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# LBHA Airspace Change Proposal ACP-2018-69

Options Development & Design Principles Evaluation

## Document Details

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# 1 Design Options Development

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## 1.1 Introduction

Over the coming years, a national programme of airspace modernisation will result in the redesign of the airspace above London and the south east of England. In June 2018, the Aviation Minister, Baroness Sugg, wrote to London Biggin Hill Airport (LBHA), setting out the need for an Airspace Modernisation Programme to facilitate the future needs of UK airspace users and asking for our commitment to the development and delivery of this programme. As part of this modernisation process, LBHA is required to redesign the portion of the arrival and departure routes at the airport up to a height of 7,000 ft above mean sea level (amsl), where those routes must join and integrate with a new overarching route structure to be designed entirely by National Air Traffic Services (NATS), the UK's en-route air traffic service provider.

As part of this redesign, LBHA must follow guidance provided by the CAA and successfully complete the first 6 stages of CAP 1616 – Airspace Change. The LBHA Airspace Change project is currently at the Stage 2 – Develop & Assess stage of the CAP 1616 Airspace Design process. Step 2A requires the change sponsor to develop a comprehensive list of options that addresses the Statement of Need and aligns with the Design Principles developed in Stage 1.

## 1.2 Progress So Far

In October 2018, LBHA submitted a Statement of Need to the CAA. This is the formal explanation as to why the Airport wishes to make changes within the airspace surrounding the Airport. The CAA indicated that an airspace change was an appropriate mechanism to achieve the objectives in the Statement of Need. A copy of the Statement of Need and other associated documentation can be viewed on the Civil Aviation Authority (CAA) airspace portal:

<https://airspacechange.caa.co.uk/PublicProposalArea?pID=95>.

Previously, LBHA drew up a list of Design Principles which will steer and guide the development of its route options. These Design Principles were agreed with the national airspace regulator, the UK CAA.

At the end of July 2019, the first stage in the change process was successfully completed when the Airport's submission passed through the CAA's Stage 1 DEFINE Gateway.

The work undertaken during Stage 1 helped to establish a prioritised shortlist of Design Principles to act as a framework against which Design Options have been drawn up. The prioritised list of Design Principles is shown in Table 1 below.



Prioritised DP	Design Principle
1	SAFETY – New routes must be safe
2	COMPLIANCE – Route should, where possible, be designed to be PANS OPS compliant
3	ENVIRONMENTAL CONCERNS - Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown
4	WORKLOAD - Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity
5	HARMONISED ROUTES – LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport
6	EFFICIENT ROUTES - Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies
7=	Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).
7=	NAVIGATION STANDARDS – New routes must be designed to use Performance Based Navigation
9	IMPROVED AIRCRAFT PERFORMANCE – Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl

Table 1 – Prioritised Design Principles

Following the successful Stage 1 Gateway assessment, the CAA wrote to LBHA to explain that the Airspace Modernisation Strategy (AMS) and the Masterplan that NERL has been commissioned (jointly by the CAA and the Department for Transport) to produce will affect this proposed airspace change and any decision on it.

Because of the CAA's AMS and the co-sponsored Masterplan work, the CAA understood that it is important that the impact of the AMS and the Masterplan work on LBHA's proposed change is included in our Design Principles. The CAA concluded that it was necessary to see the following concept reflected and adopted in LBHA's Design Principles:

*Subject to the overriding design principle of maintaining a high standard of safety, the highest priority principle of this airspace change that cannot be discounted is that it accords with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.*

In a letter to LBHA, dated 23<sup>rd</sup> June 2018, Baroness Sugg (Parliamentary Under-Secretary of State for Aviation at the Department for Transport) set out the need for an Airspace Modernisation programme to facilitate the future needs of UK airspace users and requested an LBHA commitment to the development and delivery of the Airspace Modernisation programme in the south east of the UK. In accordance with that request, LBHA embarked on the ACP to design and introduce new and/or revised departure and arrival routes that will fully and properly integrate with the new London Terminal Area architecture which will result from the Airspace Modernisation programme to which Baroness Sugg referred.

As part of this commitment, LBHA included the HARMONISED ROUTES Design Principle shown above with the intention that the results of this ACP would accord with the CAA's published AMS and any current or future plans associated with it. Hence, it is in our opinion that the mandatory additional Design Principle has already been included in our finalised list of Design Principles.

### 1.3 Design Options

This document provides a narrative explanation of steps taken in Step 2A to develop the options for airspace design and arrival and departure routes at LBHA. Since the actual point in the sky where interaction with the NATS airway structure has yet to be determined, swathes have been developed, within which the final routes will be located and assessed and re-assessed as necessary.

As part of the CAP 1616 Stage 2 – Develop and Assess – LBHA has conducted comprehensive two-way engagement with the same stakeholders who were engaged during Stage 1B. Following this stakeholder engagement, LBHA has conducted the Design Principle Evaluation to show to what extent the options meet the Design Principles.

As part of continuing engagement activities, LBHA will contact stakeholders to update them on the progress of this ACP and will signpost the Stage 2 documentation on the airspace change portal.

On successful completion of the Stage 2 Gateway assessment, LBHA will continue to develop the design options during Stage 3 of the CAP 1616 process. This will involve constructing scenarios that will consider each of the procedure designs in combination with other procedures and airspace options to assess the holistic options that deliver the operational requirement at LBHA. This will allow us to analyse interactions between different design options and which combinations best meet our Design Principles. We look forward to engaging our stakeholders during this next phase and working towards an optimal design for LBHA and our stakeholders.



## 2 Options Development

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### 2.1 Options Development

Section 3 of this document sets out the different routing options that form the comprehensive list of route options. These are not specific or defined routes – they are simply representative swathes of potential operations to determine where LBHA might find the optimum routes having regard to the agreed Design Principles. The routing options were initially developed during a bilateral meeting with Heathrow Airport held at LBHA on 19<sup>th</sup> November 2019 and a bilateral meeting with Gatwick Airport held at LBHA on 21<sup>st</sup> January 2020.

Following a discussion with ACOG on 31<sup>st</sup> January 2020, the designs were further updated so that they represent indicative swathes in which the route designs could be incorporated. The boundaries of the swathes are shown in red in each of the images shown in Section 3.

The exact entry/exit points into and out of the airspace network (above 7,000 ft amsl) have not yet been finalised, but all the possible route options have the potential to be integrated as shown by the individual diagrams.

During a stakeholder Focus Group to discuss the list of options, one stakeholder questioned why there was only one option presented for Runway 03 departures to the north when all the other options to the east, south and west have a number of options. The option presented routed through a densely populated area to the north of the airport hence they wanted to see other options for this departure. Following the meeting, two alternative options for Runway 03 departures to the north were introduced and were included as options 10a and 10b and were subsequently shared with stakeholders.

### 2.2 Defining the Baseline

In accordance with CAP 1616, a baseline will be required for all environmental assessments. This will allow the change sponsor to conduct an assessment to understand the current impacts so that a comparison can be made with the impacts of the options. In most cases, the baseline will be the ‘Do Nothing’ option and will largely reflect the current-day scenario.

#### 2.2.1 Do Nothing Option

The Do Nothing option represents the current situation at Biggin Hill Airport and will be used as the baseline against which all other options are measured. LBHA is situated in Class G, uncontrolled airspace; the only regulated airspace currently at LBHA is an Aerodrome Traffic Zone (ATZ) established to protect the airport’s operations and all en-route traffic is required to avoid it unless permission has been granted to enter by LBHA. The LBHA ATZ is the airspace extending from the surface to a height of 2,000 ft above the level of the aerodrome within the area bounded by a circle centred on the mid-point of the runway and having a radius of 2.5 nm. Figure 1 below shows the location of LBHA in relation to the current surrounding airspace profile.



Figure 1 – Biggin Hill Airport Local Area

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Aerodrome and Approach Control functions are provided at LBHA. Aerodrome Control is responsible for Ground Control, Tower Control, and Clearance Delivery. Aerodrome Control co-ordinates with Approach Control for:

- Departing Instrument Flight Rules (IFR) flights.
- Departing Visual Flight Rules (VFR) flights.
- Arriving aircraft which make their first call on the Tower frequency (unless they are transferred to Approach Control).

LBHA Approach Control provides the following Air Traffic service (ATS):

- Procedural Service (only available to IFR aircraft).
- Basic Service.
- Alerting Service.

NATS Ltd through Terminal Control (TC) Thames Radar, are contracted to provide radar services to IFR flights arriving or departing from LBHA, regardless of the service requested by the pilot.

Before any IFR flight departs, or immediately before an inbound or transit IFR flight contacts LBHA Approach, co-ordination must be affected with TC Thames Radar regardless of the type of ATS being provided.

There are no conventional departure Instrument Flight Procedures published for LBHA. Departing aircraft are to follow the procedures published in the Aeronautical Information Publication (AIP), which includes noise abatement procedures for aircraft departing under both Instrument Flight Rules (IFR) and Visual Flight Rules (VFR). There are Standard Departure Routes via the ATS route network published in the AIP. All Standard Departure Routes currently route aircraft to the Detling (DET) Doppler Very High Frequency Omni Range (VOR/DME) ground-based electronic beacon.

Aircraft arriving from the ATS en-route network will either be cleared to follow the RNAV1 Arrival Transition procedure, published in the AIP, or will be radar vectored by Thames Radar prior to transfer to Biggin Hill Approach for the

appropriate approach procedure. The baseline operational environment includes the following list of conventional Instrument Approach Procedures (IAP):

- ILS/DME/VOR to Runway 21
- LOC/DME/VOR to Runway 21
- VOR/DME to Runway 21

There is currently an ACP in progress for the introduction of an RNAV IAP to Runway 21. There are currently no IAP's for Runway 03. If Runway 03 is in use due to the prevailing wind, the pilot will break off the Runway 21 Instrument Approach at approximately 2nm from the airfield, to position visually for Runway 03.

Runway 21 is the dominant runway, used approximately 78% of the time, due to aircraft normally taking-off and landing into the prevailing south westerly wind.

LBHA handled 36,763 aircraft movements in 2021, all of which were non-commercial operations, comprising Business Jets, Light Aircraft, military aircraft and helicopters. LBHA does not support Commercial Air Transport (CAT) operations providing scheduled and charter services. This figure is expected to increase to approximately 50,000 annual movements in 2023 and 51,000 movements in 2024, the expected year of implementation. LBHA expect the business to continue to grow, with an anticipated growth in aircraft movements of 1,000 aircraft per annum for the period of 10 years from the intended year of implementation. The anticipated annual movements for 2034, 10 years after implementation, is expected to be 61,000. Figures have been provided by LBHA Management.

## 2.3 Initial Departure

The departure profile flown from each runway is shown in Figure 2 below, which is almost the same as the current profiles and adheres to the extant noise abatement procedures. When departing from Runway 03 in future options, aircraft would climb straight ahead to a position that equates approximately to 1.1 nautical miles (nm) from the BIG DME (current procedures use 1.0 nm) before any turns to follow the planned route. From Runway 21 in future options, aircraft would turn right 10° before crossing the upwind end of the runway, onto a track of 220°M, and climb straight ahead to a position that equates approximately to 1.1 nm from the BIG DME (current procedures use 1.0 nm) before any turns to follow the planned route. Each of the design options would follow this initial profile after take-off.



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Figure 2 – Initial Departure Routes

## 2.4 Indicative Height Boxes

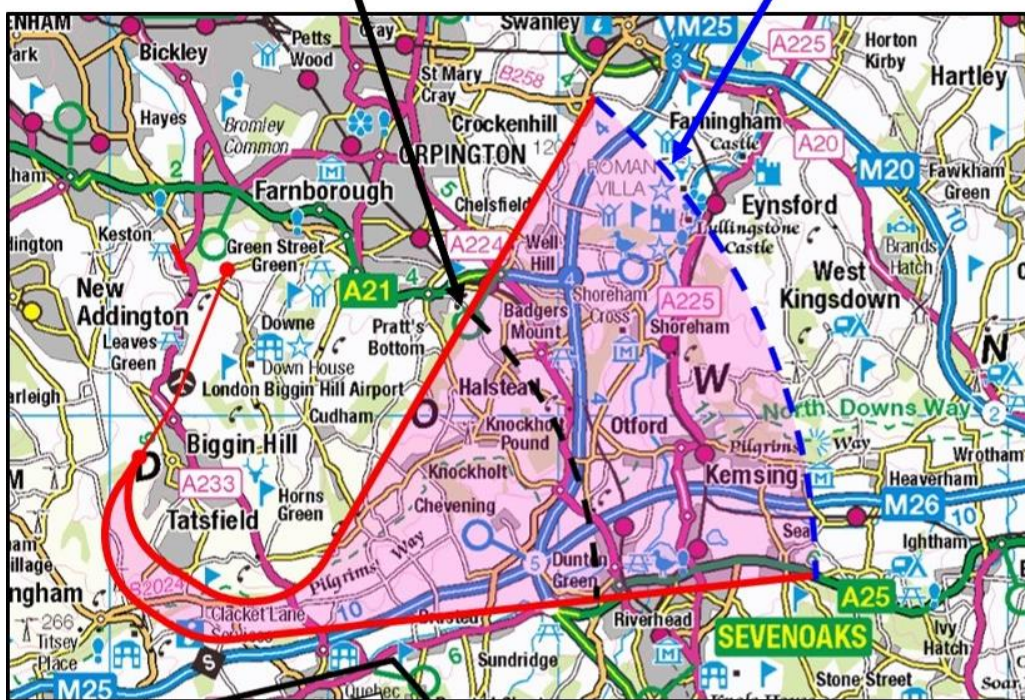
The design options include a representation of the position at which departing aircraft are expected to achieve an altitude of 7,000 ft, as shown on Figure 3 below. The black line represents the position a typical Business Jet that operates at LBHA will reach 7,000 ft based on a climb profile of 3,000 ft per minute at 210 kias, which equates to a 14.11% climb gradient. The blue line represents the position a typical Turbo-Prop aircraft that operates at LBHA will reach 7,000 ft based on a climb profile of 1,500 ft per minute at 140 kias, which equates to a 10.58% climb gradient.





**Business Jet**  
**7,000 ft @ 14.11%**

**Turbo-Prop**  
**7,000 ft @ 10.58%**



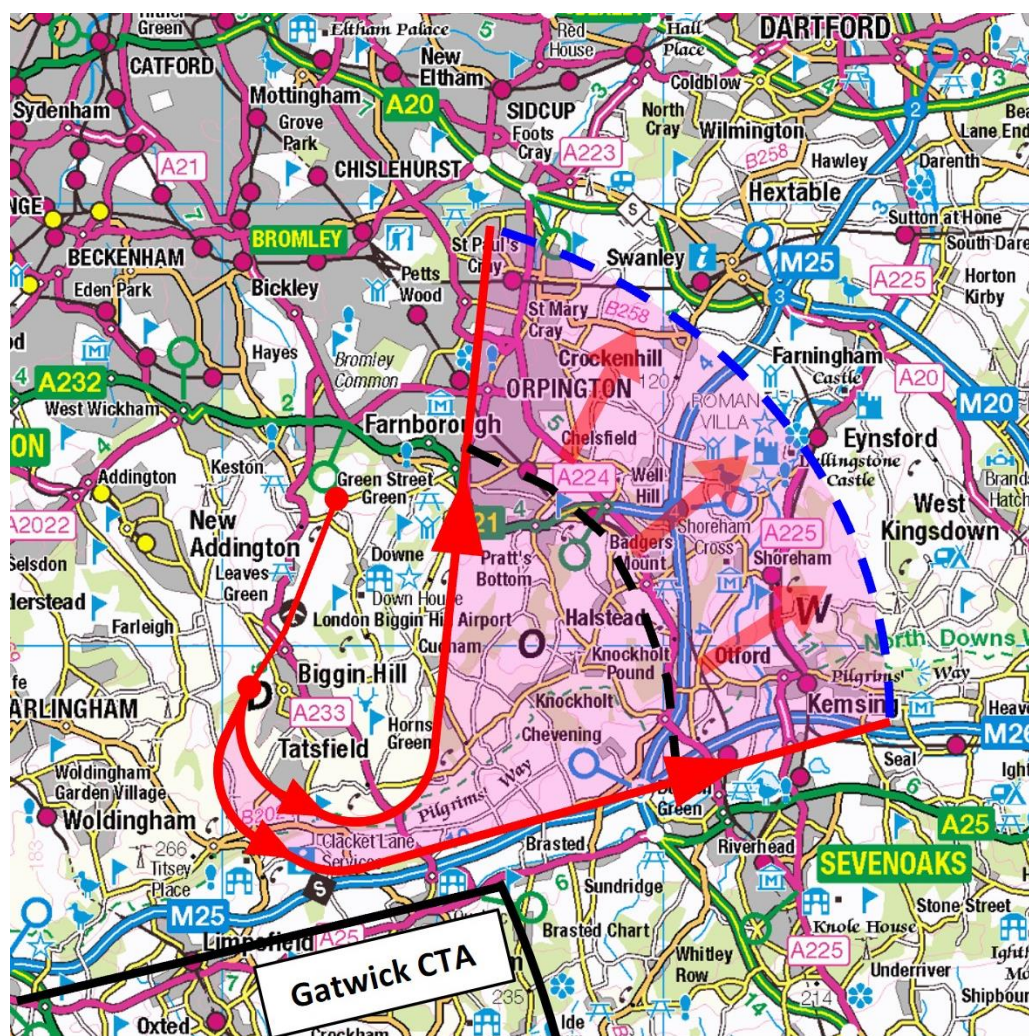
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Figure 3 – Indicative Height Boxes

## 3 Departure Procedures

### 3.1 Option D1 – Runway 21 North 1

Figure 4 – the route swathe represents the area in which the routes for aircraft departing Runway 21 to the north following a left-hand turn after take-off can be designed. The southerly track line represents the latest position the aircraft can turn left whilst avoiding the Gatwick CTA followed by the aircraft following the track of the M25 and M26 motorways before turning north.



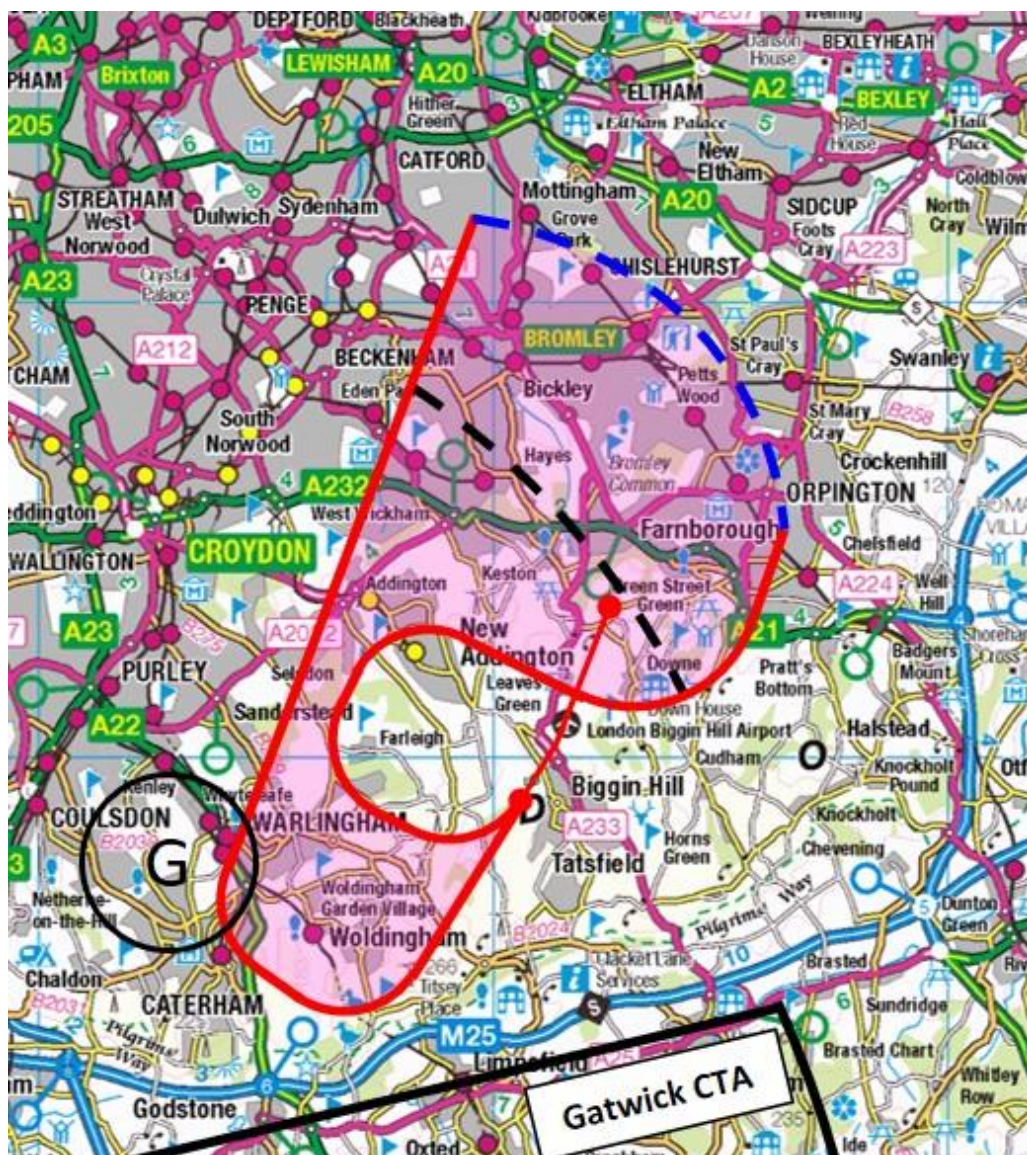
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Figure 4 – Runway 21 North 1



### 3.2 Option D2 – Runway 21 North 2

Figure 5 – the route swathe represents the area in which the routes for aircraft departing Runway 21 to the north following a right-hand turn after take-off can be designed. Aircraft commence a right-hand turn and continue to route back through the airfield overhead before turn left to route north. The outer boundary represents the latest position an aircraft can turn to remain clear of the Gatwick CTA before turning to route to the north.



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Figure 5 – Runway 21 North 2

### 3.3 Option D3 – Runway 21 East 1

Figure 6 – aircraft commence a right-hand turn and continue to turn onto an easterly direction. The alternative boundary represents the route aircraft can follow by climbing straight ahead on the runway heading initially before turning

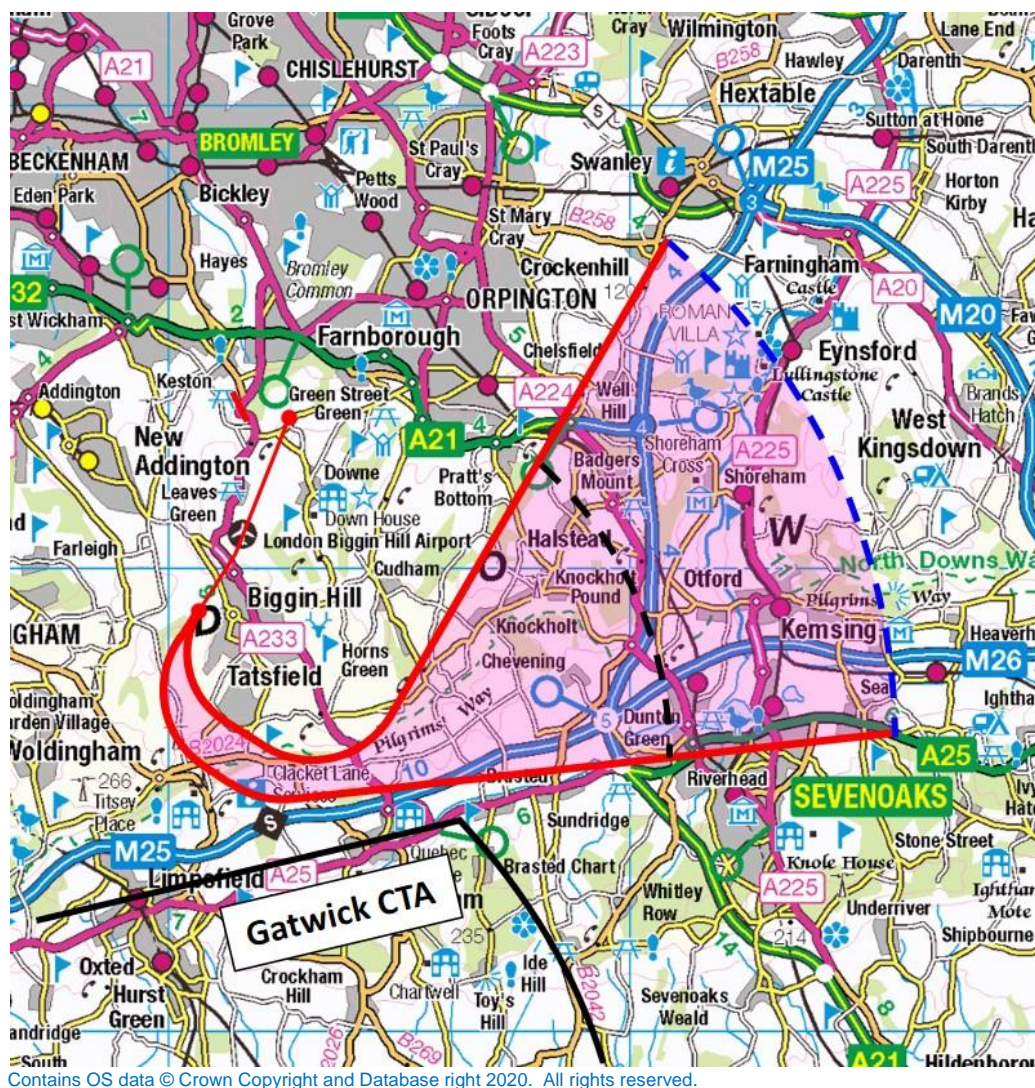


The map displays the Gatwick CTA area, showing the M25 motorway and surrounding roads. Key locations include Gatwick Airport, Biggin Hill, Addington, and various residential areas. A red line highlights a specific route or boundary within the CTA.

Figure 6 – Runway 21 East 1

Figure 7 – aircraft commence a left-hand turn onto the reciprocal runway heading and continue on that heading whilst climbing to 7,000 ft before routing in an easterly direction. The southerly track line represents the latest position the aircraft can turn left whilst avoiding the Gatwick CTA onto an easterly direction.





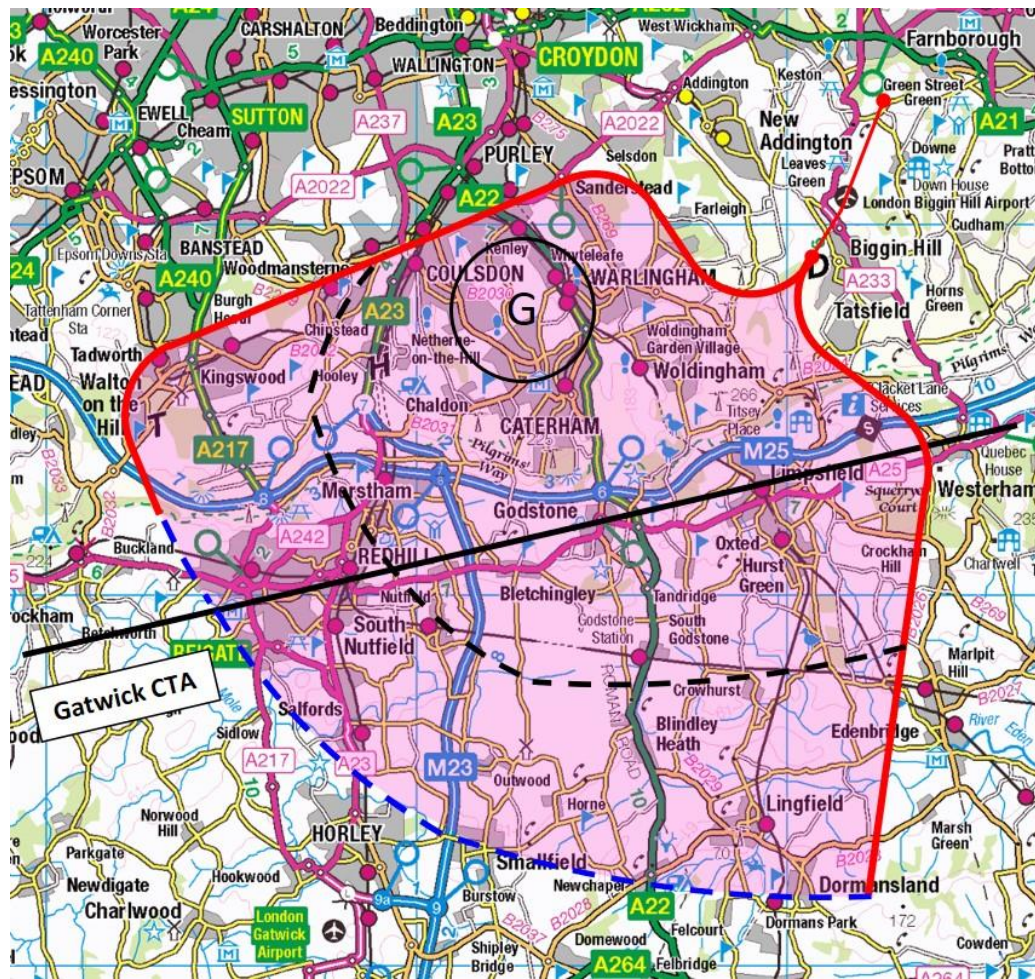
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Figure 7 – Runway 21 East 2

### 3.5 Option D5 – Runway 21 South 1

Figure 8 – the northern track line represents the route aircraft would follow having turned right onto a north-westerly direction initially, followed by a left-hand turn, avoiding Kenley Airfield before turning south. Aircraft should reach 7,000 ft prior to overflying the Gatwick CTA. The alternative, easterly boundary represents the route aircraft would follow having turned left after take-off onto a south-easterly heading, before turning right onto south.





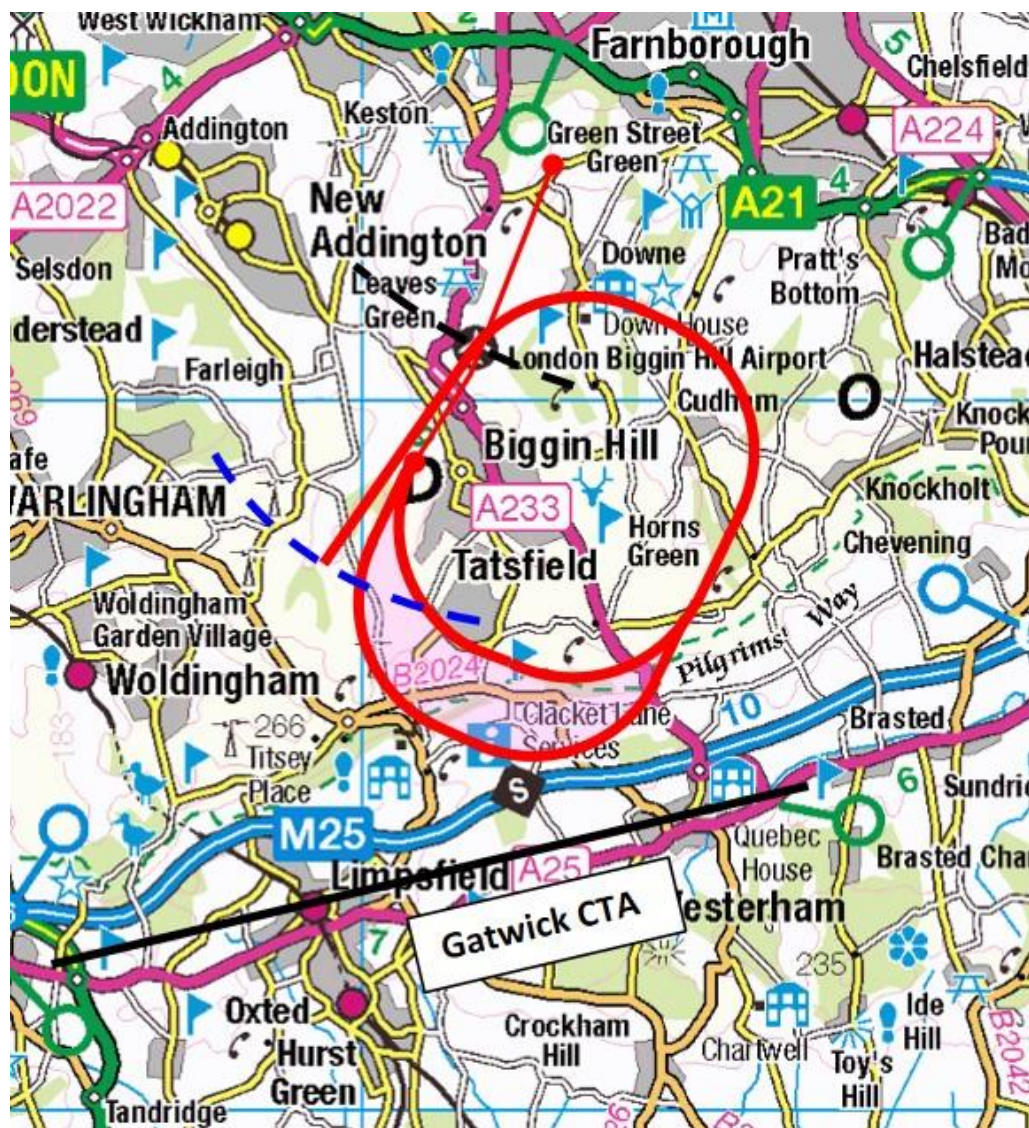
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Figure 8 – Runway 21 South 1

### 3.6 Option D6 – Runway 21 South 2

Figure 9 – aircraft follow a left-hand racetrack to route back through the airfield overhead and route in a south-westerly direction. The southern track represents the latest position an aircraft can turn to remain clear of the Gatwick CTA.





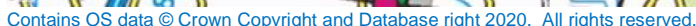
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Figure 9 – Runway 21 South 2

### 3.7 Option D7 – Runway 21 South 3

Figure 10 – aircraft follow a right-hand racetrack to route back through the airfield overhead onto a south-westerly direction. The southern track represents the position an aircraft can turn to remain clear of the Gatwick CTA.





### 3.8 Option D8 – Runway 21 West 1

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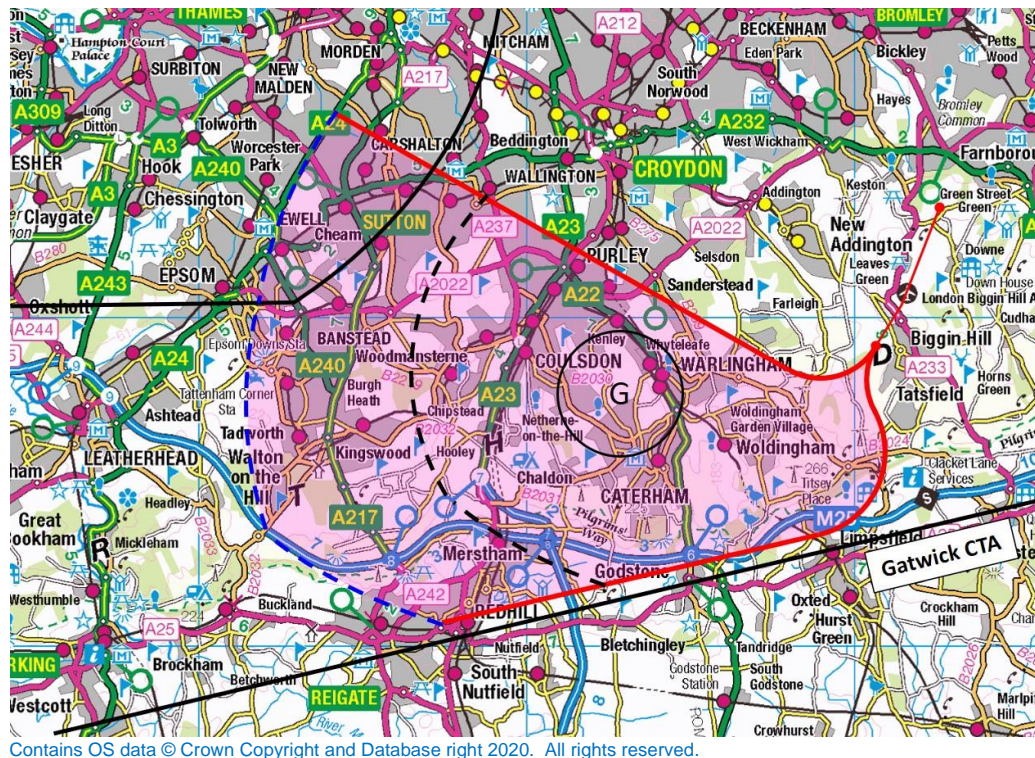


Figure 11 – Runway 21 West 1

### 3.9 Option D9 – Runway 21 West 2

Figure 12 – aircraft commence a left-hand turn all the way round to route through the airfield overhead and head west. The alternative is for aircraft to climb straight ahead after take-off, before turning left to avoid the Gatwick CTA onto the reciprocal runway heading. Aircraft then turn left again, through the airfield overhead onto west. Alternatively, aircraft can continue through the airfield overhead onto a south-westerly direction to route further south, before heading west.

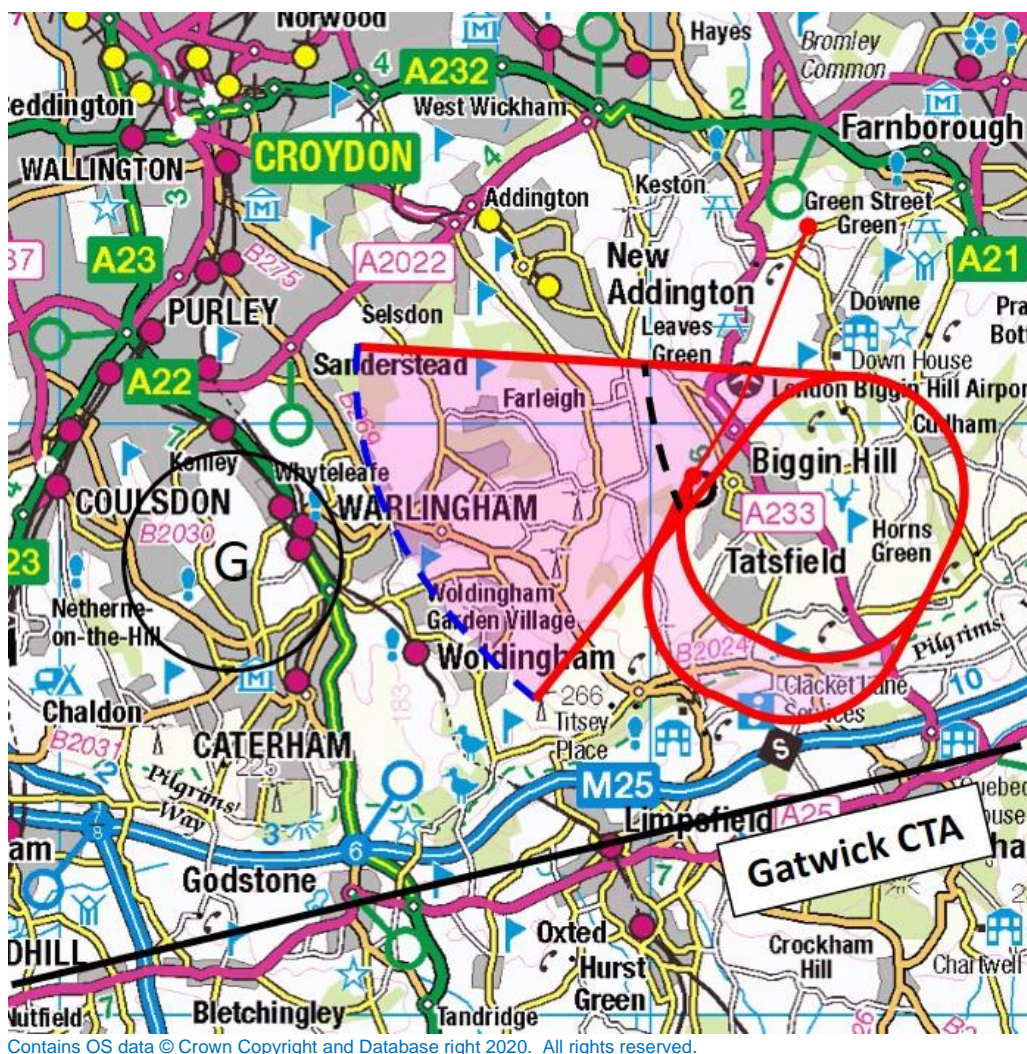
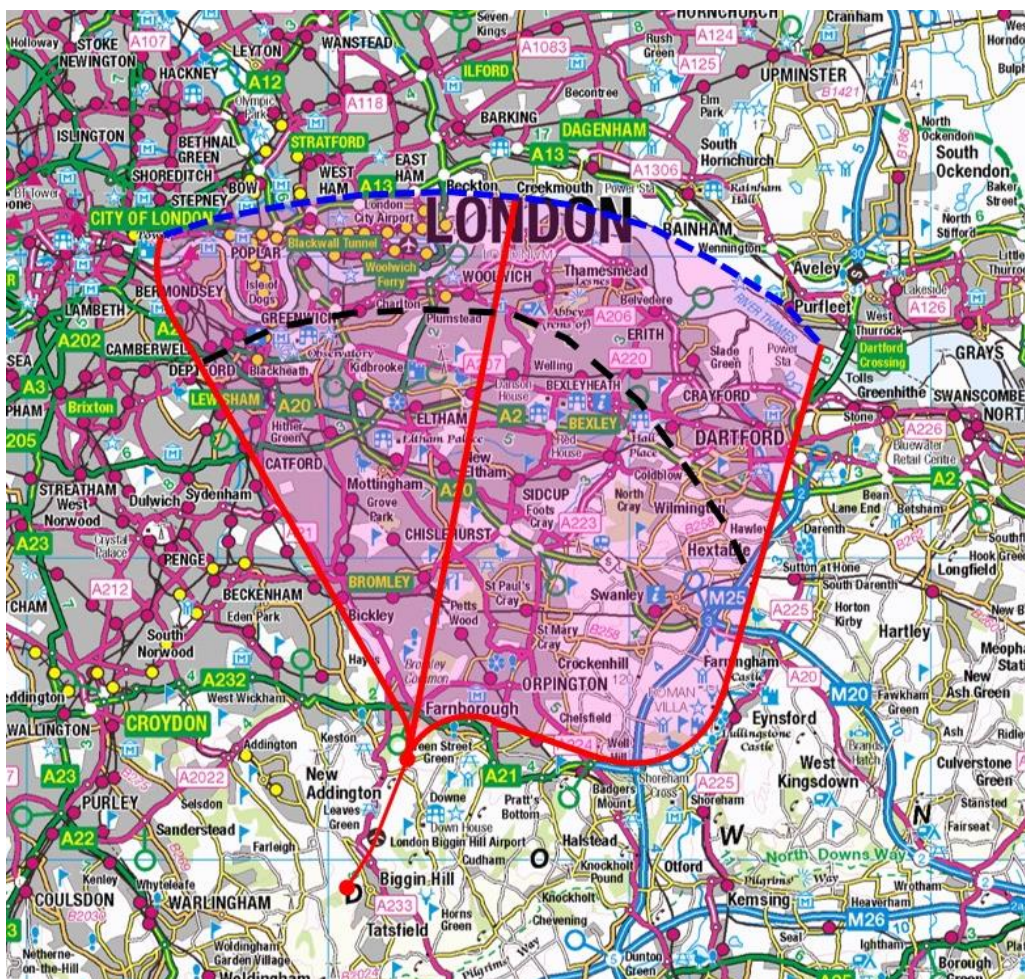


Figure 12 – Runway 21 West 2

### 3.10 Option D10 – Runway 03 North 1

Figure 13 – aircraft turn left onto a north-westerly direction and climb to 7,000 ft. For the swathe boundary to the east, aircraft turn right in an easterly direction, before turning left to follow the route of the M25 motorway, onto north.





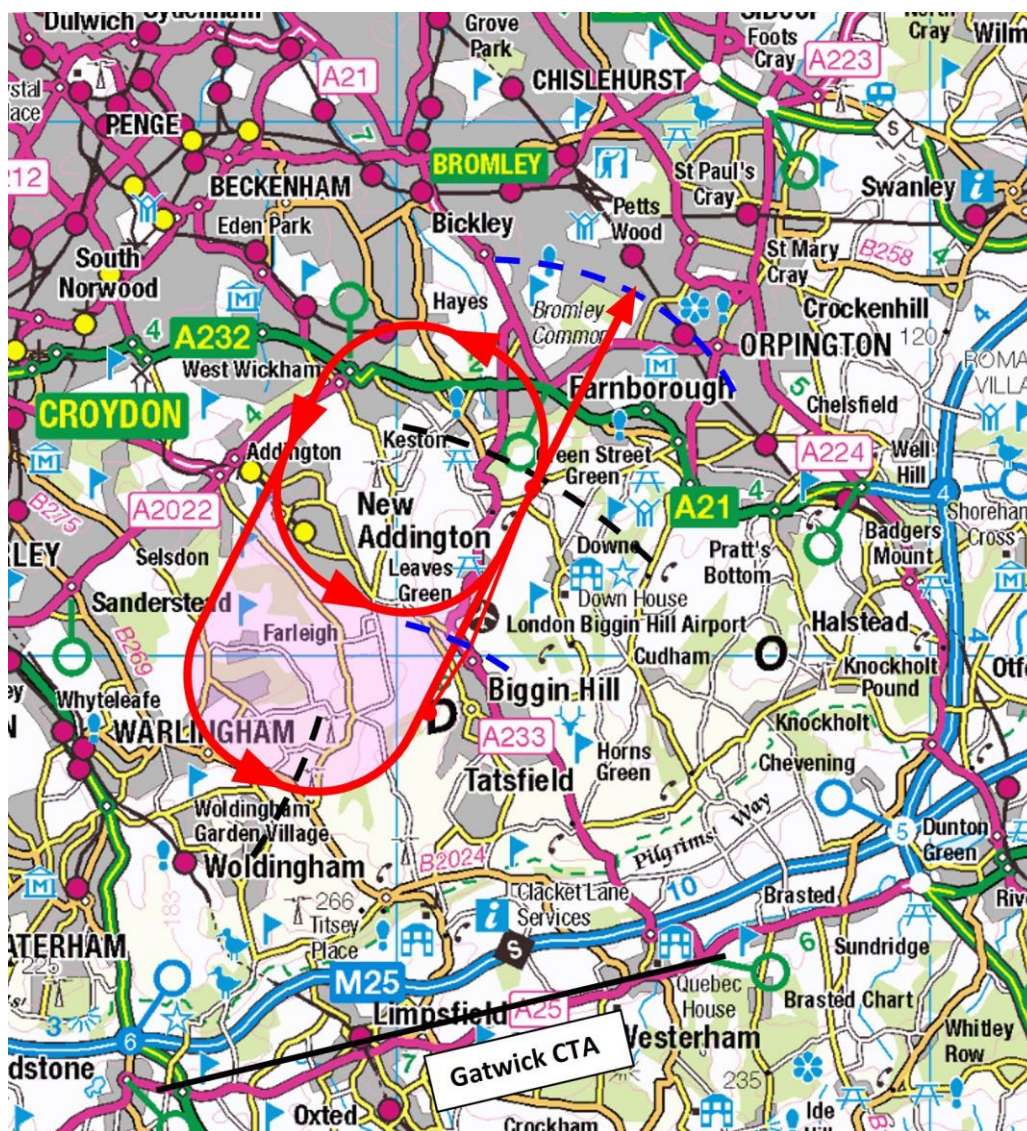
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Figure 13 – Runway 03 North 1

### 3.11 Option D10A – Runway 03 North 2

Figure 14 – aircraft follow a left-hand racetrack to route back through the airfield overhead onto a northerly heading. The southern track represents the position an aircraft can turn to avoid the built-up areas of Warlingham and Woldingham and also remain clear of the Gatwick CTA.





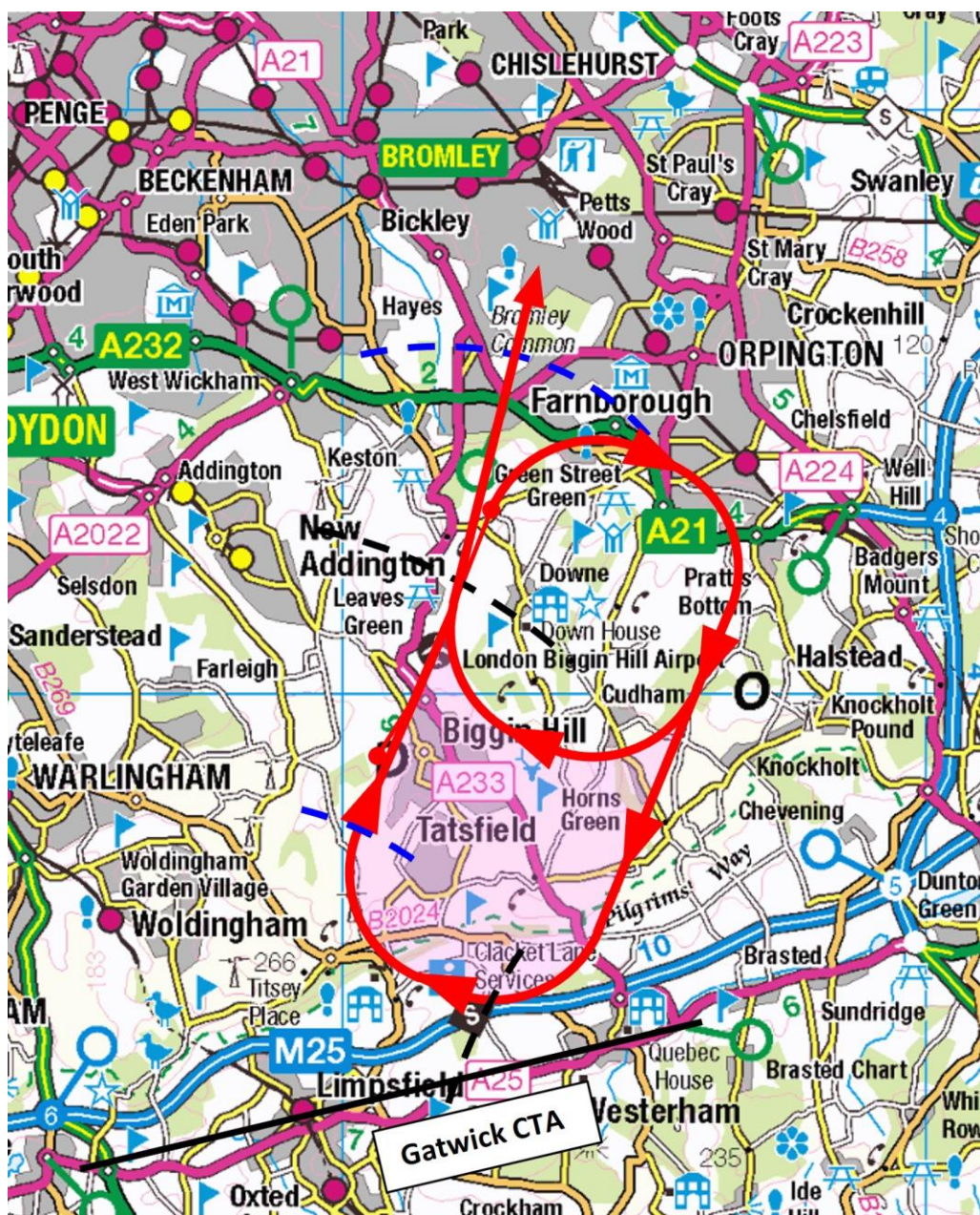
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Figure 14 – Runway 03 North 2

### 3.12 Option D10B – Runway 03 North 3

Figure 15 – aircraft follow a right-hand racetrack to route back through the airfield overhead onto a northerly direction. The southern track represents the position an aircraft can turn to remain clear of the Gatwick CTA.





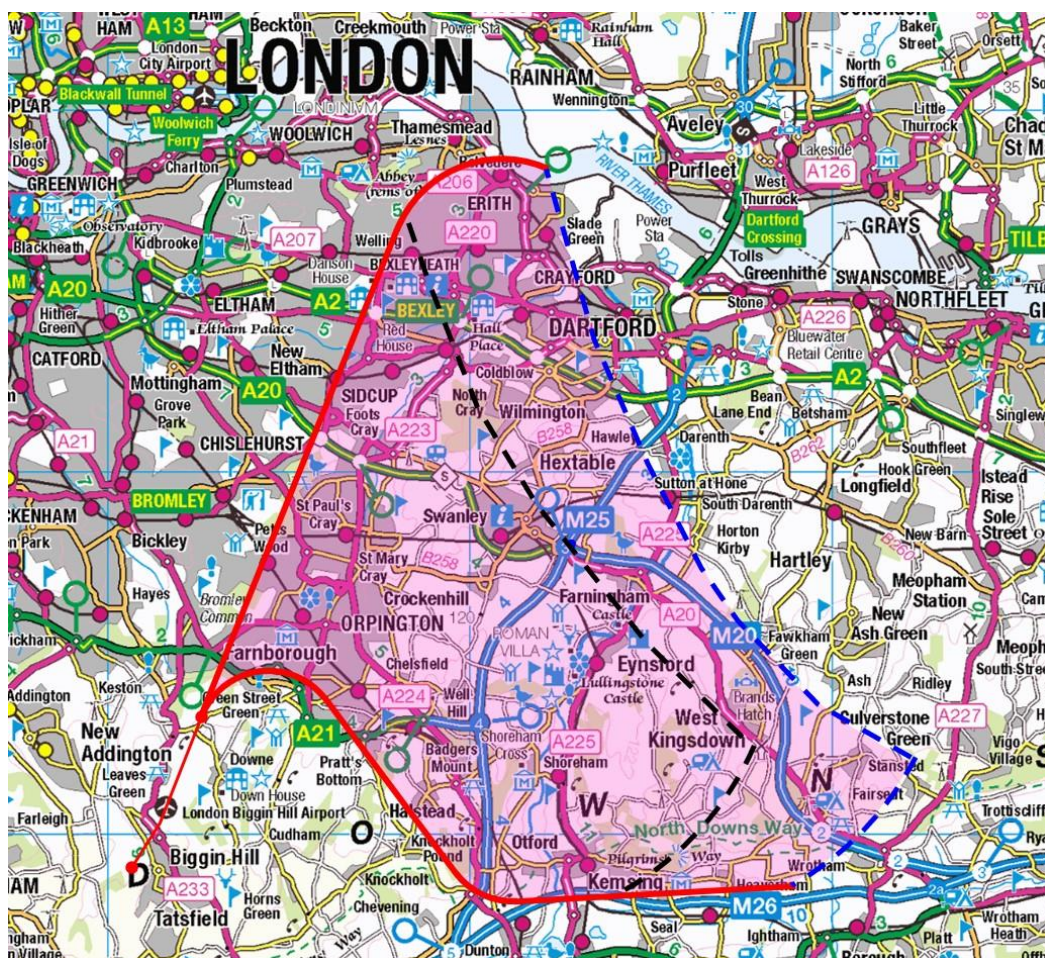
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Figure 15 – Runway 03 North 3

### 3.13 Option D11 – Runway 03 East 1

Figure 16 – for the southern boundary of the swathe, aircraft commence a right-hand turn onto a south-easterly heading before turning left onto east to follow the route of the M26 motorway. For the northern extreme of the swathe, aircraft continue on runway heading after take-off whilst climbing. At approximately 5,000 ft, aircraft turn right onto east.





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Figure 16 – Runway 03 East 1

### 3.14 Option D12 – Runway 03 East 2

Figure 17 – aircraft follow a left-hand racetrack to route back through the airfield overhead onto an easterly heading. The northern turn represents an aircraft climbing to 2,000 ft before commencing the left-hand racetrack to route back through the airfield overhead. For this track, aircraft can continue through 270° onto east to the north of the airfield.



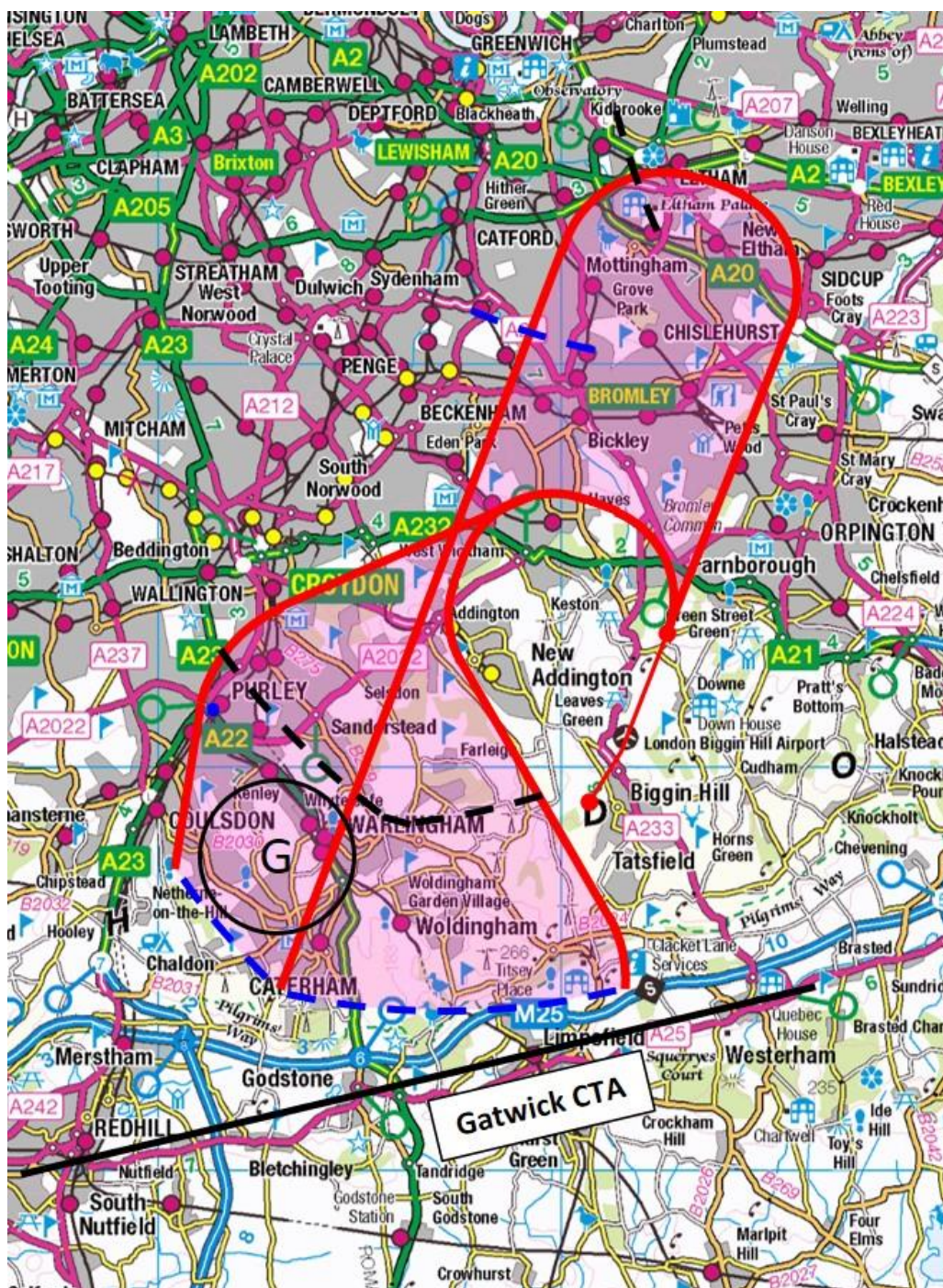


Figure 17 – Runway 03 Departures East 2

### 3.15 Option D13 – Runway 03 South 1

Figure 18 – aircraft commence a left-hand turn and continue round onto a south-easterly heading, before heading south. After following this initial turn, aircraft could head south-westerly to route to the west of Kenley airfield before turning south. Alternatively, aircraft continue on the runway heading to approximately 3,000 ft before turning left to head south.





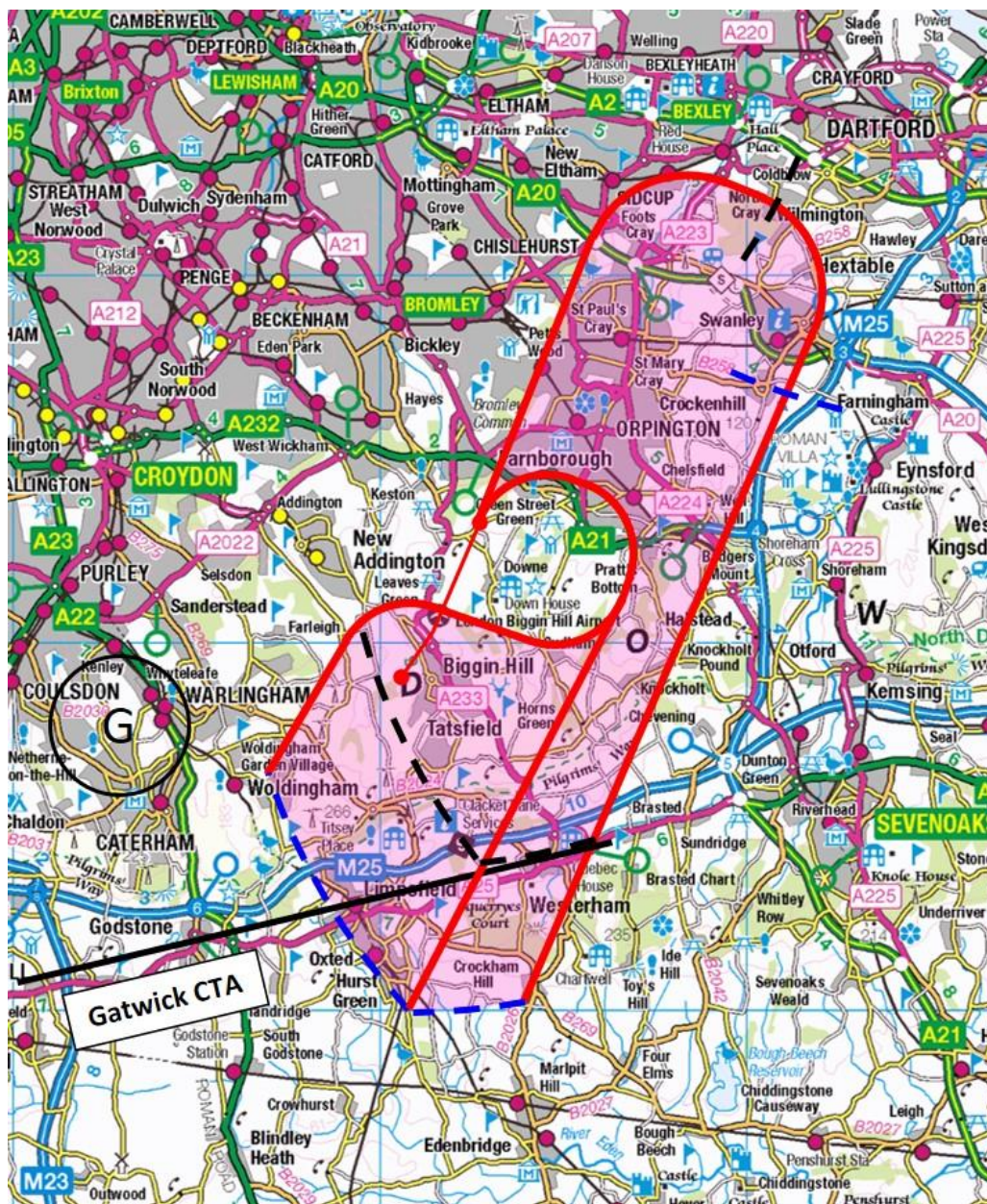
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Figure 18 – Runway 03 Departures South 1

### 3.16 Option D14 – Runway 03 South 2

Figure 19 – aircraft commence a right-hand turn all the way round to route through the airfield overhead, before turning south. For the northern extreme of the swathe, aircraft continue on the runway heading whilst climbing to approximately 3,000 ft before turning right to head south.





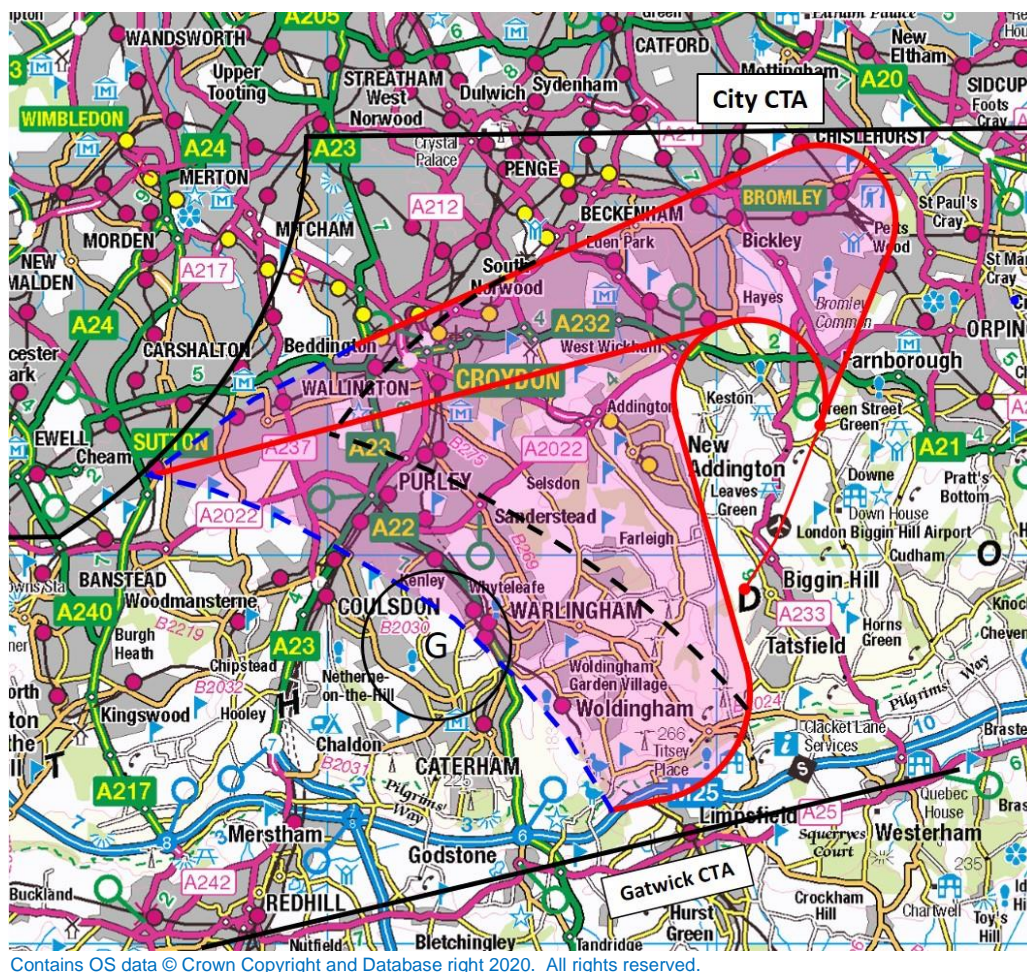
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Figure 19 – Runway 03 Departures South 2

### 3.17 Option D15 – Runway 03 West 1

Figure 20 – aircraft turn left onto a southerly heading, before turning right to remain clear of the Gatwick CTA and head west. Alternatively, aircraft continue on runway heading after take-off, climbing to approximately 2,000 ft before turning left in a south-westerly direction.





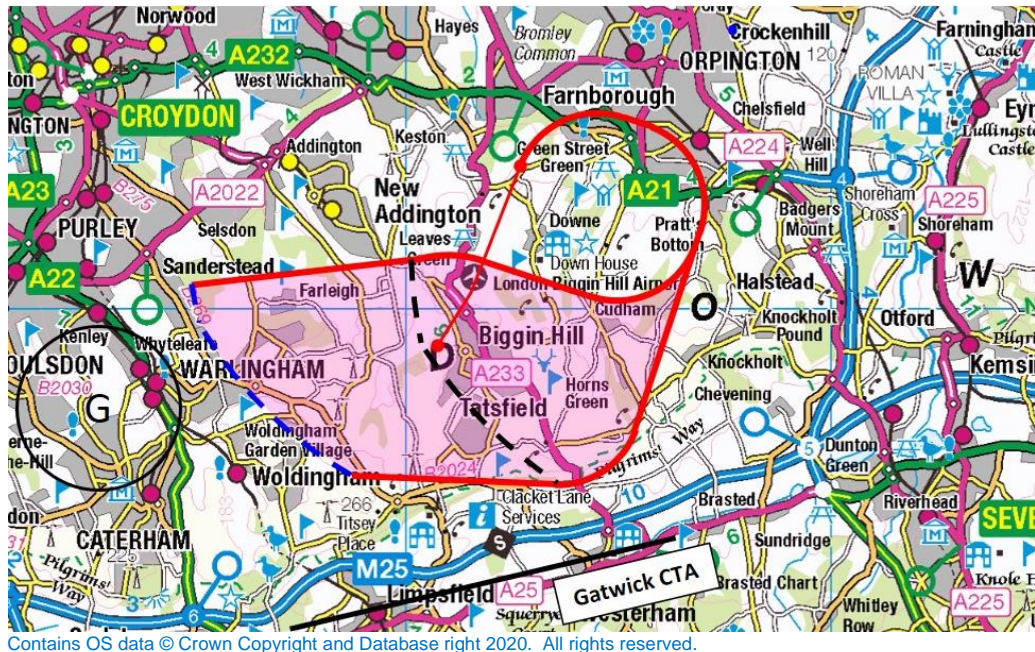
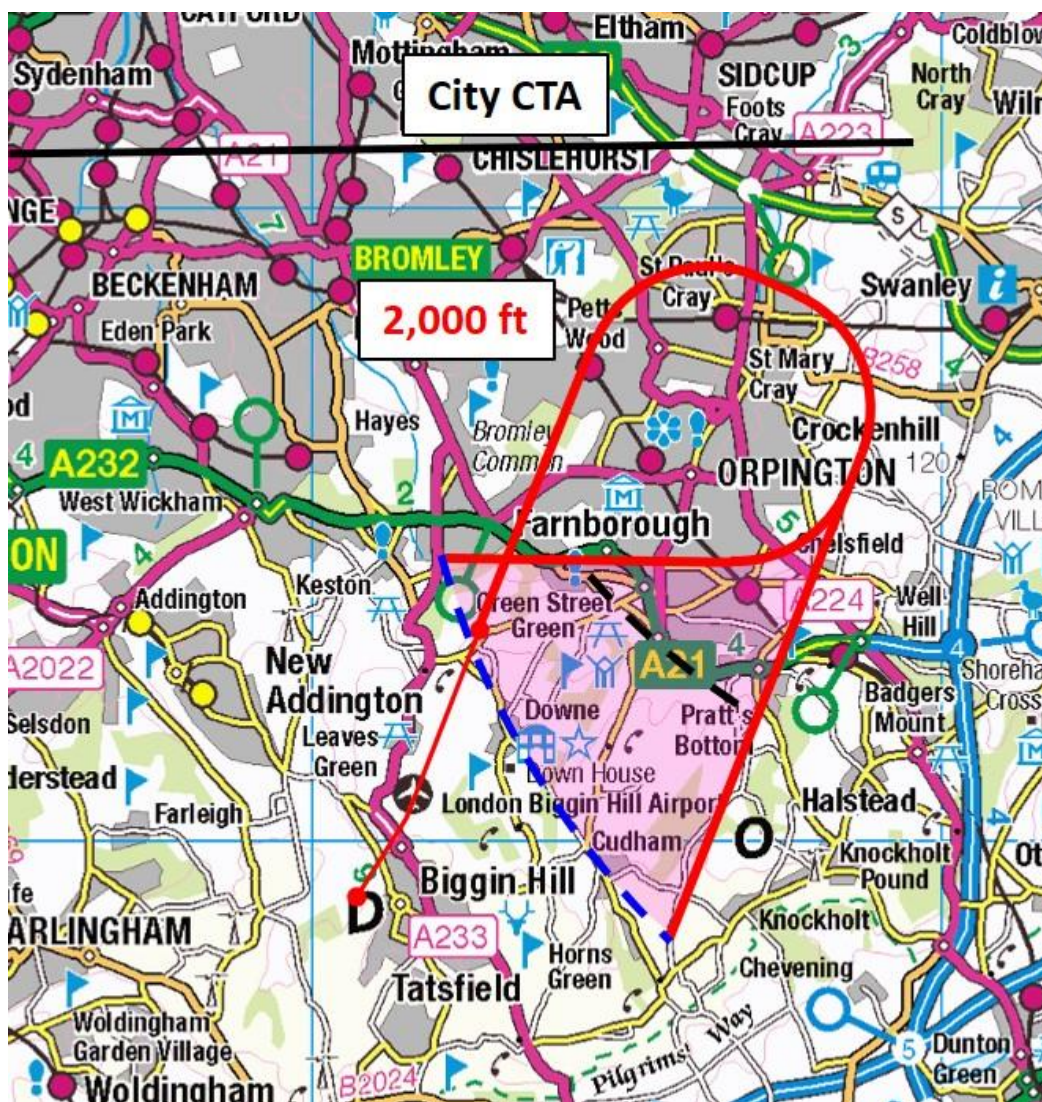


Figure 21 – Runway 03 West 2

### 3.19 Option D17 – Runway 03 West 3

Figure 22 – after take-off, continue straight ahead and climb to 2,000 ft before turning right through 270° to head west. Alternatively, after turning through 180°, continue on the reciprocal runway heading before turning right to avoid the Gatwick CTA, and route in a westerly direction.





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Figure 22 – Runway 03 West 3

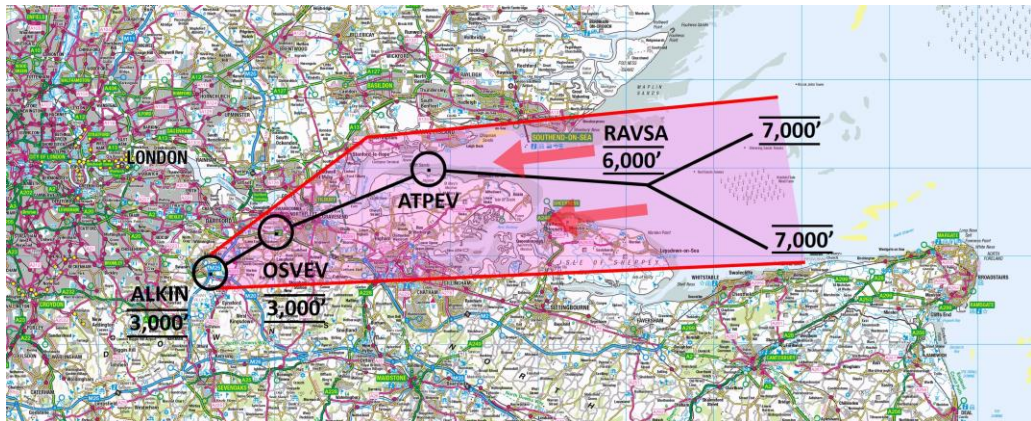




## 4 Transition Arrival Procedures

### 4.1 Option A1 – Transition Arrival East

The route replicates the current Transition Arrival Chart.

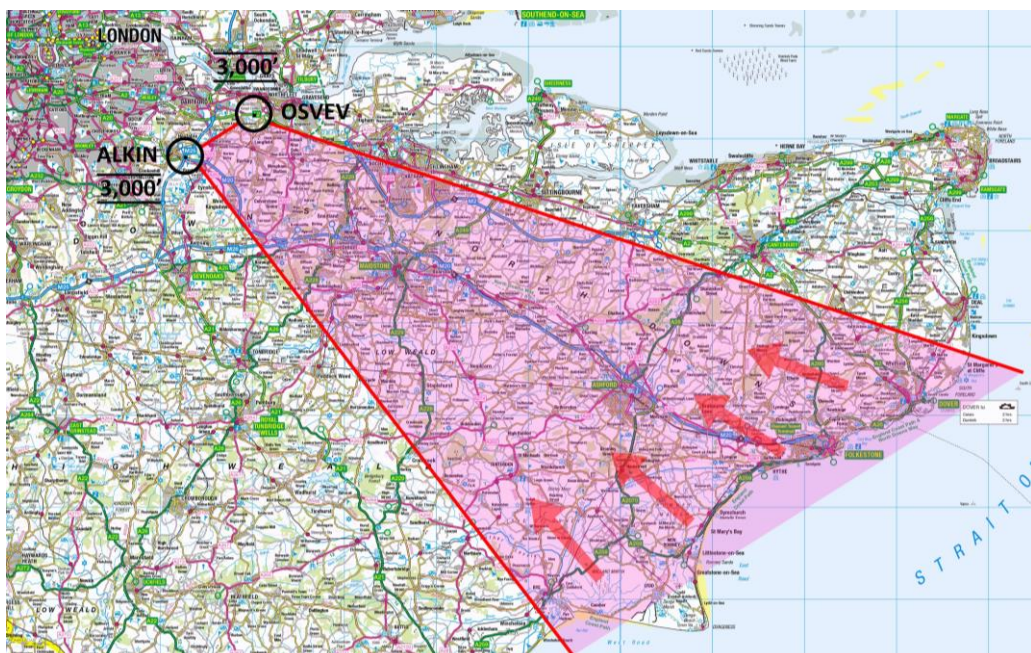


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Figure 23 – Transition Arrival East

### 4.2 Option A2 – Transition Arrival South

The route swathe represents the area in which the routes for aircraft arriving from the south can be designed. The procedure would terminate at ALKIN at 3,000 ft, where aircraft would join an approach procedure to land at LBHA.



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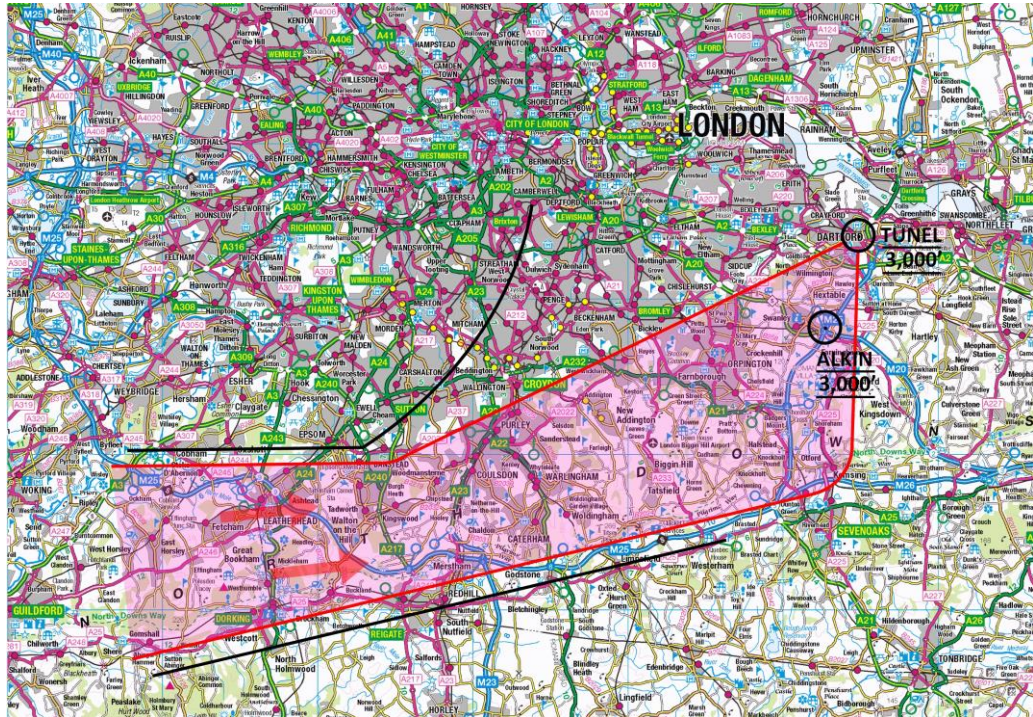
Figure 24 – Transition Arrival South





### 4.3 Option A3 – Transition Arrival West

The route swathe represents the area in which the routes for aircraft arriving from the west can be designed. The procedure could terminate at ALKIN at 3,000 ft, where aircraft would join an approach procedure to land at LBHA, or could position aircraft for an approach to the airport without routing via ALKIN. This would require the development of new Instrument Approach Procedures for both runways at LBHA.



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Figure 25 – Transition Arrival West

### 4.4 Option A4 – Transition Arrival North

The route swathe represents the area in which the routes for aircraft arriving from the north can be designed. The procedure could terminate at ALKIN at 3,000 ft, where aircraft would join an approach procedure to land at LBHA, or could include a direct track to a straight in approach, rather than routing via ALKIN.





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Figure 26 – Transition Arrival North

## 4.5 Regulated Airspace

New Regulated Airspace will be required to protect any Instrument Approaches and Departures at LBHA. The Instrument Approach at LBHA currently lies outside of Regulated Airspace below 2,500 ft amsl. Regulated Airspace was proposed as a Design Principle during Stage 1, but has been incorporated into the approved Design Principle 1: SAFETY. Until the exact route options have been established, which will connect to the safe arrival and departure routes being developed by NATS, it is not currently possible to determine the Regulated Airspace requirements or dimensions. These exact routes, and therefore the airspace requirements, will be determined during Stage 3, Consultation, of this ACP.

## 5 Stakeholder Engagement

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### 5.1 Stakeholder Engagement

The comprehensive list of options was shared with all the stakeholders and representative bodies that contributed to the development of the Design Principles in Stage 1. These included a wide range of organisations and groups from airlines, local aviation clubs and the wider aviation industry, regional and local councils and public officials, national and regional conservation and environmental organisations, as well as individuals who represent local community groups around the airport. A full list of those contacted is included in Appendix A1.

The purpose of the engagement was to check that stakeholders were satisfied that the design options were aligned with the Design Principles and that LBHA had properly understood and accounted for stakeholder concerns specifically related to the design options.

Stakeholders were asked to provide their views to help further develop the designs to form the short list that would be taken forward to the next stage of the process. This could include, but was not limited to:

- Is this list of options comprehensive and been generated
- with due consideration for the Design Principles?
- Are there any other route options we should consider that have not already been introduced?

The Comprehensive List of Options document was sent to stakeholders via e-mail on 5<sup>th</sup> October 2022, with a deadline date for responses of 4<sup>th</sup> November 2022. Stakeholders were also invited to attend a focus group where they had the opportunity to discuss the options that had been presented, or to ask questions about why the options had been planned as they were. Two online focus groups were organised that included a variety of representatives from different stakeholder groups including Airlines, General Aviators and Air Navigation Service Providers, Local Authorities and community groups. Representatives of the following organisations or groups attended one of the Focus Groups:

- NERL
- Heathrow Airport
- Gatwick Airport
- RAF Kenley
- Surrey Hills Gliding Club (Kenley)
- London Borough of Bromley Council
- Sevenoaks District Council
- Woldingham Parish Council
- Keston Residents
- Farnborough Park Residents

The focus groups planned and undertaken are detailed in Table 2 below:

Focus Group	Attendees	Date
Focus Group 1	Airports and Air Navigation Service Providers; Local Community Groups	26 <sup>th</sup> October 2022 - am
Focus Group 2	Airports and Air Navigation Service Providers; Local Airfields and GA clubs; Council representatives; Local Community Groups	26 <sup>th</sup> October 2022 - pm

Table 2 – Focus Group Details

At the end of each meeting, the participants were advised that attendance at the Focus Group did not preclude them from providing a written response to the engagement and were reminded of the deadline for responses. A Record of Discussion for the Focus Groups can be found on the airspace change portal alongside this document; stakeholder comments from the Focus Groups have been captured in the feedback below.

During the first Focus Group, one stakeholder questioned why only one option was presented for Runway 03 departures to the north when all the other options to the east, south and west have a number of options. The option presented routed through a densely populated area to the north of the airport hence they wanted to see other options for this departure. Following the meeting, two alternative options for Runway 03 departures to the north were introduced and were included as options 10a and 10b. These options were also shared with all stakeholders via e-mail on 16<sup>th</sup> November 2022. As a result of including these extra options, the deadline for responses was extended until Friday 2<sup>nd</sup> December 2022.

## 5.2 Stakeholder Feedback

These options only concern the vertical profile of the portion of this approach inside

Stakeholder	Feedback	LBHA Response
RAF Northolt	Do not have feedback at this time on the options presented, but would appreciate the opportunity to engage with Biggin Hill in the future, throughout the CAP1616 process.	LBHA acknowledges RAF Northolt's response and will continue to engage with RAF Northolt as the project progresses.
Individual	Concerned about air pollution. Noticed in recent years an increase in the smell of aviation fuel early in the morning and late in the evening. With advances in plane technology is it really necessary to have the engines running for so long before take-off? On some occasions fumes can be smelled in the garden. which is very unpleasant. Sometimes the engines have been idling for 30 minutes before take-off. Please can consideration be given to air quality at the same time as noise.	The aim is to introduce new routes that will minimise aircraft emissions by introducing improved flight profiles and to optimise operational efficiencies, thereby minimising any ground delays.
Kent Downs AONB	Increased concentration of flight paths, if overflying the AONB could negatively impact on tranquillity of the AONB as well as being disruptive for sleep and health and well-being of residents. These areas are typically subject to much quieter background noise than existing urban areas, where the presence of overflying aircraft will therefore be more apparent than in areas where the existing ambient noise levels are higher. <b>Departure Options:</b> The current departure route swathe appears to avoid overflying the Surrey Hills AONB but at its furthest point, does overfly a segment of the Kent Downs AONB. As this is a relatively tight swathe, this will result in a concentrated amount of overflying of departures.	LBHA acknowledges the concerns regarding overflight of the AONB and will take this into account during the Initial Options Appraisal. Further regard will be considered for any options taken forward to Stage 3 as more defined routes are developed within the swathes.



	<p>Of the Options proposed, it is considered that D12 and D17 would have the least impact on the two AONBs and are therefore the AONB Units preferred options.</p> <p>Minor adjustments through small scale tightening of the indicated swathes of Options D7, D8, D10, D15 and D16, would also result in no overflying of the AONBs.</p> <p>Options D4, D5 and D14 would have the most impact on the two AONBs and are not therefore supported.</p> <p><b>Arrival Options:</b></p> <p>The existing arrival route largely avoids overflight of the Kent Downs AONB. Any change that results in overflying of the AONB would not meet the Design Principle of avoiding overflying sensitive areas and would not be supported by the AONB Unit.</p> <p>Option A1 and A4 both avoid no overflying of the Kent Downs AONB and are therefore supported.</p> <p>Option A3 would result in overflying of a relatively small section of the Kent Downs and Surry Hills AONBs which, given the current baseline situation, should be avoided if possible.</p> <p>Option A2 however introduces overflying of a large swathe of the Kent Downs AONB, which would be wholly opposed by the Kent Downs AONB Unit.</p>	
Natural England	Natural England does not consider that this list of options poses any likely risk or opportunity in relation to our statutory purpose, and so does not wish to comment on this consultation.	
Flightpath Watch	<ol style="list-style-type: none"> <li>1 We would like to understand how this exercise affects the Lease that Biggin Hill Airport Limited has with Bromley Council and the current NPRs.</li> <li>2. We do not see any reference to the promised new approach to Runway 03.</li> </ol>	<ol style="list-style-type: none"> <li>1. This is a National project, being run in conjunction with the UK CAA and the Department of Transport (DfT), and has no impact on the</li> </ol>



	<p>3. We believe that Design Principle 7= (AONB/Schools/hospitals) should be upgraded and seen together with Design Principle 3. Environmental Concerns.</p> <p>4. We are aware that the impact of noise takes precedence over fuel burn under 4,000 ft (CAA Briefing Report, Apr. 2015). As most of the areas affected by BHAL in and around Bromley are below 4,000ft, we believe that most of the swathes should have tried to avoid densely populated areas rather than give priority to direct routes.</p> <p>5. We do not agree that the noise created by business jets is “inaudible” at 4,000 ft. Moreover, as stated, most of the borough’s residential and sensitive areas are below this altitude and the power needed for a steep climb is too obtrusive.</p> <p>6. The routes on the slide Departures – Do Nothing (the starting point of the exercise), do not reflect the current NPRs.</p> <p>7. We do not understand why it is stated that “Do Nothing” is not an option, particularly as you state that we do not yet know the design plans of Gatwick, City and Heathrow.</p> <p>8. The general government policy is to “promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.” Specifically, it states the need to “avoid significant adverse impact on health and quality of life; mitigate and minimise adverse impacts on health and quality of life; where possible, contribute to the improvement of health and quality of life”. We do not believe that the options proposed do this. If there were opportunities to improve on the current NPRs, they have been missed.</p> <p>9. It seems futile to analyse all the options at present, since Biggin Hill Airport is not a driving force in the airspace change. Also all the swathes presented are excessively wide to be meaningful. They all seem to contrast with Design Principles 3 and 7=.</p>	<p>Lease the Airport has with Bromley Council.</p> <p>2. This project does is not about the new approach we are trying to introduce to Runway 03. This is a National Programme reorganising the UK Airspace to make it more efficient, economical and environmentally friendly.</p> <p>3. Design Principles, including priority, have been developed through stakeholder engagement and have already been approved at Stage 1 of the CAP 1616 process.</p> <p>4. The impact of noise is considered in DP3. The impact will be taken into account during the Initial Options Appraisal. Further regard will be considered for any options taken forward to Stage 3 as more defined routes are developed within the swathes.</p> <p>5. Detailed noise analysis of options taken forward will be conducted at Stage 3 of the CAP 1616 process. The type of aircraft that routinely operate from LBHA are able to perform steeper climbs than a typical passenger airliner without the use of maximum power.</p>
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	<p>10. Option D10 demonstrates point 9 above. It affects most of the built-up areas of the borough of Bromley, which the current NPR is devised to protect and is therefore not worthy of consideration.</p> <p>In answer to your question whether all the options have been considered, we would say that relevant ones, such as the new approach to R03, have not been, and we regret to say that the ones presented do not appear to be an improvement on the current situation. It seems to be a missed opportunity.</p>	<p>6. The departure swathe has been derived from actual radar track data. The nominal track routes aircraft through the centre of the runway. However, variations in aircraft types, navigation equipment, weather and piloting techniques result in aircraft being dispersed about the nominal track line.</p> <p>7. Do Nothing is not an option because all major airfields in the UK are engaged in making changes to meet the requirements of this National reorganisation of the UK Airspace, above and below 7000ft. For more information, please see the ACOG information website, One Sky One Plan.</p> <p>8. By introducing new routes to a PBN standard, LBHA aims to improve the current impact of noise on the local population.</p> <p>9. The swathes represents the full suite of options of where a route could go. Further analysis will be conducted as more defined routes are developed within the swathes.</p> <p>10. The Initial Options Appraisal will analyse the impact of each of</p>
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		<p>the options to see if they can be taken forward to the next stage.</p> <p>In accordance with the CAA CAP1616 process, we are required to look at all possible route options into and out of Biggin Hill Airport. Final routes will be established during Stage 3, when a full evaluation can be conducted against our established Design Principles from Stage 1, which will also take into consideration the already established NPRs. This will also involve full engagement with our adjacent airfield and the National Air Traffic Services, which is being co-ordinated for the CAA and DfT, through the Airspace Change Organisation Group (ACOG).</p>
DAATM	<p>Agree that options have been designed with consideration for the agreed design principles.</p> <p>The MOD is keen to remain involved in engagement and consultation as this ACP progresses, but I would request that you retain both RAF Kenley and RAF Northolt as specific local airspace stakeholders while I represent wider MOD. I have already seen that Kenley offered some general feedback and am sure that you will continue to work closely with them to ensure suitable deconfliction between the two units, given their proximity.</p> <p>I would also like to iterate that we will be interested to see what the proposed increases in regulated airspace will look like and to understand how impact on other airspace users will be minimised</p>	



Oriens Aviation	<ul style="list-style-type: none"> <li>• Do nothing is not an option.</li> <li>• No mention is made of emergency engine out procedures in the design principles.</li> <li>• The departure north 1 RW 21 is in direct conflict with inbound traffic. Look how close we are to the Gatwick CTA.</li> <li>• Departure 2 probably is the better option, however, infringing environmentally on a greater area to the west.</li> <li>• Departure east 1 more complex therefore favouring 2 but too close a proximity to the Gatwick CTA.</li> <li>• Departure south 1 must involve Gatwick as the controlling authority and environmentally greater disturbance. Conflicting with Kenley gliding site which has potential safety implications and is difficult to mitigate.</li> <li>• Departure south 2 far safer climbing overhead but operationally costly in time. Likewise 3 but the two latter allowing pilots time for coordination with the relevant authorities.</li> <li>• Departure west 1 dismiss.</li> <li>• Departure west 2 preferential for the same reasons. However, conflicting with Kenley.</li> <li>• Arrivals seem to be better organised as you are already under a controlling authority and can be readily coordinated.</li> <li>• Transition east-do not change. It works and is safe option.</li> <li>• North via the Alvin transition perfect. Once again Thames will coordinate and already works.</li> <li>• The arrivals west will and always will present problems and are likely to be vectored increasing controller workload. A factor to be considered with special orientation for pilots. NATS must coordinate with operators and not just drive through changes as they have in the past.</li> <li>• Certainly the options are comprehensive but as stated are too complex in some cases. We have highlighted the problems of infringements and undoubtably unless we think and implement with caution, these will occur. Simple means safe. Our preference would be keep it simple,</li> </ul>	<p>Emergency procedures are not considered as part of the development process for the new routes, other than the requirement to design the procedures in accordance with PANS-OPS, which takes into account aircraft performance.</p> <p>Proximity to other airports, their routes and airspace, will continue to be considered as the process develops.</p>
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	particularly on departures, allow time for ATC coordination and avoid CTA infringements.	
Individual	<p>The reasons for my concerns are as follows:</p> <ul style="list-style-type: none"> <li>a) Most of the published Options result in aircraft leaving Biggin Hill Airport in a Northerly direction, flying over heavily populated areas containing many schools and several Hospitals.</li> <li>b) Options 10a and 10b both appear to require aircraft to circle fairly close to Biggin Hill Airport whilst gaining height before travelling North.</li> </ul> <p>This will result in yet additional noise and pollution around the Airport, whilst also creating more congestion for incoming aircraft to avoid.</p> <p>In short, from a safety and efficiency perspective, as well as noise and nuisance reduction, it would appear more appropriate for aircraft taking off from Biggin Hill Airport to gain altitude and leave the Biggin Hill Area flying over the least populated area possible, namely in an Easterly direction, as soon as possible.</p> <p>In doing so, Biggin Hill Aircraft would be less likely to jeopardise aircraft approaching London Heathrow and London Gatwick Airports, create a significant nuisance to less residents and pollute far less people, especially children and the infirm.</p>	<p>The swathes represents the full suite of options of where a route could go. Further analysis will be conducted as more defined routes are developed within the swathes.</p> <p>Proximity to other airports, their routes and airspace, will continue to be considered as the process develops.</p>
RAF Kenley	<ul style="list-style-type: none"> <li>• I am assuming all departures will have entered the London TMA by the time they are in the vicinity of RAF Kenley?</li> <li>• It would be preferable to be at least 2300ft AMSL when overhead Kenley.</li> <li>• It may be worth having typical expected heights on your presentation.</li> <li>• As we have previously discussed, we would wish arrivals to route around Kenley with appropriate separation, but not ‘hugging’ the boundary.</li> <li>• An appropriate LOA between us would be useful.</li> </ul>	<p>LBHA understands very well Kenley’s existence and it wouldn’t be acceptable in the design process to impact Kenley. We will continue to work with Kenley to ensure routes are deconflicted from Kenley’s operations.</p>





<p>Bromley BC</p>	<p>Bromley Council is, and has always been, concerned about the noise disruption suffered by residents. We have always placed a high priority on the diminution of this annoyance and continue to do so.</p> <p>We would be concerned about any suggestion of new or additional routes that may direct aircraft over the residents of Bromley and would take a stand against such suggestions. Indeed, we would be concerned about any suggestion of new or additional routes that may direct aircraft across any built-up areas, which should be avoided by aircraft wherever possible.</p> <p>We would say that the list created is comprehensive and we were pleased to hear that where other stakeholders had raised alternative ideas, these were also being considered. However, while we understand that new routes may be necessary, if the routes from 7000ft are yet to be finalised, it would seem that the existing routes may still be fit for purpose and should also still be under consideration rather than being labelled ‘not appropriate’ and dismissed.</p> <p>Almost all of the suggested routes have the potential to direct aircraft over agreed Noise Sensitive Areas. While we are aware that the NSAs have a ceiling and that the potential heights of aircraft are not given in the diagrams, any deliberate and systematic overflight of such areas, even at an altitude above the NSA’s ceiling, would be a breach of trust and not within the spirit of the good neighbour clause or the Noise Action Plan. As these areas are not supposed to be overflowed, unless for safety reasons or under ATC instructions, it would also seem in contradiction of Design Principle 3.</p> <p>The vast majority of the new routes also include the potential for overflight of populations not previously overflowed, also in contradiction of Design Principle 3. According to the 2021 Census, Bromley’s population has grown by 6.7% since 2011 to 330,000; any overflight of populated areas will now likely cause disruption to a greater number of people than it would have done a decade ago.</p> <p>Similarly, the departures to the north between them include within their swathes: Princess Royal University Hospital, Orpington Hospital, Chelsfield</p>	<p>DP3, a high priority Design Principle, seeks to ensure that, where possible, the new routes are designed to minimise the impact of noise below 7000ft and should aim to avoid the overflight of populations not previously overflowed.</p> <p>Although the new routes may follow similar tracks over the ground to the existing routings, the new routes will need to be designed to PBN standards to improve integration and operational efficiencies and hence the Do Nothing options has been dismissed.</p> <p>The swathes represents the full suite of options of where a route could go and as mentioned, have the potential to direct aircraft over agreed Noise Sensitive Areas. These areas will be considered in more detail as more defined routes are developed within the swathes.</p> <p>The impact of noise is considered in DP3 and DP7.</p> <p>Whilst LBHA would aim to avoid overflight of populations not previously overflowed, to do so may actually result in an overall</p>
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	<p>Park Hospital, Queen Mary's Sidcup, Sloane Hospital, St Olave's Grammar School, Ravens Wood School, Hayes School, Langley Park Girls School, Newstead Wood School, Harris Academy Orpington, Bishop Justus Church of England School, LSEC Bromley, Coppers School, Chislehurst School for Girls, Bromley High, Eltham College, Harris Academy Beckenham and Charles Darwin School. New routes causing disruption to these institutions would surely be in contravention of Design Principle 7.</p> <p>With the suggested arrival routes, only A1 keeps aircraft away from densely populated areas for as long as possible, which would seem the preferable option with regards to Design Principles. Both arrivals from the east and the south imply that more residents of the borough of Bromley will be overflown. Is there a reason why the terminating parts of these swathes cannot be widened, rather than ending at ALKIN at the north-east of the borough?</p> <p>We also note that your diagrams reflect the rate of climb of jet and turbo-prop aircraft. While we are sure you have taken into account the speed required by the UK AIP, we would caution that a high rate of climb, driven by increased thrust and hard-working engines, can lead to greater noise disruption for Bromley residents, which we would again stand against.</p> <p>While we are aware that more detailed analysis of more specific routes is to come at the consultation stage, we would urge you to take these contradictions with Design Principles 3 and 7 into serious account as you move the process forward and do all you can to ensure you minimise the impact of noise below 7,000 ft and hospitals, schools, country parks or Areas of Outstanding Natural Beauty. We would also expect that: existing and agreed Noise Preferential Routes are honoured and this should be reflected in the process moving forwards; that the new approach to Runway 03, a key commitment of the Noise Action Plan and the agreement to extend hours of operation, is included; and that all routes taken on to consultation comply with all existing obligations in the lease, NAP and MIL.</p>	<p>reduction in the noise impact. The impact will be taken into account during the Initial Options Appraisal. Further regard will be considered for any options taken forward to Stage 3 as more defined routes are developed within the swathes.</p> <p>LBHA acknowledges the presence of a large number of sensitive areas and will consider these as more detailed routes are developed.</p> <p>Detailed noise analysis of options taken forward will be conducted at Stage 3 of the CAP 1616 process. The type of aircraft that routinely operate from LBHA are able to perform steeper climbs than a typical passenger airliner without the use of maximum power.</p>
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Individual	<p>It is clear that several of the routes shown have not been designed to minimise the impact of noise below 7,000 ft. Judging from the experience of recent years with an increasing number of BHAL jet aircraft overhead from take-off, I also consider the black and blue hatched lines are optimistic representations of the heights jets and turbo-prop aircraft will reach. If correct there are two implications; the swathes are likely to be longer and the noise on the ground is likely to be greater.</p> <p>1. Is this list of options comprehensive and been generated with due consideration for the Design Principles?</p> <p>The list of departures is comprehensive; however it has not aligned with Design Principle 3. Environmental Concerns. Neither do some of the options shown adequately address Baroness Sugg's paragraph two requirements. My more detailed comments on the individual suggestions are shown below.</p> <p>1. DEPARTURES – DO NOTHING The red route arrow detailing the existing departure route from 03 is incorrectly shown as a wider circle passing over Keston Village. The existing BHAL Aircraft Tracks document details this flightpath as passing over the centre of the runway. Copy enclosed.</p> <p>2. DEPARTURE OPTIONS. R21 departures must continue to cross the middle of the runway as 1) above details.</p> <p>3. INDICATIVE HEIGHT BOXES – Noted; I cannot comment on any populations to the east which are not already overflown.</p> <p>4. DEPARTURE OPTIONS – Noted</p> <p>5. RUNWAY 21 – DEPARTURE NORTH 1 – OPTION D1 – The left hand red arrow indicates a far greater swathe taking aircraft over heavily populated areas including Farnborough and Orpington. The swathe needs to be much narrower and head towards West Kingsdown.</p> <p>6. RUNWAY 21 – DEPARTURE NORTH 2 – OPTION D2 – There should be one arrow departing south, crossing the middle of the runway and heading out to J4 of the M25 then turning north. The left hand arrow and resulting swathe</p>	<p>The swathes represents the full suite of options of where a route could go. Detailed noise analysis will be conducted as more defined routes are developed within the swathes at Stage 3 of the CAP 1616 process. The aim is for unrestricted climb to 7,000 ft and although this may not be achievable given the airspace restrictions, it is anticipated that improved climb performances over today's operations would be achievable. The type of aircraft that routinely operate from LBHA are able to perform steeper climbs than a typical passenger airliner without the use of maximum power.</p> <p>The swathes represents the full suite of options of where a route could go. Further analysis will be conducted as more defined routes are developed within the swathes.</p> <p>The departure swathe has been derived from actual radar track data. The nominal track routes aircraft through the centre of the runway. However, variations in aircraft types, navigation equipment, weather and piloting techniques result in aircraft being</p>
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	<p>creates an area not already overflowed by departing aircraft and is unacceptable.</p> <p>7. RUNWAY 21 – DEPARTURE EAST 1 – OPTION D3 – The top arrow needs to be dropped to route aircraft over the middle of the runway.</p> <p>8. RUNWAY 21 – DEPARTURE EAST 2 – OPTION D4 – Looks good.</p> <p>9. RUNWAY 21 – DEPARTURE SOUTH 1 – OPTION D5 – Noted, doesn't look practical considering the proximity to the Gatwick CTA.</p> <p>10. RUNWAY 21 – DEPARTURE SOUTH 2 – OPTION D6 – Looks good as long as pilots fly over the middle of the runway on the 'back through the overhead'.</p> <p>11. RUNWAY 21 – DEPARTURE SOUTH 3 – OPTION D7 – Unacceptable over Keston Village. Needs amending to traverse the middle of the runway.</p> <p>12. RUNWAY 21 – DEPARTURE WEST 1 – OPTION D8 – Noted</p> <p>13. RUNWAY 21 – DEPARTURE WEST 2 – OPTION D9 – Noted</p> <p>14. RUNWAY 03 – DEPARTURE NORTH 1 – OPTION D10 – Unacceptable. Far too great a population currently not overflowed. Would appear to conflict with aircraft landing from the north and using the ILS.</p> <p>15. RUNWAY 03 – DEPARTURE EAST 1 – OPTION D11 – Unacceptable. Far too great a swathe to the north overflying populations not already overflowed. Suggest left hand arrow follows lower arrow and breaks towards J4 of M25 then towards the east.</p> <p>16. RUNWAY 03 – DEPARTURE EAST 2 – OPTION D12 - Unacceptable. Far too great a swathe to the north overflying populations not already overflowed. Seems unnecessary.</p> <p>17. RUNWAY 03 – DEPARTURE SOUTH 1 – OPTION D 13 - Unacceptable. Far too great a swathe to the north overflying populations not already overflowed.</p> <p>18. RUNWAY 03 – DEPARTURE SOUTH 2 – OPTION D 14 – The northern swathe unacceptable overflying populations not already overflowed. The tight right turn followed by a left turn towards the SW looks reasonable.</p>	<p>dispersed about the nominal track line, as noted on the existing BHAL Aircraft tracks document.</p> <p>Individual comments for each of the swathe options are noted and will be considered more defined routes within any swathes taken forward are developed.</p>
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	<p>19. RUNWAY 03 – DEPARTURE WEST 1 – OPTION D 15 - Unacceptable. Far too great a swathe to the west overflying populations not already overflown.</p> <p>20. RUNWAY 03 – DEPARTURE WEST 2 – OPTION D 16 – Noted</p> <p>21. RUNWAY 03 – DEPARTURE WEST 3 – OPTION D 17 - Unacceptable. Far too great a population currently not overflown. Would appear to conflict with aircraft landing from the north and using the ILS.</p> <p>2. Are there any other route options we should consider that have not already been introduced?</p> <p>I think you should have shown the detail with commentary about how the 03 GPS arrival route is currently drawn. This is needed to provide contributors with further information of potential flight's overhead.</p>	
London City	<ul style="list-style-type: none"> <li>Any departures that track north, or arrivals from the north, increase interactions with London City traffic and may therefore impact both airports due to the airspace constraints in that area.</li> <li>Given both airports' aspirations for growth, gaining freeflow for both airports should be a priority. Deconfliction of routes to the north would therefore be required to avoid interdependency.</li> <li>We support the desire to move away from shared arrival structures as these result in capacity constraints for either or both of our airports. With Biggin's growth, we are seeing this impact today, particularly in periods of non-standard operations such as poor weather.</li> <li>We draw attention to the dimensions of our CTA/CTR. There is no safe procedural method for Biggin traffic to enter this airspace.</li> </ul>	LBHA acknowledges the likelihood of interactions with London City traffic for any new routes to the north. We will continue to work closely with London City Airport to ensure routes are deconflicted through the FASI-S programme.
NERL	<p>Departures - Swathe length: NERL would like to suggest the lengthening of all the departure swathes. This would accommodate stepped climb profiles which will potentially be required to ensure the safe separation against adjacent airport operations.</p>	<p>The aim is for unrestricted climb to 7,000 ft and although this may not be achievable given the airspace restrictions, it is anticipated that improved climb performances over today's operations would be</p>



	<p>Option D4 (extension/additional option): NERL would like to suggest extending the swathe to the south in the vicinity of Sevenoaks. Whilst this would need deconflicting with the Gatwick operation, this extension may increase flexibility in Stage 3.</p> <p>Arrivals – Swathe length: NERL would like to suggest the lengthening of all the arrival swathes to incorporate the airspace, be it for an RMA or transitions, between ALKIN and Biggin Hill.</p> <p>Option A1 (extension/additional option): NERL would like to suggest extending the swathe to the north east in the vicinity of Brentwood. This would facilitate a shorter route into ATPEV from the north. NERL would also suggest the removal of the vertical profile displayed on this option. As sponsors progress through the process the vertical profile on the route depicted may prove overly restrictive.</p> <p>Option A3 (extension/additional option): NERL would like to suggest extending the western swathe further into the LL CTA. This would facilitate flexibility for both the positioning of the specific route and tactical options available to appropriately manage the traffic.</p> <p>I would like to confirm, for your records, that NERL has no additional feedback on these two options.</p>	<p>achievable. Further development work will be undertaken during Stage 3 of the CAP 1616 process which may result in increased ranges to achieve 7,000 ft to ensure safe separation from adjacent airport operations.</p> <p>There is no reason why the arrival swathe cannot be extended to the north east to improve arrivals from the north, although Southend and London City operations would need to be considered. The heights are indicative only to show how the procedure is flown today and can be subject to further work to achieve an optimal profile.</p> <p>There is no reason why the swathe cannot be extended further west and this will be considered as the swathes are developed.</p>
Sevenoaks DC	<p>Sevenoaks District lies to the east of the airfield and 60% of land is subject to AONB designation. Presented as they are as large swathes of airspace, many of the options that affect land to the east have the potential to result in overflying of schools and AONB in our District.</p> <p>In the absence of specific routes, we object to the options with the potential to result in overflying of Sevenoaks District, on the basis that they are contrary to Biggin Hill's own design principles. These appear to be departure options D1, D2, D5, D11 and D12. The current arrivals swathe also impacts on the District. I look forward to receiving more detailed information at Stage 3 of</p>	<p>The swathes represents the full suite of options of where a route could go. LBHA acknowledges the concerns regarding overflight of the AONB and will take this into account during the Initial Options Appraisal. Further regard will be considered for any options taken forward to</p>





	<p>the consultation, that will hopefully address our concerns and inform a more comprehensive response.</p> <p>As presented, the options appear to cover all available airspace around the airfield and I cannot see any scope for further routes.</p>	<p>Stage 3 as more defined routes are developed within the swathes.</p>
Heathrow Airport	<p>Heathrow has no reason to believe that the ‘swathes’ presented for the Comprehensive List of Options at this stage would not align to the Design Principles set. We are comfortable that due consideration of the Design Principles has taken place in the development of the Options presented.</p> <p>Heathrow has no further suggestions for additional options.</p>	<p>LBHA will continue to work closely with Heathrow Airport as plans for both airports are developed.</p>
Individual	<p>I note with interest the design principles and comment as follows:</p> <p>3. ENVIRONMENTAL CONCERNS – Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7000ft and should avoid the overflight of populations not previously overflowed.</p> <p>Whilst I agree with the first part and would appreciate if this were the case for inbound aircraft I find the second part confusing. If I read it correctly for those living under the existing ILS flightpath there will be no change in any of your options as the aircraft whether approaching from the North, South, East or West would still head towards Alkin and then fly over densely populated areas, schools, Hospitals. I would have thought this initiative would have taken the opportunity to approach from a direction where it had minimal impact on residents, Hospitals and Schools. I sincerely hope that you would reconsider the wording of this Design Principle and apply it to the options.</p> <p>6. EFFICIENT ROUTES – Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.</p> <p>Whist I agree with the design principle I wonder how this can be satisfied if the aircraft are forced to climb steeply. The steep climb will no doubt incur higher emissions and noise worse still in the case of Turbo Prop aircraft.</p>	<p>Aircraft commence their descent to land from approximately 4 miles from the airfield and need to be lined-up on the runway heading before this point. There are no options to approach from a different direction and as such, we are not considering changes to the final approach procedures.</p> <p>The type of aircraft that routinely operate from LBHA are able to perform steeper climbs than a typical passenger airliner without the use of maximum power.</p> <p>As previously stated, Aircraft commence their descent to land from approximately 4 miles from the airfield and need to be lined-up</p>



	<p>7= AONB/Schools - Procedures should, where possible, avoid overflight of sensitive areas, e.g. Hospitals, schools, country parks or AONBs.</p> <p>This is a valid principle but again is contravened by the existing ILS approach and one wonders how this can be satisfied.</p> <p>So my overriding question. Is there a consideration in this review to look at other ILS options. I did note that Matthew Amer stated that the Council would want to reduce the impact on residents and that he would write to you in this regard.</p> <p>This graphic for instance clearly shows a swathe that avoids densely populated areas and therefore has a minimal impact on residential areas, schools and hospitals.</p> <p>Similarly D1 and D2 overfly densely populated areas as does a number of the other D* options.</p> <p>It is unclear what options are available from Alkin to BHA and I would appreciate it if these were clarified.</p>	on the runway heading before this point.
Individual	<p>As a resident of Woldingham village I am concerned with increasing numbers of aircraft flying low over the village. The number of executive jets in particular seems to have gone up, and they are too frequently at low altitude making noise and visual disturbance for residents in their houses and gardens, not to mention the added pollution and carbon footprint from such flights.</p> <p>The information in the message and document attached is complicated for the lay person, but from what I understand I think there are proposals that are not generated with due consideration for the Design Principles - especially no. 3 Environmental concerns.</p> <p>The following options do not minimise the impact of noise or avoid overflight of residents in my area, and as such, I object to them all: D2, D3, D5, D7, D8, D13, D14, D15, D16, A3</p>	The swathes represents the full suite of options of where a route could go. LBHA acknowledges the concerns regarding the impact of noise and will take this into account during the Initial Options Appraisal. Further regard will be considered for any options taken forward to Stage 3 as more defined routes are developed within the swathes.





Individual	Would ask for you to take option 10A 03 North Left hand route	A number of local residents have responded to the engagement to specifically express a preference for one or other of the alternate Runway 03 departures to the north. Further analysis of these options will be undertaken as part of the Initial Options Appraisal and for any options taken forward to Stage 3 as more defined routes are developed within the swathes.
Individual	Of the two options presented please note that our preference is for - 10a. 03 North LH which routes the flights to the west of the airport, away from us. We are already adversely impacted by the many flights to/from the airport and the southern option would increase the disturbance.	
Individual	Please note my preference of the flight path 10a. 03 North LH which routes the flights to the west of the airport	
Individual x 4	Please note my preference of the flight path 10a. 03 North LH which routes the flights to the west of the airport.	
Individual	I am a Knockholt resident and I strongly oppose the right hand flight path which is 10b.	
Individual	Of the 2 suggestions for the South Airspace Change we prefer option 10a 03 North LH	
Individual	Biggin Hill Airport is part of the Bromley Borough and the newly proposed route for aircraft at Biggin Hill should therefore use the airspace over Bromley and not over the Sevenoaks District. Therefore route option 10a, with a Left Hand (LH) turn off runway 03, then back through Biggin Hill overhead proceeding North should be utilised rather than route 10b	
Individual	10a. 03 North LH appears to be less densely populated and therefore sound and air pollution would impact on fewer residents and so is our preferred option.	
Individual	I would like to state my preference for the proposed changes to be 10a. 03 North LH	
Individual	I would like to make my opinion on the preferred flight path from the airport which is 10a . 03 North LH.	



Individual	<p>10a - Keston village is located directly in the centre of the circling movement and given the accuracy with which pilots follow designated flightpaths, coupled with the excessive noise from climbing aircraft, and the air pollution, [measurement at my home already exceeds three W.H.O. limits] I do not support this route option. It also appears that the population to the north of the airport will be impacted, which is contrary to the Noise Preferential Route (NPR) contained within the lease.</p> <p>10b - This option appears more acceptable to Keston residents as long as the pilots follow the flightpath more accurately than experience to date would indicate. The pollution point and the impact on the population to the north of the airport are still relevant, which again is contrary to the NPR.</p> <p>Climate Change - The broader point for all airport staff as they aim to conform to the requirement to participate in the airspace change work and dance to the tune of their bosses is to carefully consider the impact on their children and grandchildren's lives, their health and the future of the Earth. We know Climate Change is going to impact severely in the years to come. As evident from COP27 decision makers are not taking seriously the aviation industry and taking a far too short-term view generally. What should be done is to reduce all airport development to a level, which is going to protect those staff in the industry when the climate catastrophe happens. In this context the Biggin Hill strategic perspective of concentrating on private air travel is flawed. Britain is already Europe's biggest polluter from private air travel.</p>	
Focus Group	<p>Why was there only one option presented for the Runaway 03 departures to the north when all the other options to the east, south and west have a number of options. This option goes through a densely populated area to the north of the airport and we would like to see other options for this departure.</p>	<p>The design swathe could contain multiple route options within the area. The airport would like options that allow aircraft to depart in different directions rather than currently, where all aircraft depart to the east. Following the meeting, two alternative options for the</p>



		Runway 03 departure to the north were introduced that turned south initially (left turn and right turn after take-off) before circling back over the airport to route north. These were included as options 10a and 10b and were subsequently shared with stakeholders.
Focus Group	Concern that the higher climb rates would create more noise on the ground.	Currently aircraft have to level at 2,400 ft before getting clearance to climb further. The aim of these options is for unconstrained climbs to 7,000 ft. The noise impacts will be modelled in more detail as we get closer to consultation. The type of aircraft that operate from Biggin Hill are lighter and had smaller engines and are much quieter than airliners. The noise impacts will be modelled in more detail at the next stage of the CAP 1616 process.
Focus Group	When aircraft currently take off and circle to route over the centre of the airfield the impact is much less. Some departing aircraft end up further north than the airfield boundary and this has a bigger impact. They stated that it would be helpful if any route options that circle back to pass over the airfield use the middle of the runway as a reference point.	This will be considered as the options develop.
Focus Group	Regarding options D6 through D9 and the climb ranges depicted. These options overfly the glider site at Kenley so wondered whether the climb profiles were continuous to 7,000 ft or levelled off. If they level off at 2,400 or 2,500 ft, they would impact the glider site operations.	The aim is for unrestricted climb to 7,000 ft and we would design routes so that they are deconflicted from Kenley. We understand very well





		Kenley's existence and it wouldn't be acceptable in the design process to impact Kenley. We will work with Kenley to ensure routes are deconflicted from Kenley's operations. Although the restriction is 2,400 ft today, this may change as a result of the wider LTMA programme.
Focus Group	Any aircraft departing Biggin Hill have to climb quite considerably to avoid noise impact on the village of Woldingham.	Part of the modernisation programme is to get better climb profiles for departing aircraft. Currently, aircraft take off and are close to Woldingham but can only climb initially to 2,400 ft. It is quite possible that with the new routes, aircraft will be passing this height only 1 mile from the runway, which should improve any impact. Current airspace geography prevents aircraft being able to climb faster.
Focus Group	There should not be any greater overflight of the built-up population of Greater London than today. Local residents already suffer from a lot of air traffic. Some of the options presented go over densely populated areas.	In reality, those currently overflowed are still likely to be overflowed in the future but we would look to minimise the impact. We will look at the swathes alongside the design principles to reduce the swathes to a few routes in conjunction with Heathrow and Gatwick Airports and



		NATS with consideration for other airspace users to arrive at the options that are put to consultation. The feedback is important to remind us what to take into account when we narrow the options down to viable route options.
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Table 3 – Stakeholder Feedback and Responses



## 5.3 FASI-S and Masterplan Coordination

### 5.3.1 FASI-S

FASI-S is the combined programme of airspace changes to the legacy air traffic route structures in the southern part of the UK. FASI-S is comprised of several change sponsors including NATS En Route Limited (NERL), the UK's en route Air Navigation Service Provider (ANSP). NERL is responsible for airspace change to the en route network above 7,000 ft such as creating additional capacity to support growth and reducing airspace inefficiencies. FASI-S also includes low-level airport changes led by a number of airports in the south of England. These are focussed on low-level designs including the better management of noise impact and reduction of environmental impacts.

LBHA is part of the London Airspace Modernisation Programme (LAMP) Deployment Programme specifically aimed at coordinating the programme and designs of the ACPs in the LTMA deployment of the Airspace Change Masterplan.

The change sponsors are currently leading their own ACPs which often focus on similar geographical areas of airspace. It is therefore imperative that we continue to work together to develop airspace design options and manage engagement with stakeholders in a joined-up approach. LBHA has been working closely with Heathrow, Gatwick, London City, Stansted and Southend Airports, alongside numerous other stakeholders to ensure that our designs are progressed with other potential airspace changes in mind; allowing potential conflicts and enablers to be identified.

### 5.3.2 The Airspace Change Masterplan

Commissioned by the DfT and CAA, who are the co-sponsors of the Airspace Modernisation Strategy (AMS), the Airspace Change Masterplan will be a high-level co-ordinated implementation plan that identifies which individual but interdependent airspace design changes need to be developed to deliver the range of benefits that airspace modernisation will bring. The Masterplan is strategically important for coordinating the delivery of two of the key initiatives under the AMS, one of which is the coordination of design changes in the south of the UK (FASI-S). In line with these points, LBHA is coordinating their proposal in line with Heathrow, Gatwick, London City, Stansted and Southend Airports and NERL due to the potential interdependencies that exist.

On 23<sup>rd</sup> January 2023, the CAA published the Second Edition of the Airspace Modernisation Strategy (CAP 1711). Although work to date has been undertaken under the first edition of the AMS and the associated Masterplan, LBHA acknowledges the publication of the new AMS and will align with this as this ACP progresses.

LBHA has been working closely with the Airspace Change Organising Group (ACOG) throughout its Stage 2 work to ensure it is aligned with the wider programme. LBHA is fully supportive and aligned with ACOG's initial Masterplan and has also supported the recently approved Iteration 2 of the Masterplan. This specifically focuses on interdependencies between independent ACPs where design conflicts or enablers could arise. LBHA has worked alongside and engaged with Heathrow, Gatwick, London City, Stansted and Southend Airports, as well as





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NERL throughout its Stage 2 design work. This has enabled potential conflicts to be identified early on and appropriate design decisions to be made.

The Masterplan has identified that there is a possibility that design conflicts or enablers may arise between LBHA and the surrounding airports. LBHA will continue to work with NERL and the other airports to ensure satisfactory solutions to any conflicts are achieved.

LBHA appreciate the support from ACOG and are confident that this Stage 2 submission is fully aligned with both iterations (Stage 1 and Stage 2) of the Masterplan. The design options will continue to be coordinated with the other regional airspace changes within the FASI LTMA Deployment Programme. We look forward to continuing to work alongside ACOG and the change sponsors of ongoing ACPs.

## 6 Design Principles Evaluation

### 6.1 Evaluation of the Options against the Design Principles

Each option has been assessed against the prioritised list of Design Principles shown in Table 1 in Section 1 above. The evidence is qualitative and based on combining input from experienced subject matter experts with feedback from stakeholders and the evolving design work.

Table 3 below, and the individual ‘Option’ tables that follow, give an overview of how well each option aligns to each Design Principle; it shows a summary of the analysis conducted for each option with a high-level assessment of whether the Design Principle is either not met, partially met or fully met, as follows:

- A **green** box indicates that the Design Principle has been **met** by the specified option.
- An **orange** box means that the Design Principle has been **partially met** by the specified option.
- A **red** box indicates that the Design Principle has **not been met** by the specified option.

The assessment criteria in Table 3 below have been used to determine whether each design option has been met, partially met or not met each of the Design Principles.

DP	Design Principle	
1	SAFETY – New routes must be safe	<p><b>MET:</b> No safety issues identified, or issue that could be overcome with similar levels of safety assurance to today’s operation</p> <p><b>PARTIAL:</b> Issues identified to overcome that would require a significantly more robust safety argument than today’s operation</p> <p><b>NOT MET:</b> Issues identified that would be unlikely to be overcome without prohibitively restrictive safety mitigations</p>



2	COMPLIANCE – Route should, where possible, be designed to be PANS OPS compliant	<p><b>MET:</b> Expected to comply fully, or mostly but with reasonable justification for non-compliance in limited technical areas</p> <p><b>PARTIAL:</b> Expected to comply partially, with significant justification needed for non-compliant areas</p> <p><b>NOT MET:</b> Significant areas of non-compliance without reasonable justification</p>
3	ENVIRONMENTAL CONCERNS - Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown	<p><b>MET:</b> Has the potential to reduce overall impacts of aircraft noise and does not overfly new populations</p> <p><b>PARTIAL:</b> Impacts of aircraft noise likely to be better or broadly similar but could overfly new populations</p> <p><b>NOT MET:</b> Has the potential to increase the overall impacts of aircraft noise including overflight of new populations</p>
4	WORKLOAD - Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity	<p><b>MET:</b> Design option has potential to improve ATC workload</p> <p><b>PARTIAL:</b> ATC workload would be broadly similar under this design option</p> <p><b>NOT MET:</b> Design option has potential to increase ATC workload</p>
5	HARMONISED ROUTES – LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport	<p><b>MET:</b> Minimal change, or positive impact on other airspace users</p> <p><b>PARTIAL:</b> Minor negative impact on other airspace users</p> <p><b>NOT MET:</b> Significant negative impact on other airspace users</p>
6	EFFICIENT ROUTES - Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies	<p><b>MET:</b> Has the potential to reduce fuel burn per flight &amp; optimize operational efficiencies</p> <p><b>PARTIAL:</b> May introduce no change (broadly similar to today)</p> <p><b>NOT MET:</b> Clearly likely to increase fuel burn per flight &amp; unlikely to optimise operational efficiencies</p>





7=	Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).	<p><b>MET:</b> The effect upon noise sensitive receptors is considered to be the same or better than that of the Do Nothing option</p> <p><b>PARTIAL:</b> The effect upon noise sensitive receptors could be greater than that of the Do Nothing option but will depend on the final route design</p> <p><b>NOT MET:</b> The effect upon noise sensitive receptors is considered to be greater than that of the Do Nothing option with no mitigation within the swathe</p>
7=	NAVIGATION STANDARDS – New routes must be designed to use Performance Based Navigation	<p><b>MET:</b> Designed to high navigation standards that do not require aircraft fleet upgrades</p> <p><b>PARTIAL:</b> Designed to high navigation standards likely to require aircraft fleet upgrades</p> <p><b>NOT MET:</b> Designed to the same or lower navigation standard than today</p>
9	IMPROVED AIRCRAFT PERFORMANCE – Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl	<p><b>MET:</b> Allows high-performance continuous and uninterrupted climb direct to 7,000 ft</p> <p><b>PARTIAL:</b> N/A</p> <p><b>NOT MET:</b> Does not allow for a high-performance continuous and uninterrupted climb direct to 7,000 ft</p>

Table 4 – Design Principle Evaluation Criteria

Due to the nature of assessing swathes at this step of the process, unless safety issues are identified that would be unlikely to be overcome without prohibitively restrictive safety mitigations and Design Principle 1 is NOT MET, the option will be taken forward to Initial Options Appraisal at Step 2B.

Design Principle Evaluation		OPTION NO: Baseline		
Option Name: Do Nothing		REJECT		
Description of Option: Aircraft routes would be dependent on en-route airways joining position. Routing outside of CAS could vary depending on the position of the joining point in relation to the airport.				
Design Principle 1: New routes must be safe.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Current operations are safe.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: There are currently no published departure procedures; departing aircraft follow the Noise Abatement Procedures before following the Standard Departure Routes as published in the UK AIP ASD 2.22. Departing aircraft follow these routes to the Detling (DET) VOR to join the en-route network, or may receive ATC vectors. Arriving aircraft will normally receive ATC vectors to join the ILS Approach Procedure. There is an Approach Transition procedure, shared with London City Airport, which is compliant.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Impact will be the same as today. No overflight of populations not previously overflown.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Has the potential to increase ATC workload as other airports modernise their procedures due to lack of integration.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Key outcomes of Airspace Modernisation (efficient use of airspace and enabling integration, avoiding flight delays by better managing the airspace network and improving environmental performance by better managing noise) are unlikely to be met. May have a significant negative impact on other airports looking to modernise their procedures.				

<b>Design Principle 6:</b> Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Could increase fuel burn due to lack of integration with modernised network and hence unlikely to optimise operational efficiencies.			
<b>Design Principle 7=:</b> Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The effect upon noise sensitive receptors is considered to be the same as today.			
<b>Design Principle 7=:</b> New routes must be designed to use Performance Based Navigation.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Current operational procedures are not designed to PBN standard.			
<b>Design Principle 9:</b> Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Does not allow for a high-performance continuous and uninterrupted climb direct to 7,000 ft.			

#### 6.1.1 Do Nothing Conclusion

The Do Nothing option does not modernise the operations at LBHA in line with the aspirations of the Airspace Modernisation Strategy and would leave LBHA isolated within the LTMA area.



Design Principle Evaluation		OPTION NO: D1		
Option Name: Runway 21 North 1		ACCEPT		
<i>Description of Option:</i> The route swathe represents the area in which the routes for aircraft departing to the north following a left-hand turn after take-off can be designed. The southerly track line represents the latest position the aircraft can turn left whilst avoiding the Gatwick CTA followed by the aircraft following the track of the M25 and M26 motorways before turning north.				
Design Principle 1: New routes must be safe.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Impacts of aircraft noise likely to be better or broadly similar to today, but would overfly new populations by turning left after take-off. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.	NOT MET	PARTIAL	MET	

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

<b>Design Principle 6:</b> Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.	NOT MET	<b>PARTIAL</b>	MET
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*Summary of Qualitative Assessment:* May introduce no change and would be broadly similar to today. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

<b>Design Principle 7=:</b> Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).	<b>NOT MET</b>	PARTIAL	MET
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*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Surrey Hills AONB, is likely to be greater than that of the Do Nothing option with no mitigation within the swathe. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

<b>Design Principle 7=:</b> New routes must be designed to use Performance Based Navigation.	NOT MET	PARTIAL	<b>MET</b>
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*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

<b>Design Principle 9:</b> Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.	NOT MET	PARTIAL	<b>MET</b>
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*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

### 6.1.2 Runway 21 North 1 Conclusion

By turning left after take-off, this option will overfly populations not previously overflown, but has the potential to improve noise impacts overall. The proximity to potential Gatwick Airport routes will require further work and coordination to ensure no negative impact on Gatwick Airport's operations.

Design Principle Evaluation	OPTION NO: D2		
Option Name: Runway 21 North 2	ACCEPT		
Description of Option: The route swathe represents the area in which the routes for aircraft departing to the north following a right-hand turn after take-off can be designed. Aircraft commence a right-hand turn and continue to route back through the airfield overhead before turning left to route north. The outer boundary represents the latest position an aircraft can turn to remain clear of the Gatwick CTA before turning to route to the north.			
Design Principle 1: New routes must be safe.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.			
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: All the swathes have the potential to contain a fully compliant route. This will be investigated more closely once individual routes are assessed within the options carried forward to the next stage of the CAP1616 process.			
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Impacts of aircraft noise likely to be better or broadly similar to today, but could overfly new populations, depending on the placement of the final route. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.			
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.			
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.	NOT MET	PARTIAL	MET



*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

**Design Principle 6:** Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* More direct routing than currently so has the potential to reduce fuel burn per flight and optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Surrey Hills AONB, could be greater than that of the Do Nothing option but will depend on the final route design. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** New routes must be designed to use Performance Based Navigation.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

**Design Principle 9:** Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

### 6.1.3 Runway 21 North 2 Conclusion

This option broadly mimics today's operations, but may overfly populations not previously overflown. It has however, has the potential to improve environmental impacts overall with more direct routing, depending on the placement of the final route design.

Design Principle Evaluation		OPTION NO: D3		
Option Name: Runway 21 East 1		ACCEPT		
<i>Description of Option:</i> The route swathe represents the area in which the routes for aircraft departing to the east following a right-hand turn after take-off can be designed. Aircraft commence a right-hand turn and continue to turn onto an easterly direction. The alternative boundary represents the route aircraft can follow by climbing straight ahead on the runway heading initially before turning right onto an easterly heading at the latest position an aircraft can turn to remain clear of the Gatwick CTA.				
Design Principle 1: New routes must be safe.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Has the potential to reduce overall impacts of aircraft noise but could overfly new populations. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.		NOT MET	PARTIAL	MET

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

**Design Principle 6:** Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Surrey Hills AONB, could be greater than that of the Do Nothing option but will depend on the final route design. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** New routes must be designed to use Performance Based Navigation.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

**Design Principle 9:** Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

#### 6.1.4 Runway 21 East 1 Conclusion

This option broadly mimics today's operations, but may overfly populations not previously overflown. It does however, have the potential to improve environmental impacts overall with improved vertical profile, depending on the placement of the final route design.



Design Principle Evaluation		OPTION NO: D4		
Option Name: Runway 21 East 2		ACCEPT		
Description of Option: The route swathe represents the area in which the routes for aircraft departing to the north following a left-hand turn after take-off can be designed. Aircraft commence a left-hand turn onto the reciprocal runway heading and continue on that heading whilst climbing to 7,000 ft before routing in an easterly direction. The southerly track line represents the latest position the aircraft can turn left whilst avoiding the Gatwick CTA onto an easterly direction.				
Design Principle 1: New routes must be safe.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Impacts of aircraft noise likely to be better or broadly similar to today, but would overfly new populations by turning left after take-off. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.		NOT MET	PARTIAL	MET

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

<b>Design Principle 6:</b> Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.	NOT MET	PARTIAL	MET
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*Summary of Qualitative Assessment:* May introduce no change and would be broadly similar to today. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

<b>Design Principle 7=:</b> Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).	NOT MET	PARTIAL	MET
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*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Surrey Hills AONB, is likely to be greater than that of the Do Nothing option with no mitigation within the swathe. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

<b>Design Principle 7=:</b> New routes must be designed to use Performance Based Navigation.	NOT MET	PARTIAL	MET
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*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

<b>Design Principle 9:</b> Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.	NOT MET	PARTIAL	MET
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*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

### 6.1.5 Runway 21 East 2 Conclusion

By turning left after take-off, this option will overfly populations not previously overflown, but has the potential to improve noise impacts overall. The proximity to potential Gatwick Airport routes will require further work and coordination to ensure no negative impact on Gatwick Airport's operations.



Design Principle Evaluation		OPTION NO: D5		
Option Name: Runway 21 South 1		ACCEPT		
<i>Description of Option:</i> The route swathe represents the area in which the routes for aircraft departing to the south can be designed. The northern track line represents the route aircraft would follow having after turning right onto a north-westerly direction, followed by a left-hand turn, avoiding Kenley airfield before turning south. Aircraft should reach 7,000 ft prior to overflying the Gatwick CTA. The alternative, easterly boundary represents the route aircraft would follow having turned left after take-off onto a south-easterly heading, before turning right onto south.				
Design Principle 1: New routes must be safe.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Impacts of aircraft noise likely to be better or broadly similar to today, but would overfly new populations. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.		NOT MET	PARTIAL	MET



*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users, specifically Gatwick Airport. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

**Design Principle 6:** Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Surrey Hills AONB, could be greater than that of the Do Nothing option but will depend on the final route design. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** New routes must be designed to use Performance Based Navigation.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

**Design Principle 9:** Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

### 6.1.6 Runway 21 South 1 Conclusion

This option will overfly populations not previously overflown, but has the potential to improve environmental impacts overall with more direct routing. The proximity to potential Gatwick Airport routes and airspace will require further work and coordination to ensure no negative impact on Gatwick Airport's operations.

Design Principle Evaluation		OPTION NO: D6		
Option Name: Runway 21 South 2		ACCEPT		
Description of Option: The route swathe represents the area in which the routes for aircraft departing to the south can be designed. Aircraft follow a left-hand racetrack to route back through the airfield overhead and route in a south-westerly direction. The southern track represents the latest position an aircraft can turn to remain clear of the Gatwick CTA.				
Design Principle 1: New routes must be safe.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Impacts of aircraft noise likely to be better or broadly similar to today, but would overfly new populations by turning left after take-off. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.		NOT MET	PARTIAL	MET

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users, specifically Gatwick Airport. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

**Design Principle 6:** Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Surrey Hills AONB, is likely to be greater than that of the Do Nothing option with no mitigation within the swathe. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** New routes must be designed to use Performance Based Navigation.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

**Design Principle 9:** Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

### 6.1.7 Runway 21 South 2 Conclusion

This option will overfly populations not previously overflown, but has the potential to improve environmental impacts overall with more direct routing. The proximity to potential Gatwick Airport routes and airspace will require further work and coordination to ensure no negative impact on Gatwick Airport's operations.



Design Principle Evaluation		OPTION NO: D7		
Option Name: Runway 21 South 3		ACCEPT		
Description of Option: The route swathe represents the area in which the routes for aircraft departing to the south can be designed. Aircraft follow a right-hand racetrack to route back through the airfield overhead onto a south-westerly direction. The southern track represents the position an aircraft can turn to remain clear of the Gatwick CTA.				
Design Principle 1: New routes must be safe.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Impacts of aircraft noise likely to be better or broadly similar to today, but could overfly new populations when turning right after take-off. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.		NOT MET	PARTIAL	MET

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users, specifically Gatwick Airport. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

**Design Principle 6:** Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Surrey Hills AONB, could be greater than that of the Do Nothing option but will depend on the final route design. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** New routes must be designed to use Performance Based Navigation.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

**Design Principle 9:** Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

### 6.1.8 Runway 21 South 3 Conclusion

This option could overfly populations not previously overflowed, but has the potential to improve environmental impacts overall with more direct routing. The proximity to potential Gatwick Airport routes and airspace will require further work and coordination to ensure no negative impact on Gatwick Airport's operations.

Design Principle Evaluation		OPTION NO: D8		
Option Name: Runway 21 West 1		ACCEPT		
<i>Description of Option:</i> The route swathe represents the area in which the routes for aircraft departing to the west can be designed. Aircraft commence a 90°right-hand turn onto a north-westerly direction. Aircraft remain on this heading whilst climbing. The southern boundary of the route swathe represents the track an aircraft can follow having turned left after take-off, before turning right to remain clear of the Gatwick CTA.				
Design Principle 1: New routes must be safe.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Impacts of aircraft noise likely to be better or broadly similar to today, but would overfly new populations. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.	NOT MET	PARTIAL	MET	



*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users, specifically Gatwick Airport and Kenley Aerodrome. Consideration of Kenley Aerodrome would be mitigated once final route design is decided. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

**Design Principle 6:** Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Surrey Hills AONB, could be greater than that of the Do Nothing option but will depend on the final route design. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** New routes must be designed to use Performance Based Navigation.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

**Design Principle 9:** Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

### 6.1.9 Runway 21 West 1 Conclusion

This option could overfly populations not previously overflowed, but has the potential to improve environmental impacts overall with more direct routing for westerly departures. The proximity to potential Gatwick Airport routes and airspace will require further work and coordination to ensure no negative impact on Gatwick Airport's operations. Consideration of Kenley Aerodrome would be mitigated once final route design is decided. This option allows for improved access to Farnborough Airport.

Design Principle Evaluation		OPTION NO: D9		
Option Name: Runway 21 West 2		ACCEPT		
<i>Description of Option:</i> The route swathe represents the area in which the routes for aircraft departing to the west can be designed. Aircraft commence a left-hand turn all the way round to route through the airfield overhead and head west. The alternative is for aircraft to climb straight ahead after take-off, before turning left to avoid the Gatwick CTA onto the reciprocal runway heading. Aircraft then turn left again, through the airfield overhead onto west. Alternatively, aircraft can continue through the airfield overhead onto a south-westerly direction to route further south, before heading west.				
Design Principle 1: New routes must be safe.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Impacts of aircraft noise likely to be better or broadly similar to today, but would overfly new populations. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.		NOT MET	PARTIAL	MET

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users, specifically Gatwick Airport. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

**Design Principle 6:** Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Surrey Hills AONB, is likely to be greater than that of the Do Nothing option with no mitigation within the swathe. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** New routes must be designed to use Performance Based Navigation.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

**Design Principle 9:** Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

#### 6.1.10 Runway 21 West 2 Conclusion

This option could overfly populations not previously overflowed, but has the potential to improve environmental impacts overall with more direct routing. The proximity to potential Gatwick Airport routes and airspace will require further work and coordination to ensure no negative impact on Gatwick Airport's operations.



Design Principle Evaluation		OPTION NO: D10		
Option Name: Runway 03 North 1		ACCEPT		
Description of Option: The route swathe represents the area in which the routes for aircraft departing to the north can be designed. For the swathe boundary to the north west, aircraft turn left onto a north-westerly direction and climb to 7,000 ft. For the swathe boundary to the east, aircraft turn right in an easterly direction, before turning left to follow the route of the M25 motorway, onto north.				
Design Principle 1: New routes must be safe.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Impacts of aircraft noise likely to be better or broadly similar to today. This option could overfly new populations, although some may already be overflown by aircraft arriving at the airport. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.	NOT MET	PARTIAL	MET	

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users, specifically Heathrow and London City Airport's. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

**Design Principle 6:** Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* More direct routing than currently so has the potential to reduce fuel burn per flight and optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors is considered to be the same or better than that of the Do Nothing option. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** New routes must be designed to use Performance Based Navigation.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

**Design Principle 9:** Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

### 6.1.11 Runway 03 North 1 Conclusion

This option could overfly populations not previously overflowed, but has the potential to improve noise impacts overall. Depending on the final route design, some populations overflowed may already be overflowed by arriving aircraft. More direct routing has the potential to deliver efficient routes, improving fuel burn and minimising emissions. The proximity to potential Heathrow Airport and London City Airport routes will require further work and coordination to ensure no negative impact on either airport's operations.

Design Principle Evaluation		OPTION NO: D10A		
Option Name: Runway 03 North 2		ACCEPT		
Description of Option: The route swathe represents the area in which the routes for aircraft departing to the north following a left-hand turn after take-off can be designed. Aircraft follow a left-hand racetrack to route back through the airfield overhead onto a northerly direction. The southern track represents the position an aircraft can turn to avoid the built-up areas of Warlingham and Woldingham and also remain clear of the Gatwick CTA.				
Design Principle 1: New routes must be safe.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Impacts of aircraft noise likely to be better or broadly similar to today, but could overfly new populations by turning left after take-off. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.		NOT MET	PARTIAL	MET



*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users, specifically Gatwick, Heathrow and London City Airport's. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

<b>Design Principle 6:</b> Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.	NOT MET	<b>PARTIAL</b>	MET
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*Summary of Qualitative Assessment:* Not the most direct track with extended track miles by turning south initially but may introduce no change and would be broadly similar to today. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

<b>Design Principle 7=:</b> Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).	NOT MET	PARTIAL	<b>MET</b>
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*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors is considered to be the same or better than that of the Do Nothing option. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

<b>Design Principle 7=:</b> New routes must be designed to use Performance Based Navigation.	NOT MET	PARTIAL	<b>MET</b>
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*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

<b>Design Principle 9:</b> Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.	NOT MET	PARTIAL	<b>MET</b>
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*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

### 6.1.12 Runway 03 North 2 Conclusion

This option could overfly populations not previously overflowed, but has the potential to improve noise impacts overall. This is not the most direct routing for aircraft departing to the north but would allow aircraft to gain height before overflying the more densely populated areas to the north of the airport. More direct routing has the potential to deliver efficient routes, improving fuel burn and minimising emissions. The proximity to potential Gatwick, Heathrow and London City Airport's routes and airspace will require further work and coordination to ensure no negative impact on these airport's operations.

Design Principle Evaluation		OPTION NO: D10B		
Option Name: Runway 03 North 3		ACCEPT		
Description of Option: The route swathe represents the area in which the routes for aircraft departing to the north following a right-hand turn after take-off can be designed. Aircraft follow a right-hand racetrack to route back through the airfield overhead onto a northerly direction. The southern track represents the position an aircraft can turn to remain clear of the Gatwick CTA.				
Design Principle 1: New routes must be safe.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Impacts of aircraft noise likely to be better or broadly similar to today, but could overfly new populations, depending on the placement of the final route. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.		NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.		NOT MET	PARTIAL	MET

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users, specifically Gatwick, Heathrow and London City Airport's. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

<b>Design Principle 6:</b> Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.	NOT MET	<b>PARTIAL</b>	MET
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*Summary of Qualitative Assessment:* Not the most direct track with extended track miles by turning south initially but may introduce no change and would be broadly similar to today. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

<b>Design Principle 7=:</b> Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).	NOT MET	<b>PARTIAL</b>	MET
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*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Surrey Hills AONB, could be greater than that of the Do Nothing option but will depend on the final route design. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

<b>Design Principle 7=:</b> New routes must be designed to use Performance Based Navigation.	NOT MET	PARTIAL	<b>MET</b>
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*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

<b>Design Principle 9:</b> Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.	NOT MET	PARTIAL	<b>MET</b>
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*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

### 6.1.13 Runway 03 North 3 Conclusion

This option could overfly populations not previously overflowed, but has the potential to improve noise impacts overall. This is not the most direct routing for aircraft departing to the north but would allow aircraft to gain height before overflying the more densely populated areas to the north of the airport. More direct routing has the potential to deliver efficient routes, improving fuel burn and minimising emissions. The proximity to potential Gatwick, Heathrow and London City Airport's routes and airspace will require further work and coordination to ensure no negative impact on these airport's operations.



Design Principle Evaluation		OPTION NO: D11		
Option Name: Runway 03 East 1		ACCEPT		
<i>Description of Option:</i> The route swathe represents the area in which the routes for aircraft departing to the east following a right-hand turn after take-off can be designed. For the southern boundary of the swathe, aircraft commence a right-hand turn onto a south-easterly heading before turning left onto east to follow the route of the M26 motorway. For the northern extreme of the swathe, aircraft continue on runway heading after take-off whilst climbing. At approximately 5,000 ft, aircraft turn right onto east.				
Design Principle 1: New routes must be safe.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Impacts of aircraft noise likely to be better or broadly similar to today, but could overfly new populations, depending on the placement of the final route. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.		NOT MET	PARTIAL	MET

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

**Design Principle 6:** Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Surrey Hills AONB, could be greater than that of the Do Nothing option but will depend on the final route design. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** New routes must be designed to use Performance Based Navigation.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

**Design Principle 9:** Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

#### 6.1.14 Runway 03 East 1 Conclusion

This option broadly mimics today's operations, but may overfly populations not previously overflown. It has however, has the potential to improve environmental impacts overall with improved vertical profile, depending on the placement of the final route design.

Design Principle Evaluation		OPTION NO: D12		
Option Name: Runway 03 East 2		ACCEPT		
<i>Description of Option:</i> The route swathe represents the area in which the routes for aircraft departing to the east following a left-hand turn after take-off can be designed. Aircraft follow a left-hand racetrack to route back through the airfield overhead onto an easterly heading. The northern turn represents an aircraft climbing to 2,000 ft before commencing the left-hand racetrack to route back through the airfield overhead. For this track, aircraft can continue through 270° onto east to the north of the airfield.				
Design Principle 1: New routes must be safe.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Impacts of aircraft noise likely to be better or broadly similar to today, but could overfly new populations, depending on the placement of the final route. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.		NOT MET	PARTIAL	MET

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

<b>Design Principle 6:</b> Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.	NOT MET	PARTIAL	MET
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*Summary of Qualitative Assessment:* Likely to increase fuel burn per flight & unlikely to optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

<b>Design Principle 7=:</b> Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).	NOT MET	PARTIAL	MET
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*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors is considered to be the same or better than that of the Do Nothing option. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

<b>Design Principle 7=:</b> New routes must be designed to use Performance Based Navigation.	NOT MET	PARTIAL	MET
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*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

<b>Design Principle 9:</b> Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.	NOT MET	PARTIAL	MET
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*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

### 6.1.15 Runway 03 East 2 Conclusion

By turning left after take-off, this option will overfly populations not previously overflown. By turning left after take-off, the environmental impacts are expected to be worse than the Do Nothing option.



Design Principle Evaluation		OPTION NO: D13		
Option Name: Runway 03 South 1		ACCEPT		
Description of Option: The route swathe represents the area in which the routes for aircraft departing to the south can be designed. At the earliest opportunity, aircraft commence a left-hand turn and continue round onto a south-easterly heading, before heading south. After following this initial turn, aircraft could head south-westerly to route to the west of Kenley airfield before turning south. Alternatively, aircraft continue on the runway heading to approximately 3,000 ft before turning left to head south.				
Design Principle 1: New routes must be safe.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Impacts of aircraft noise likely to be better or broadly similar to today, but would overfly new populations. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.	NOT MET	PARTIAL	MET	

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users, specifically Gatwick and London City Airport's. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

**Design Principle 6:** Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Surrey Hills AONB, could be greater than that of the Do Nothing option but will depend on the final route design. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** New routes must be designed to use Performance Based Navigation.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

**Design Principle 9:** Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

#### 6.1.16 Runway 03 South 1 Conclusion

This option will overfly populations not previously overflown, but has the potential to improve environmental impacts overall with more direct routing. The proximity to potential Gatwick and London City Airport's routes and airspace will require further work and coordination to ensure no negative impact on either airport's operations.

Design Principle Evaluation		OPTION NO: D14		
Option Name: Runway 03 South 2		ACCEPT		
<i>Description of Option:</i> The route swathe represents the area in which the routes for aircraft departing to the south can be designed. At the earliest opportunity, aircraft commence a right-hand turn all the way round to route through the airfield overhead, before turning south. For the northern extreme of the swathe, aircraft continue on the runway heading whilst climbing to approximately 3,000 ft before turning right to head south.				
Design Principle 1: New routes must be safe.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Impacts of aircraft noise likely to be better or broadly similar to today, but would overfly new populations by turning right after take-off. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.		NOT MET	PARTIAL	MET

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users, specifically Gatwick and London City Airport's. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

**Design Principle 6:** Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Surrey Hills AONB, could be greater than that of the Do Nothing option but will depend on the final route design. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** New routes must be designed to use Performance Based Navigation.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

**Design Principle 9:** Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

### 6.1.17 Runway 03 South 2 Conclusion

This option will overfly populations not previously overflown, but has the potential to improve environmental impacts overall with more direct routing. The proximity to potential Gatwick and London City Airport's routes and airspace will require further work and coordination to ensure no negative impact on either airport's operations.



Design Principle Evaluation		OPTION NO: D15		
Option Name: Runway 03 West 1		ACCEPT		
<i>Description of Option:</i> The route swathe represents the area in which the routes for aircraft departing to the west can be designed. Aircraft turn left onto a southerly heading, before turning right to remain clear of the Gatwick CTA and head west. Alternatively, aircraft continue on runway heading after take-off, climbing to approximately 2,000 ft before turning left in a south-westerly direction.				
Design Principle 1: New routes must be safe.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Impacts of aircraft noise likely to be better or broadly similar to today, but would overfly new populations when turning left after take-off. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.	NOT MET	PARTIAL	MET	

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

**Design Principle 6:** Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Surrey Hills AONB, could be greater than that of the Do Nothing option but will depend on the final route design. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** New routes must be designed to use Performance Based Navigation.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

**Design Principle 9:** Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

#### 6.1.18 Runway 03 West 1 Conclusion

This option could overfly populations not previously overflowed, but has the potential to improve environmental impacts overall with more direct routing. The proximity to potential Gatwick Airport routes and airspace will require further work and coordination to ensure no negative impact on Gatwick Airport's operations.

Design Principle Evaluation		OPTION NO: D16		
Option Name: Runway 03 West 2		ACCEPT		
<i>Description of Option:</i> The route swathe represents the area in which the routes for aircraft departing to the west can be designed. Aircraft turn right through 270° to route through the airfield overhead onto a westerly heading. Alternatively, after turning through 180°, continue on the reciprocal runway heading before turning right to avoid the Gatwick CTA, and route in a westerly direction.				
Design Principle 1: New routes must be safe.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Impacts of aircraft noise likely to be better or broadly similar to today, but would overfly new populations. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.	NOT MET	PARTIAL	MET	

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users, specifically Gatwick and Heathrow Airport's. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

**Design Principle 6:** Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Surrey Hills AONB, could be greater than that of the Do Nothing option but will depend on the final route design. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** New routes must be designed to use Performance Based Navigation.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

**Design Principle 9:** Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

### 6.1.19 Runway 03 West 2 Conclusion

This option could overfly populations not previously overflowed, but has the potential to improve environmental impacts overall with more direct routing. The proximity to potential Gatwick and Heathrow Airport's routes and airspace will require further work and coordination to ensure no negative impact on either airport's operations.



Design Principle Evaluation		OPTION NO: D17		
Option Name: Runway 03 West 3		ACCEPT		
<i>Description of Option:</i> The route swathe represents the area in which the routes for aircraft departing to the west can be designed. After take-off, aircraft continue straight ahead and climb to 2,000 ft before turning right through 270° to head west. Alternatively, after turning through 180°, continue on the reciprocal runway heading before turning right to avoid the Gatwick CTA, and route in a westerly direction.				
Design Principle 1: New routes must be safe.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> New procedures would require the implementation of CAS to contain the procedures. Safety assurance likely to be the same as, or better than today's operation.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Impacts of aircraft noise likely to be better or broadly similar to today, but would overfly new populations. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.	NOT MET	PARTIAL	MET	

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

**Design Principle 6:** Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors is considered to be the same or better than that of the Do Nothing option. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** New routes must be designed to use Performance Based Navigation.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

**Design Principle 9:** Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Allows high-performance continuous and uninterrupted climb direct to 7,000 ft.

### 6.1.20 Runway 03 West 3 Conclusion

This option could overfly populations not previously overflowed, but has the potential to improve environmental impacts overall with more direct routing. The proximity to potential Gatwick Airport routes and airspace will require further work and coordination to ensure no negative impact on Gatwick Airport's operations.

Design Principle Evaluation		OPTION NO: A1		
Option Name: Transition Arrival East		ACCEPT		
Description of Option: The route swathe represents the area in which the routes for aircraft arriving from the east can be designed. The existing arrival transition procedure is contained within this swathe. The procedure would terminate at ALKIN at 3,000 ft, where aircraft would join an approach procedure to land at LBHA.				
Design Principle 1: New routes must be safe.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Safety assurance likely to be the same as, or better than today's operation. Aircraft would remain in CAS when flying this procedure.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Impacts of aircraft noise likely to be better or broadly similar to today and does not overfly new populations. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.				

<b>Design Principle 6:</b> Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.			
<b>Design Principle 7=:</b> Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The effect upon noise sensitive receptors is considered to be the same or better than that of the Do Nothing option. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.			
<b>Design Principle 7=:</b> New routes must be designed to use Performance Based Navigation.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.			
<b>Design Principle 9:</b> Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Should allow for continuous descent profiles to be flown from 7,000 ft.			

#### 6.1.21 Transition Arrival East Conclusion

This option would replicate the existing arrivals transition procedure. The impacts are likely to be the same, or better, than today.



Design Principle Evaluation		OPTION NO: A2		
Option Name: Transition Arrival South		ACCEPT		
Description of Option: The route swathe represents the area in which the routes for aircraft arriving from the south can be designed. The procedure would terminate at ALKIN at 3,000 ft, where aircraft would join an approach procedure to land at LBHA.				
Design Principle 1: New routes must be safe.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Safety assurance likely to be the same as, or better than today's operation. Aircraft would remain in CAS when flying this procedure.				
Design Principle 23: Route should, where possible, be designed to be PANS OPS compliant.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Impacts of aircraft noise likely to be better or broadly similar but could overfly new populations. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.				

<b>Design Principle 6:</b> Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.			
<b>Design Principle 7=:</b> Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The effect upon noise sensitive receptors, specifically the Kent Downs AONB, could be greater than that of the Do Nothing option but will depend on the final route design. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.			
<b>Design Principle 7=:</b> New routes must be designed to use Performance Based Navigation.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.			
<b>Design Principle 9:</b> Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Should allow for continuous descent profiles to be flown from 7,000 ft.			

#### 6.1.22 Transition Arrival South Conclusion

This option mimics current practice where aircraft receive radar vectors from ATC when arriving at the airport. The impacts are likely to be the same, or better, than today.

Design Principle Evaluation		OPTION NO: A3		
Option Name: Transition Arrival West		ACCEPT		
<i>Description of Option:</i> The route swathe represents the area in which the routes for aircraft arriving from the west can be designed. The procedure could terminate at ALKIN at 3,000 ft, where aircraft would join an approach procedure to land at LBHA, or could position aircraft for an approach to the airport without routing via ALKIN. This would require the development of new Instrument Approach Procedures for both runways at LBHA.				
Design Principle 1: New routes must be safe.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Safety assurance likely to be the same as, or better than today's operation. Aircraft would remain in CAS when flying this procedure.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Impacts of aircraft noise likely to be better or broadly similar but would overfly new populations. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.		NOT MET	PARTIAL	MET

*Summary of Qualitative Assessment:* The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.

**Design Principle 6:** Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The effect upon noise sensitive receptors, specifically the Kent Downs AONB, could be greater than that of the Do Nothing option but will depend on the final route design. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.

**Design Principle 7=:** New routes must be designed to use Performance Based Navigation.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.

**Design Principle 9:** Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.

NOT MET

PARTIAL

MET

*Summary of Qualitative Assessment:* Should allow for continuous descent profiles to be flown from 7,000 ft.

### 6.1.23 Transition Arrival West Conclusion

This option allows a more efficient option for aircraft arriving from the west. Currently, aircraft are positioned to the east of the ALKIN Hold when arriving at the airport, which is time consuming and creates extra track miles. The impacts are likely to be better than today.



Design Principle Evaluation		OPTION NO: A4		
Option Name: Transition Arrival North		ACCEPT		
Description of Option: The route swathe represents the area in which the routes for aircraft arriving from the north can be designed. The procedure could terminate at ALKIN at 3,000 ft, where aircraft would join an approach procedure to land at LBHA, or could include a direct track to a straight in approach, rather than routing via ALKIN.				
Design Principle 1: New routes must be safe.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Safety assurance likely to be the same as, or better than today's operation. Aircraft would remain in CAS when flying this procedure.				
Design Principle 2: Route should, where possible, be designed to be PANS OPS compliant.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: All the swathes have the potential to be designed to be PANS OPS compliant.. This will be investigated more closely once individual routes are designed within the options carried forward to the next stage of the CAP1616 process.				
Design Principle 3: Arrival and Departure routes should, where possible, be designed to minimise the impact of noise below 7,000 ft and should avoid the overflight of populations not previously overflown.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Impacts of aircraft noise likely to be better or broadly similar but would overfly new populations. More detailed analysis of the impact of noise will be conducted at Stage 3 of the CAP 1616 process.				
Design Principle 4: Routes must be designed to introduce capacity to Air traffic Control workload to facilitate adequate deconfliction in the vicinity.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: This design option has potential to improve ATC workload with the introduction of systemisation and CAS which will assist in facilitating safety and deconfliction in the vicinity.				
Design Principle 5: LBHA should consider the effect of any changes in its flight routes on the behaviour of other airspace users making use of the airspace around Biggin Hill Airport.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The option is considered likely to be consistent with the Airspace Modernisation Strategy and the FASI-S programme. However, since specific routes have not been established, this option may have an impact on other airspace users. Further coordination will be required before detailed analysis is conducted at Stage 3 of the CAP 1616 process.				

<b>Design Principle 6:</b> Arrival and Departure routes should, where possible, be designed to minimise emissions and optimise operational efficiencies.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Has the potential to reduce fuel burn per flight & optimise operational efficiencies. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.			
<b>Design Principle 7=:</b> Procedures should be designed to avoid, where possible, overflight of sensitive areas e.g. hospitals, schools, country parks or Areas of Outstanding Natural Beauty (AONB).	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The effect upon noise sensitive receptors is considered to be the same or better than that of the Do Nothing option. More detailed analysis will be conducted at Stage 3 of the CAP 1616 process.			
<b>Design Principle 7=:</b> New routes must be designed to use Performance Based Navigation.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The routes will be designed to meet PBN standards which do not require aircraft fleet upgrades to the operators that utilise LBHA.			
<b>Design Principle 9:</b> Departure routes should, where possible, aim to take advantage of the high-performance climb characteristics of typical Business Jet types by offering a continuous and uninterrupted climb direct to 7,000 ft amsl.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Should allow for continuous descent profiles to be flown from 7,000 ft.			

#### 6.1.24 Transition Arrival North Conclusion

This option allows a more efficient option for aircraft arriving from the north. The impacts are likely to be the same, or better, than today.



## 7 The Design Technical Criteria Evaluation of Design Options

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### 7.1 Technical Criteria Evaluation

The technical criteria detailed in Appendix F to CAP 1616 forms the basic structure on which the change sponsor builds a formal airspace change proposal. The option that is eventually chosen must be compliant with these technical criteria. The options taken forward to Stage 3 will be assessed so that any operational, technical or training critical interdependencies are identified and plans will be established to resolve any identified issues that arise.

# A1 List of Stakeholders

## A1.1 Introduction

This section outlines the key stakeholder organisations and individuals that LBHA believes could be affected by the proposed changes to airspace at and around the airport.

## A1.2 Non-Aviation Stakeholders

### A1.2.1 Regional and Local Authorities

Regional and Local Authorities	
East Sussex County Council	Kent County Council
Surrey County Council	West Sussex County Council
Sevenoaks District Council	Tandridge District Council
Tatsfield & Titsey District Council	Dartford Borough Council
Reigate & Banstead Borough Council	London Assembly
London Borough Councils	London Borough of Bexley
London Borough of Bromley	London Borough of Croydon

Table 5 – Regional and Local Authorities

### A1.2.2 Town and Parish Councils

Town Councils (TC) and Parish Councils (PC)	
Tatsfield Parish Council	Woldingham Parish Council

Table 6 –Town and Parish Councils

### A1.2.3 National Environmental Stakeholders

National Environmental/Conservation Organisations	
CPRE - Kent	Natural England
Kent Downs AONB	Surrey Hills AONB

Table 7 – National Environmental/Conservation Organisations





#### A1.2.4 Members of Parliament

Member of Parliament	Constituency
Bob Stewart	Beckenham
Sir David Evennett	Bexleyheath & Crayford
Sir Bob Neill	Bromley & Chislehurst
Sarah Jones	Croydon Central
Steve Reed	Croydon North
Chris Philp	Croydon South
Gareth Johnson	Dartford
Claire Coutinho	East Surrey
Louie French	Old Bexley & Sidcup
Gareth Bacon	Orpington
Crispin Blunt	Reigate
Laura Trott MBE	Sevenoaks
Paul Scully	Sutton & Cheam

Table 8 – Members of Parliament

#### A1.2.5 Other Organisations/Consultees

Other Organisations/Consultees	
Flightpath Watch	Godstone Preservation Society
Green Street Green Association	London Borough of Bromley Residents Federation
Nutfield Conservation Society	Woldingham
Individual	Individual
Individual	Individual
Individual	Individual
Individual	Individual
Individual	Individual
Individual	

Table 9 – Other Organisations/Consultees



## A1.3 Aviation Stakeholders

### A1.3.1 Airport Users

Airport Users	
1 Aviation	Acropolis Aviation
Alouette Flying Club	Alpha Golf
Avalon Aerojet	Bombardier
Castle Air	Catreus Ltd
Centreline Air Charter	Cirrus Aircraft
Echelon Air	EFG Flying School
Falcon Flying Services	Heritage Hangar
Interflight Air Charter	JETMS Completions (formerly RAS Completions)
JT Air Ltd	Linkinjet
London Executive Aviation	Net Jets
Oriens Aviation	Signature Flight Support
Shipping & Airlines	Sovereign Business Jets
Textron	Voluxis
Wessex Aviation	Zenith Aviation

Table 10 – Airport Users

### A1.3.2 Aircraft Operators

Aircraft Operators	
Air Hamburg	Centreline Air Charter
Elite Aero Services	Executive Jet
Fai Rent-a-jet	Formula 1
Fresh Air UK Ltd	Globe Air
Jetfly Aviation	Luxwing
Starspeed	Vista Jet
xclusive jet	

Table 11 – Aircraft Operators



### A1.3.3 Local GA Community

Local GA Community	
2FTS - Kenley Aerodrome	East Haxted microlight site
Green Dragons Warlingham	Hurley Lodge helicopter site
Staffhurst Woods	Surrey Hills Glider Club - Kenley Aerodrome

Table 12 – Local GA Community

### A1.3.4 NATMAC members

Organisation
Latest NATMAC List from CAA

Table 13 – NATMAC members

### A1.3.5 Adjacent Airports/ANSPs

Adjacent Airports/ANSPs	
Gatwick Airport	London City Airport
Heathrow Airport	Farnborough Airport
Redhill Aerodrome	Kenley Airfield
Rochester Airport	NATS Ltd

Table 14 – Adjacent Airports/ANSPs

### A1.3.6 LBHA Airport Consultative Committee

Airport Consultative Committee
Members provided by London Biggin Hill Airport

Table 15 – Airport Consultative Committee