposed to 80 dB(A) SEL. This is shown graphically in Figure 14.

5.5.4. The SEL footprint areas and the populations they contain are given below in Table 5 and Table 6.

Route	Footprint Area (sq km)	
	80 dB(A) SEL	90 dB(A) SEL
Cessna Citation		
Existing routes	14.5 / 11.5 / 8.5	0.5
New RNAV IAP	2.8	0.4
Learjet 35		
Existing routes	7.2 / 5.8 / 4.5	0.3
New RNAV IAP	1.8	0.2

Table 5: SEL Footprint Areas

Route	Population in Thousands	
	80 dB(A) SEL	90 dB(A) SEL
Cessna Citation		
Existing routes	13.2 / 8.9 / 3.2	0.1
New RNAV IAP	0.1	0.1
Learjet 35		
Existing routes	4.6 / 3.2 / 0.7	0.1
New RNAV IAP	0.1	0.0

Table 6: SEL Footprint Populations

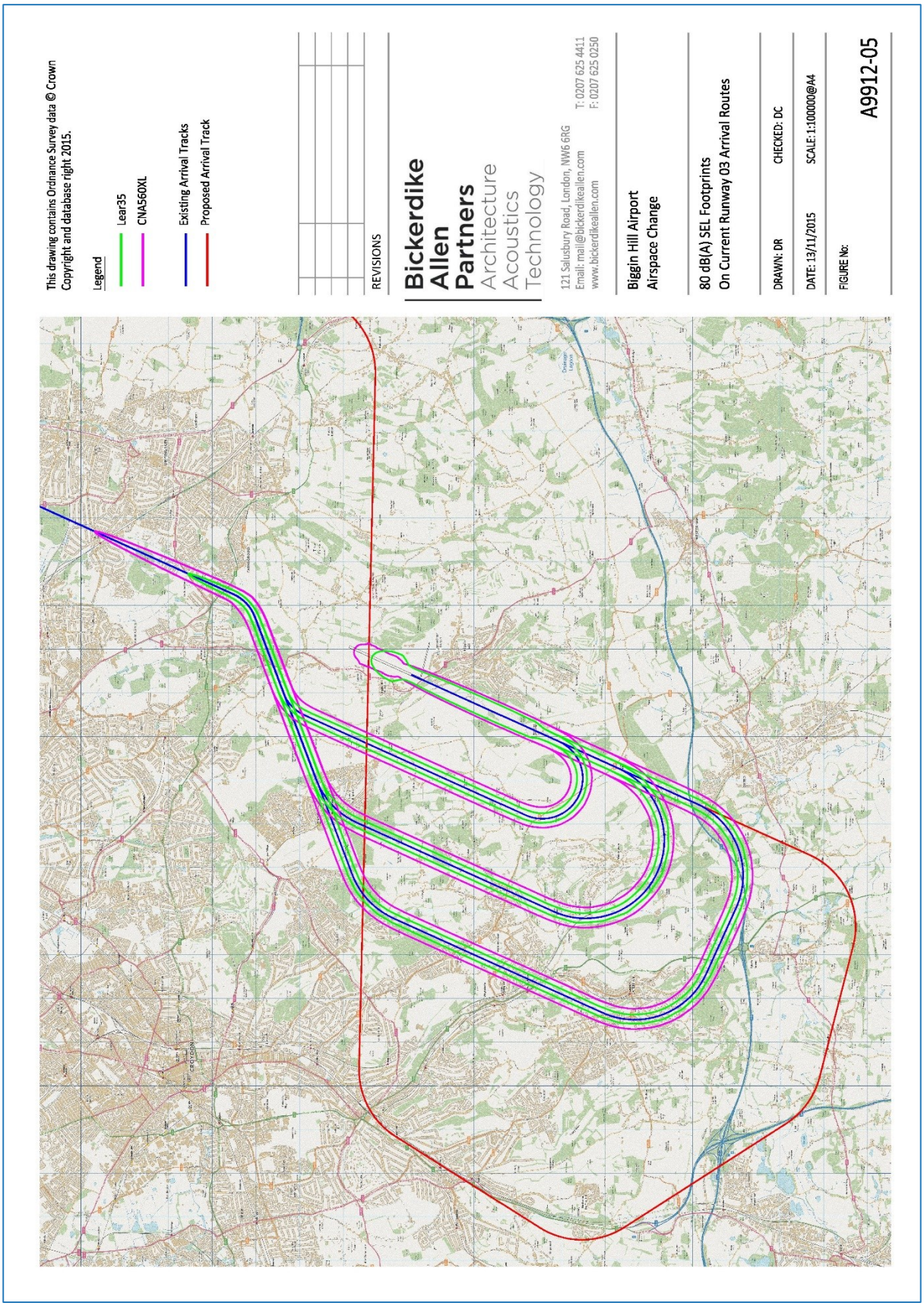

Figure 12: 80 dB(A) SEL Footprint (current Runway 03 arrival routes)

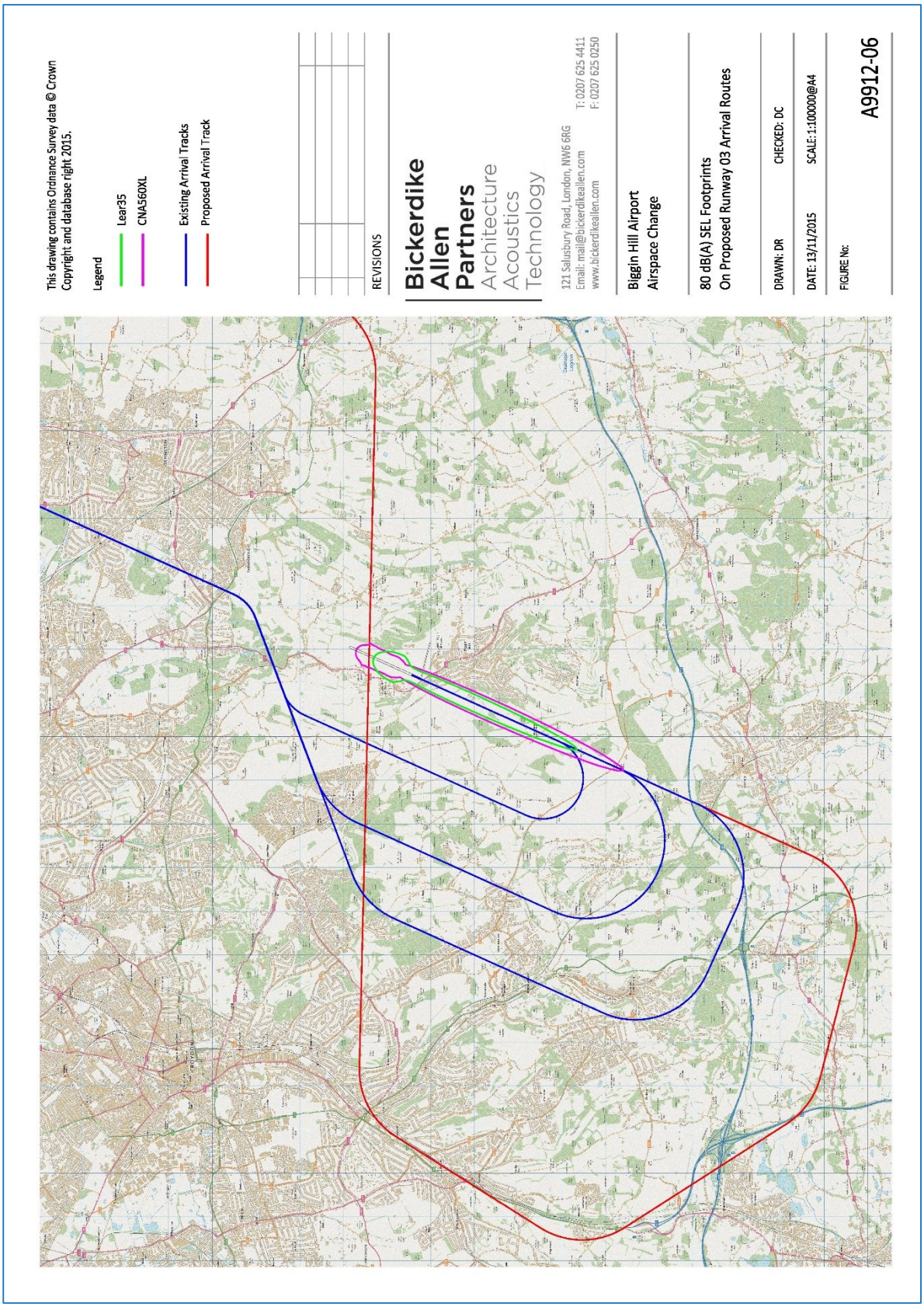

Figure 13: 80 dB(A) SEL Footprint (proposed Runway 03 RNAV GNSS arrival route)

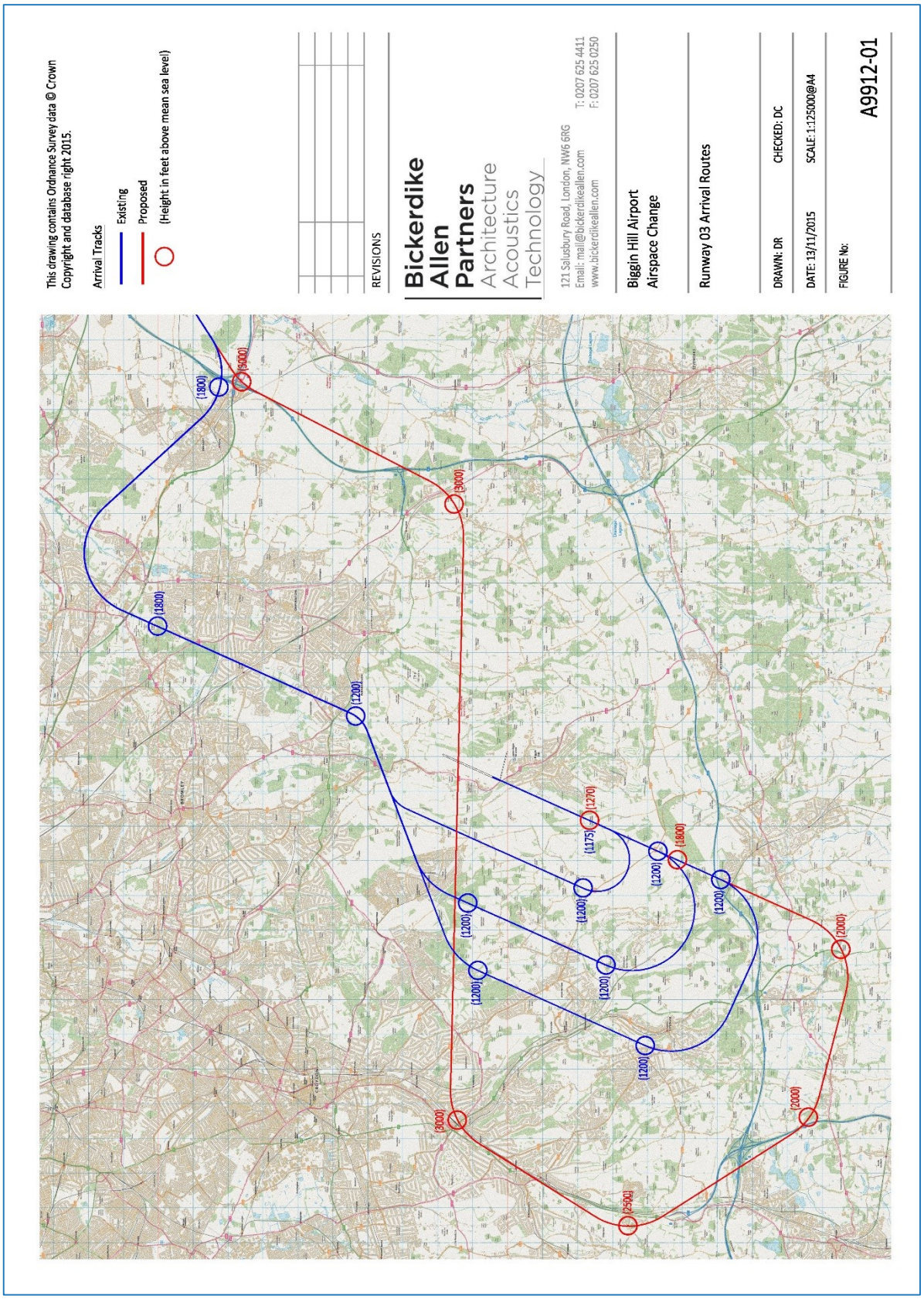

Figure 14: Comparison of nominal heights for routes

5.6. Fuel Burn and CO_2

5.6.1. Typically, aircraft that will be using the IAP will arrive via the airways system through ALKIN, as previously described at paragraph 4.2.1. This would be the common entry point for either the existing Circling Approach to land on Runway 03 or the new RNAV procedure. Although the nominal route of the new procedure is longer, it will be conducted at a higher altitude (3000ft amsl) and in a low-drag, low noise configuration as compared to the existing (shorter in route length) Circling Approach procedure which is conducted at low altitude (851ft aal) in a high-drag, high power (i.e. a very noisy and fuel inefficient) configuration. Turbine engine efficiency improves markedly with increased altitude and even the difference between 3000ft amsl and 851ft aal is appreciable and significant. The increased fuel-burn required by the longer track distance resulting from the new IAP is therefore offset somewhat by the more efficient profile. Moreover, the very substantial improvement in noise levels that accrue in the locale from the introduction of the new IAP are considered of greater significance than any increase in fuel burn that may result. Both the existing and new approach procedures were flown in the Global Express and Learjet 45 simulators and approach fuel burns (measured in lbs) were recorded as shown in Table 7. When measured across all types, LBHA believes that the introduction of IAP to Runway 03 should prove to be neutral in terms of overall fuel burn.

Learjet 45		BD 700 Global Express	
Existing Procedure	New Runway 03 IAP	Existing Procedure	New Runway 03 IAP
800	600	165	165

Table 7: Fuel Burn Results of Simulation

5.6.2. It is not possible to provide an estimate of the CO_2 impact because values cannot be modelled with a satisfactory degree of accuracy for the IAP given the variables arising from, for example, different aircraft types and operators, different routings towards the airport, the lack of prescribed tracks to be flown by aircraft within Class G airspace, the type of ATS provided, etc. However, it should be noted that airways arrivals through ALKIN will benefit from the improved and more efficient inbound routings being introduced under LAMP 1A anticipated in February 2016 (see paragraph 2.3.3) and when coupled to the more efficient RNAV procedure, there should be minor improvement overall.

5.7. Visual intrusion and tranquillity

Overview

5.7.1. Although difficult to measure, the potential visual intrusion and impact on tranquillity is recognised. However, it must be also recognised that LBHA now resides within a busy urban area with an appreciable ambient noise level, generated mainly by road traffic. Residents and communities close-in to the north and west of the Airport should notice distinct benefits as the need to conduct 3-D visual manoeuvring, using high power setting at relatively low level, will be rare. Similarly, communities under the Runway 21 approach path should enjoy a

marked reduction in overflights (circa 30%) as arriving aircraft will not be obliged to conduct instrument approaches to Runway 21 as a precursor to landing on Runway 03.

5.7.2. In the wider area, some communities may notice a minor increase in overflights by aircraft engaged in the Direct Arrival and Initial segments of the approach. However, in reality, aircraft in this stage of flight will be indistinguishable from other LTMA traffic operating within the LTMA above 2500ft amsl and itinerant traffic operating legitimately in the Class G (uncontrolled airspace) below that altitude. Moreover, those aircraft associated with this IAP will be not below 1800ft amsl until established on final approach from 3.2 NM when they will be indistinguishable from aircraft performing the current fully visual approach. In sum, it is suggested that changes to the status quo will be barely perceptible.

Areas of Outstanding Natural Beauty (AONB)

5.7.3. The proposed IAP does not overfly the Kent Downs, or any other, AONB.

Sites of Special Scientific Interest (SSSI)

5.7.4. Several SSSIs lay below or adjacent to the proposed IAP. However, with the sole exception of Godstone Ponds, all these SSSIs comprise sites associated with woodland, grassland, invertebrate assemblages and fauna interests that would not be adversely affected by aviation activities. Indeed, most SSSIs in the wider Kent region will be overflown by existing Commercial, General, Corporate/Business and Sport and Recreational Aviation activities. Accordingly, there is no effective change to the status quo.

5.7.5. Godstone Ponds is a site of breeding bird assemblage but this area is currently overflown by itinerant transit aircraft operating randomly but legitimately in Class G airspace and below 1500ft amsl to remain clear of LGW's CAS. Moreover, the site is overflown by numerous airliners departing LGW, from both runways at or about 3000ft amsl, and general LTMA traffic above that altitude. It is therefore considered that the bird colony will be well conditioned to the presence of aircraft in the vicinity and that this SSSI is not at risk from, or poses a risk to, this airspace change proposal where aircraft will be at 2000ft amsl in the area of Godstone Ponds.

5.8. Local Air Quality

5.8.1. Change Sponsors are only required to provide information on local air quality where the Airport operates within an Air Quality Management Area (AQMA). Government guidance states that, due to the effects of mixing and dispersion, emissions from aircraft above 1000ft are unlikely to have a significant effect on local air quality. There are no changes affecting flight paths below 1000ft which are all contained within circa 3NM of LBHA. LBHA does not lie in an AQMA and nor do the proposed approach paths for the IAP.

5.9. Economic Impact

5.9.1. The introduction of the proposed IAP to Runway 03 will not, in itself, have any obvious negative economic impact to the Airport or local community. LBHA has been designated by the Mayor of London and the local authority as a Strategic Outer London Development Centre with the aim of increasing business revenues, employment and economic trickle

down. Improvements in airport infrastructure are a key component of delivering the requisite economic growth. The proposed Runway 03 IAP is one component of this improvement program, most of which involves infrastructure upgrades coupled with environmental enhancements.

5.9.2. As detailed at paragraph 2.2.4, the LBHA Management wishes to broaden the appeal of the Airport, not just as an aerodrome but also as a valuable community asset that increases the economic benefit of the site. The potential of the Airports' initiative(s) – of which this project is an integral part - to create a projected 2,300 new jobs over the next 15 years will clearly have a very positive and highly beneficial economic impact to the local community.

5.9.3. Aircraft operators will see an appreciable benefit accrue from the introduction of the Runway 03 RNAV IAP as it will provide safer and more assured access to the Airport in all weather conditions which is important for flight planning and safe operation. The current approach arguably does not offer the required degree of certainty for all-weather operations.

5.10. Conclusion

5.10.1. In developing the proposed new IAPs to Runway 03 at LBHA we have taken due cognisance of the need to sustain (and where possible improve) the safety and expedition of aircraft operations at the Airport whilst at the same time giving due consideration to the effect of aircraft operations on nearby communities. We consider that the procedures outlined in this Sponsor Consultation document provide an appropriate balance between the competing needs of the aviation community and those communities on the ground in the vicinity of the Airport. The environmental impact will be largely neutral to most and an improvement to those communities living closer to the Airport. In economic terms, the introduction of the proposed new procedure will benefit the aircraft operators appreciably and, indeed, form a cornerstone for future planned improvements to the Airport.

6. Responding to the Sponsor Consultation

6.1. Focal Point for Responses to this Sponsor Consultation

6.1.1. You are invited to respond to the Sponsor Consultation and your response to this consultation should be addressed to:

Airspace Change - Sponsor Consultation
London Biggin Hill Airport
Main Road
Biggin Hill
Bromley
Kent
TN16 3BN

e-mail: ACP@bigginhillairport.com

6.1.2. The discrete e-mail address listed above is the preferred method for responding to this Sponsor Consultation. Alternatively, you can follow the links on the LBHA website to:

www.bigginhillairport.com/acp

where you may also additional useful information. Note that there is no facility to respond through Twitter, Facebook or other 'social media'.

6.1.3. Please indicate clearly as the first item in the subject Line of your e-mail that this is your **RESPONSE** to the Sponsor Consultation.

6.1.4. To confirm receipt of your E-mail, responses will be acknowledged electronically.

6.1.5. If you cannot submit your response by email you may do so in writing to the address at paragraph 6.1.1. Responses sent by post will not be acknowledged. If confirmation of receipt is required please use a recorded delivery service.

6.1.6. Please note that we cannot guarantee that a response submitted by any other means will be accounted for in the Sponsor Consultation. Late responses received after the closing date will be logged and stored but not analysed.

6.1.7. We will not enter into correspondence with individual respondents on issues relating to this Sponsor Consultation.

6.2. Queries

6.2.1. If you have any queries about what is presented in this document or if wish you to raise any queries on the conduct of this Consultation please contact the Focal Point (as detailed in paragraph 6.1.1 above) as soon as possible. Please indicate clearly that this is a **QUERY** about the Sponsor Consultation in the subject Line of your e-mail. (N.B. *If you use the e-mail link detailed above you will receive the electronic automatic e-mail acknowledgement. However we will be checking e-mails regularly and will respond to your query as quickly as possible*).

6.3. What Happens Next?

6.3.1. A summary of the key issues raised in the Sponsor Consultation and further details of the next steps will be provided in a feedback report which will be published on the LBHA website after the end of the Consultation. No personal details of respondents will be included in the Report.

6.4. Confidentiality

6.4.1. The CAA requires that all consultation material, including copies of responses from consultees and others, is included in any formal submission to the CAA of an ACP.

6.4.2. LBHA undertakes that, apart from the necessary submission of material to the CAA and essential use by our consultants for analysis purposes, LBHA will not disclose personal details or content of responses and submissions to any third parties. Our consultants are signatories to confidentiality agreements in this respect.

6.5. UK CAA Oversight

6.5.1. The CAA (SARG) maintains oversight of the conduct of the Sponsor Consultation being carried out by LBHA to ensure that we adhere to the process laid down in CAP 725. If you have any complaints about LBHA's adherence to the consultation process these should be referred to:

Airspace Regulator (Co-ordination)
Airspace, ATM and Aerodromes,
Safety and Airspace Regulation Group
CAA House
45-59 Kingsway
London WC2B 6TE
e-mail: airspace.policy@caa.co.uk

6.5.2. Please note that this address **must not be used** for direct responses to the Sponsor Consultation; doing this will make it unlikely that your views will be captured.

6.5.3. Furthermore, please note that the CAA will respond only to concerns about LBHA's compliance with the process. They will not comment on the proposal itself.

A. Glossary of Terms

A.1. Organisational

Abbreviation	Meaning	Comment
ANSP	Air Navigation Service Provider	The organisation approved to provide air traffic management services. In some cases an Airport Operator provides the air traffic services itself (as at LBHA) and in some cases the Airport Operator contracts a specialist Air Navigation Service Provider (ANSP) company.
CAA	Civil Aviation Authority	The specialist UK aviation Regulator established by government to oversee all aspects of aviation activity in the UK.
DAP	Directorate of Airspace Policy * (now SARG)	Prior to its merger with SRG on 1 July 2013, the DAP was the airspace approval and regulatory authority which conducted the planning of airspace and related arrangements in the UK. It ensured that the UK airspace was utilized in a safe and efficient manner. This was achieved through the development, approval and enforcement of policies for the effective allocation and use of UK airspace and its supporting infrastructure taking into account the needs of all stakeholders. These functions are now encompassed within the Safety and Airspace Regulation Group.
SARG	Safety and Airspace Regulation Group	The part of the CAA which oversees all aspects of air safety including the operation of aircraft and air traffic services. The SARG is responsible for the airspace arrangements in the UK. Note: Prior to July 2013 these functions were undertaken by separate Departments within the CAA, namely the Safety Regulation Group (SRG) and the Directorate of Airspace Policy (DAP).
ICAO	International Civil Aviation Organisation	An organisation established under the auspices of the United Nations through the Chicago Convention, charged with establishing Standards, Recommended Practices, Procedures for worldwide application.

Abbreviation	Meaning	Comment
NATS		Previously part of the CAA, NATS is an ANSP and was part privatised by the UK Government in 2001. NATS provides civil en route air navigation services in the UK under license from the Government and provides air navigation services at a number of airports under contract to the airport operators.
LTCC	London Terminal Control Centre	That part of the LAC which provides the Terminal ATC services for the LTMA Airports.

A.2. Documents

Abbreviation	Meaning	Comment
CAP	Civil Aviation Publication	The UK CAA publishes Regulatory, Guidance and Information material in the form of CAPs.
CAP 725	CAA Guidance on the Application of the Airspace Change Process	A document published by the DAP which details the procedure by which a proposal to modify airspace dimensions, classification or usage in the UK can be put forward to DAP for approval. The process to be followed by sponsors of airspace change enables the CAA to meet its statutory duties established under the Transport Act 2000.
MATS Part 2	Manual of Air Traffic Services Part 2	The document which contains the local instructions for each air traffic control unit and provides information which amplifies and interprets, at a local level, the instructions in MATS Part 1 and also details local separation standards to be applied where these differ from the national criteria because of specific local circumstances. The MATS Part 2 is subject to approval by the CAA as part of the Regulatory process.
PANS	Procedures for Air Navigation	ICAO documents which are the next level down from SARPS detailing procedures recommended for worldwide application. They specify in greater detail than the SARPS the actual procedures to be applied. e.g.: PANS-OPS Aircraft Operations PANS-ATM: Air Traffic Management

Abbreviation	Meaning	Comment
PANS-OPS	Procedures for Air Navigation Services - Aircraft Operations (ICAO Doc 8168)	Volume 2. Construction of Visual and Instrument Flight Procedures. A document published by the ICAO which specifies the criteria which are to be used on a world-wide basis for the design of Visual and Instrument Flight Procedures.
UK IAIP	UK Integrated Aeronautical Information Package	The State publication published by the CAA (CAP 32) to ICAO requirements detailing all of the aeronautical information and procedures applicable to civil aircraft operations in the UK. The UK IAIP is a notifying document, which means that procedures notified within it have legal authority. Amendment of the UK IAIP is in accordance with the AIRAC system.

A.3. Units of measurement

Abbreviation	Meaning	Comment
	Units of Measurement	Aviation uses a mixture of imperial and metric measurements. Whilst runway lengths are measured in metres, distances for navigation are measured in nautical miles (NM). 1NM is a distance of 6017.12ft, equivalent to 1.8520km. The standard unit for vertical measurement is feet (Ft).
aal	Above Aerodrome Level	The vertical displacement of an aircraft above aerodrome level is known as **Height**. The aircraft altimeter is set to the barometric pressure at the aerodrome (known as QFE).
amsl	Above mean sea level	The standard level reference for aircraft operations and airspace design below the Transition Altitude. The height of an aircraft measured above mean sea level is known as **Altitude** (ALT). The aircraft altimeter is set to the barometric pressure at the aerodrome, adjusted to take account of the aerodrome elevation (known as QNH).

Abbreviation	Meaning	Comment
FL	Flight Level	The height of an aircraft above a standard barometric pressure reference of 1013.25 Hectopascals and is the standard level reference for aircraft operations above the Transition Altitude.

A.4. Airspace and Air Traffic Services

Abbreviation	Meaning	Description
ATS	Air Traffic Services	A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service). (ICAO)
ATC	Air Traffic Control	A service provided for the purpose of preventing collisions between aircraft, and, on the manoeuvring area, between aircraft and obstructions, and expediting and maintaining an orderly flow of air traffic.
	Classification of Airspace	The ICAO system of classifying airspace by letter indicating the level of Air Traffic Service provided in the airspace and the meteorological criteria for VFR flight. Classes A to E are Controlled Airspace; Classes F & G are uncontrolled airspace. Class A airspace requires the mandatory operation of all flights according to the Instrument Flight Rules, Classes B, C, D and E controlled airspace permit VFR operations with differing levels of ATM compliance and application of separation by ATC.
	Class A Airspace	Controlled airspace in which the operation of flights according to the IFR is mandatory and in which ATC provides separation between all flights (including Special VFR flights).

Abbreviation	Meaning	Description
	Class C Airspace	Controlled airspace in which both IFR and VFR flights are permitted and in which ATC provides separation between IFR flights (including Special VFR flights) and between IFR flights and VFR flights and provides adequate management of VFR flights to permit the effective integration of traffic and collision avoidance. Throughout the EU airspace, all airspace from FL195 to FL660 is designated as Class C airspace but stringent access rules preclude the routine operation of VFR flights. In the UK, some portions of Airways are also designated as Class C Airspace.
	Class D Airspace	Controlled airspace in which both VFR and IFR flights are permitted and in which ATC provides separation between IFR flights (including Special VFR flights) and provides adequate management of VFR flights to permit effective integration of traffic and collision avoidance. In the UK, Class D airspace is the normal classification used for controlled airspace in the vicinity of aerodromes. Some Airway segments are also designated as Class D airspace.
	Class E airspace	Controlled airspace in which both VFR and IFR flights are permitted and air traffic service is only mandatory for IFR flights. VFR flights may operate without reference to ATC. The use of Class E airspace for Control Zones is not permitted.
	Class G Airspace	Uncontrolled airspace in which aircraft may operate freely, under VFR or IFR, without reference to any ATS Unit.
	Radar Vectoring	Provision of navigational guidance to aircraft in the form of specified headings based on the use of radar.
ATSOCAS	Air Traffic Services Outside Controlled Airspace	A menu of Air Traffic Services specified in CAP774 which are available, on request, to VFR or IFR flights operating in Class G airspace. The services comprise Basic Service, Traffic Service, Deconfliction Service and Procedural Service.

Abbreviation	Meaning	Description
ATM	Air Transport Movement	Landings or take offs by aircraft engaged on the transport of passengers, cargo or mail on commercial terms. All scheduled movements, including those operated empty, loaded charter and air taxi movements are included.
ATZ	Aerodrome Traffic Zone	Airspace of defined dimensions established around an aerodrome for the protection of aerodrome traffic.
CTA	Control Area	A controlled airspace extending upwards from a specified limit above the surface to a specified upper limit.
CTR	Control Zone	A controlled airspace extending upwards from the surface to a specified upper limit.
IAP	Instrument Approach Procedure	A series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en route obstacle clearance criteria apply.
IFR	Instrument Flight Rules	Rules 32 to 37 of the Rules of the Air Regulations which specify certain rules to be complied with (including Minimum Height Rules, level convention rules, flight planning, and ATC clearance rules and position reporting requirements). A pilot must be suitably qualified and the aircraft appropriately equipped in order to operate under the IFR.
IMC	Instrument Meteorological Conditions	Meteorological conditions expressed in terms of visibility, distance from cloud and ceiling, which preclude flight under the Visual Flight Rules.

Abbreviation	Meaning	Description
RMZ	Radio Mandatory Zone	An airspace of defined dimensions wherein the carriage and operation of suitable/appropriate radio equipment is mandatory. (EU IR 923/2012). Before entering an RMZ a pilot must make an initial call to the designated radio station giving the aircraft callsign, type, position, level, intentions and any other information prescribed by the competent authority. Whilst operating within an RMZ VFR flights in Class E, F or G airspace and IFR flights in Class F or G airspace shall maintain a continuous communication watch on the appropriate communications channel unless operating in compliance with alternative provisions for that particular airspace prescribed by the Controlling Authority.
TMA	Terminal Control Area	A Control Area normally established at the confluence of a number of ATS Routes in the vicinity of one or more major aerodromes. That area serving the London airports is known as the London TMA (LTMA)
VFR	Visual Flight Rules	Rules 25 to 30 of the Rules of the Air Regulations 2007
VMC	Visual Meteorological Conditions	Meteorological conditions expressed in terms of visibility, distance from cloud which permit flight under the Visual Flight Rules. In the UK the VMC minima for VFR operations in various classifications of airspace are laid down in Rule 27 of the Rules of the Air Regulations 2009 and different minimum flight visibility, distance from cloud and ceiling minima are specified between controlled and uncontrolled airspace.
VRP	Visual Reference Point	A point established in the vicinity of an aerodrome located within controlled airspace to facilitate access to and from aerodromes located within, and transit of the controlled airspace by VFR traffic. VRPs are located at prominent natural or man-made ground features which are readily identifiable from the air.

A.5. Infrastructure

Abbreviation	Meaning	Description
DME	Distance Measuring Equipment	A navigational facility which provides information to an aircraft indicating its distance from the facility. DME may be installed in conjunction with an en route, terminal or approach navigational facility.
GNSS	Global Navigation Satellite System	A navigation infrastructure using satellite based navigation data.
GPS	Global Positioning System	A GNSS provided by the US Department of Defence and available for public use.
ILS	Instrument Landing System	A precision instrument approach navigation aid which provides lateral and vertical track guidance to aircraft along the final approach track and distance information.
PSR	Primary Surveillance Radar	A surveillance radar system which uses reflected radio signals.
RNAV	Area Navigation	A method of navigation which permits aircraft operation on any desired flight path within the coverage of station referenced navigation aids or within the limits of the capability of self-contained aids, or a combination of these.
SSR	Secondary Surveillance Radar	A system of radar using ground interrogators and airborne transponders to determine the position of an aircraft in range and azimuth and, when agreed modes and codes are used, height and identity as well.

B. List of Consultees

B.1. Development of the Consultee list

B.1.1. This Section is included so that consultees understand why they have been included on the consultation list. In past consultations some aviation consultees have challenged the inclusion of non-aviation interests in an aviation consultation.

B.1.2. Development of the "Consultee List" is dictated very much by the CAA requirements specified in CAP725. LBHA sought advice and guidance from the CAA prior to the compilation of an appropriate list of consultees and subsequently this has been agreed with the CAA staff.

B.1.3. The CAA requires that consultation with non-aviation bodies includes Statutory Bodies and appointed Councils down to and including Parish Council level throughout the area that would be overlaid by the proposed flight paths. Thus 9 Councils at County, City, District, Borough and Town level have been identified as consultees together with 22 Parish Councils. The CAA also expects certain other non-aviation national organisations that may have an environmental interest to be included.

B.1.4. It is expected that some consultees may not be familiar with aviation terminology, particularly with the technical aspects of Instrument Flight Procedure design. Thus the offer is made for them to seek clarification, preferably by e-mail query, if they so desire. (See Section 6.2.)

B.1.5. With respect to the "aviation interests" side, the CAA requires appropriate "local" aviation parties to be included in the process as individual entities; these being aircraft operators likely to regularly use the procedures or other aerodromes that may be affected by the procedures. However, such is the national interest in airspace usage that the consultation process needs to include the wider aviation community (including more distant aerodromes and airspace user groups). The CAA expects national bodies (such as Light Aircraft Association (LAA), British Gliding Association (BGA), Airport Operators Association (AOA), etc.) to represent their members interests through the auspices of the CAA's National Air Traffic Management Advisory Committee (NATMAC). These member organisations are inherently more aware of the wider issues involved and, moreover, have been directly involved in the development of the CAA's regulatory process for airspace change. Consequently it is reasonable to expect that they should respond objectively to the consultation.

B.1.6. A number of military organisations are also members of the NATMAC and are, individually, included as consultees. However, it is standard practice for the MOD to provide a consolidated response representing all military branches. The number of military aircraft operating to/from LBHA and requiring access to the Network airspace route system is minimal.

B.2. Airport User Consultees

- 1 Aviation
- Acropolis Aviation
- Alouette Flying Club
- Arena Aviation
- Avalon Aero
- Castle Air
- Catreus Ltd
- Centreline Air Charter
- Cirrus Aircraft
- EFG Flying School
- Heritage Hangar
- Interflight Air Charter
- Jets (Biggin Hill) Ltd
- JT Air Ltd
- Linkinjet
- London Executive Aviation
- Net Jets
- RAS Completions
- Rizon Jet UK Ltd
- Signature Flight Support
- Shipping & Airlines
- Sovereign Business Jets
- Surrey & Kent Flying Club
- Wessex Aviation
- Zenith Aviation

B.3. Other Affected Aviation Stakeholders

- East Haxted microlight site
- Green Dragons parascending and Hang Gliding near Warlingham
- Hurley Lodge helicopter site
- Kenley Aerodrome
- London Gatwick Airport (including ANSP)
- London Heathrow Airport (including ANSP)
- London City Airport (including ANSP)
- NATS (Farnborough – LARS)
- NATS (TC)
- Redhill Aerodrome
- Rochester Airport
- Staffhurst Woods

B.4. NATMAC - Civil Consultees

- Airport Operators Association (AOA)
- Aircraft Owners & Pilots Association UK (AOPA UK)

- Association for Remotely Piloted Aircraft and Systems (ARPAS-UK)
- Aviation Environment Federation (AEF)
- BAe Systems
- British Airways (BA)
- British Airline Pilots Association (BALPA)
- British Air Transport Association (BATA)
- British Balloon & Airship Club (BBAC)
- British Business & General Aviation Association (BBGA)
- British Gliding Association (BGA)
- British Hang Gliding & Paragliding Association (BHPA)
- British Helicopter Association (BHA)
- British Microlight Aircraft Association (BMAA)
- Future Airspace System VFR Integration Group (FASVIG
- General Aviation Safety Council (GASCo)
- Guild of Air Traffic Control Officers (GATCO)
- "Heavy Airlines"
- Helicopter Club of Great Britain (HCGB)
- Honourable Company of Air Pilots (HCAP)
- Light Aircraft Association (LAA)
- "Light Airlines"
- "Low Cost Airlines"
- NATS
- PPL/IR Europe
- Unmanned Aerial Vehicle Systems Association (UAVS Association)
- UK AIRPROX Board (UKAB)
- UK Flight Safety Committee (UKFSC)

B.5. NATMAC - Military Consultees

- DAATM
- HQ 3rd Air Force USAFE (3AF UK/A3)
- Military Aviation Authority (MAA)
- Ministry of Defence (MoD) (JtCap-ISTAR-1)
- NC HQ Aviation Division

B.6. Non-aviation Consultees – Airport Consultative Committee

- Cllr D Hodge
- Cllr R Hogarth
- Cllr T Letts
- Cllr I Mitchell
- Cllr P Morgan
- Cllr R Parry
- Cllr R Scoates
- Cllr M Stevens
- Cllr D Weightman
- Mr J Bowden
- Mr V Endacott

- Mrs M Manuel
- Deva Ponnoosami
- Mr J Willis
- Mr B Wingate

B.7. Non-aviation Consultees - County, City, District Councils

- Dartford
- Kent County Council
- London Borough of Bromley
- London Borough of Bexley
- London Borough of Croydon
- Reigate & Banstead
- Sevenoaks
- Surrey County Council
- Tandridge DC

B.8. Non-aviation Consultees - Parish Councils (or equivalent)

- Badgers Mount
- Bletchingley
- Caterham on the Hill
- Caterham Valley
- Chaldon Village Council
- Chelsham & Farleigh
- Crockenhill
- Eynsford
- Farningham
- Godstone
- Halstead
- Hextable
- Horton Kirby
- Knockholt
- Nutfield
- Oxted
- Swanley
- Tatsfield
- Warlingham
- Westerham
- Whyteleaf Village Council
- Woldingham

B.8.1. Non-aviation Consultees - Other organisations/Individuals

- “40 Shillings”
- Mr R Trott
- CPRE - Kent
- Flightpath Watch

- Natural England
- Surrey Hills AONB

B.8.2. Members of Parliament

- Beckenham
- Bexleyheath & Crayford
- Bromley & Chislehurst
- Croydon Central
- Croydon North
- Croydon South
- Dartford
- East Surrey
- Old Bexley & Sidcup
- Orpington
- Reigate
- Sevenoaks
- Sutton & Cheam

B.8.3. Copy addressees

- NATS Hd — LTC operations
- NATS Mgr — LAMP
- CAA SARG — R Bishton (NATMAC)
- CAA SARG — J Mills (NATMAC)
- CAA CAAi — C Peart (NATMAC)

C. Classification of UK Airspace