Airspace Modernisation Gatwick Airport

Step 2A
Submission Document

Options Development and Evaluation

DOCUMENT CONTROL

Document Reference	GAL FASI ACP Step 2A Submission Document
Version	V1.1
Date	2nd October 2023
Status	Public
Classification	Private until a final version is approved, then Public
Authors	GAL FASI ACP team
Reviewers	Internal review amongst the GAL FASI ACP team
Approvals	Head of Noise and Airspace Strategy

Version History

Following submission of Gatwick FASI ACP Step 2A Submission Document V1.0, the CAA made two recommendations / observations in order to improve the information provided within the document. The following table gives details of the updates made, and where this can be found in the document. All updates are also shown in blue text.

Update	Location
Section 3 (Gatwick's Existing Airspace Arrangements (Baseline) - Local Geography) has been updated to include maps showing Air Quality Management Areas (AQMAs), Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Sites of Special Scientific Interest (SSSIs) and Ramsar sites in the vicinity of the airport.	Local Geography (Page 17, 19, 20)
Rationale text added for the virtual method of engagement conducted throughout the latter phases of stage 2 engagement.	Summary of Stakeholder Engagement Events and Activities (Page 68)

Contents

Contents 3
List of Tables 5
1. Glossary 6
2. Introduction 9
CAP1616 11
Gatwick's FASI-S ACP 12
Final Design Principles 13
This Stage 2A document 14
3. Gatwick's Existing Airspace Arrangements (Baseline) 15
Movement Data 15
Local Geography 17
Runways 21
Northern Runway Project 22
Aircraft Arriving and Departing from Gatwick Airport 23
Aircraft Arriving at Gatwick Airport 23
Aircraft Departing from Gatwick Airport 29
Existing Noise Contours 35
Interactions within the LTMA 40
Current Airspace Arrangements, Procedures General Aviation and Adjacent Airports (Technical Section) 42
Published Procedures 42
Current Constraints from other London Terminal Control Area (LTMA) Traffic Flows 44
Transition Altitude 46
Controlled Airspace Arrangements 46
General Aviation (GA) 47
4. Performance Based Navigation – Understanding our Airspace Change Options 52
5. Options Development 54
6. Stakeholder Engagement 59
Approach to Stakeholder Engagement 59
Stakeholder Identification 60
Additional Stakeholders 61
Removed Stakeholders 62

Summary of Stakeholder Engagement Events and Activities 63
Comprehensive List of Options Stakeholder Engagement 69
Additional workshop 69
Drop in question-and-answer sessions 69
Extended Feedback Period 69
Our Feedback Questions (We asked) 70
Engagement Outcomes (You Said) 70
Summary of feedback that influenced our final Comprehensive List of Options (You said/We did) 72
Summary of feedback received that did not influence our final Comprehensive List of Options but will be taken into consideration in the next stages of the ACP process. 76
Co-ordination with interdependent ACP sponsors 78
7. Comprehensive List of Options 79
Understanding the Options on the Comprehensive List 79
Westerly Departures (WD) (Runway 26) 83
Easterly Departures (ED) (Runway 08) 88
Westerly Arrivals (WA) (Runway 26) 93
Easterly Arrivals (EA) (Runway 08) 98
Options for Controlled Airspace and other procedures 102
Options for Controlled Airspace 102
Options for other procedures (Missed Approaches) 102
8. Design Principle Evaluation Methodology 103
Integration with the airspace above 7000ft 103
Design Principle 1: Safety by Design 106
Design Principle 2: Enhanced Navigation Standards 107
Design Principle 3: Limit Adverse Noise Effects 107
Design Principle 4: Time-based Arrival Operations 109
Design Principle 5: Resilience Built In 110
Design Principle 6: Optimise Use of Aircraft Capabilities 111
Design Principle 7: Long Term Predictability & Adaptability 112
Design Principle 8: Deconfliction by Design 113
Design Principle 9: Locally Tailored Designs 114
Airspace Modernisation Strategy 115
Assessment of Design Principles with multiple components 118

9. Design Principle Evaluation Outcomes (Conclusion) 120
Arrivals 120
Radar Manoeuvring Area (RMA) 122
Departures 123
Baseline 'Do nothing' Scenarios 132
Departure Options for the Initial Options Appraisal 132
10. Next steps 141
11. Appendix A: Stakeholder List and Engagement Log 142
12. Appendix B: Comprehensive List of Options Feedback Form 157
13. Appendix C: ACOG Interdependency Map 158
14. Annex A: Evolution of the Options Design 159
15. Annex B: Design Principle Evaluation 159
16. Annex C: Stakeholder Engagement Report 159

List of Tables

Table 1 Gatwick's ACP Progress to date 12
Table 2 Gatwick FASI-S ACP Design Principles 13
Table 3 Total number of movements by type in 2019 16
Table 4 Average Continuous Descent Performance at Gatwick. Source: 2019 Decade of Change performance report 28
Table 5 Gatwick Daytime Departure Route Usage. Source: ERCD Annual Report 2019 33
Table 6 Gatwick's Published Departure Procedures 42
Table 7 Additional stakeholders included in the Stage 2 stakeholder engagement activities 61
Table 8 Chronological Summary of Stakeholder Engagement Events and Activities 63
Table 9 Summary of Feedback that influenced the final Comprehensive List of Options 72
Table 10 Feedback received that will be taken into consideration in the next stages of the ACP process. 76
Table 11 Interdependent sponsor engagement 78
Table 14 List of Stakeholder Groups Engaged 142

1. Glossary

ACP	Airspace Change Proposal	A request (usually from an airport or air navigation service provider) for a permanent change to the design of UK airspace. An airspace change sponsor must follow a 7-stage process explained in the CAA's document CAP 1616 Airspace Design Guidance.
ANG	Air Navigation Guidance	Guidance to the CAA on its environmental objectives when carrying out its air navigation functions, and to the CAA and wider industry on airspace and noise management.
AMS	Airspace Modernisation Strategy	A coordinated strategy and plan for the use of UK airspace for air navigation up to 2040, including for the modernisation of the use of such airspace, prepared and maintained by the CAA.
ATC	Air Traffic Control	Responsible for the safe separation of traffic in controlled airspace
CAA	Civil Aviation Authority	Independent aviation regulator and responsible for the adjudication of airspace change proposals
CAP1616	Civil Aviation Publication 1616	Guidance on the regulatory process for changing the notified airspace design and planned and permanent redistribution of air traffic, and on providing airspace information. www.caa.co.uk/cap1616
CCO / CDO	Continuous climb operations / Continuous descent ops	Allow arriving or departing aircraft to descend or climb continuously, to the greatest extent possible.
CLOO	Comprehensive List of Options	A list of viable options an airspace change sponsor develops as part of Stage 2 of the CAP1616 process. The list aims to address the statement of need and align with the Design Principles developed at Stage 1.
DfT	Department for Transport	Department for Transport. Co-sponsors with the CAA of the Airspace Modernisation Strategy

DP	Design Principle	Developed as part of Stage 1 of the airspace change process
DPE	Design Principle Evaluation	Undertaken as part of Step 2A of the CAP1616 process, the Design Principle Evaluation is a qualitative high level assessment which evaluates whether each option on the Comprehensive List of Options has either 'met', 'partially met' or 'not met' each Design Principle.
FASI-S	Future Airspace Strategy Implementation – South	The coordinated programme of airspace modernisation in southern England.
IOA	Initial Options Appraisal	Undertaken as part of Step 2B of the CAP1616 process, the Initial Options Appraisal involves a largely qualitative and some quantitative assessment of the impacts, both positive and negative, of the shortlisted options compared to the 'do nothing' pre-implementation baseline.
NATS	Formerly known as 'National Air Traffic Services	Provide air traffic services across the UK. NATS NERL (NATS (En Route) plc) are responsible for the upper airspace change (airspace network above 7000ft)
	Notional Flight Path	A path based on the basic principles of Instrument Flight Procedure (IFP) design that is used to flood sections of airspace. Notional flight paths are not airspace change options, but assessment of the paths provides a core set of environmental information that can be used when developing routes and options.
	Option	At this stage, an option is one complete system of either arrival or departure routes from the same runway end.
PBN	Performance Based Navigation	A concept that moves aviation away from the traditional use of aircraft navigating by ground-based beacons to a system more reliant on airborne technologies, utilising satellite systems and improving navigation accuracy and performance.

RMA	Radar Manoeuvring Area	An area of airspace used by ATC to vector aircraft. This allows ATC to sequence and safely separate arriving and departing aircraft.
	Vectoring	Provision of navigational guidance to aircraft in the form of specific headings, based on the use of an Air Traffic Services surveillance system.

2. Introduction

Following the publication of the Strategic Rationale for Airspace Modernisation, the Government directed the Civil Aviation Authority (CAA) to "prepare and maintain a coordinated strategy and plan for the use of UK airspace up to 2040, including its modernisation". As a result, in 2018 the CAA published the Airspace Modernisation Strategy (AMS), which replaced the earlier 2011 Future Airspace Strategy. The AMS was recently reviewed by the CAA and an updated version was published in January 2023. It has been split into 3 parts, Part 1 - Strategic objectives and enablers, Part 2 - Delivery elements and Part 3 – Deployment (still under development).The AMS sets out the initiatives required to modernise the existing Airspace System by upgrading the airspace design, technology and operations.

One of the most important initiatives required to achieve the AMS objective is known as FASI (Future Airspace Strategy Implementation). Gatwick Airport is one of the 22 airports in the UK included in FASI. This FASI initiative is considered the UK's Airspace Change National Infrastructure Programme (the Programme). The Programme encompasses the requirement to fundamentally redesign the National Airspace System at lower altitudes and in the terminal airspace that serves commercial air transport across the busiest regions of the UK, making the most of the capabilities of modern aircraft and satellite-based navigation technology. These airspace design projects are sponsored by the 22 airports (for the local arrival and departure routes below 7000ft) and by NATS EnRoute Limited (NERL), for the airspace structures and route network above 7000ft. The 'S' in FASI-S refers to the southern regional cluster of airports.

Today's national route network is designed with reference to a grid of ground-based navigation beacons distributed across the UK. Some of these beacons are outdated and reaching the end of their operational life. Meanwhile, the vast majority of the current commercial air transport fleet Aircraft are equipped to follow routes designed to satellite navigation standards (known as Performance-based Navigation or PBN) with greater precision than conventional ground navigation. The widespread deployment of routes designed to satellite navigation standards is a cornerstone of airspace modernisation. The opportunity to design a new network of PBN routes with far greater accuracy and flexibility offers the potential to address many of the issues set out in the Government's strategic rationale. Significant improvements in airspace capacity and efficiency can be achieved by positioning routes so that they are safely separated and optimised by design.

Whilst more precise routes can be used to avoid noise sensitive areas, they may also concentrate the impacts of overflight. For this reason, the use of multiple route options that can distribute the impacts more equitably, or be configured to offer predictable respite from noise, must be considered, in consultation with local stakeholders when routes are being developed for deployment at lower altitudes.

The number, complexity and overlapping scope of the individual Airspace Change Proposals (ACPs) needed to deliver the Programme requires a strategic coordination mechanism in the form of a single joined up implementation plan or Masterplan.

Given the large number of organisations involved (22 airports and NERL, the CAA and Department for Transport (DfT) also required NERL to set up an impartial body, the Airspace Change Organising Group (ACOG) to develop a Masterplan, coordinate the Programme and lead the necessary engagement with external stakeholders. In this context, ACOG was established in 2019 as a unit within NERL, separate and impartial from the organisation's other functions.

Masterplan Iteration 2 was accepted by CAA on 27th January 2022. The purpose of Iteration 2 is to provide a system-wide view of the scope of the constituent ACPs and identify the potential interdependencies between the proposals. Collectively, the ACPs that are included in the Masterplan are referred to as the 'constituent airspace change proposals'. Each individual ACP is developed following the same detailed process steps laid out in the CAA's guidance for changing the airspace design – known as CAP1616. The CAA evaluates the progress of every ACP through each stage of the process, via a series of seven regulatory gateways and make decisions on whether to approve further development and ultimately the implementation of the proposed changes. A summary of the CAP1616 process is available in the next section.

Iteration 2 places Gatwick Airport in the 'London Terminal Manoeuvring Area (LTMA) regional cluster' alongside Biggin Hill, Bournemouth, Heathrow, Luton, London City, Manston, RAF Northolt, Southampton, Southend, and Stansted airports. Since Iteration 2 Farnborough Airport has joined the programme and will also be part of the LTMA regional cluster.

Gatwick Airport Limited (GAL/Gatwick) began their ACP to modernise their airspace in October 2018 and passed through Stage 1 of CAP1616 in July 2019. Stage 2A Options Development began shortly afterward however the project, and much of the wider Programme, was paused due to COVID-19 pandemic. The Programme was remobilised in March 2021 following the provision of DfT grant funding, allowing Gatwick to recommence this FASI-S ACP.

This document forms part of the Gatwick's Stage 2 submission to the CAA. It sets out how Gatwick has developed its Comprehensive List of Options for the ACP and how it evolved those options through stakeholder engagement. It then explains the methodology used to evaluate the options against the Design Principles as well as containing a summary of that evaluation.

All airspace design options in this document are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation with all our stakeholders.

CAP1616

In December 2017 the Civil Aviation Authority (CAA) published Civil Aviation Publication 1616 (CAP1616 Airspace Design: Guidance on the regulatory process for changing airspace design, including community engagement requirements).

The guidance sets out the process which a change sponsor of any permanent change to the published airspace design must follow. This includes changes to flight paths.

The airspace change process is split into 7 Stages as shown in Figure 1. CAP1616 provides a framework for changing airspace and places importance on engaging and consulting on Airspace Change Proposals with a wide range of stakeholders.

This document is written in accordance with the fourth edition of CAP1616 published March 2021.

Following consultation, the CAA is currently updating CAP1616 with a new version expected in Q4 2023.

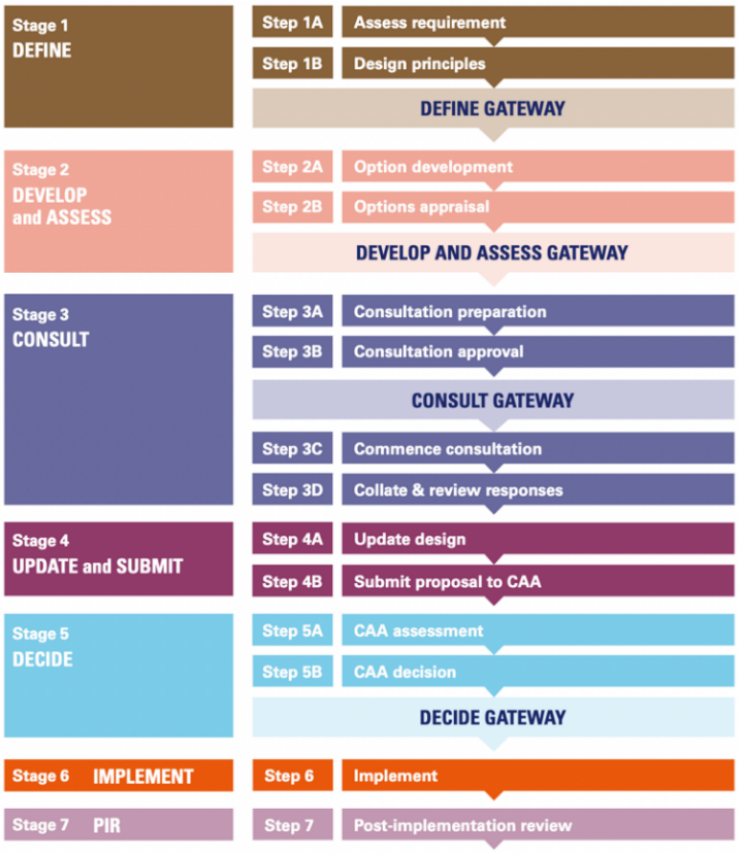


Figure 1 CAP1616 Stages. Source: Civil Aviation Publication 1616

Gatwick's FASI-S ACP

As outlined in the section above, this Airspace Change Proposal (ACP) is required to follow the CAP1616 process. Table 1 below summarises the CAP1616 stages already undertaken for this ACP and the stage where Gatwick is at now, providing links to previous submission documents with further information.

Table 1 Gatwick's ACP Progress to date

Airspace Change Stage	Summary	Link to Documents (Also available on the ACP portal)
Stage 1A	In October 2018, GAL submitted a Statement of Need (SoN) to the CAA.	Statement of Need
	On the 23rd January 2019, GAL participated in an assessment meeting with the CAA as part of Step 1A of the CAP1616 process. The purpose of the assessment meeting is for the change sponsor to present and discuss their SoN and to enable the CAA to consider whether the proposal falls within the scope of the formal airspace change process.	Assessment meeting minutes Assessment meeting slides
Stage 1B	At Stage 1B GAL developed a set of design principles with identified Stakeholders. The aim of the design principles is to provide high-level criteria that the proposed airspace design options should meet. They also provide a means of analysing the impact of different design options and a framework for choosing between or prioritising options. The final design principles outlined within Version 2 of the Stage 1B submission, were accepted by the CAA. These design principles are listed here in this document and are reproduced in their allocated priority order.	Stage 1B Design Principle Submission Report
Stage 2A	Stage 2A requires change sponsors to develop and assess options for the airspace change. In Stage 2A, the change sponsor develops a comprehensive list of options that address the Statement of Need and that align with the design principles from Stage 1. Gatwick then share those options with our Stakeholder representatives (the same ones engaged with on the Design Principles). Feedback from the engagement is then used to refine and/or generate further options where feasible. Finally, Gatwick qualitatively assess all options developed against the Design Principles and produce a Design Principle Evaluation. The following sections of this document outline how Gatwick have developed airspace change options, engaged with Stakeholders, and then assessed the options against the design principles developed at Stage 1B.	**This Document**

Final Design Principles

The Design Principles were developed through engagement with Gatwick Stakeholders and are shown in Table 2 below:

Table 2 Gatwick FASI-S ACP Design Principles

#	Design Principle	Definition
1	**Safety by Design – Core**	Airspace design must at least maintain, and ideally enhance, aviation safety, by reducing or removing safety risk factors, provided enhancement does not have a disproportionately detrimental impact on other benefits
2	**Enhanced Navigation Standards – Core**	Airspace design should adopt the most beneficial form of enhanced navigation standards for arrival and departure routes
3	**Limit Adverse Noise Effects – Core**	The airspace design shall aim to limit and where possible reduce the adverse impacts of aircraft noise
4	**Time Based Arrival Operations**	Route design below 7000 feet should be compatible with the adoption of time-based arrival operations
5	**Resilience Built In**	The airspace design should be materially unaffected by most disruptions, including poor weather and technical failures, through the provision of adequate contingencies, provided this does not have a disproportionately detrimental impact on other benefits
6	**Optimise Use of Aircraft Capabilities**	The airspace design should enable aircraft operators to optimise the use of their fleet capabilities to improve operational efficiency and environmental performance
7	**Long Term Predictability & Adaptability**	Airspace design should offer long term predictability of flight paths and respite and offer adaptation for the future airport development scenarios outlined in our draft Masterplan
8	**Deconfliction by Design**	The airspace design should seek, where possible, to deconflict routes by design below 7000ft, and the prevalence of overflight of a community by flights on different routes and/or by neighbouring

		airport traffic, provided this does not significantly extend a departure or arrival route
9	**Locally Tailored Designs**	Airspace design should enable decisions which affect how aircraft noise is best distributed to be informed by local circumstances and consideration of different options including multiple routes and the management of overflights (as per Limit Adverse Noise Effects)

The Stage 1B Design Principle submission document, explains the design principles have been clustered into two groups, core and non-core, and the principles are prioritised within each group. This relative prioritisation, within each group is based on the extent to which they are likely to align with and support the Airspace Modernisation Programme and Gatwick's related objectives.

This Stage 2A document

Stage 2 of the CAP1616 process is split into 2 steps, Stage 2A – Options Development and Stage 2B – Options Appraisal.

Stage 2A requires Gatwick to develop an initial comprehensive list of options which address the Statement of Need, and which aim to align with the design principles. These options are then tested with the stakeholders engaged with during Stage 1B, to assess whether they are satisfied that the design options are aligned with the design principles and that Gatwick has understood and considered stakeholders' concerns. Following engagement, where appropriate, further options may be developed in response to stakeholder feedback. Gatwick then produces a Design Principle Evaluation (DPE) that sets out how the design options have responded to each of the design principles.

This document is the main Stage 2A submission document that forms part of a set of documents submitted to the CAA for the Stage 2 Gateway.

Figure 2 GAL Stage 2 Submission Documents

3. Gatwick's Existing Airspace Arrangements (Baseline)

Gatwick airport is owned and operated by Gatwick Airport Limited (GAL). In 2022 the airport was the second busiest airport in the UK based on total passenger numbers and it was the 8th busiest in Europe. In 2019, before the COVID-19 pandemic, Gatwick Airport was the busiest it's ever been and the busiest daytime, single-runway airport in the world.

Movement Data

CAP1616 requires sponsors to define a 'do nothing' pre-implementation baseline (sometimes referred to as the counterfactual) using up to date and credible data. The most up to date year of data that Gatwick could use for this Stage 2 submission is 2022 however in 2022, Gatwick was still recovering from the impacts of COVID-19 and is therefore not considered representative for baseline purposes.

Iteration 2 of the Masterplan expects implementation of this ACP from 2027 onwards and by this point, the airport is expected to have recovered from the impacts of COVID-19. The traffic patterns in 2019, with the exception of Route 4[1], are considered the most representative of the recovered scenario in 2027 and therefore for the purposes of this baseline description Gatwick have provided information based on 2019.

Figure 3 shows Gatwick's actual Air Traffic Movements (ATMs) from 2012 to 2022 and forecast ATMs from 2023 to 2047. The forecast traffic levels in 2027 onwards are expected to be very similar to 2019. The figure also shows traffic levels with Gatwick's Northern Runway DCO project. More information about the norther runway project can be found here.

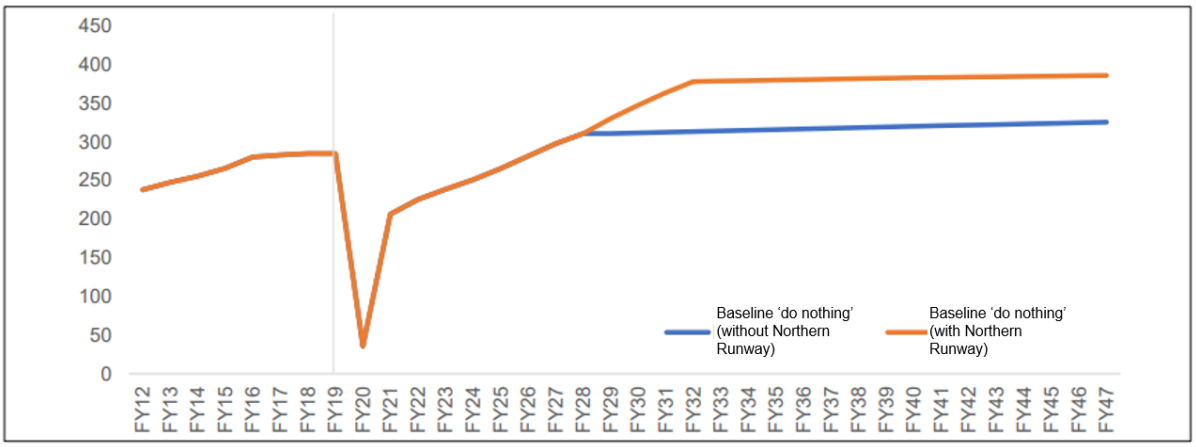


Figure 3 Gatwick Forecast Annual Commercial ATMs (000s) Source: CAA/GAL Statistics, excludes non-commercial ATMs

As part of the baseline description, particularly for the Stage 2B Initial Options Appraisal (IOA), some quantitative definition may be required. For the purposes of Stage 2, we have used 2019 movement data to quantitatively describe the baseline, as the traffic levels and tracks in 2019 are most representative of the expected recovery from COVID-19 which will be seen by the year of implementation (2027 onwards). This 2019 data has been adjusted to reflect the tracks of the extant conventional Route 4 procedure, with 2019 traffic levels applied to these Route 4 tracks.

[1] Route 4 is a westerly right turn departure from Runway 26, which completes a 180 degree turn to track east. For more information about Route 4, please see the 'Aircraft departing from Gatwick Airport' section within the document.

Fleet Mix

Table 3 shows the 2019 fleet mix at Gatwick airport.

Table 3 Total number of movements by type in 2019

Aircraft Type	2019
Airbus A320	86,768
Airbus A319	79,815
Boeing 737	41,757
Airbus A320 Neo	12,499
Airbus A330	4,664
Embraer 195	3,651
Boeing 757	3,337
Airbus A380	2,125
Boeing 747	2,058
Airbus A220 (prev BCS3)	1,524
ATR 72	1,434
Airbus A350	1,277
Boeing 767	1,234
Embraer 190	954
Airbus A340	330
Other Small Jets	324
B737 MAX 8	323
Airbus A310	322
Cessna Citation	142
Other Embraer Jets	134
Canadair Regional Jet	52
Gulfstream	47
Dassault Falcon	39
Helicopters	4
Antonov 124	0
Ilyushin IL96	0

Local Geography

Gatwick Airport is a major international airport in West Sussex, located approximately 28 miles south of London and about 2 miles north of Crawley.

Within the immediate vicinity of the airport, there are the densely populated areas of Crawley to the south, and Horley to the north. Beyond this, there are multiple areas of dense population within vicinity of the airport including, Reigate, East Grinsted, Royal Tunbridge Wells, Tonbridge, Crowborough, Haywards Heath, Burgess Hill, Horsham. Figure 4 shows a map with a population density overlay.

To the north, north west and north east of the airport is the Surrey Hills Area of Outstanding Natural Beauty (AONB) and to the south, south east and east is the High Weald AONB. These are shown as a map overlay on Figure 5.

The Surrey Hills AONB overlaid on the map shows the current area of the AONB. A formal boundary review of the Surrey Hills AONB is currently being undertaken by Natural England which will consider the case for extending the existing AONB. At the time of writing (August 2023) a revised boundary has not been agreed however Gatwick will continue to monitor the outcomes of the Natural England consultation, expected in early 2024, and will incorporate any applicable information into the Stage 3 Full Options Appraisal.

Figure 6 shows the Air Quality Management Areas (AQMA) near Gatwick with the Crawley Borough Council AQMA to the south, and the Reigate and Banstead Borough Council AQMA (No.3) to the north.

Figure 7 Special Areas of Conservation (SAC), Figure 8 Special Protection Areas (SPAs) and Figure 9 Sites of Special Scientific Interest (SSSI). Note there are no RAMSAR sites within the vicinity of Gatwick airport.

Figure 4 Gatwick Airport and the surrounding area

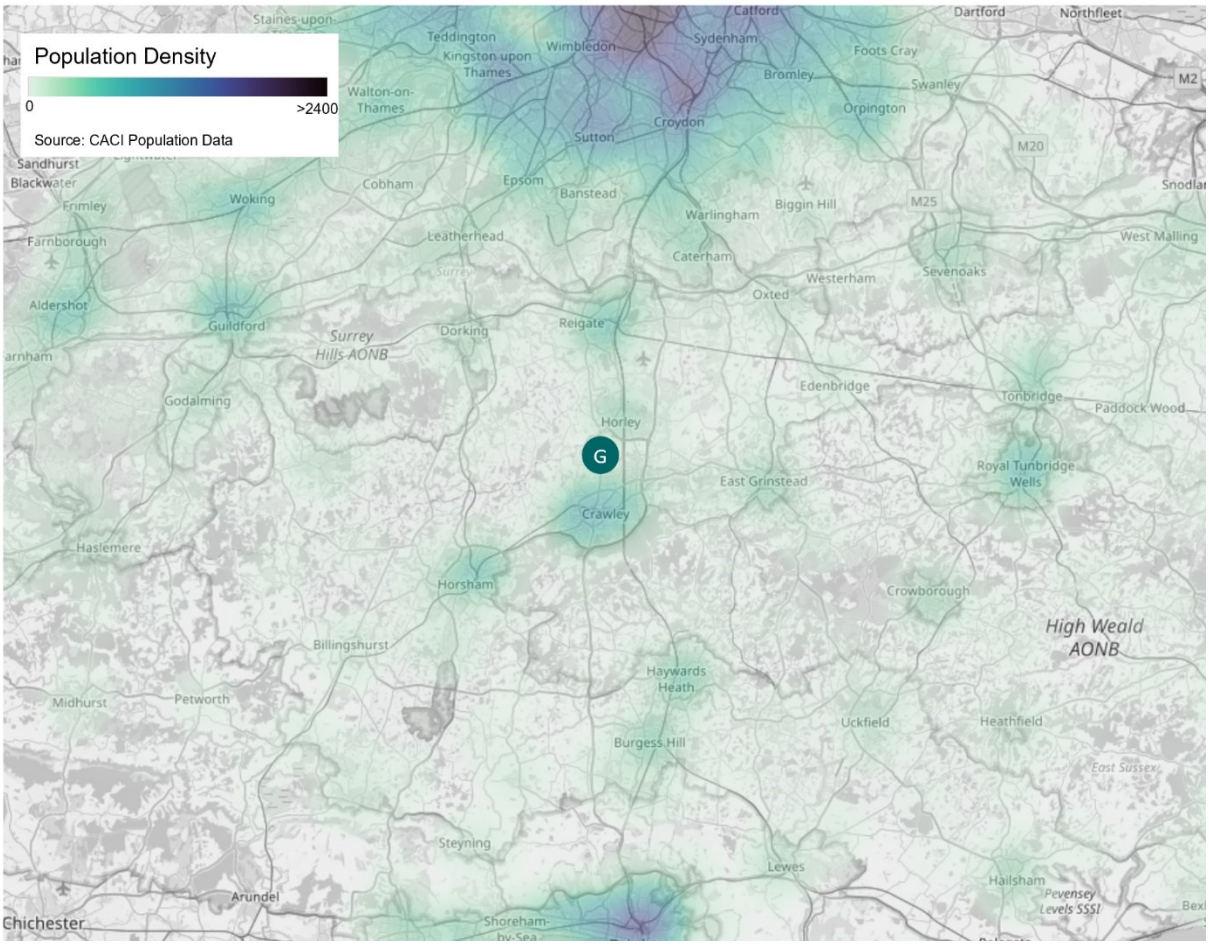


Figure 5 The High Weald and Surrey Hills AONB (green shaded area)

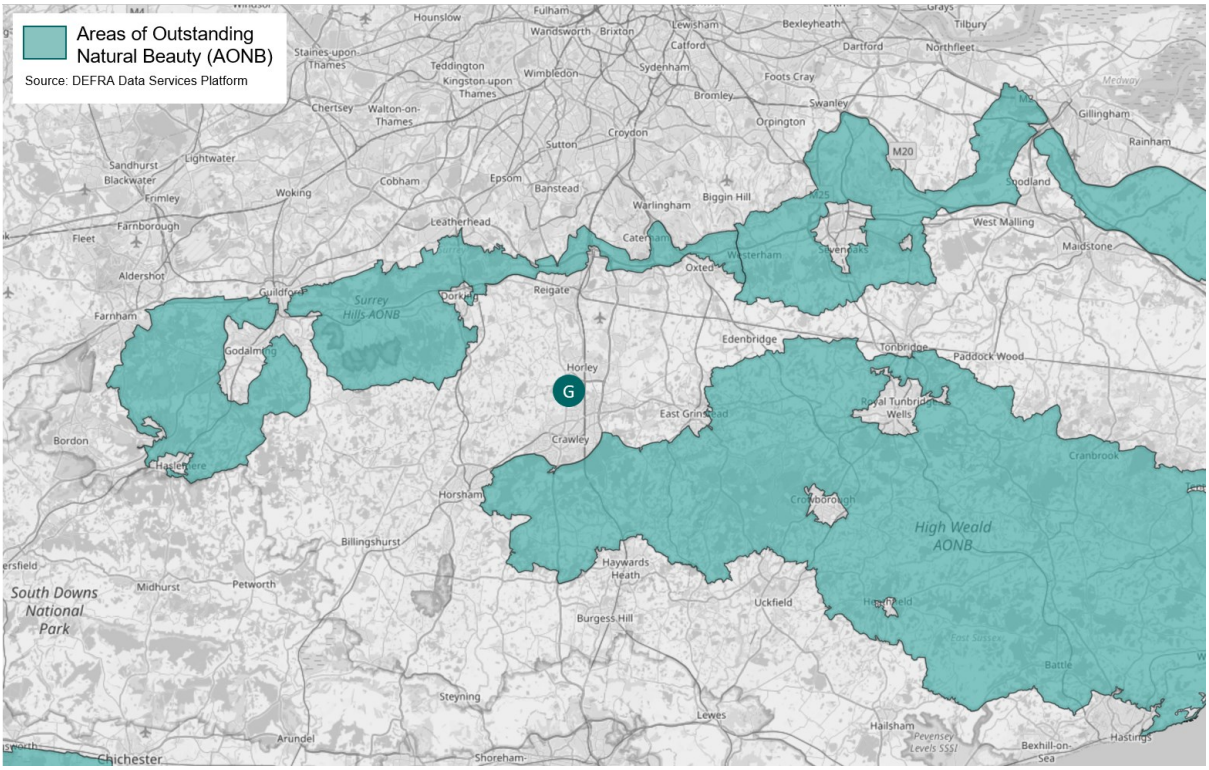


Figure 6 Air Quality Management Areas (AQMA)

Figure 7 Special Areas of Conservation (SAC)

Figure 8 Special Protection Areas (SPAs)

Figure 9 Sites of Special Scientific Interest (SSSI)

Runways

Gatwick operates as a single runway airport, referred to as the 'Main Runway'. This runway is orientated 08 (Right) / 26 (Left). A secondary runway is also available and is often referred to as the 'northern runway'. The northern runway is parallel to the main runway and is currently restricted under a planning condition for use as a standby/emergency runway. Within the existing aerodrome arrangements, the runways cannot be operated at the same time. The northern runway is orientated in the same way as the Main Runway but describes its runways as 08 (Left) / 26 (Right).

For safety reasons, aircraft usually take off and land into the wind. When the wind is from west, the airport will operate "westerly operations", which involves aircraft approaching Gatwick from the east and departing towards the west. Figure 10 below illustrates westerly operations. The opposite, "easterly operations", are used when the wind blows from the east and this is shown in Figure 11. When winds are light either easterly or westerly operations may be conducted.

In 2019 around 74% of aircraft operations have been in a westerly direction and around 26% in an easterly direction. However, this ratio does fluctuate, and weather conditions may mean prolonged periods of one operation or another.

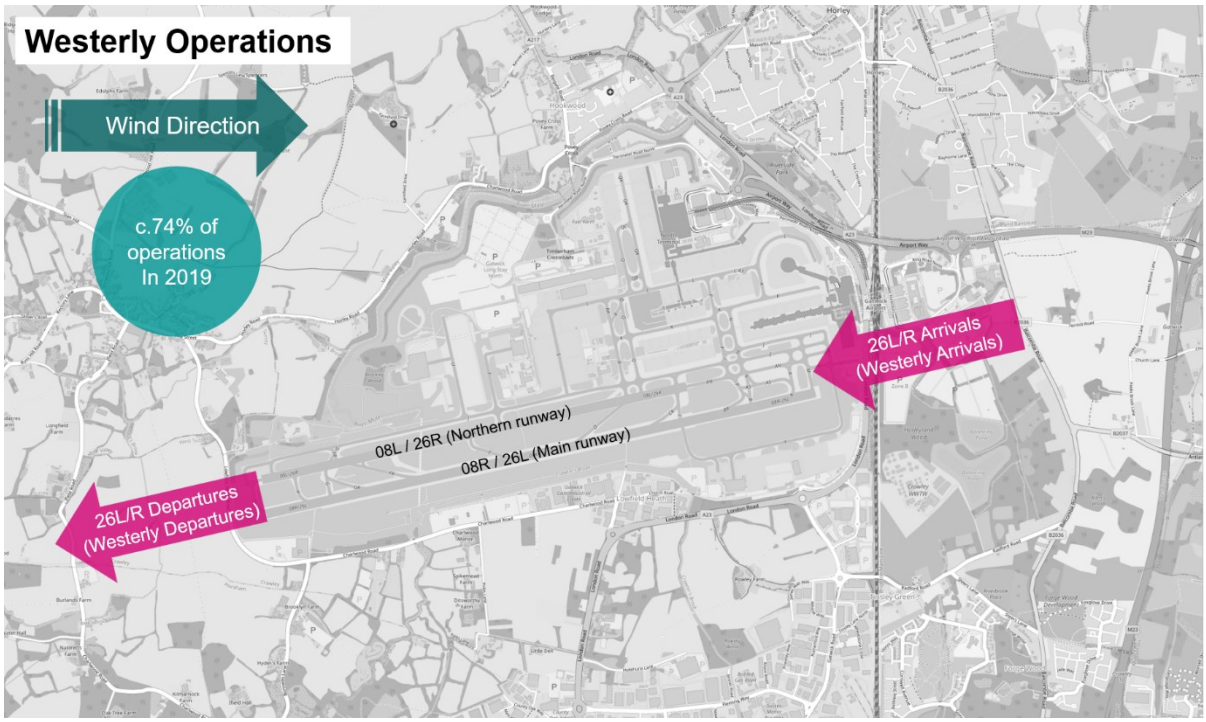


Figure 10 Westerly Operations

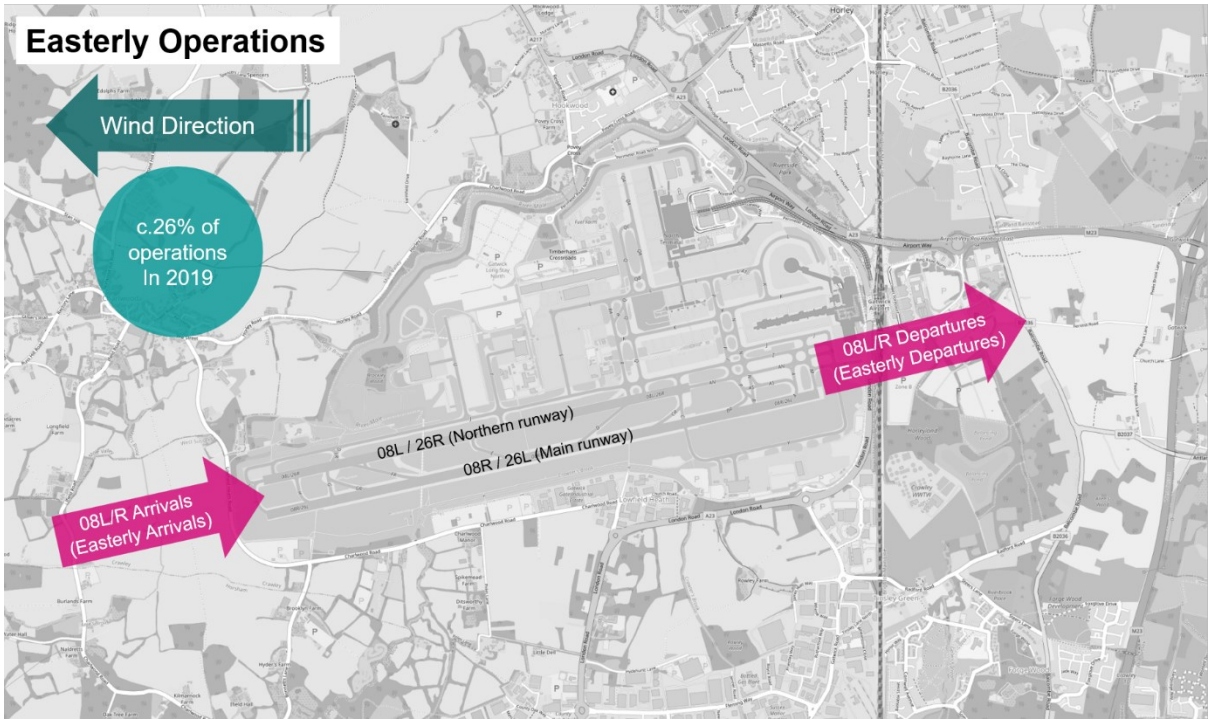


Figure 11 Easterly Operations

Northern Runway Project

In September 2019, Gatwick Airport commenced a Development Consent Order (DCO) application to bring the existing Northern Runway into routine use alongside the Main Runway. Departures would be shared between both runways. The Northern Runway would be used for small and medium wingspan departing aircraft, and all arrivals would continue to use the Main Runway.

The plans also include the development of supporting infrastructure and facilities. These include road improvements, the realignment of the existing Northern Runway, a new Pier (aircraft stands), additional parking and hotels and improvements to the existing terminal buildings.

Routine use of the northern runway alongside the existing main runway would provide a semi-dependent dual runway operation at Gatwick Airport. No new flight paths would be created as a result of the northern runway project which is sepaerate to this ACP. The northern runway project does have an associated ACP and details can be found on the CAA's Airspace Change Portal under ACP reference ACP-2019-081.

The project also includes new commitments to a noise envelope, a Carbon Action Plan, a sustainable transport strategy and biodiversity enhancements. At this stage, these have not been finalised however this information will be incorporated into this ACP where appropriate to do so.

The northern runway project is expected to enable passenger throughput to be increased to approximately 75.6 million passengers with 382,000 Air Traffic Movements (ATMs) in 2038, and around 80.2 million passengers with some 386,000 ATMs per annum in 2047.

In July 2023 Gatwick submitted the DCO documentation to the planning inspectorate (PINS) and the application was accepted for detailed examination on 3rd August 2023 and a period

of detailed and rigorous examination of the proposals by a panel of independent experts will follow.

Ahead of the examination, the public – including residents in local communities and other stakeholders - will be able to register with the Planning Inspectorate to become an 'interested party'. They may be asked to participate and provide their feedback on the proposals during examination.

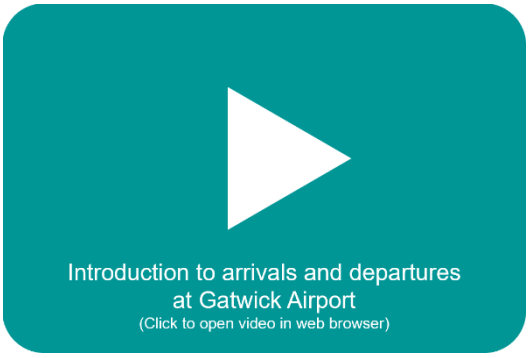
At this stage, all airspace change options developed for this FASI-S ACP are applicable for both the northern and southern runways. The option assessment as part of Stage 2 has not incorporated the DCO forecasts as a decision had not been made at the point of undertaking the analysis. As part of further appraisals in Stage 3 of this process we will incorporate information about the DCO.

More information about the application can be found on northern runway project website.

Aircraft Arriving and Departing from Gatwick Airport

Gatwick's noise website (https://aircraftnoise.gatwickairport.com/) includes introductory videos which explain how aircraft arrive and depart from Gatwick Airport.

The following sections provide a written description of arrivals and departures from Gatwick Airport.



Aircraft Arriving at Gatwick Airport

Please click the link on the video icon to watch a video that describes how aircraft arrive at Gatwick Airport. Alternatively, the figures and text below describe arrivals:

Aircraft arriving at Gatwick do not typically have defined routes to follow and the majority are provided with instructions from Air Traffic Control (ATC) who ensure the aircraft are safely spaced whilst being directed to land. A number of factors affect where arrivals fly, and the location of flight paths may vary significantly between different days and even during the day.

On occasion, often at busy times or during adverse weather, it is not possible for aircraft to approach and land at Gatwick without having to undertake short-term holding. This takes place in fixed oval pattern known as a stack or hold. Gatwick has two holding stacks; one called 'WILLO' which is located west of Lewes and above Burgess Hill and the second, 'TIMBA' is located above Heathfield. The stacks have been in the same locations since the 1960s. NATS are responsible for the location of the stacks and the location of the stacks cannot be moved without an airspace change and public consultation.

Aircraft kept in holding stacks circle in an oval shape at different heights before being directed by ATC to start their final approach. Each aircraft in the stack is separated vertically by 1,000ft. The lowest level of the stack is 7,000ft but aircraft in the vicinity can and do pass the area at a lower altitude.

To achieve an optimised delivery of aircraft onto the runway, approach controllers are given an area of airspace or Radar Manoeuvring Area (RMA), to keep aircraft under their control within. The RMA is an Air Traffic Control (ATC) operational area articulated as a volume of airspace by the Air Navigation Service Provider (ANSP). It facilitates the close-in radar vectoring by ATC that is required to take the aircraft safely from a holding stack and established onto final approach. It provides approach controllers with the airspace necessary to perform their primary function of sequencing the aircraft with the distance between each aircraft into the required landing order for joining the Instrument Landing system (ILS). The majority of aircraft arriving at Gatwick fly an ILS approach although PBN approaches, called required navigation performance (RNP approaches) are also available.

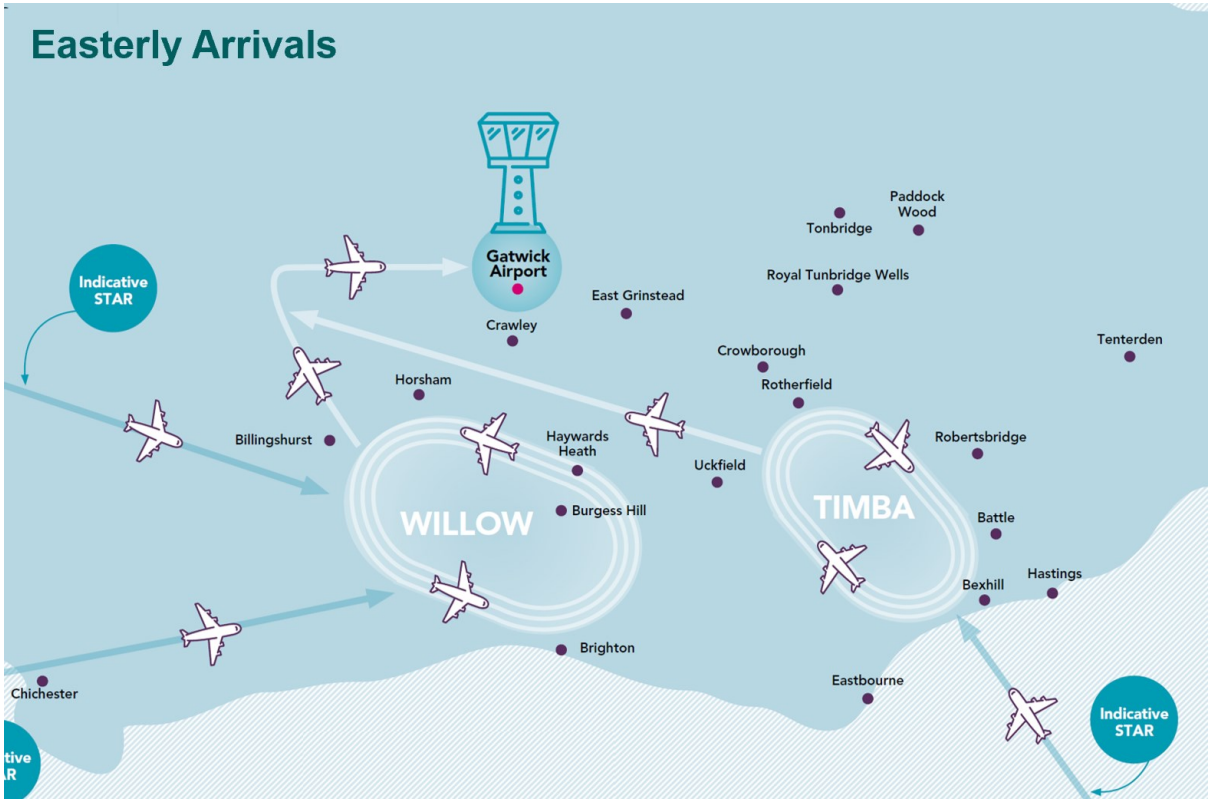
There are no set heights or noise limits once arriving aircraft have left the stack. This is because of the random pattern in which they arrive in the airspace and the need for ATC to separate and sequence them safely and efficiently to join the ILS.

The ILS is a beam which extends out a horizontal distance of 25 nautical miles (nm) from the airport. It is aligned with the runway centreline to guide aircraft to land. Landing is a very busy and critical stage of the flight so it's vital that aircraft are set up for landing (with flaps correctly configured) and at the correct speed some distance from touchdown. To achieve this ATC has discretion over where they direct aircraft to join the ILS in the interest of both safety and separation. This means any area beneath the ILS will have arriving aircraft flying over as well as areas to the side as aircraft are directed on to the ILS. Note that aircraft arriving at Gatwick will usually join the ILS from the south to avoid the proximity of Heathrow Airport to the north.

On the following page, Figure 12 and Figure 13 illustrate westerly and easterly arrivals into Gatwick Airport.

Figure 12 Westerly Arrivals to Gatwick

Figure 13 Easterly Arrivals to Gatwick



On the following page, Figure 14 and Figure 15**Error! Reference source not found.** show the arrival tracks from 2 busy weeks of data from 2019. Note this data shows aircraft tracks above and below 7000ft.

Figure 14 Easterly Arrivals (Runway 08): Sample from 2019. Source: Gatwick Airport NTK system

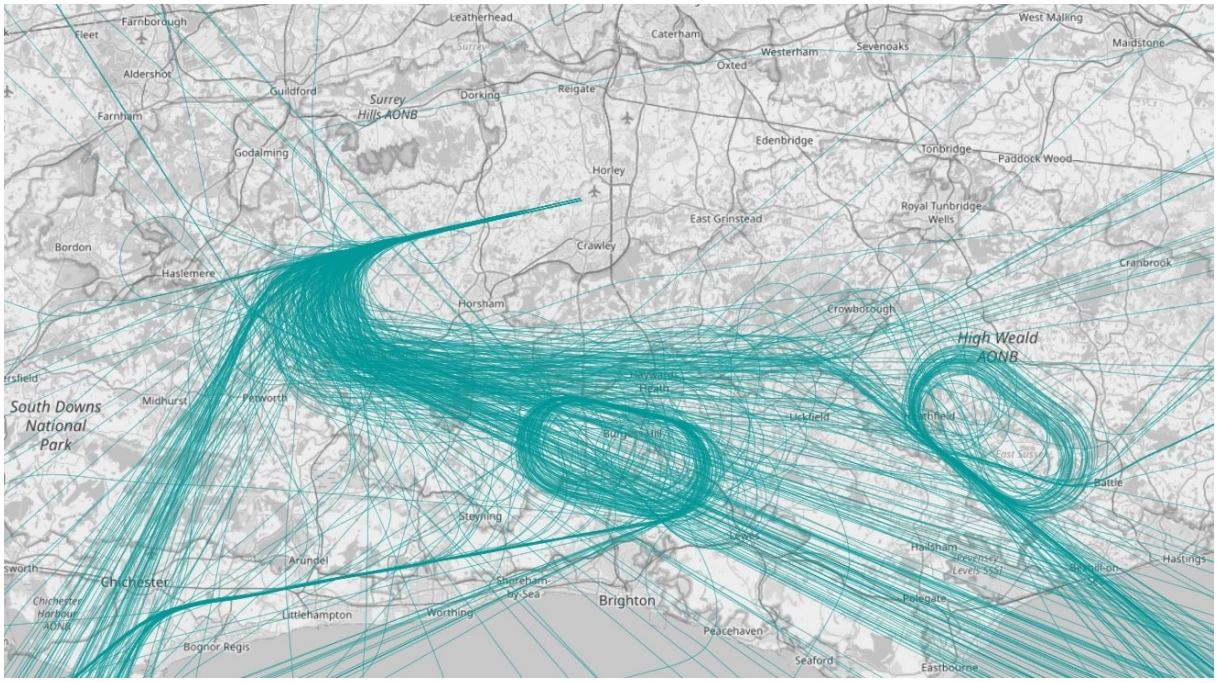
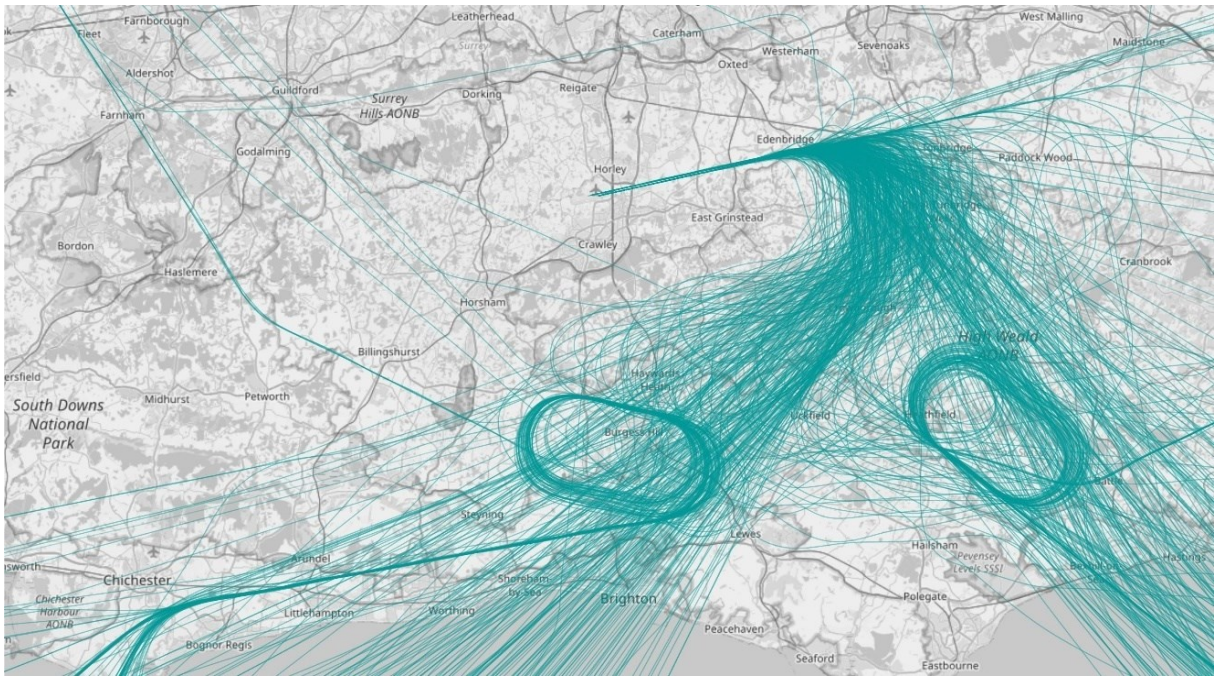


Figure 15 Westerly Arrivals (Runway 26): Sample from 2019. Source: Gatwick Airport NTK system



Noise Abatement Procedures for Arrivals

Although there are no noise limits or routes for arriving aircraft, there are noise abatement procedures to reduce the impact on the community.

One of the main noise reduction measures, subject to safety requirements, is Continuous Descent Operations (CDO) which involves avoiding prolonged periods of level flight. CDO facilitates the aircraft descending continuously to join the ILS at the correct height. This avoids the need for long periods of level flight and means the aircraft can stay higher for longer. Not only does it help with noise reduction, but it also reduces fuel burn, and emissions. Gatwick measures CDO performance from 7,000ft and reports performance in our quarterly and annual flight performance reports available on our website www.gatwickairport.com/noise.

Table 4 Average Continuous Descent Performance at Gatwick. Source: 2019 Decade of Change performance report

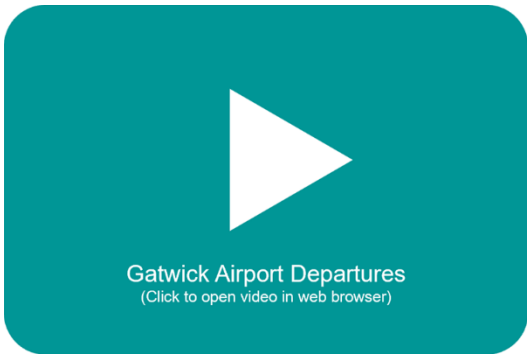
Year	Average CDO performance
2019	89.58%

Gatwick's electronic Aeronautical Information Publication (eAIP) AD 2.1. EGKK Noise Abatement Procedures outlines other long-standing procedures to reduce noise from arrivals including:

- Avoiding the densely populated areas of Crawley, East Grinstead, Horley and Horsham at less than 3,000ft, and over Lingfield at an altitude of less than 2,000ft,
- Limitations on the joining point on final approach which are dependent on aircraft weight and type of approach being flown,
- Limitations on the joining point on final approach for arrivals at night; between 23:30 and 05:59 aircraft must join the ILS at no less than 3,000ft and not within 10nm of the airport, and
- There are also restrictions around reverse thrust which is a way of slowing aircraft down once they've landed. Pilots have been asked to avoid using reverse thrust between 23:30 and 06:00 local time unless required for safety reasons, such as if the runway is wet.

Aircraft Departing from Gatwick Airport

Please click the link on the video icon to watch a video that describes how aircraft depart from Gatwick Airport. Alternatively, the figures and text below describe departures:



Noise Preferential routes (NPRs)

Departing aircraft follow flight paths known as Noise Preferential Routes (NPRs). NPRs were set by the Department for Transport in the 1960s to avoid over-flight of built-up areas where possible. The location of NPRs remains the responsibility of the Government. Any changes proposed to the NPRs as part of this FASI-S ACP would require separate approval from the Department for Transport.

Each NPR consists of a 'centreline' and a corridor extending 1.5 km either side of the NPR centre line. Aircraft flying inside this corridor are considered to be flying on-track. Each NPR has a release altitude which is either 3,000ft or 4,000ft depending on the route. Figure 16 and Figure 17 on the following pages illustrate these routes and state their release altitudes.

Gatwick publish Standard Instrument Departure (SID) routes that extend above the altitude of the NPRs however once an aircraft reaches the release altitude of the NPR, aircraft are typically vectored by ATC towards their destination. This means that aircraft do not typically follow the SID centreline after flying the NPR. This vectoring can be seen in Figure 18 and Figure 19. Vectoring may also happen below the NPR release altitudes if safety, weather, or traffic demand it.

Note on the Route 9 NPR: Also known as the WIZAD, Route 9 is a Tactical Offload Route and is not usually offered as a flight path. So, for example, if Route 4, to the north of Horley, is very busy, Route 9 may be offered as a tactical alternative to ease the load. It may also be used if there are thunderstorms on other routes which aircraft should not fly through. It's not used from 23:30 to 07:00 local time.

Figure 16 Gatwick Easterly Departure Noise Preferred Routes (NPRs) and the release altitudes

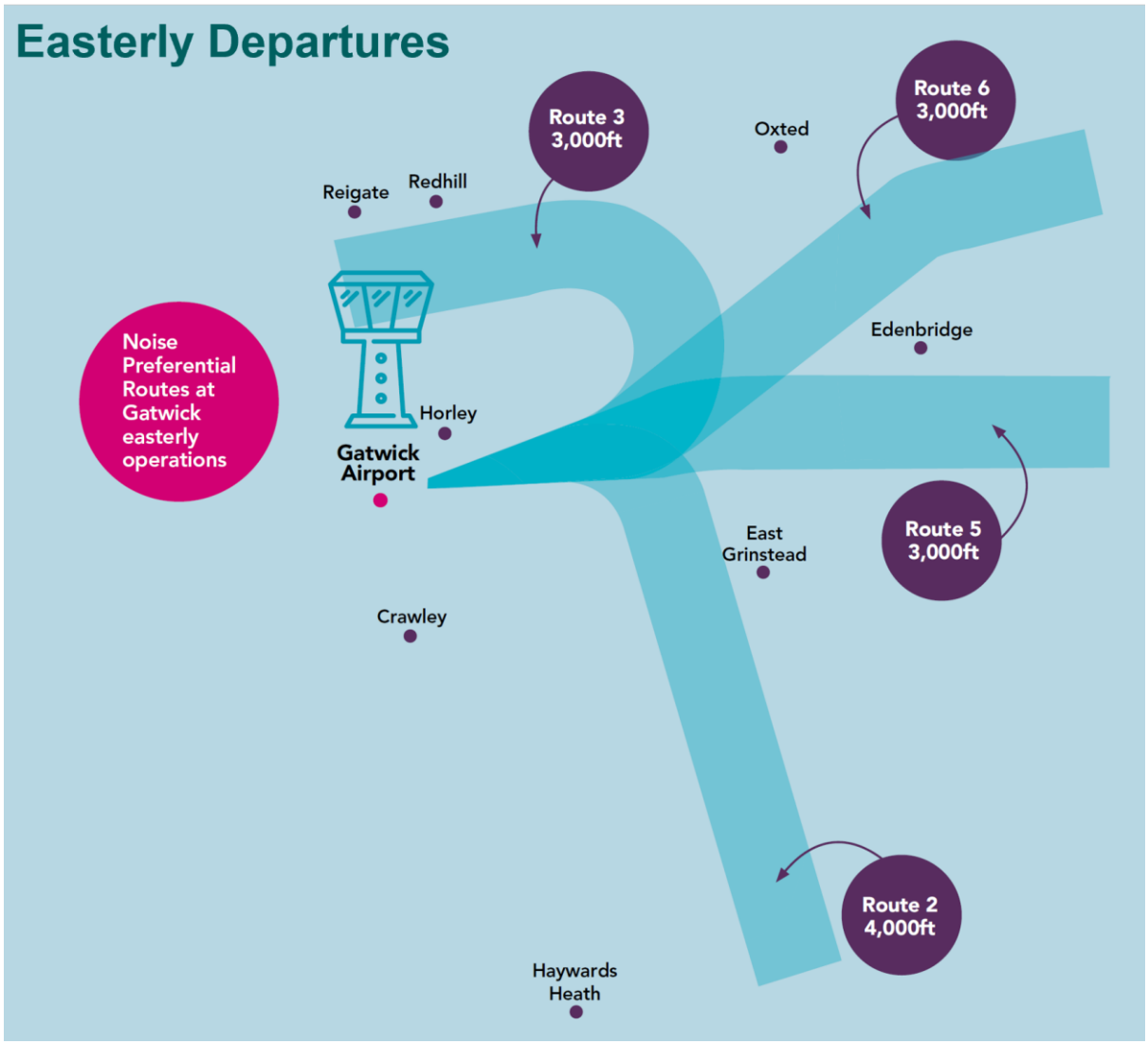


Figure 17 Gatwick Westerly Departure Noise Preferred Routes (NPRs) and the release altitudes

Gatwick's Performance Based Navigation (PBN) Departures

Gatwick implemented Area Navigation (RNAV1) standard instrument departure (SID) routes in May 2014. RNAV1 is a type of Performance Based Navigation (PBN) which uses satellite-based waypoints rather than conventional ground-based navigation aids. More information about PBN can be found in the 'Performance Based Navigation' section of this document.

The RNAV1 SIDs are available for departures from the main runway, with the exception of westerly departure Route 4 which uses conventional navigation, following withdrawal of RNAV 1 SID routes in 2020. Departures from the northern runway are based on conventional ground-based navigation aids.

As noted earlier in this section, beyond the NPRs Gatwick's departures are routinely vectored by ATC and this means that aircraft rarely follow the SID centreline beyond 3,000ft/4,000ft. Vectoring is required due to the high level of interactions between Gatwick traffic (for example to keep departures safely separated from arrivals), and to keep safe separation from traffic from other neighbouring airports. More information about this can be found in the 'Interactions within the London Terminal Manoeuvring area' section of this document.

The vectoring of departures creates swathes across the airspace. Figure 18 and Figure 19, show the departure tracks from 2 weeks of data from 2019. Note these tracks show traffic above and below 7,000ft.

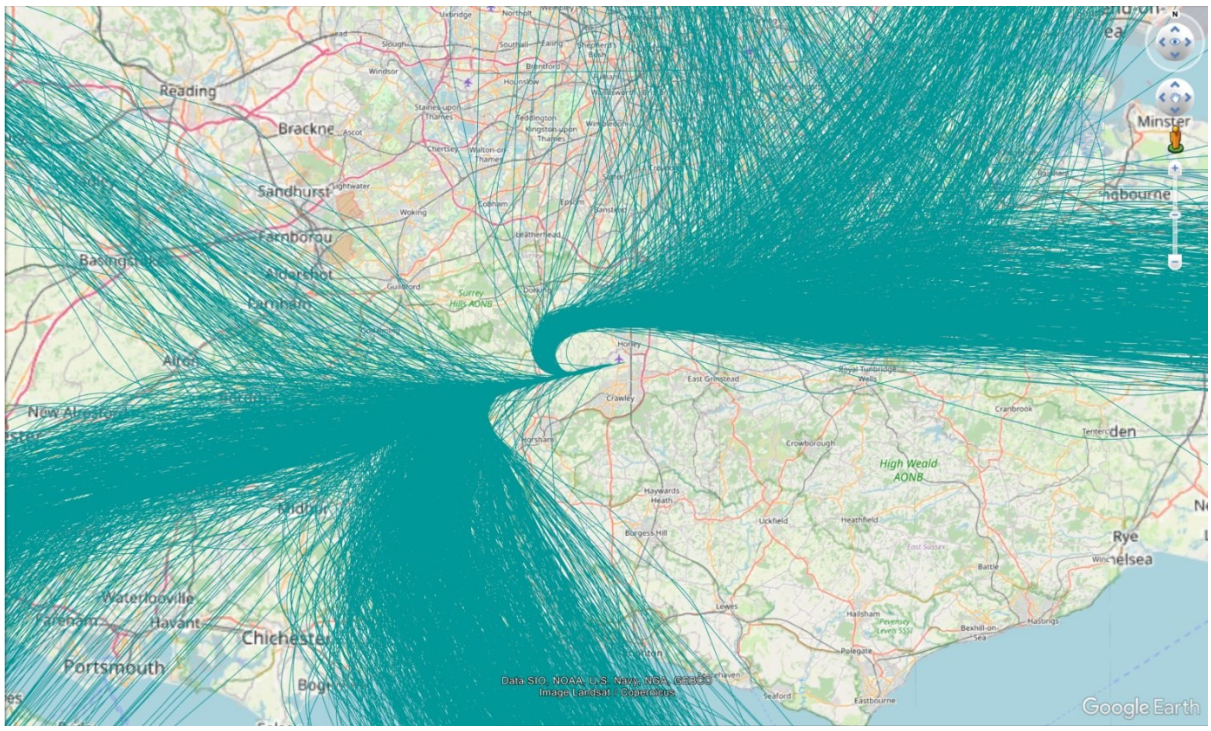


Figure 18 Westerly Departures (Runway 26): Sample from 2019. Source: Gatwick Airport NTK system

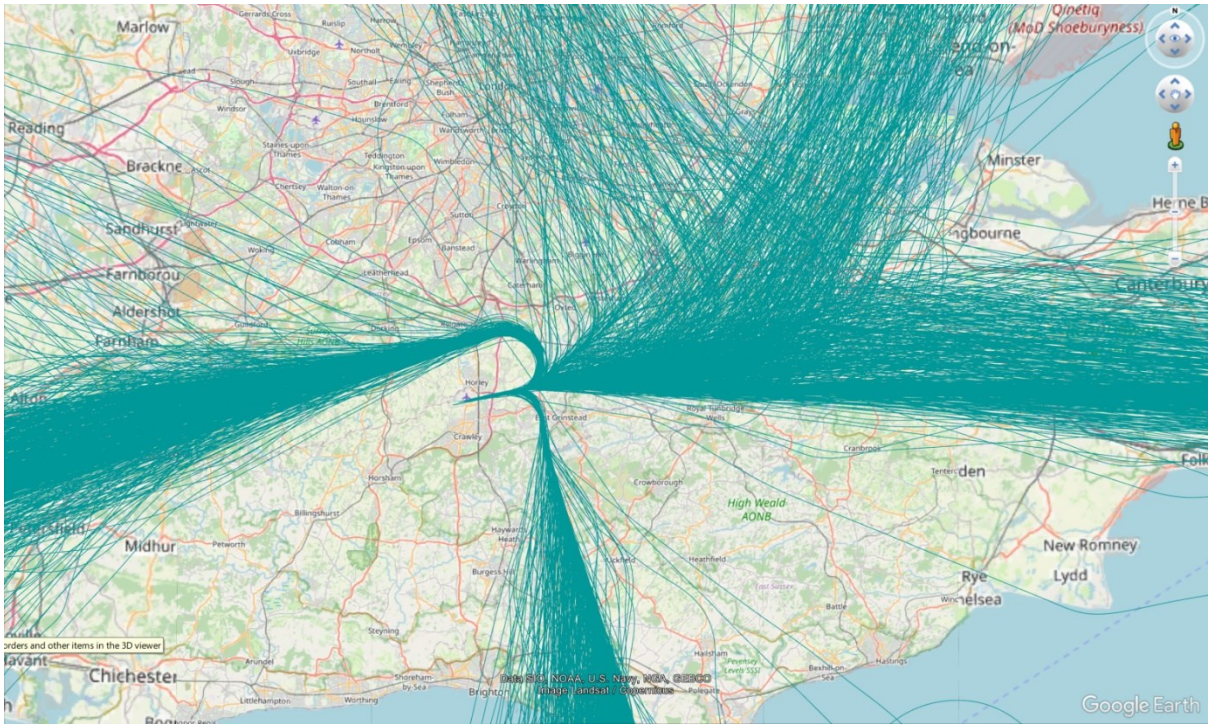


Figure 19 Easterly Departures (Runway 08): Sample from 2019. Source: Gatwick Airport NTK system

Departure Route Usage

Table 5 outlines the daytime departure route usage in 2019. Note percentage totals add to 98% owing to rounding on each individual route. Figure 20 is provided as a visual reference to be used in conjunction with Table 5.

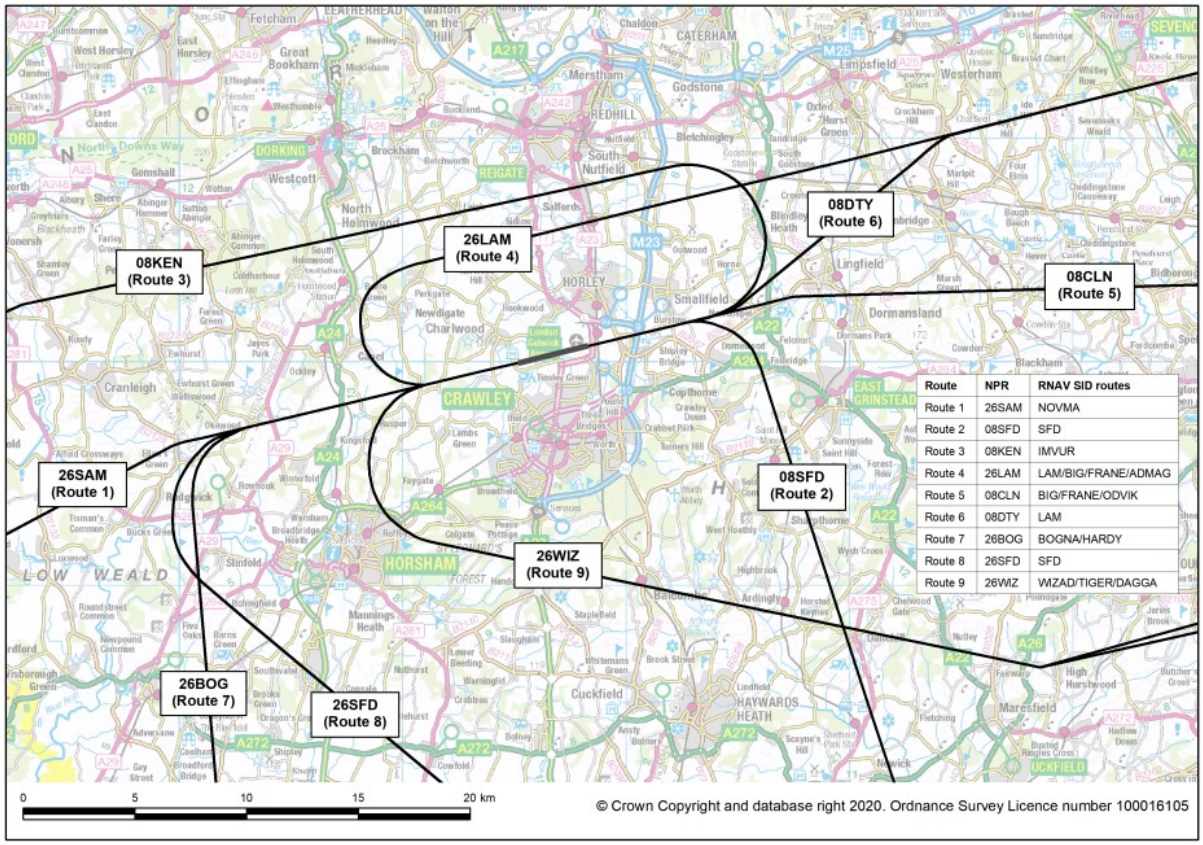


Figure 20 Gatwick NPR and SID Routes. Image Source: ERCD Annual Report 2019

Table 5 Gatwick Daytime Departure Route Usage. Source: ERCD Annual Report 2019

Gatwick Departure Route	NPR Name	SID Routes	2019 Usage
Route 1	26SAM	NOVMA	22%
Route 2	08SFD	SFD	8%
Route 3	08KEN	IMVUR	8%
Route 4	26LAM	LAM/FRANE/MIMFO	27%
Route 5	08CLN	CLN	8%
Route 6	08DTY	LAM	2%

Route 7	26BOG	BOGNA	23%
Route 8	26SFD	SFD	8%
Route 9	26WIZ	WIZAD/TIGER/DAGGA	0%

The Route 4 ACP

Gatwick have a separate ongoing ACP which seeks to reintroduce the RNAV1 Route 4 SIDs. This is published on the CAA's Airspace Change Portal under ACP 2018-86.

Route 4 is a set of SID routes for aircraft taking off in a westerly direction from Runways 26L / 26R and then turning right approximately 180°, through north, to track in an easterly direction.

The introduction of RNAV SIDs (Area Navigation Standard Instrument Departure) for Route 4 has been subject to regulatory and legal challenge since its original approval in 2013, when the CAA approved, and GAL implemented, RNAV procedures on all nine Gatwick Airport departure routes. In 2015, the CAA conducted a Post Implementation Review (PIR) (CAP 1912) and approved most of the routes for continued use but found that Route 4 had not delivered the objective of the airspace change. This required the route to be modified. This work was completed, and GAL submitted an amended Route 4 proposal which was ratified by the CAA.

Subsequently, the community group 'Plane Justice' sought a judicial review to challenge the CAA's PIR decision. Following a further detailed investigation, the CAA asked the court to quash their previous PIR decision. As a result, Route 4 RNAV SIDs assumed a temporary status and in 2020 they were withdrawn. This means that in the current airspace environment, aircraft flying the Route 4 SID fly the conventional procedure which is based on ground-based navigation aids.

The purpose of the separate Route 4 ACP is to submit a new application for RNAV-1 performance-based navigation (PBN) SID procedures for Route 4 departures at Gatwick Airport, under the guidance and requirements of the CAA's Airspace Change Process, CAP 1616. This project commenced in late 2018 and is currently at Stage 3 of the Airspace Change Process.

For the purposes of Stage 2 of this ACP, our baseline pre-implementation scenario assumes that the conventional Route 4 SIDs will be flown. Gatwick will continue to monitor the progress of the Route 4 ACP and when appropriate in later stages of the process may incorporate the outcomes of the route 4 ACP into the baseline scenarios for this FASI-S ACP, if the Route 4 ACP is expected to alter the baseline.

Noise Abatement Procedures for Departures

Set by the DfT, noise limits only apply to departing aircraft and differ during the day (07:00 to 22:59 local time), night (23:30 to 05:59 local time) and 'shoulder periods' (06:00 to 06:59 and 23:00 to 23:29 local time). The noise is monitored at fixed sites at either end of the runway.

If an aircraft breaches the legal noise limits at the fixed sites, the airline is fined. All proceeds from these fines are passed to the independently run Gatwick Airport Community Trust, which together with other money raised at the airport, helps local charity and community projects.

There have only been isolated infringements of these limits in recent years with fines levied against airlines.

Gatwick's electronic Aeronautical Information Publication (eAIP) AD 2.1. EGKK Noise Abatement Procedures also outlines other long standing procedures to reduce noise from departures including:

- after take-off aircraft must climb to at least 1,000 ft above the airport level by 6.5km from when they begin moving on the runway. This encourages airlines to gain height as fast as possible so they can reduce engine power and noise as soon as possible.
- Aircraft shall, after take-off, be operated in such a way that it will not cause more than 94 dBA[2] L_{max} by day or 87 dBA L_{max} during the night quota period 23:30-06:00 local as measured at any noise monitoring terminal.
- Where the aircraft is a jet aircraft, after passing 1,000ft above ground, it shall maintain a gradient of climb of not less than 4% to an altitude of not less than 3,000ft.
- After taking off the aircraft shall avoid flying over the congested areas of Horley and Crawley

Existing Noise Contours

Gatwick are required to publish daytime and night-time noise contours on an annual basis. These contours are generated by the Civil Aviation Authorities (CAA) Environmental Research and Consultancy Department (ERCD) using radar and noise data from Gatwick's noise and track (NTK) system. The calculations account for mean flight tracks and lateral dispersions for each route, and average flight profiles of aircraft height, speed and thrust for each aircraft type.

The main noise exposure metric used is the Equivalent Continuous Sound Level, commonly referred to as L_{Aeq} daytime 16-hour (07:00-23:00 local time), which is calculated over the 92-day summer period from 16 June to 15 September. Alongside the daytime contour, there is a L_{Aeq} 8-hour night-time contour (23:00-07:00). L_{Aeq} contours are a primary noise metric in the CAP1616 process.

Gatwick also request day and night contours N65 16-hour and N60 8-hour contours. These N65 and N60 contours indicate the number of aircraft noise events exceeding a maximum sound level (L_{max}) of 65 and 60dBA respectively at a given location. N above contours are a secondary noise metric in the CAP1616 process.

The *size* of the L_{Aeq} and N_{above} contours is determined largely by four main factors:

- The type of aircraft using the airport
- The number of aircraft using the airport
- The frequency of use of each flight path
- The height of aircraft on those flight paths

The *shape* of these contours is directly influenced by the position of the flight paths.

Figures 21 – 24 illustrate these L_{Aeq} and N above contours for 2019.

[2] A-weighted decibel

Figure 21 Gatwick 2019 summer day actual modal split (73% west / 27% east) L_{Aeq} contours

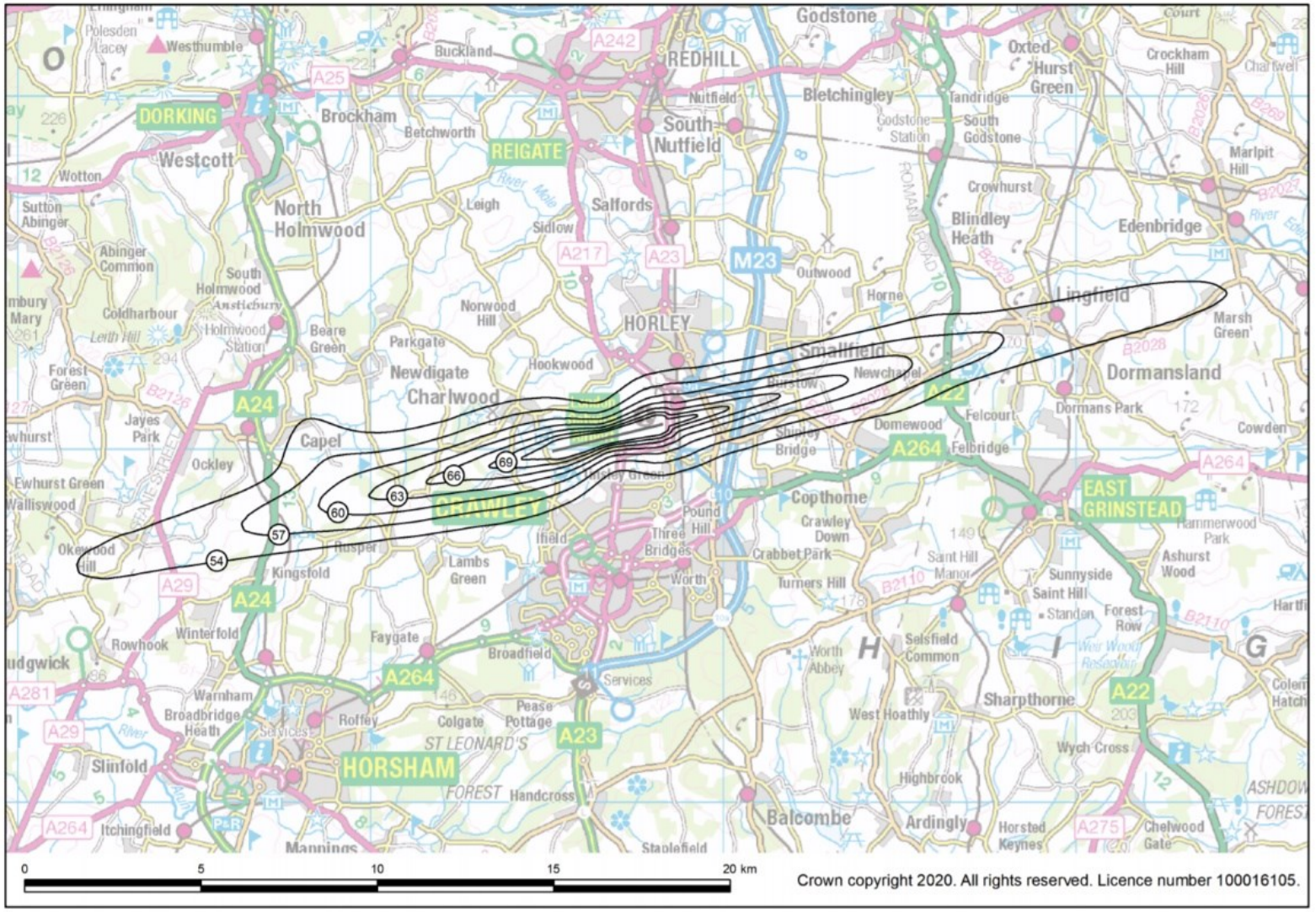


Figure 22 Gatwick 2019 summer day actual modal split (73% west / 27% east) N65 contours

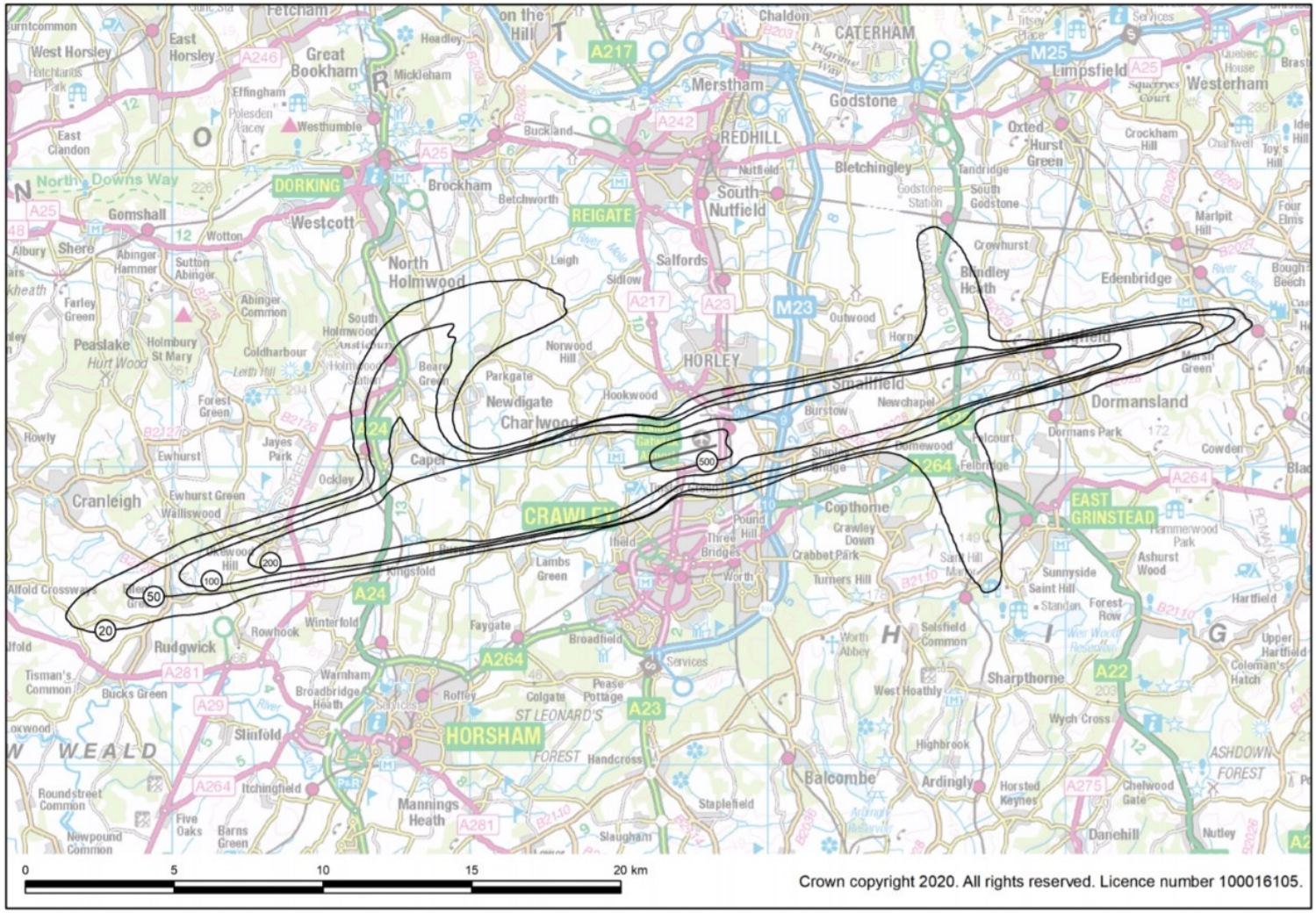


Figure 23 Gatwick 2019 summer night actual modal split (73% west / 27% east) L_{Aeq} contours

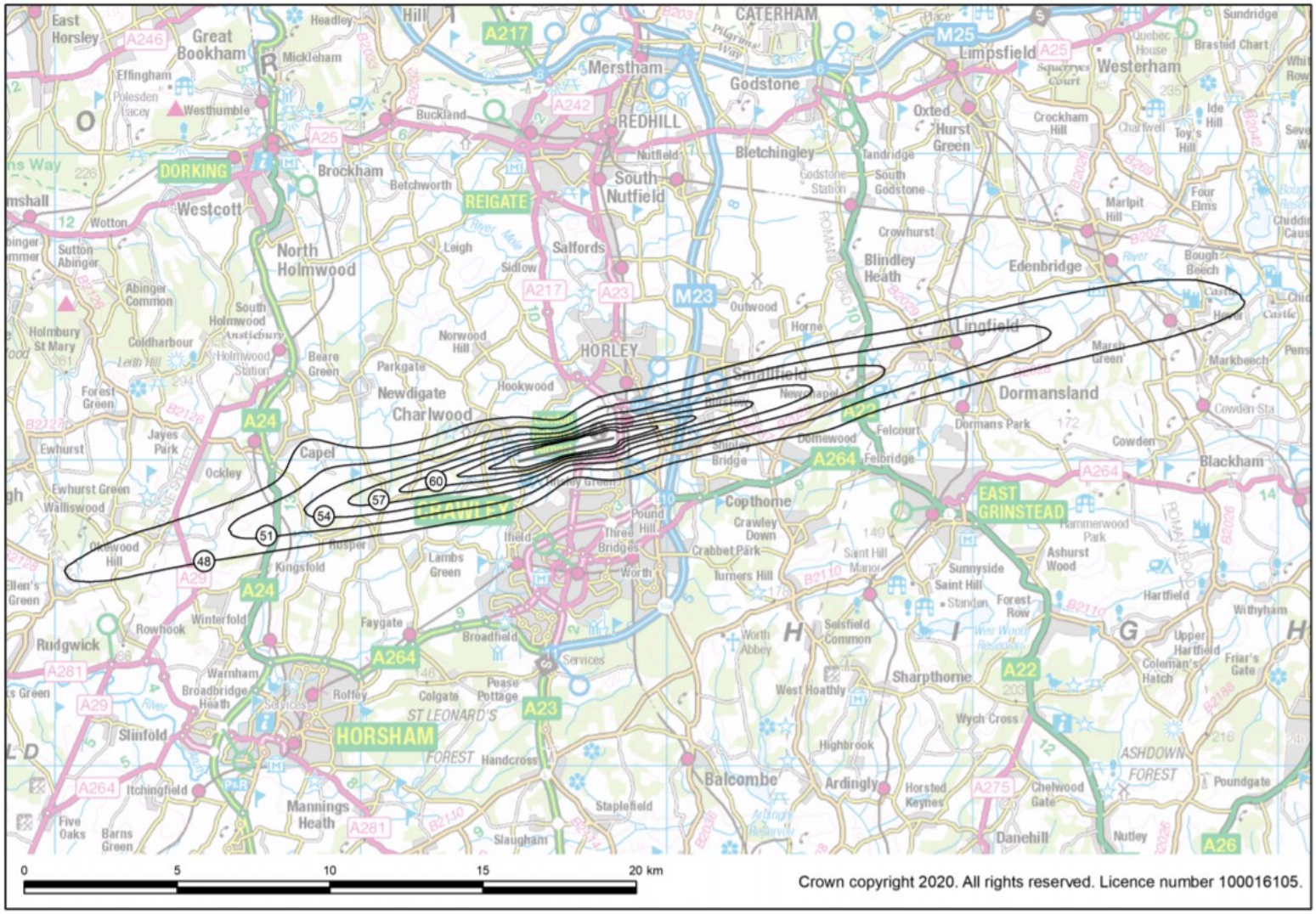
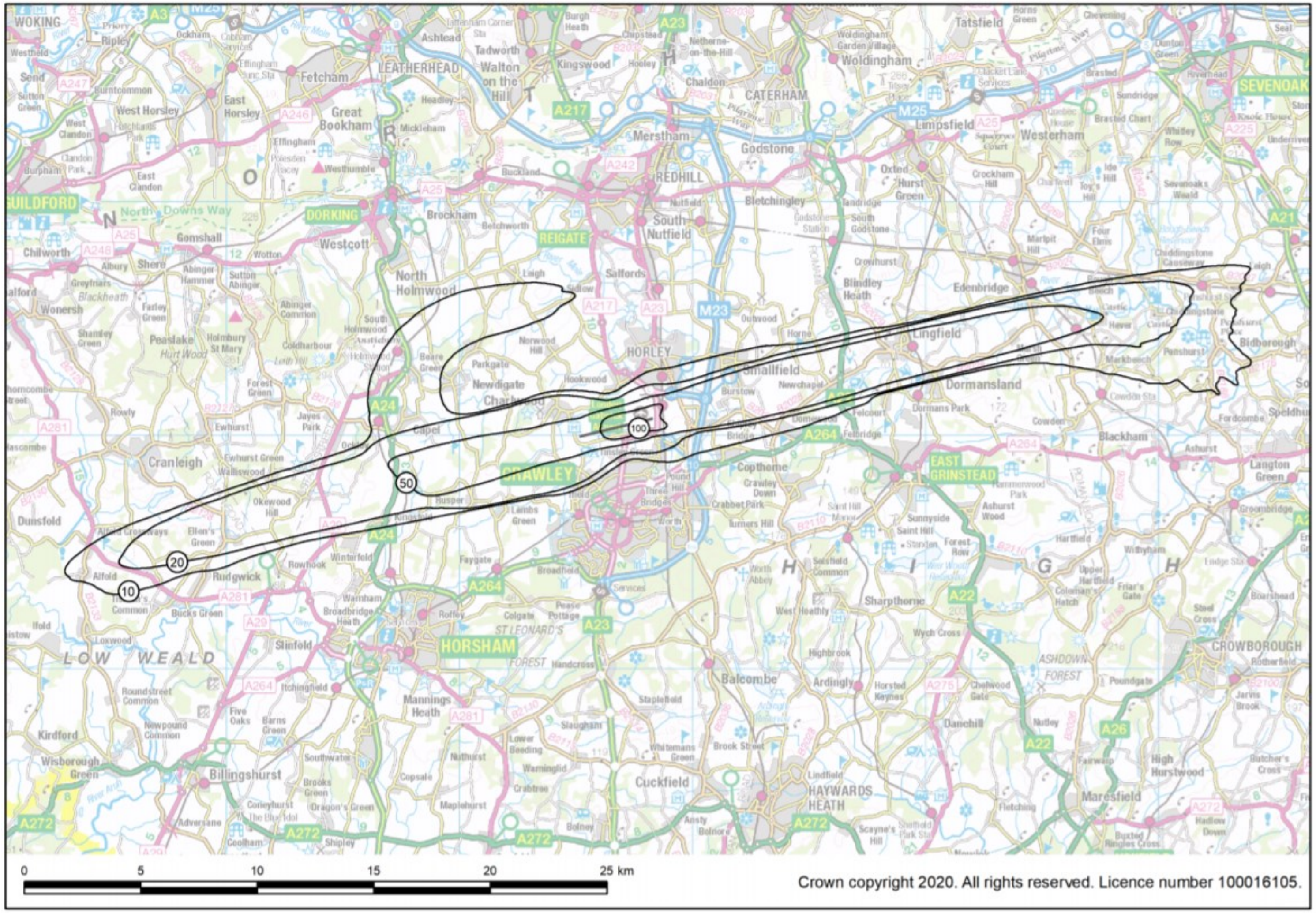


Figure 24 Gatwick 2019 summer night actual modal split (73% west / 27% east) N60 contours



Gatwick's Noise Insulation Scheme

Gatwick operate a Noise Insulation Scheme which applies to eligible homes across Surrey, Sussex and Kent who can apply for up to £3,000 plus VAT towards double glazing for their windows and doors. The core scheme boundary, as shown in Figure 25, is based on a CAA calculated 60dBA noise contour based on airport operation at 45 million passengers per annum. Gatwick have then amended this contour boundary to reflect local geographic layout resulting in an uneven boundary line. In addition to this, and in response to feedback, Gatwick have extended this line 15km, both east and west outside the furthest contour, to reflect aircraft noise impacts from all arriving aircraft established on the centre line.

Figure 25 Map of Gatwick Noise Insulation Scheme area

Interactions within the LTMA

Gatwick's arrivals and departures fly within an area of airspace called the London Terminal Manoeuvring Area (LTMA). The LTMA is one of the busiest areas of airspace anywhere in the world. Figure 26 shows an image taken from a video produced by NATS which shows the traffic within the LTMA airspace from the London Airports.

Figure 26 Aircraft traffic within the LTMA. Source: NATS London 24 (2015) Youtube: https://youtu.be/kGMVl3y8GxI

As shown in Figure 26, Gatwick's location means that it is in close proximity to aircraft operating from other London Airports such as Heathrow, London City, and Biggin Hill. Gatwick also shares some interactions with Southampton. This proximity results in interactions and interdependencies with other airport's traffic.

In today's LTMA, these interactions are managed through ATC vectoring aircraft. This means that ATC keep aircraft safely separated by instructing aircraft to fly a compass heading and at a specific altitude.

The interactions with other traffic in the LTMA sometimes result in aircraft not being able to continuously climb or descend. Many of the departures from Gatwick, Farnborough, London City, Southampton and Biggin Hill are prevented from continuous climb due to Heathrow departures as well as Heathrow arrivals. In addition, there are dependencies between Gatwick, Heathrow, London City, Farnborough, Southampton and Biggin Hill departures as their routes are not all vertically or laterally deconflicted.

In terms of Gatwick's arrivals, aircraft arriving and departing from Heathrow airport, and to a lesser extent Farnborough, Southampton, Biggin Hill and London City airports, also require some integration. For the arrivals from the Northwest, North, Northeast and East the current airspace design means aircraft take slightly longer routes than the most operationally efficient flightpath.

Current Airspace Arrangements, Procedures General Aviation and Adjacent Airports (Technical Section)

The following section builds upon the 'Aircraft Arriving and Departing from Gatwick Airport' section above and provides some further technical information about the airspace arrangements, procedures, and interactions at Gatwick Airport

Published Procedures

Gatwick's procedures are published as part of Section Part 3 AD EGKK of Aeronautical Information Publication (eAIP). For full details of the procedures and their associated charts, please see Section 2.24 (EGKK) using the link above.

Standard Instrument Departures (SIDS):

Table 6 outlines Gatwick's published departure procedures:

Table 6 Gatwick's Published Departure Procedures

		Main Runway		Northern Runway
Gatwick Departure Route	**NPR Name**	**Conventional SID**	**RNAV1 SID**	**Conventional SID**
Route 1	26SAM	NOVMA 1M	NOVMA 1X	NOVMA 1V
Route 2	08SFD	SFD 9P	SFD 4Z	SFD 9W
Route 3	08KEN	KENET 3P	IMVUR 1Z	KENNET 3W
		SAM 3P	IMVUR 1Z	SAM 3W
Route 4	26LAM	FRANE 1M	-	FRANE 1V
		MIMFO 1M	-	MIMFO 1V
		LAM 6M	-	LAM 6V
Route 5	08CLN	DVR 2P	ODVIK 2Z	DVR 2W
Route 6	08DTY	FRANE 1P	FRANE 1Z	FRANE 1W
		LAM 5P	LAM 1Z	LAM5W
Route 7	26BOG	BOGNA 1M	BOGNA 1X	BOGNA 1V
Route 8	26SFD	SFD 5M	SFD 1X	SFD 5V
Route 9	26WIZ	DAGGA 1M	DAGGA 1X	DAGGA 1V
		TIGER 3M	TIGER 1X	TIGER 3V
		WIZAD 4M	WIZAD 1X	WIZAD 4V

Approaches

For the main runway, Gatwick promulgates Instrument Landing System (ILS) and Required Navigation Performance (RNP) approaches. For the northern runway, only RNP approaches are promulgated. Alongside these, Gatwick promulgates initial approach procedures that make use of an ILS without radar control, however these are very rarely operated. Pilots can also elect to fly a visual approach. The same missed approach procedures apply to the main runway and the northern runway.

The Aeronautical Information Publication (eAIP) Section 2.24 (EGKK) includes charts and further details of all the current promulgated approach procedures.

Gatwick's Radar Manoeuvring Area (RMA)

To achieve an optimised delivery of aircraft onto the runway, approach controllers at National Air Traffic Services (NATS) are given an area of airspace known as 'Radar Manoeuvring Area' (RMA), to maintain the separation between aircraft under their control.

The RMA facilitates the close-in radar vectoring by ATC that is required to take the aircraft safely from a holding stack until established on final approach. It provides approach controllers with the airspace necessary to sequence the aircraft into the required landing order with the appropriate distance between each aircraft required by the airport at any particular time.

Aircraft arriving and departing from Heathrow airport, and to a lesser extent Farnborough, Southampton, Biggin Hill and London City airports, also require some integration from a direct arrival routing. For the arrivals from the Northwest, North, Northeast and East the current airspace design means aircraft take longer routes than would be ideal.

Figure 27 gives an example of this; aircraft arriving from the East initially route Southwest before turning North-west back towards the airport. Arrivals from the North invariably need to be routed to the East or West of the Heathrow airspace structure before being fed into the two holding areas to the South.

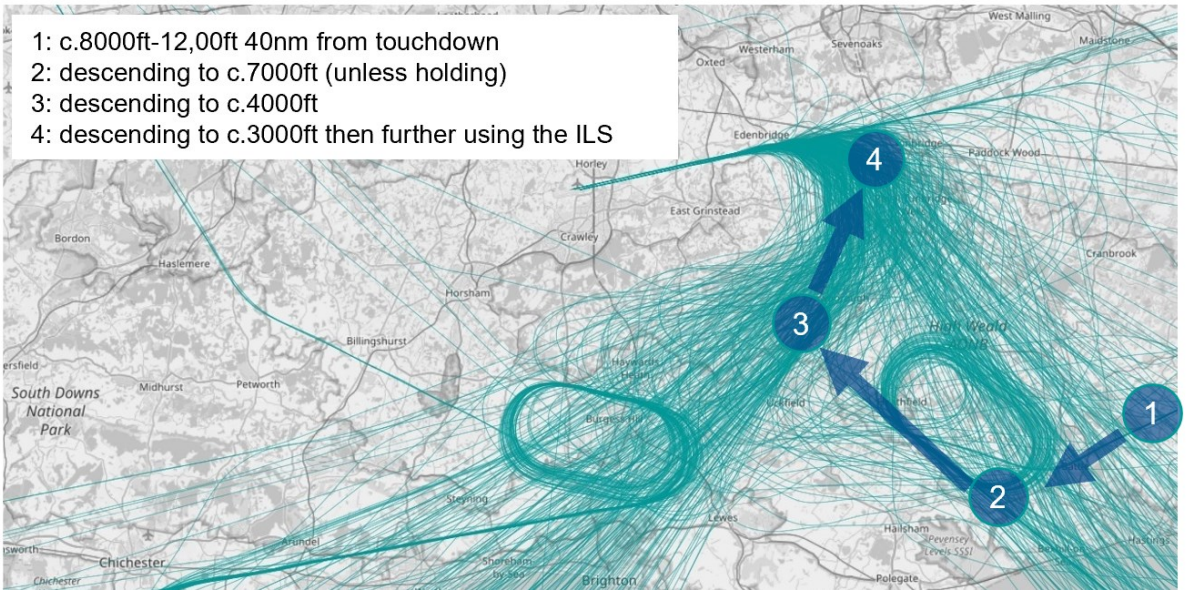


Figure 27 The Gatwick stacks and an example of a Gatwick arrival from the East (For Runway 26)

Figure 27 also shows the position of the two main holding areas of WILLO and TIMBA. The majority of arrivals are routed from their inbound tracks to these holding areas located to the South of the airport. The main reason these holding areas are situated to the South is to segregate them from Heathrow arrivals and departures.

Current Constraints from other London Terminal Control Area (LTMA) Traffic Flows

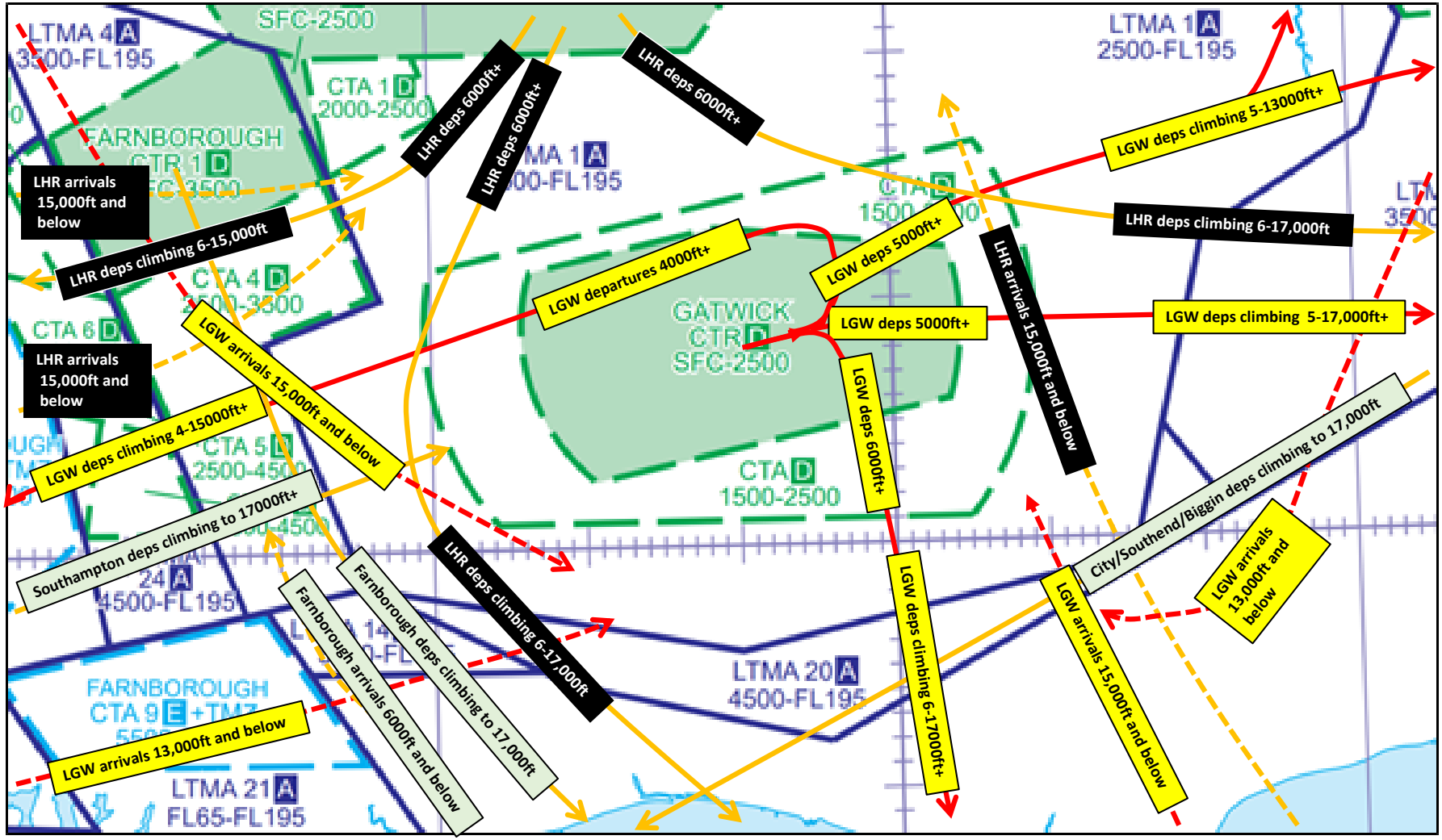
The close proximity of major airports within the LTMA generate significant complexity and dependencies on one another, which can result in delays and inefficient routing and vertical profiles. There are significant dependencies between Gatwick and Heathrow and, to a lesser extent between Gatwick and London City, Farnborough, Southampton and Biggin Hill. These dependencies are likely to exist with any future Gatwick design option which requires Continuous Climb Operation / Continuous Descent Operations to/from higher levels than today or moves routes closer to those airports.

The leading constraint to all these airports is the Heathrow arrival operation including its holding areas. Heathrow departures are limited to 6000ft, underneath their own arrivals. Many years ago, when the LTMA airspace was designed this wasn't a constraint, as the aircraft climbed much more slowly and were able to level off below arrivals. Aircraft now climb much more quickly and reach 6000ft well before they cross underneath the arrivals.

Many of the departures from Gatwick, Farnborough, London City, and Biggin Hill are prevented from continuous climb due to Heathrow departures as well as Heathrow arrivals. In addition, there are dependencies between Gatwick, Heathrow, London City, Farnborough, Southampton and Biggin Hill departures as their routes are not all vertically or laterally deconflicted meaning each airport can generate delays for one another.

Figure 28 illustrates, at a very basic level, the reason why Gatwick departures are often restricted to 4,000ft or 5,000ft until they are clear of other traffic.

Figure 28 Diagrammatic representation of interdependencies between Gatwick (example for easterlies) and other TMA airport traffic flows



There is usually a significant difference between the published SID routes and the flightpaths of actual departing aircraft above the levels of the NPRs. The SID structure has a multitude of altitude restrictions demonstrating safe operations with all departures separated from other departure and arrival streams. However, when aircraft actually depart, ATC can often allow discretionary early climbs if there are no other conflicting aircraft to affect. They can also vector aircraft to laterally deconflict from each other to enable more direct routings, continuous climbs and continuous descents. The application of these ATC practices is balanced with a requirement to not allow too much additional workload on flight crews and ATC. It can also introduce more variability into aircraft lateral and vertical profiles.

Transition Altitude

Even with a redesign and modernisation of the airspace there is another significant and fixed constraint to consider, the Transition Altitude (TA). In the LTMA this is 6,000ft.

In the LTMA, how aircraft reference their height above ground varies. At or below 6,000ft, aircraft fly with reference to an altitude (above mean sea level). Above 6,000ft they fly at a Flight Level (FL) which is a height based on a universal pressure setting which is set on in-cockpit altimeters.

Whenever aircraft are not laterally separated, they are kept at least 1000ft apart vertically. 5,000ft is obviously 1,000ft below 6,000ft. Similarly, FL70 is 1,000ft below FL80. However, when the prevailing atmospheric pressure is low, 6,000ft and FL70 are less than 1,000ft apart. In very low pressure even 6,000ft and FL80 are less than 1,000ft apart.

Therefore, for Gatwick departures to be guaranteed continuous climb in the future to 6,000ft or above, Heathrow departures that have dependencies with Gatwick either need to be routed laterally deconflicted from those departures or need to be guaranteed to make at least FL90 3-5nm before crossing the path of Gatwick's flight paths.

To put this into context, this would mean all aircraft from Heathrow on SID's that route to the South would be required to climb at a significantly higher gradient than they need to currently, to enable Gatwick's conflicting SIDs (particularly those routing into the Northwest and Northeast quadrants) to be guaranteed climb to 6,000ft. That is without even considering other interdependent airport departures.

The ability to enable continuous climb for all departures within the LTMA to at least 7,000ft (as explained above they would actually need to climb to at least FL90) is an immense challenge. Therefore, enabling as much track distance between departures from adjacent airports is essential in generating the best possible chance of improved vertical performance.

Controlled Airspace Arrangements

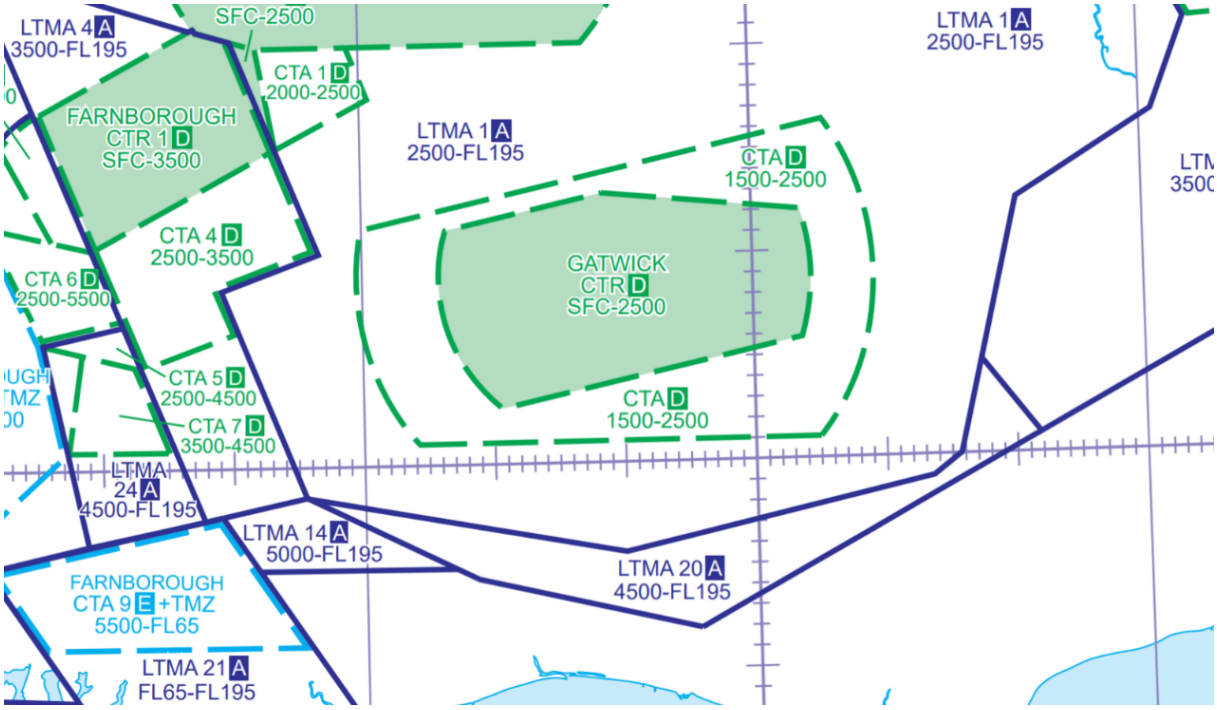
UK airspace is divided into invisible pieces that vary in function, size and classification. Classifications determine the rules for flying within a piece of airspace and whether it is 'controlled' or 'uncontrolled'.

In the UK there are currently six classes of airspace; A,C,D,E, and G. The classification of the airspace determines the flight rules which apply and the minimum air traffic services which are to be provided. Classes A, C, D and E are areas of controlled airspace and G is uncontrolled airspace.

Controlled airspace is typically used to protect its users, mostly commercial airliners, and as such, aircraft which fly in controlled airspace must be equipped to a certain standard and their pilots must hold certain flying qualifications. Pilots must obtain clearance from Air Traffic Control (ATC) to enter such airspace and, except in an emergency situation, they must follow ATC instructions explicitly.

Figure 29 shows the airspace classification from the surface (SFC) to Flight Level FL195 (about 19,500ft) in the Gatwick area.

Figure 29 The current Gatwick Airspace. Source: UK eAIP

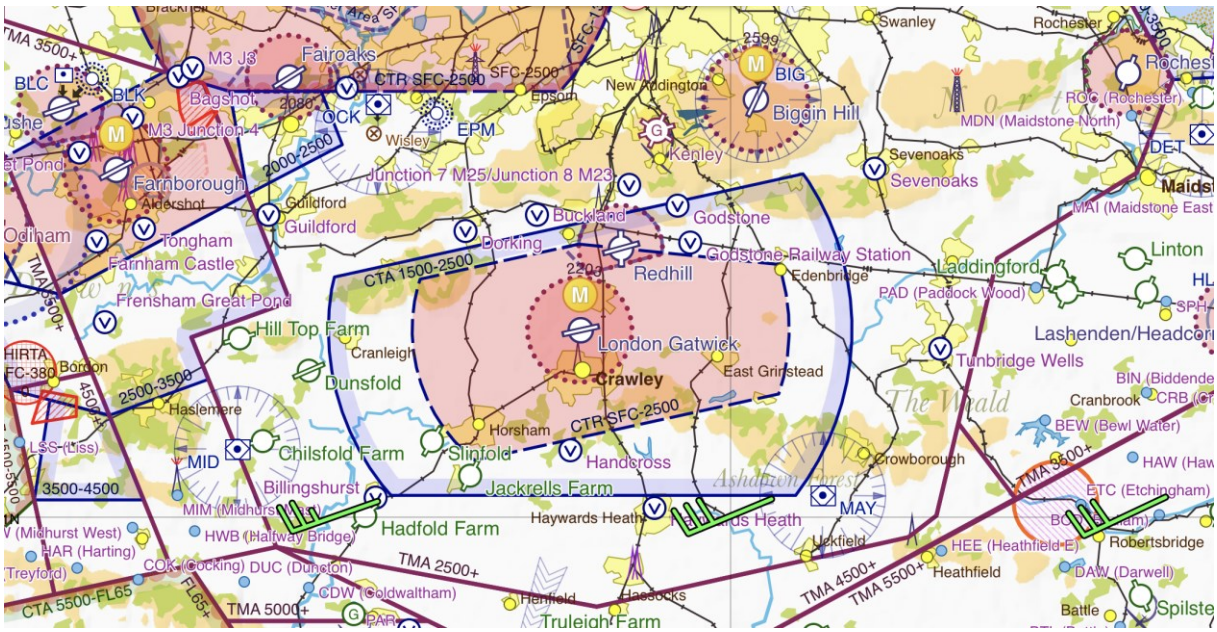


- The **Gatwick Aerodrome Traffic Zone (ATZ)** (not shown on the image) extends up to 2000 ft AGL within a radius of 2.5nms from the midpoint of runway 08R/26L.
- ***Gatwick CTR D SFC-250*** is the Gatwick Control Zone with Class 'D' status (some less equipped aircraft and pilots are permitted to enter) from the surface to 2,500ft.
- ***Gatwick CTA D 1500-2500*** is the Gatwick Terminal Control Area with Class 'D' status (some less equipped aircraft and pilots are permitted to enter) from 1500 ft QNH to 2500 ft QNH.
- ***'LTMA 1A 2500'-FL195'*** is the London Terminal Control Area section 1 which has Class 'A' status (highly protected) airspace in this area from 2,500ft to 19,500ft.

General Aviation (GA)

Gatwick is located in an area with significant General Aviation (GA) activity in the vicinity. Figure 30 shows Gatwick Airport's CAS structure overlaid on a Visual Flight Rules (VFR) map underlay.

Figure 30 Gatwick Controlled Airspace structure



Redhill aerodrome is located 3 miles to the Northeast. The vast majority of traffic operating from Redhill is following VFR. A Letter of Agreement and associated procedures exist to deconflict traffic between the airport and Redhill aerodrome and significant infringements of Gatwick CAS are rare.

Similarly, Biggin Hill, located 13nm Northeast of Gatwick, generates a significant amount of VFR traffic. In addition, Biggin Hill also generates a steady flow of inbound and outbound IFR movements, mostly small business aviation aircraft. Biggin Hill airport forms part of the FASI-S group of airports undertaking ACPs to modernise the LTMA.

Within 10nm of Gatwick there are also a number of smaller airfields including Slinfold, Jackrells Farm, Valence, and Rusper. Some of these are close to the Control Zone (CTR) (where aircraft require entry permission from ground level). Gatwick has Letters of Agreement (LOA's) governing access arrangements with these airfields.

There are also GA hubs at Goodwood (20nm SW), Shoreham (15nm SSW), Rochester (20nm ENE), Headcorn (20nm E) and Fairoaks (15nm NW). These aerodromes also create VFR traffic flows within 20nm of Gatwick. ATC access to the Control Zone and associated Control Area segments is facilitated by Gatwick Approach Radar Directors. Access is usually controlled utilising the visual reporting points at Dorking, Buckland, M25 J7, Godstone, Godstone Station, Tunbridge Wells, Haywards Heath, Billingshurst and Handcross (see the 'V' symbols on Figure 30). In addition, aircraft routing from the South of the Control Zone to the North are often permitted to route following the M23 motorway which passes just to the East of Gatwick. Clearance across the Gatwick zone is dependent on gaps in the IFR traffic flow in and out of Gatwick. If the airport is busy such VFR transits may not be possible.

There are several active gliding sites nearby, Kenley (11nm NNE) and Parham (12nm SW) being the closest. Kenley predominantly generates just local traffic operating underneath the TMA (base - 2500ft altitude) within 5nm of the airfield. Parham, as well as generating considerable local gliding activity, also generates cross-country traffic with gliders often flying close-circuit flights in excess of 150nm throughout the East and West Sussex areas, and on good soaring days well beyond this into Kent, Hampshire and wherever free airspace allows. There is a small club at Ringmer (11nm SSE) which generates local and a small amount of

cross-country activity. Lasham airfield is 32nm to the West is one of the largest gliding centres in the world with over 200 gliders based here. On busy days in the soaring season (March-October) it is not unusual for 100+ gliders to be flying cross-country from here, and if soaring conditions prevail many of these will use the uncontrolled airspace to the South of Gatwick. Finally, the South Downs ridge (Winchester-Eastbourne) is one of England's ridge soaring locations. When strong North wind conditions prevail, this area becomes highly congested (mainly below 2000ft) with gliders and para-gliders.

In 2017, Airspace4All published a piece of work on VFR Significant Areas (VSA). The term VFR Significant Area denotes a volume of airspace which has been identified as being particularly important to VFR operations i.e. General Aviation (GA). A VSA might take the form of a route, a zone or an area chosen for its particular importance to its GA users. These areas do not have any official status but are intended to highlight the importance of a particular area so that any future airspace development plans can take due account of the GA activity.

Of relevance to Gatwick are the 'Southampton-Gatwick gap', 'Isle of wight–Gatwick', 'Gatwick –South coast gap', and 'Heathrow/London City/Gatwick gap' which are illustrated in Figure 31.

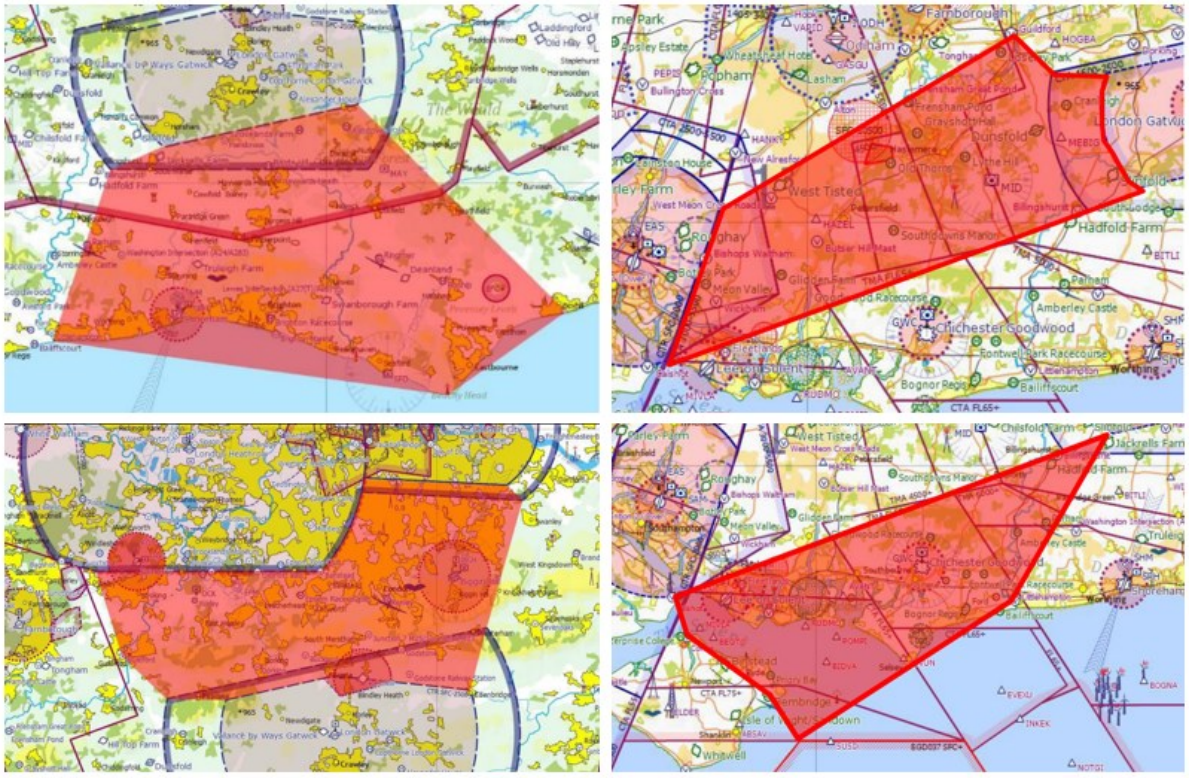


Figure 31 VFR Significant Areas (VSA) identified by Airspace4All

These four areas identified by A4A surround the Gatwick CTR and help demonstrate the prevalence of GA activity in the region. Note that this work was produced by A4A ahead of the changes to airspace made as a result of the Farnborough ACP implemented in February 2020.

Airspace Classification Review

In December 2019 the CAA launched a consultation to ask respondents to identify volumes of controlled airspace, where the classification could be amended to better reflect the needs of all airspace users on an equitable basis.

The following section summarises the information provided by the CAA to Gatwick Airport around the Airspace Classification review:

The key points raised by GA stakeholders to CAA with regards to controlled airspace in the vicinity of Gatwick's airspace were:

- VFR aircraft restricted up to 1500ft in the narrow part of the CTA to the North.
- Observation that no commercial aircraft operate below FL40 in the narrow part of the CTA to the North.
- 'Choke Point' for VFR aircraft operating between the North East part of the CTA and the Biggin Hill ATZ.
- Gatwick airspace is appropriate and should remain as it is.
- Use of VFR corridors should be considered.

Some of the responses requested an increase in the base level of some parts of the Gatwick CTA, one response requested the North East part of the CTA to be removed. One response said the airspace is appropriate, while another noted an increase in controlled airspace was needed, but also mentioned the establishment of VFR corridors.

The key points raised which were related to the airspace near and around Gatwick Airport were:

- The base of LTMA 1 (2500ft) North and South of the Gatwick CTA is too low.
- Concentrated corridor of VFR aircraft operating between Heathrow and Gatwick.
- Concentration of VFR aircraft at low level.
- Limited Clearance above Biggin Hill ATZ & between Biggin Hill ATZ and Gatwick CTA.
- Clearance from terrain between Heathrow and Gatwick.
- Limited room for Glider flights south of Gatwick main glider sites in the area are South Downs & East Sussex.
- Aircraft on approach to Gatwick & departing Gatwick on the Eastern side (Tunbridge wells) are well above the LTMA base.

The majority of responses requested an increase in the base level of LTMA 1 to the North and South of Gatwick. The remaining responses wanted the Northern boundary of LTMA 20 to move further North into LTMA 1 to allow glider operations at higher altitudes. One response requested the base of controlled airspace should be raised much more steeply to the east of Gatwick.

Airspace Infringements

An Airspace Infringement is the unauthorised entry of an aircraft into notified airspace. In 2019, there were 77 infringements of Gatwick Controlled Airspace (CAS); 54 were in the Control Area (CTA) and 23 were in the Control Zone (CTR). Every month of 2019 saw at least one infringement of the Gatwick CAS by an aircraft operating to or from Redhill. The other area for hotspots is around a 5nm radius of MID-MAY-DET.

An infringement requires ATC to achieve 3NM or 3,000 feet separation from the unknown infringing aircraft and invariably requires the issuing of ‘safety intervention measures’ such as avoiding action to known traffic to achieve safe separation.

4. Performance Based Navigation – Understanding our Airspace Change Options

Part of modernising UK airspace involves moving away from ground-based conventional navigation aids to modern satellite-based navigation. This type of navigation is referred to as Performance Based Navigation (PBN).

Routes based on conventional ground-based navigation are constrained by the geographic availability of suitable locations for navigation beacons. Conversely, PBN uses satellite-based navigation which means that waypoints and routes can be located with more flexible positioning.

Figure 32 illustrates the flexibility that PBN can provide.

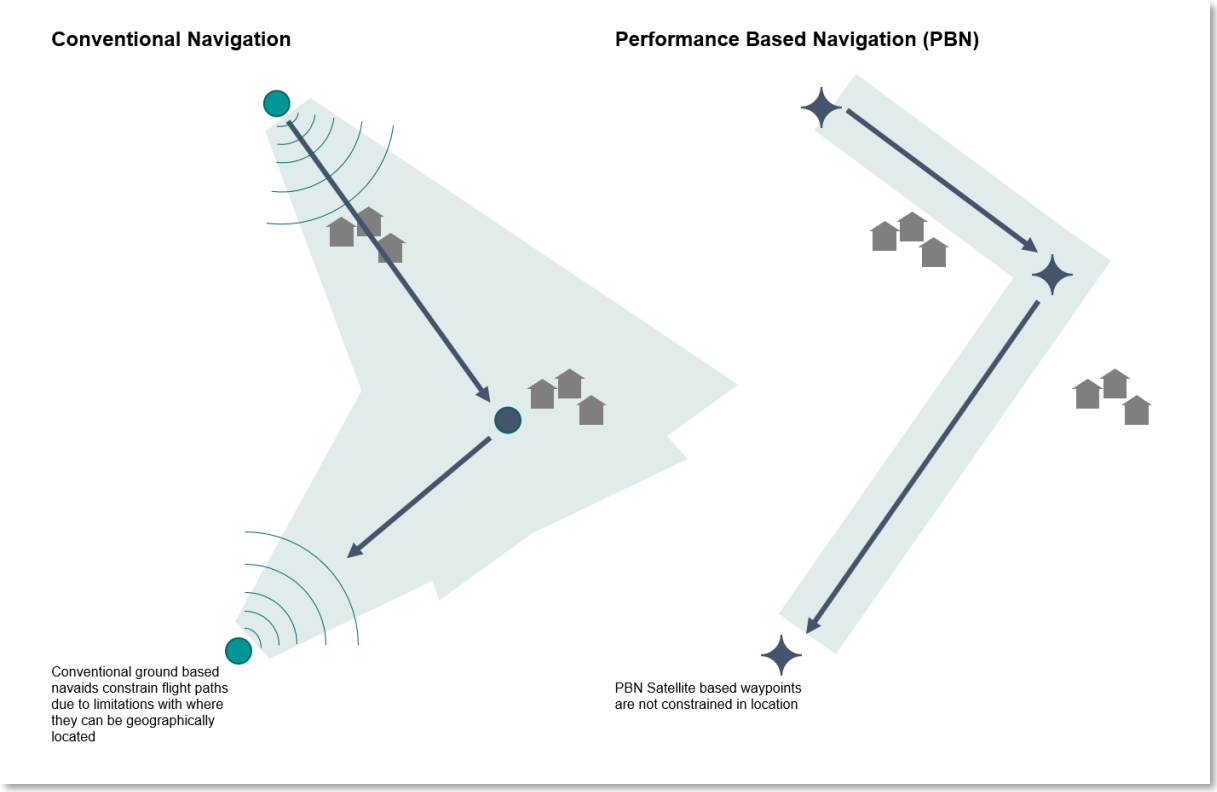


Figure 32 Illustrative Example of Conventional and PBN Navigation

Although Gatwick has some PBN departure procedures, these were implemented to replicate the original conventional procedures.

Owing to the interdependencies with other airports, once Gatwick departures have exceeded the vertical limit of the NPRs, they are typically tactically controlled (sometimes called vectoring) by ATC. Gatwick Arrivals are also tactically controlled by ATC.

Tactical control typically creates some dispersion of flight tracks whereas the accuracy of PBN results in concentration of flight tracks. Figure 33 shows an illustrative example of the differences between vectoring and PBN:

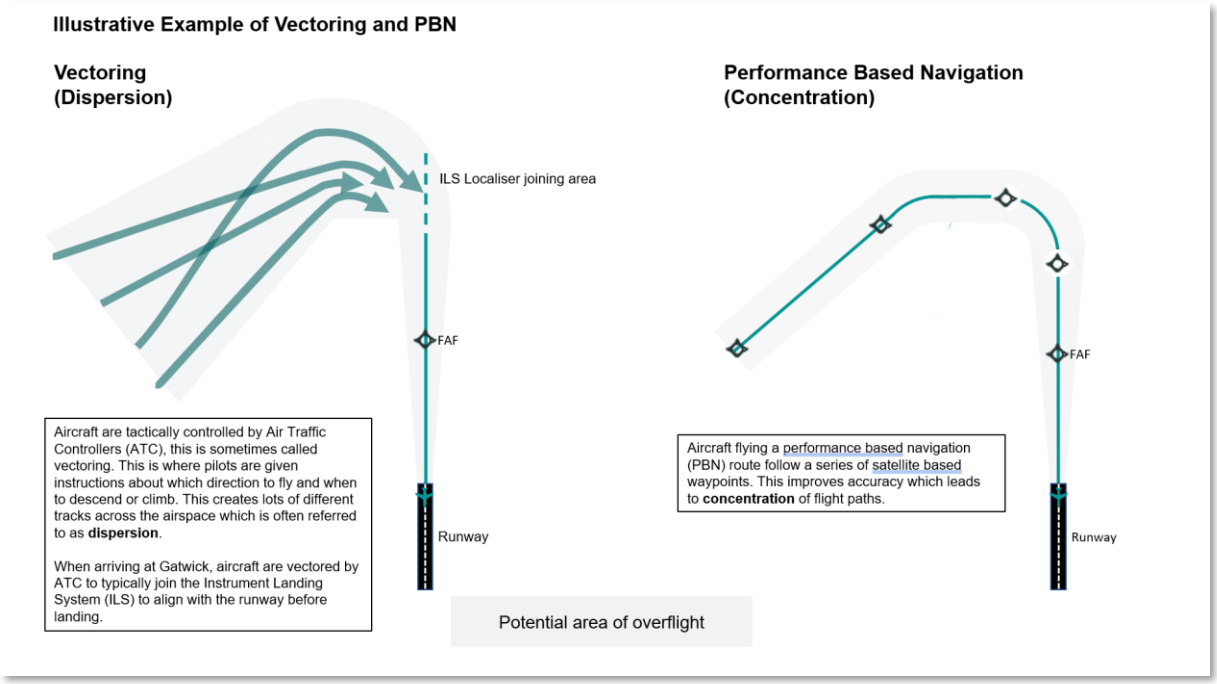


Figure 33 Illustrative Example of Vectoring and PBN

It is important to note that Figure 33 assumes that all flights will follow the PBN route, but it is also possible to operate a mix of vectoring and PBN routes.

5. Options Development

CAP1616 requires Airspace Change Sponsors to develop an initial comprehensive list of options that meet the Airport's Statement of Need and align with the design principles developed at Stage 1B.

In practice, developing a comprehensive list of options that address the Statement of Need and align with the design principles is a complex task. There are several stages of work that are required to take place in order to arrive at a comprehensive list of options.

Early in Stage 2, Gatwick committed to regularly engage with stakeholder representatives on the methodology used to develop and assess the airspace change options. Annex A: Evolution of the Options Design contains each presentation from the stakeholder engagement which describes in detail the development and the evolution of the design options as Gatwick have progressed through Stage 2 of the Airspace Change Process. The following section provides a high-level summary of the methodology; for full details please refer to Annex A.

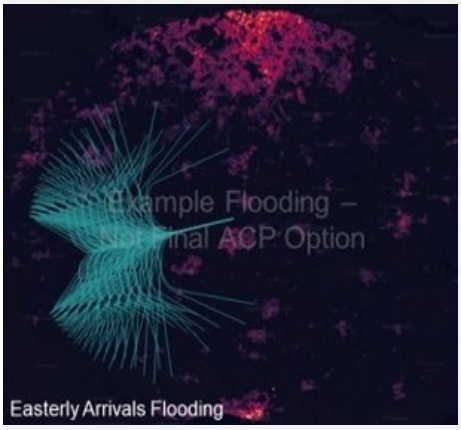
Gatwick organised the methodology for developing and assessing the Comprehensive List of Options (CLOO) into six parts aligned to the CAP1616 requirements for developing & assessing options:

1	Develop an Airspace Design Database
2	Define the Do Nothing
3	Build a Comprehensive List of Options
4	Conduct the Design Principle Evaluation
5	Produce the Initial Options Appraisal
6	Set out Full Options Appraisal Methodology

The following section provides a high-level overview of the six parts and links to where further information can be found within this Stage 2 submission. For full details, please see Annex A: Evolution of the Options Design.

1	**Develop an Airspace Design Database**	The Airspace Design Database collates a core set of information needed to clearly demonstrate how each option has been identified and why the first list is considered sufficiently comprehensive.
	Sections of Airspace	The database covered all geographical sections of airspace where a flight path may conceivably be positioned within the scope of the ACP.
	Notional Flight Paths	A broad range of notional flight paths were defined that are technically possible within each section of airspace (an technique known as 'flooding').

An example of the easterly arrival and departure flooding is shown below. This illustrates the thousands of notional flight paths which were considered. The map underlay shows areas of population density.



For more information, please see Annex A: Evolution of the Options Design.

Preliminary Assessment

A core set of information was produced through a preliminary assessment of the performance of each individual notional flight path using a variety of noise and overflight metrics.

This data was collated in the Airspace Design database:

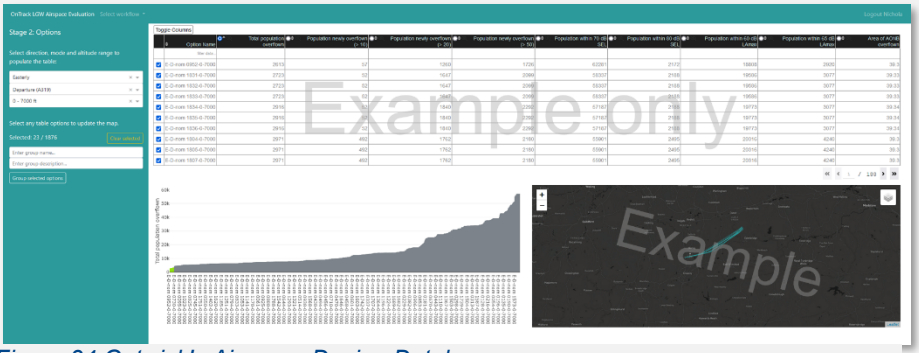


Figure 34 Gatwick's Airspace Design Database

The database allows the filtering of data by direction (easterlies or westerlies), Mode (Arrivals or departures), and altitude range (0-4000ft and 0-7000ft).

The **metrics** included in the database are:

- **Total population overflown:** calculated using the CAA's CAP1498 definition of overflight (48.5º cone).
- **Population newly overflown:** The database identifies the number of people newly overflown where they were not already overflown at least 10, 20 or 50 times a day on average in 2019. It is calculated using the CAA's CAP1498 definition of overflight (48.5º cone) and the information within the database has been adjusted to reflect the extant route 4 procedure.

		• **Population within the 70dB and 80dB SEL (Departures):** The database calculates the number of people within the 70dB and 80 dB Sound Exposure Level (SEL) contours. The SEL data shows the population exposed above a certain level from a single noise event. They are an indicator of the primary metrics Gatwick will appraise later in the process (L_{Aeq} contours). • **Population within the 60dB LAmax and 65dB LAmax (Departures):** The database calculates the number of people within the 60 dB and 65dB LAmax contours. LAmax contours show the locations where the number of events exceed a pre-determined noise level. These are an indication of secondary metrics used as part of the CAP1616 process. • **Area of Area of Outstanding Natural Beauty (AONB) overflown:** calculated in km^2 based on the CAA definition of overflight (48.5°). The database allows the sorting of metrics and interactive interrogation of information to identify groups of comparatively high performing notional flight paths. More information about the Airspace Design Database is contained within Annex A: Evolution of the Options Design..
	Stakeholder Engagement	In September 2021 and December 2021 stakeholders were engaged on the methodology intended to be used to develop Airspace Change Options; details of the Airspace Design Database were also explained. For more information, please see the Stakeholder Engagement section of this document and Annex A: Evolution of the Options Design.
2	**Define a Do Nothing Option**	The 'do nothing' pre-implementation scenario was defined. For more information, please see the Existing Airspace Arrangements section of this document.
3	**Build a Comprehensive List of Options**	The airspace design database provided sufficient information to identify the comparatively higher performing notional paths however in order to develop airspace change options that meet the Design Principles, options must be combined into systems. A system was defined as 'a workable group of arrival or departure routes from the same runway end'. When developing the system options, the aims of the Design Principles were combined with the outputs of the Airspace Design Database in order to develop the Comprehensive List of Options. It was identified that the design principles would either; • Be inherent to all options developed (for example, safety will be inherent to the option as GAL would not develop an option that is fundamentally unsafe based on the information available at the options development stage),

- Require consideration as GAL developed the system (for example the resilience of a departure system would be dependent on all routes), or
- Require specific flight paths to be identified in order to meet the design principle (for example, DP3 limit adverse noise effects).

The figure below shows each design principle was categorised:

#	Design Principle	Outcome
1	Safety by Design – Core	Inherent in all options developed
2	Enhanced Navigation Standards – Core	Inherent in all options developed
3	Limit Adverse Noise Effects – Core	Specific flight paths need to be identified in order to meet the design principle
4	Time Based Arrival Operations	Inherent in all arrival options developed
5	Resilience Built In	The design principle can be considered as part of system development
6	Optimise Use of Aircraft Capabilities	Specific flight paths need to be identified in order to meet the design principle
7	Long Term Predictability & Adaptability	Specific flight paths need to be identified in order to meet the design principle
8	Deconfliction by Design	The design principle can be considered as part of system development
9	Locally Tailored Designs	The design principle can be considered as part of system development

The Airspace Design Database was used to identify high performing notional flight paths that best met DP3, DP6 and DP7 and then consider the other Design Principles as Gatwick developed the systems.

Based on representative stakeholder feedback, system options were developed that focused on minimising total population overflown and options that focused on minimising population newly overflown (i.e. taking into account existing overflight swathes).

From the above Gatwick created the following matrix which was used as a structure to build the options on our comprehensive list:

Options Development Matrix	Limit Adverse Noise Effects (DP3)	Optimise Use of Aircraft Capabilities (DP6)	Long Term Predictability & Adaptability (DP7)
Minimise total population overflown	✓ Options developed aim to also meet DP1 DP5 and DP8 DP9	✓ Options developed aim to also meet DP1 DP3 DP5 and DP8	✓ Options developed aim to also meet DP1 DP3 DP5 DP8 and DP9
Minimise population newly overflown	✓ Options developed aim to also meet DP1 DP5 and DP8 DP9	✓ Options developed aim to also meet DP1 DP3 DP5 and DP8	✓ Options developed aim to also meet DP1 DP3 DP5 DP8 and DP9

(DP2 is inherent in all options and DP4 is inherent to all arrivals options)

Options that aimed to meet DP6 apply noise metrics from the database between 0-4000ft and then route directly to the network exit points to minimise track miles; Gatwick will use map data to make small adjustments to the tracks between 4-7000ft to consider noise impacts. This is informed by the altitude based priorities in the Air Navigation Guidance 2017 which explains that from the ground to 4000ft the government's environmental priority is to limit and, where possible, reduce the total adverse effects on people. Between 4000ft-7000ft the environmental priority should continue to be minimising the impact of aviation noise unless this would disproportionately increase CO_2 emissions.

Options that aim to meet DP7 use the database outputs to identify potential respite configurations.

		As part of the process of developing the Initial Comprehensive List of Options, Gatwick developed 39 options based on the Design Principles and the outputs of the Airspace Design Database. For more information, please see Annex A: Evolution of the Options Design.
	Stakeholder Engagement	In February and March 2022 engagement workshops were held to outline the Comprehensive List of Options. The purpose of the engagement was to share the Comprehensive List of Options to ascertain stakeholder views on their development in line with the Design Principles. For more information, please see the Stakeholder Engagement section of this document and Annex A: Evolution of the Options Design
	Develop further Options	Following the stakeholder engagement and stakeholder feedback, further options were developed. More details are included in the 'Options developed following stakeholder engagement' section.
4	**Conduct the Design Principle Evaluation**	The Design Principle Evaluation (DPE) examines how well each option aligns with the Design Principles and shortlists the options to progress to the Initial Options Appraisal. The DPE includes a high-level assessment of each option which outlines whether each design principle is **'not met', 'partially met' or 'met'**. More information is included in the Design Principle Evaluation section of this document.
5	**Produce the Initial Options Appraisal**	The Initial Options Appraisal (IOA) involves a largely qualitative and some quantitative assessment of the impacts, both positive and negative, of the shortlisted options compared to the 'do nothing' pre-implementation baseline. The IOA forms part of Gatwick's Stage 2B submission which is published on the CAA's Airspace Change Portal.
6	**Set out Full Options Appraisal Methodology**	The last step in the methodology is to describe the methodology for producing a Stage 3 Full Options Appraisal. Initial information about this is included as part of the Initial Options Appraisal document on the CAA's Airspace Change Poral.

6. Stakeholder Engagement

To meet CAP1616 requirements, following the development of the Comprehensive List of Options, the airspace change sponsor is required to 'preliminary test these with the same stakeholders it engaged with in Step 1B to ensure that they are satisfied that the design options are aligned with the design principles and that the change sponsor has properly understood and accounted for stakeholder concerns, specifically related to the design options'[3]. Furthermore, CAP1616 requires the change sponsor to 'seek feedback from key stakeholders to test their hypotheses'[4].

Gatwick chose to exceed the level of engagement required from CAP1616 to reflect the scale and the need to explain additional system design complexities to stakeholders, as well as obtain their feedback when relevant. Gatwick regularly engaged stakeholders throughout Stage 2, offering opportunities to engage on the methodology for developing the Comprehensive List of Options, the Comprehensive List itself, and to provide an update on the progress with the Design Principle Evaluation and the Initial Options Appraisal.

The strategy for meeting the Stage 2 stakeholder engagement requirements associated with Stages 2A and 2B was organised into three parts:

- Round 1: Commence Stage 2 stakeholder engagement and gather feedback to test the options development and assessment methodology that Gatwick intended to follow.
- Round 2: Engagement on the comprehensiveness of the list of options to provide assurance that the options are aligned to the design principles and identify stakeholder concerns.
- Round 3: Engagement on the outcomes of the Design Principle Evaluation and the approach to developing the initial options appraisal.

The following sections provide an overview of the rounds of engagement with specific focus on the Comprehensive List of Options engagement which complies with the mandatory requirements of CAP1616. Details of the non-mandatory engagement undertaken throughout Stage 2 are included in Annex C: Stakeholder Engagement Report.

Approach to Stakeholder Engagement

One of the main goals of the CAP1616 process is that ACPs are developed openly through regular engagement with the potentially affected stakeholders. Throughout the process, the ACP sponsor is required to demonstrate that effective engagement has provided the stakeholders with a reasonable understanding of the current situation, clear information about what is being proposed and the assurance that their inputs will be conscientiously taken into account. It is clear from the CAP1616 guidance and Gatwick's experience of other airspace changes that for the process to function correctly the engagement must be conducted in an open, fair, transparent, and effective way. These objectives will underpin Gatwick's approach

[3] CAP1616: Stage 2 Develop and Assess, Process Overview, Para. 125
[4] CAP1616: Appendix C, Consultation and Engagement, Para. C27

to stakeholder engagement during all stages of the GAL FASI South ACP in the following ways:

- Open: Stakeholders will be assured that the airspace change process is not a foregone conclusion, their feedback is valued, and they can influence the final design.
- Fair: Stakeholders will have advanced notice of the engagement activities to plan their contribution and adequate time and information to form meaningful inputs.
- Transparent: Stakeholders will be presented with information to help them understand the impacts of the proposed changes on them. All information will be clear and accessible. Although the concepts included may be complex the language used to communicate them will not be.
- Effective: Stakeholders will be provided with a complete and accurate set of information that does not require technical knowledge to understand and respond. The engagement information will focus on the factors that are decisive and of substantial importance to the development and assessment of airspace design options, and not drift into related topics.

In addition to the objectives above, Gatwick has developed three key goals to help ensure that engagement activities are effective. These are to:

- Engage early and often. Engaging with stakeholders at formative points in each stage of the CAP1616 process will help to establish a transparent and effective environment, as well as set an appropriate tone for ongoing engagement.
- All materials developed must be simple and tailored. This is to ensure that all stakeholders receive a transparent and focused engagement approach, allowing them to base their views on a reasonable understanding of the situation. The use of technical jargon and industry-specific acronyms will managed carefully.
- All feedback must be easy to provide, and the sponsor must evidence that it was taken into consideration. Stakeholders must be able to express their views in an easy manner and have confidence that Gatwick will take them into consideration and offer feedback.

Stakeholder Identification

CAP 1616 Paragraph 125 explains that Stage 2A engagement should take place with the same stakeholders engaged with in Stage 1B. Throughout the Stage 2 activity to date, Gatwick have reviewed our stakeholder list and updated stakeholders as and when appropriate. Gatwick have introduced some additional stakeholders since Stage 1B and have also removed some stakeholders; details of both can be found in the tables below.

A full list of the stakeholder representatives invited to participate in the Stage 1 and Stage 2 engagement activities is set out in Appendix A.

Additional Stakeholders

Table 7 Additional stakeholders included in the Stage 2 stakeholder engagement activities

Stakeholder	Rationale
Speldhurst Parish Council **TWANSG** **Burstow Parish Council** **Horley Town**	These stakeholders were invited to the Airspace Awareness events in their capacity as members of Gatwick's Noise Management Board and Noise and Track Monitoring Advisory Group.
General Aviation Awareness Council (GAAC)	Following the Stakeholder Engagement undertaken at Stage 1 Gatwick reviewed the engagement undertaken with General Aviation stakeholder representatives and also looked at best practice across other FASI-S ACPs. Gatwick decided to broaden the stakeholder engagement in Stage 2 to include those who represent General Aviation pilots rather than just General Aviation Aerodromes and therefore the GAAC were added to the stakeholder list, as well as representatives from the National Air Traffic Management Advisory Committee detailed below.
National Air Traffic Management Advisory Committee (NATMAC) Airspace4All, Aircraft Owners and Pilots Association (AOPA), Airspace Change Organising Group (ACOG), Association of Remotely Piloted Aircraft Systems UK (ARPAS-UK), British Airways (BA), British Airline Pilots Association (BALPA), British Airline Pilots Association (BALPA), British Balloon and Airship Club, British Business and General Aviation Association (BBGA), British Gliding Association (BGA) (NATMAC), British Helicopter Association (BHA) (NATMAC), British Hang Gliding and Paragliding Association (BHPA) (NATMAC), British Microlight Aircraft Association (BMAA) / General Aviation Safety Council (GASCo) (NATMAC), British Model Flying Association (BMFA) (NATMAC), British Skydiving, Drone Major, General Aviation Alliance (GAA), Guild of Air Traffic Control Officers (GATCO), Honourable Company of Air Pilots (HCAP), Helicopter Club of Great Britain (HCGB), Heavy Airlines, Light Aircraft Association (LAA), Low Fare Airlines, Military Aviation Authority (MAA), NATS, Navy Command HQ, PPL/IR (Europe), PPL/IR (Europe), United States Air Force Europe (3rd Air Force-Directorate of Flying	Following the Stakeholder Engagement undertaken at Stage 1 Gatwick reviewed the engagement undertaken with stakeholder representatives and also looked at best practice across other FASI-S ACPs. Gatwick noted that engaging with selected members of the National Air Traffic Management Committee (NATMAC), would enable us to broaden our stakeholders who represent the interests of General Aviation, operators from Gatwick, and other airspace users. Gatwick therefore added representatives from NATMAC to our stakeholder list for Stage 2.

Stakeholder	Rationale
(USAFE (3rd AF-DOF), NATS, CAA Stakeholder Engagement	
Parish Councils (See Appendix A – Stakeholder List for full details)	During Stage 1, based on stakeholder feedback, Gatwick committed to broadening stakeholder engagement to Parish Councils during Stage 2 where and when appropriate. This is beyond the CAP1616 requirements, but Gatwick recognise the importance for local parish councils to be involved in the ACP process. Gatwick engaged parish councils during the third round of stakeholder engagement. The third round of engagement was identified as the most appropriate point in Stage 2 to engage these additional stakeholders as there was a shortlist of options that enabled more targeted engagement; any earlier in the process and the number of parish councils, and the scale of the engagement activity, would be disproportionate to the ACP requirements for engagement. Separate workshops were held with Parish Councils (details below) before they were invited to the engagement events with the broader stakeholder group.

Removed Stakeholders

Flybe, Virgin Airlines and Thomas Cook no longer operate out of Gatwick Airport and they have therefore been removed as stakeholders from the engagement list. The Independent Commission on Civil Aviation Noise (ICANN) ceased operating on the 30th September 2021 and therefore the ICANN representatives have been removed from the stakeholder list for the December update briefings and any future engagement activity.

Summary of Stakeholder Engagement Events and Activities

The following table provides an overview of the engagement activities undertaken throughout Stage 2. For full details, please see Annex C: Stakeholder Engagement Report.

Table 8 Chronological Summary of Stakeholder Engagement Events and Activities

Event Name	Date(s)	Event Description
A. Airspace Awareness Workshop	24th Jun. 2021	Following the COVID-19 related pause to the ACP project, GAL undertook additional engagement with key community stakeholders in preparation for the ACP restarting. This engagement took place with Gatwick's Noise Management Board (NMB) and Noise and Track Monitoring Advisory Group (NATMAG) via a virtual Teams meeting. The virtual workshop provided an overview of the Government's plans for Airspace Modernisation and details of the associated Future Airspace Strategy Implementation - South (FASI-S), covering: • Objectives of airspace modernisation in southern England • Insight into how Gatwick Airport will be involved and recap on progress thus far. • Provide an opportunity for discussion with airspace experts around the ACP and around the shape of future engagement plans.
B. Round 1: Communities Workshop	i. 2nd Sep. 2021 ii. 3rd Sep. 2021	In September and October 2021, GAL held the first round of stakeholder engagement workshops. The purpose of these workshops was to brief stakeholders and gather feedback on the methodology that GAL intends to follow to develop and assess options for the airspace change proposal. Stakeholders previously engaged at Stage 1, plus some additional stakeholders, were invited to a virtual session. The first session was held for local communities and council stakeholders (the Communities group). Virtual briefing session for Community Stakeholders on the methodology for developing and assessing airspace change design options, covering: • Methodology objectives and overview of the ACP process (developing an Airspace Design Database, defining the do-nothing scenario, building a comprehensive list of options, conducting a design principle evaluation, producing an initial options appraisal, and setting out the methodology for the Full Options Appraisal)

		• Discussion and feedback session with participants
C. Round 1: General Aviation and other Airspace Users Workshop	7th Oct. 2021	Virtual briefing session for General Aviation (and other airspace users) Stakeholders on the methodology for developing and assessing airspace change design options, covering: • Current ACP CAP1616 status • Review of GA stakeholder feedback from Stage 1 • Methodology objectives and overview of the process (developing an Airspace Design Database, defining the do-nothing scenario, building a comprehensive list of options, conducting a design principle evaluation, producing an initial options appraisal, and setting out the methodology for the Full Options Appraisal). • Discussion and feedback session with participants
D. Round 1: Airline & ANSP Workshop	8th Oct. 2021	Virtual briefing session for Airline and Air Navigation Service Providers (ANSP) stakeholders on the methodology for developing and assessing airspace change design options. Covering: • Current ACP CAP1616 status • Methodology objectives and overview of the process (developing an Airspace Design Database, defining the do-nothing scenario, building a comprehensive list of options, conducting a design principle evaluation, producing an initial options appraisal, and setting out the methodology for the Full Options Appraisal) • Discussion and feedback session with participants
E. Round 1: Stakeholder Update Briefing	i. 7th Dec. 2021 ii. 9th Dec. 2021	GAL had originally planned to hold the second round of stakeholder events on the Comprehensive list of Options in December 2021. However, due to changes in the overall Stage 2 timeline due to the COVID-19 pause, this round of engagement was postponed until February 2022. According to GAL's established contingency planning strategy, GAL decided to conduct a stakeholder update briefing to share the progress made so far, explain the reasons for the delay and set out the new timeline. Two virtual briefing sessions were held to update stakeholders on the development of the comprehensive list of options and the project timeline, covering:

		• Progress made during September, October and November to develop a comprehensive list of airspace design options for the ACP. • Update on the integration of the GAL FASI ACP with the wider Airspace Change Masterplan that is being developed by ACOG (the Airspace Change Organising Group). • Update on the overall timelines for the ACP and our latest views on the introduction of new technologies and operational concepts that can support airspace modernisation. • Discussion about the effectiveness of our engagement activities and an opportunity to ask questions.
F. Round 2: Stakeholder Comprehensive List of Option Workshops & Drop-in Sessions	Main workshops: i. 15th Feb. 2022 ii. 17th Feb. 2022 iii. 23rd Feb. 2022 **Additional:** v. 18th Mar. 2022 **Drop-in Q&A:** iv. 17th Mar. 2022 vi. 23rd Mar. 2022	In February and March 2022, GAL held the second round of stakeholder engagement workshops, inviting all stakeholders who were engaged during round 1 and the December update briefings. Three workshops were initially planned for 15th, 17th and 23rd of February. For this round of engagement, to facilitate as many opportunities for engagement as possible, GAL did not split the workshops into groups as per round 1. Instead, all stakeholders were invited to attend any of the dates according to their availability. The purpose of the round 2 workshops was to brief stakeholders on Gatwick's FASI-S ACP comprehensive list of options, and the methodology used to develop it. **Additional Workshop** - During the engagement period, GAL became aware that a small number of stakeholders were unable to attend the workshops due to an error when sending out the meeting link. GAL therefore held an additional workshop on the 18th of March for the stakeholders who were unable to attend. This invitation was open to all stakeholders who were yet to attend a workshop to provide another opportunity to engage. **Drop-in Q&A Sessions** - In addition to the main workshops, GAL also held two question and answer sessions on March 17th and 23rd, where stakeholders could drop-in and ask questions about the Comprehensive List of Options and the presentation. No new materials were presented at these sessions; however, the Gatwick team was available to clarify any additional information stakeholders required regarding the feedback form and responses. All stakeholders were invited to these sessions. **Extended Feedback Period** - Gatwick received requests from some stakeholders as part of the Q&A sessions to extend the feedback period. GAL also received an email from one stakeholder group requesting an extension to allow more time to engage with the groups that they represent. Following these requests, GAL extended the feedback time frame from 25th March 2022 to 12th April 2022, providing a 6-week feedback period.

G. Round 3: Stakeholder Update DPE Workshops	i. 23rd Jun. 2022 ii. 24th Jun. 2022 iii. 28th Jun. 2022	In June 2022 GAL held the third round of stakeholder engagement workshops. These workshops were originally due to take place in May 2022, however given the extended feedback period for the previous round of engagement, and as the dates would have fallen over the weeks either side of the Jubilee Bank Holiday weekend, GAL moved these sessions to the end of June. All stakeholders engaged during Round 2 of engagement were invited to workshops on 23rd, 24th and 28th June. As with round 2, GAL did not split workshops into groups, instead inviting all stakeholders to attend any of the dates according to their availability. The purpose of the workshops was to update stakeholders on the progress made between April to June 2022 to finalise the comprehensive list of airspace design options for the ACP, incorporating feedback provided by stakeholders following the engagement sessions in February and March 2022. GAL also provided an update on the development of the Design Principle Evaluation that examines how well each option aligns with the design principles. The agenda for the briefings covered: • An update on the overall timeline for the GAL FASI ACP • A recap on the stakeholder engagement and consultation requirements in CAP1616 • An update on the development of the Comprehensive List of Options for the ACP following the previous round of stakeholder engagement conducted between February and April 2022. • An overview of the Design Principle Evaluation • The next steps in the CAP1616 process
H. Round 3: Parish Councils Workshops	i. 5th & 6th Oct. 2022 ii. 5th & 9th Dec. 2022	In October and December 2022, GAL invited 238 of its nearest Parish Councils to attend a Parish Council Stakeholder briefing session. Four briefing sessions were held on the 5th & 6th of October, and on the 5th & 9th of December. The purpose of these briefing sessions was to bring representatives from the Parish Councils up to speed with the ACP activities and developments to date, allowing them to join and participate in future engagement sessions. GAL explained the progress of the ACP to date and updated them on the Comprehensive List of Options developed, as well as providing an overview of the Design Principle Evaluation and Initial Options Appraisal processes. The agenda for the briefings included: • Welcome and Introductions • Background Concepts, including UK Airspace Modernisation and the CAP1616 CAA Airspace Change Process

		• Update on Gatwick's FASI-S ACP, including the ACP timeline, and a summary of Gatwick's ACP activities to date (including Design Principles, Comprehensive List of Options Methodology Overview, and Design Principle Evaluation Methodology Overview) • Question & Answer Session • The next steps in the CAP1616 process
I. Round 3: DPE outcome and intro to IOA	i. 25th Jan. 2023 ii. 30th Jan. 2023 iii. 2nd Feb. 2023	In January and February 2023, GAL invited stakeholders to three Initial Option Appraisal Engagement virtual meetings. These virtual meetings are the first of three rounds of options appraisal engagement sessions that must be conducted by GAL to support the development of the ACP. The virtual meetings were held on the 25th & 30th of January, and on the 2nd of February. The aim of these virtual meetings was to explain GAL's approach to evaluating the Comprehensive List of Airspace Design Options for the ACP against the Design Principles developed with stakeholders during Stage 1 of the CAP1616 process, identifying a shortlist of higher-performing options that will be subject to an Initial Options Appraisal, and conducting the Initial Options Appraisal (IOA) (the first of three rounds of options appraisal for the ACP). The agenda for the virtual meetings included: • Welcome and Introductions • Recap on the overall scope and timelines for the ACP • Update on integration of Gatwick's ACP with interdependent proposals • Summary of the options development conducted to date • Overview of the Design Principle Evaluation approach and outputs • Overview of the Initial Options Appraisal • Update on the Stakeholder Engagement Report • Discussion, feedback, next steps and close
J. Round 3: GA Workshop		In July 2023, General Aviation (GA) Stakeholders were invited to a workshop to provide an overview of the IOA methodology and outcomes. Gatwick chose to engage with GA stakeholders separately in order to offer an opportunity to have more technical discussion around matters specific to GA stakeholders, which is often more difficult to facilitate in a group session with a wide range of stakeholders. 6 GA stakeholders registered to attend the event however on the day only 1 stakeholder joined. This stakeholder offered to join the afternoon workshop (see K. below) and therefore the workshop did not go ahead.

K. Round 3: IOA Outcomes

In July and August 2023, Gatwick held the last set of workshops that form part of the Stage 2 engagement. The briefings were conducted online and attended by a mix of stakeholder representatives who have been engaged previously during Steps 1B and Step 2A of the process.

The aim of these virtual meetings was to provide an overview of the methodology applied within the Initial Options Appraisal (IOA) and give a high-level overview of the outcomes of the IOA ahead of the Stage 2 submission on the 1st of September 2023.

The agenda for the briefings covered:

- Welcome and introductions
- Recap on the overall scope and timelines for the ACP
- Summary of the options development and assessment conducted to date
- Overview of the IOA Methodology
- Overview of the IOA Outcomes
- Next steps in the CAP1616 process
- Discussion, feedback, next steps and close

Gatwick Airport undertook engagement above and beyond the requirements of CAP1616 in the spirit of openness, transparency and continued dialogue between airport sponsor and stakeholders. The Annex C Stakeholder Engagement Report provides further details around all the rounds of engagement, and the feedback received as part of each round including 'you said, we did' tables for the events. The following sub-sections within this Stage 2A document focus on Round 2: Stakeholder Comprehensive List of Option Workshops, which is the main engagement requirement for Stage 2 of CAP1616.

Note on the format of Stakeholder Engagement in Stage 2

When Gatwick commenced engagement in June 2021, the impacts of COVID-19 meant that virtual workshops, held online via Microsoft Teams, were considered the most appropriate mechanism for engagement. In December 2021 Gatwick held a stakeholder update briefing where stakeholders were asked about the effectiveness of the engagement to date. The vast majority of stakeholders told us they preferred the online format and hence the remainder of Gatwick's Stage 2 engagement activities were held online. More details of the feedback received can be found in Annex C Stakeholder Engagement Report.

Comprehensive List of Options Stakeholder Engagement

In February and March 2022, Gatwick held the second round of stakeholder engagement workshops. These workshops were to present the Comprehensive List of Options (CLOO) and formed the main activity to meet the Stage 2A regulatory requirements.

Gatwick invited all stakeholders who were engaged during Stage 1B, and the Stage 2A Round 1 workshops. Three workshops were initially planned for 15th, 17th and 23rd of February 2022.

For this round of engagement, to facilitate as many opportunities for engagement as possible Gatwick did not split the workshops into three groups as per round 1, instead all stakeholders were invited to attend any of the dates available.

The purpose of the workshops was to brief stakeholders on Gatwick's FASI-S comprehensive list of options, and the methodology used to develop the comprehensive list. The workshops were split into the following agenda sections:

- Welcome and introductions
- Background to the GAL FASI ACP
- Purpose of engagement on the comprehensive list of options
- Approach to developing the comprehensive list of options
- Comprehensive list of options overview
- Focus of this engagement exercise
- Next steps

Throughout the workshops, there were opportunities for stakeholders to ask questions and the section below outlines the questions and answers from the workshops. Following the final workshop, stakeholders were sent a link to download the Comprehensive List of Options presentation and a feedback form and were initially given four weeks to respond.

Additional workshop

During the engagement period, Gatwick became aware that a small number (5 in total) of stakeholders were unable to attend the workshops due to an error when sending out the meeting link. Gatwick therefore held an additional workshop on the 18th of March for the stakeholders who were unable to attend. Gatwick opened this invitation to all stakeholders who were yet to attend a workshop to provide another opportunity to engage.

Drop in question-and-answer sessions

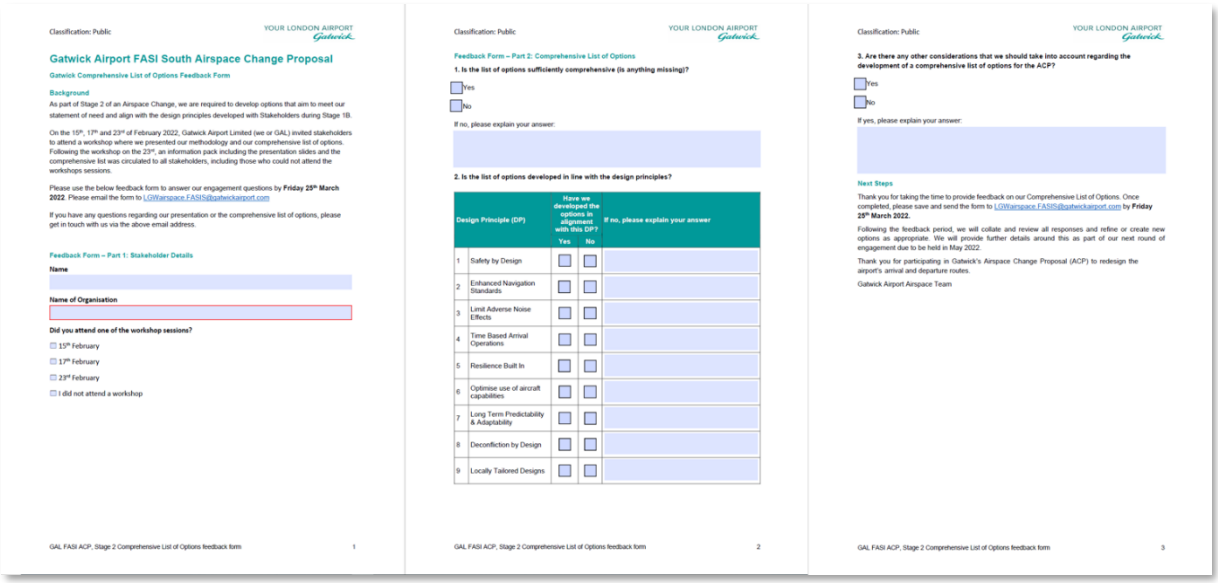
In addition to the four main workshops, GAL also held two question and answer sessions where stakeholders could drop-in and ask questions about the Comprehensive List of Options and the presentation. No new material was presented at these sessions however the Gatwick team was available to clarify any additional information stakeholders required in order to fill out the feedback form and respond. All stakeholders were invited to these sessions.

Extended Feedback Period

Gatwick received requests from some stakeholders as part of the question and answer sessions to extend the feedback period. Gatwick also received an email from one stakeholder group requesting an extension to allow more time to engage with the groups that they

represent. Following these requests Gatwick extended the feedback time frame from 25th March 2022 to 12th April 2022; providing a 6 week feedback period.

Our Feedback Questions (We asked)



Gatwick Airport FASI South Airspace Change Proposal

Gatwick Comprehensive List of Options Feedback Form

Background

As part of Stage 2 of an Airspace Change, we are required to develop options that aim to meet our statement of need and align with the design principles developed with Stakeholders during Stage 1B.

On the 15th, 17th and 23rd of February 2022, Gatwick Airport Limited (we or GAL) invited stakeholders to attend a workshop where we presented our methodology and our comprehensive list of options. Following the workshop on the 23rd, an information pack including the presentation slides and the comprehensive list was circulated to all stakeholders, including those who could not attend the workshops sessions.

Please use the below feedback form to answer our engagement questions by **Friday 25th March 2022**. Please email the form to LGWairspace.FASIS@gatwickairport.com

If you have any questions regarding our presentation or the comprehensive list of options, please get in touch with us via the above email address.

Feedback Form – Part 1: Stakeholder Details

Name

Name of Organisation

Did you attend one of the workshop sessions?

- 15th February
- 17th February
- 23rd February
- I did not attend a workshop

GAL FASI ACP, Stage 2 Comprehensive List of Options feedback form 1

Feedback Form – Part 2: Comprehensive List of Options

1. Is the list of options sufficiently comprehensive (is anything missing)?

Yes

No

If no, please explain your answer:

2. Is the list of options developed in line with the design principles?

	Design Principle (DP)	Have we developed the options in alignment with this DP? Yes	No	If no, please explain your answer
1	Safety by Design			
2	Enhanced Navigation Standards			
3	Limit Adverse Noise Effects			
4	Time Based Arrival Operations			
5	Resilience Built In			
6	Optimise use of aircraft capabilities			
7	Long Term Predictability & Adaptability			
8	Deconfliction by Design			
9	Locally Tailored Designs			

GAL FASI ACP, Stage 2 Comprehensive List of Options feedback form 2

3. Are there any other considerations that we should take into account regarding the development of a comprehensive list of options for the ACP?

Yes

No

If yes, please explain your answer:

Next Steps

Thank you for taking the time to provide feedback on our Comprehensive List of Options. Once completed, please save and send the form to LGWairspace.FASIS@gatwickairport.com by **Friday 25th March 2022.**

Following the feedback period, we will collate and review all responses and refine or create new options as appropriate. We will provide further details around this as part of our next round of engagement due to be held in May 2022.

Thank you for participating in Gatwick's Airspace Change Proposal (ACP) to redesign the airport's arrival and departure routes.

Gatwick Airport Airspace Team

GAL FASI ACP, Stage 2 Comprehensive List of Options feedback form 3

Figure 35 Comprehensive List of Options feedback form

Following the third workshop on the 23rd of February, a link to where the comprehensive list of options presentation and feedback form could be downloaded was circulated to stakeholders. Gatwick asked stakeholders to fill out a PDF form, as shown in Figure 35 and return it to the main Gatwick FASI-S email mailbox.

The main questions Gatwick asked stakeholders were:

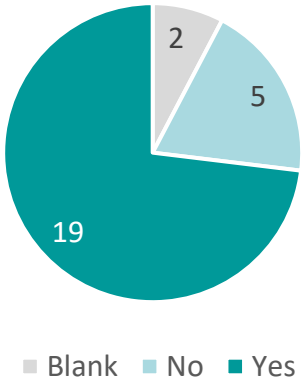
- Is the list of options sufficiently comprehensive (is anything missing)?
- Is the list of options developed in line with the design principles?
- Are there any other considerations that we should take into account regarding the development of a comprehensive list of options for the ACP?

The feedback form was structured to enable to stakeholders to answer these questions and provide specific feedback for each design principle.

Engagement Outcomes (You Said)

26 stakeholders responded to the second round of engagement feedback request. The following section summarises those responses to each of the questions posed.

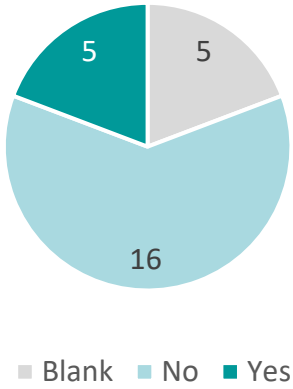
Q. Did you attend a Workshop? (Y/N)



Of the 26 stakeholders:

- 19 responded "Yes" they attended a workshop
- 5 responded "No" they did not attend, and
- 2 left this question blank

Q1. Is the list of options sufficiently comprehensive (is anything missing)? (Y/N)

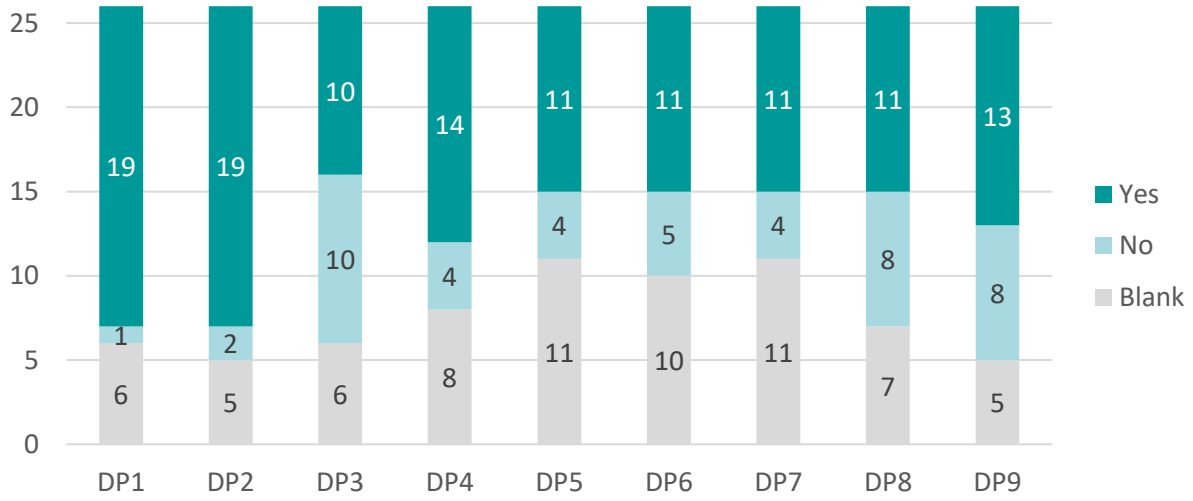


Of the 26 stakeholders:

- 5 stakeholders responded "Yes"
- 16 responded "No" and
- 5 left this question blank.

Gatwick asked stakeholders to provide qualitative feedback to explain their answer and received 21 qualitative responses. (Full details in Annex C: Stakeholder Engagement Report)

Is the list of options developed in line with the design principles? Comparison of responses for all Design Principles:



Summary of feedback that influenced our final Comprehensive List of Options (You said/We did)

As part of Gatwick's commitment to ensure that all feedback is taken into consideration, the Annex C Stakeholder Engagement report includes all feedback received for every round of Gatwick engagement and a response to each piece of feedback.

Table 9 Summary of Feedback that influenced the final Comprehensive List of OptionsTable 9 summarises the main feedback Gatwick received that influenced the final Comprehensive List of Options, our response, and the names of the options developed following the feedback. The options are shown in the next section of this document 'Comprehensive List of Options'.

Table 9 Summary of Feedback that influenced the final Comprehensive List of Options

You Said (Summary of feedback)		We did	Option
Rural areas and ambient noise	Gatwick received numerous pieces of feedback which suggested that, as part of the development of the comprehensive list of options, we should consider the noise impacts on rural areas, particularly as some of the metrics used as part of the methodology are based on the number of population overflow. The feedback suggested that people in rural areas where ambient noise is low are affected by aircraft noise more so than people in areas where ambient noise levels are higher.	The measurement of ambient noise is complex and there is not any specific regulation or legislation that offers guidance on how sponsors should take ambient noise into account when developing and assessing options as part of an airspace change. In December 2018 the Gatwick Noise Management Board (NMB) commissioned the Ambient Noise Study. The study investigated if there is a link between ambient noise and aircraft noise impact. It noted that it has been suggested that people living in rural areas are affected by aircraft noise more so than people in urban areas and that this is because rural areas have lower levels of ambient noise levels. The study had three main conclusions: (1) The literature review found conflicting reports, some linking ambient noise to aircraft noise annoyance and some not. (2) Peaks in aircraft noise can be similar to peaks in road traffic noise at the fronts of houses but are generally above ambient noise at the rear of properties in rural as well as urban areas. (3) The further analysis of the SoNA data around Gatwick showed no clear relationship between ambient noise and aircraft noise disturbance. Gatwick recognise that this is an important issue for some stakeholders, which is reflected in the feedback received on our Comprehensive List of Options. In response to stakeholder feedback, Gatwick have looked at the data publicly available which could be used to develop options that aim to balance impacts to rural populations and ambient noise.	WDJ WDK WDL WDM WDN EDK EDL EDM EDN EDO WAP WAQ EAO EAP

You Said (Summary of feedback)		We did	Option
		Subsequently, Gatwick have taken DEFRA's strategic noise mapping for roads and railways as an indication of ambient road and rail noise data. This mapping is based on L_{Aeq} daytime and night-time contours. There is typically a correlation between populated areas and noise from road/rail infrastructure so Gatwick believe this data will achieve a balance between high ambient noise and population, rather than purely developing flight paths that aim to avoid rural areas as much as possible. It is important to note that this data does not include all road and railway sources, only those for which strategic noise maps shall be prepared under the Environmental Noise (England) Regulations 2006 (as amended). These road and railways sources are broadly considered to be major railways of at least 30,000 train passages per year, and major roads of at least 3 million vehicle passages per year.  Data source: https://ssi.noiseconsultants.co.uk/ The data has been processed to create a map underlay which Gatwick have used as the basis to develop options. These options, wherever possible, aim to overfly the areas experiencing high levels of ambient noise as shown in the red and yellow parts of the map above. Sometimes, it's unavoidable to fly over areas with lower levels of ambient noise because of the requirements for the design of flight paths, however Gatwick have created a number of new options which aim to meet the feedback from stakeholders.	

You Said (Summary of feedback)		We did	Option
		When developing these options, Gatwick have followed the same methodology structure used when developing the other airspace options within the Comprehensive List. This means that configurations have been designed based on: - DP3: Gatwick have used the DEFRA road and rail data to develop options between 0-7000ft. - DP6: Gatwick have used the data to develop options that prioritise ambient noise between 0-4000ft, and then fly direct to/from the network exit points between 4-7000ft. - DP7: Gatwick have used the data to develop potential alternative respite configurations. When developing the options, Gatwick also considered the other Design Principles which are inherent to all options developed. These options, along with the other options on the comprehensive list, will progress to the Design Principle Evaluation for qualitative evaluation. The balance of overflight of rural areas with overflight of areas of high population also forms part of the second phase of the Fair and Equitable Distribution (FED) study. The study aims to define metrics that help to indicate the fair and equitable distribution of noise. The outcomes of the study will be used when available to assess the airspace change options. (Note: The outcomes are expected in Q4 2023 / Q1 2024 and therefore will be incorporated into the Full Options Appraisal)	
Balance of newly overflown and total population overflown	Feedback noted that outputs from the airspace design database should aim to balance total population overflown and population newly overflown.	Gatwick have revisited the airspace design database, following the same methodology used to develop the other options on our comprehensive list, and developed new options that aim to balance total population overflown and population newly overflown. Gatwick have done this by looking at the existing overflight swathes and then identifying the notional paths with the lowest population within these using the airspace design database data. Some options on our original comprehensive list already performed well overall when balancing these two considerations and therefore a full suite of new options has not been developed, but where required some additional options have been added.	WDO, WDP, EDP, EDQ, WAN, WAO, EAM, EAN

You Said (Summary of feedback)		We did	Option
Arrivals that join the final approach between 7nm to 10nm	Feedback noted that there was a lack of westerly arrivals between 7nm and 10nm as part of the Comprehensive List of Options.	All of our arrival options developed are based on outputs from the airspace design database; in the case of the westerly arrivals, the data within the database did not suggest to locate a flight path within this joining area. Following the feedback, Gatwick have looked at all the notional flight paths that only join between 7nm and 10nm and we've used data within the database to identify high performing paths. As stakeholders also wrote to us around balancing population newly overflown and total population overflown, Gatwick have aimed to balance these two considerations when using the airspace design database to select a notional flight path.	WAK, WAL
Two track respite arrivals options	Feedback noted that the arrivals options which looked to offer respite configurations mainly had 3 or 4 route options. They suggested to develop options that had two routes as part of the configuration.	Following the feedback, Gatwick developed additional arrivals options that were configured using two PBN routes. As stakeholders also wrote to us around balancing population newly overflown and total population overflown, we have aimed to balance these two considerations when using the airspace design database to select the notional flight paths.	EAK, EAL, WAM

Summary of feedback received that did not influence our final Comprehensive List of Options but will be taken into consideration in the next stages of the ACP process.

Table 10 Feedback received that will be taken into consideration in the next stages of the ACP process.

You said (Summary themes)	We did
Gatwick should consider noise impacts to health and quality of life	Our options have been developed using outputs from the airspace design database. This database includes metrics which are indicators of the primary and secondary metrics that will be used to appraise options later in the airspace change process. This includes Sound Exposure Level (SEL), which forms part of the L_{Aeq} calculations. Data from the L_{Aeq} contours is used as a primary metric in the airspace change process to assess impacts to health and quality of life. The Initial Options Appraisal will analyse impacts to these contours as well as reviewing secondary noise metrics such as N60 and N65 data, and overflight.
Gatwick should consider frequency of overflight and cumulative overflight	This will be evaluated as part of our Design Principle Evaluation and considered in further detail as part of the Initial Options Appraisal.
Flight paths should achieve continuous climb/descent (CCO/CDO)	All the options on the comprehensive list are designed to achieve CCO/CDO to/from 7000ft. As part of the Design Principle Evaluation and Initial Options Appraisal, Gatwick will introduce the information available from NERL about the network airspace above 7000ft and evaluate the potential for further CCO/CDO. The outcome may be that the options are refined in order to achieve optimal CCO/CDO where possible and balancing other considerations; this will be documented as part of our Stage 2 submission and communicated as part of stakeholder engagement workshops.
Gatwick should consider noise sensitive sites and tranquil areas such as local nature reserves.	Noise sensitive sites such as schools, places of worship and hospitals will be assessed as part of the Initial Options Appraisal. The Initial Options Appraisal also includes assessments on tranquillity and biodiversity.

You said (Summary themes)	We did
Gatwick should consider the NPRs	Some options within the Comprehensive List are based on the existing RNAV1 nominal tracks and therefore follow the existing NPRs. Other options do not follow the NPRs. At this stage, the benefits and impacts of each option haven't been assessed and Gatwick will consider impacts to the NPRs in further detail as part of the Initial Options Appraisal.
Gatwick should consider Controlled Airspace	The potential benefits and impacts to General Aviation and other airspace users associated with the use/release of Controlled Airspace will be appraised as part of the Initial Options Appraisal.
Feedback was received regarding the use of 2019 flight data in the airspace design database to examine populations newly overflown. Some feedback suggested that historic data should be used, incorporating those that were not overflown in earlier years.	The Airspace Design Database contains 2019 data that has been adjusted to reflect the extant Route 4 procedure. This was selected as it aligned with the requirements of later parts of the CAP1616 process. As part of Step 2A, Gatwick are required to define and assess a pre-implementation 'do nothing' baseline scenario. This scenario must take into account known or anticipated factors that might affect the baseline such as planned housing developments close to the airport, forecast growth in air traffic, or expected changes in airlines' fleet mix. Our assessment of newly overflown linked to the Do Nothing baseline must examine the populations that we expect will be overflown by the existing airspace design at the point when a change is implemented in 2026. At the point of implementation (2026 onwards), it is expected that Gatwick will have recovered from the impacts of COVID-19 therefore 2019 was chosen as it was a year which most reflected a scenario where the airspace, and traffic patterns, had recovered from the impacts of COVID-19. The 2019 data will be developed to reflect the known and anticipated factors when describing the pre-implementation scenario.

Co-ordination with interdependent ACP sponsors

In addition to the engagement outlined in the above sections, Gatwick have also participated in a number of technical working groups and bilateral workshops with neighbouring airports, NATS NERL and ACOG. Information from Iteration 2 of ACOG's Masterplan has been used to identify airports with potential interdependencies. Table 11 sets out details of these meetings below.

Table 11 Interdependent sponsor engagement

Meeting	Date
LTMA Technical Working Group	29 July 2021, 26 August 2021, 23 September 2021, 28 October 2021, 8 December 2021, 27 January 2022 and then every month from this date onwards.
LTMA Programme Coordination Meeting (ACOG)	15 July 2021, 22 September 2021, 4 February 2022 and then every 2 months from this date onwards.
Heathrow and Gatwick	16 September 2021, 04 April 2022, 03 May 2022, 09 February 2023, 14 August 2023
Northolt and Gatwick	31 March 2022, 02 August 2023
Southend and Gatwick	01 April 2022, 02 August 2023
Stansted and Gatwick	12 April 2022, 02 August 2023
Biggin Hill and Gatwick	13 April 2022, 02 August 2023
Bournemouth and Gatwick	Contacted and established that no interdependencies exist between the airports.
London City	Contacted, meeting planned for September 2023
Southampton	02 August 2023
Farnborough	02 August 2023
NERL and Gatwick	03 Feb 2022, 08 Feb 2022, 11 March 2022, 30 March 2022, 26 April 2022, 27 Jul 2022, 10 August 2022, 29 September 2022, 23 February 2023, 21 March 2023, 01 June 2023, 21 June 2023

Technical working groups, bilateral meetings and programme co-ordination meetings allow sponsors within the LTMA regional group to discuss timelines, risks, deployment strategies, Masterplan integration as well as CAP1616 interpretations and different methodologies to meet CAP1616 requirements.

7. Comprehensive List of Options

This section outlines the options that form our comprehensive list, including an image of each option along with a description.

All airspace design options in this document are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, the ACP design principles, and Gatwick's appraisals and stakeholder engagement.

Understanding the Options on the Comprehensive List

The naming convention of the options is based on whether the option is for easterlies or westerlies and whether the option is an arrival or departure:

WA = Westerly Arrival

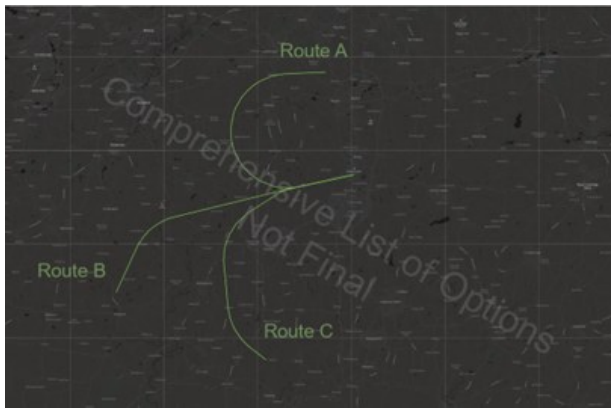
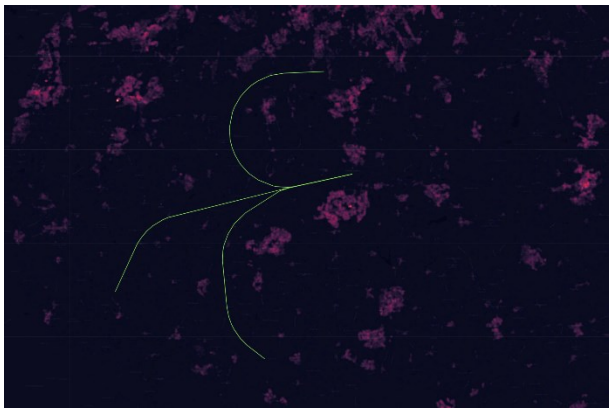
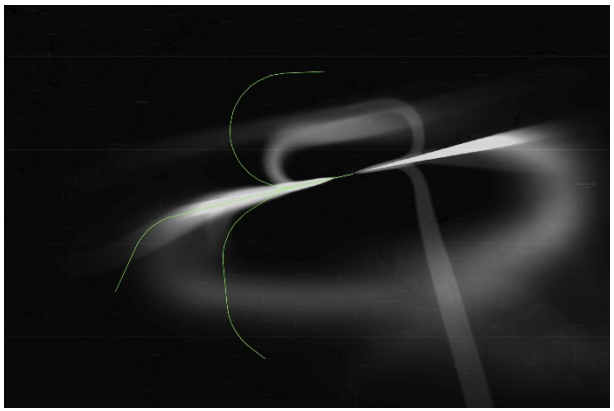
WD = Westerly Departure

EA = Easterly Arrival

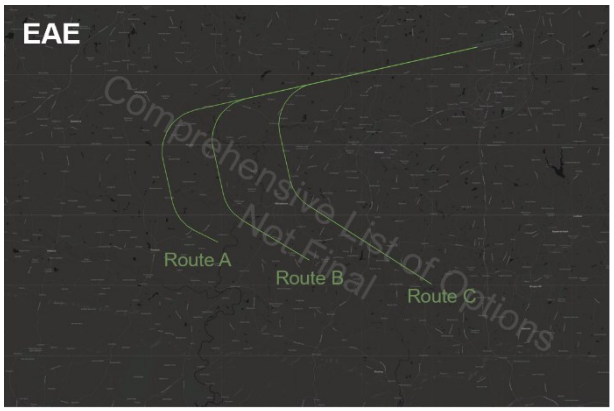
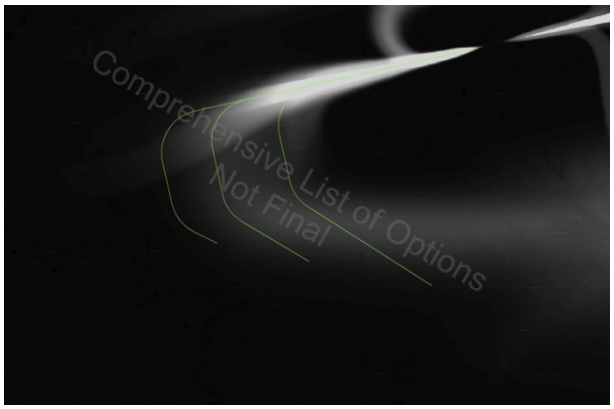
ED = Easterly Departure

The options are then labelled A, B, C, so for example WDC = Westerly Departure Option C

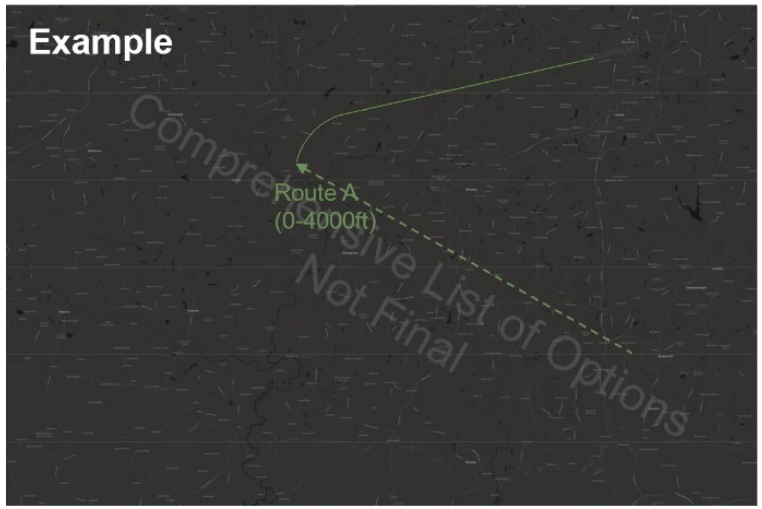
Example of departure option information:

Option	Map	Population underlay	2019 track data underlay
[Option Name]			
	The images of the departure options show a route centerline between 0 – 7000ft based on a conservative 6% climb gradient.	This image shows the option against a population density background. Data source: CACI data 	This image shows the option against a heatmap of all flights from the 92 day summer 2019 period (adjusted to reflect the extant Route 4 SID).
	Option Description The description of the options includes information about the noise metrics and Design Principles focused on when developing the options; for more information about the noise metrics and the structure please see the 'Options Development' section of this document. The flight paths developed are applicable to the northern and main runway.		

Arrival Option Example:

Option	Map	Population underlay	2019 track data underlay
[Option Name]			
	The images of the arrival options (other than options EAB, EAH, WAB, WAG which are Radar Maneuvering Area options) show a PBN route centerline between 7000ft to landing based on a standard 3° continuous descent.	This image shows the option against a population density background. Data source: CACI data 	This image shows the option against a heatmap of all flights from the 92 day summer 2019 period (adjusted to reflect the extant Route 4 SID).
	Option Description The description of the options includes information about the noise metrics and Design Principles focused on when developing the options; for more information about the noise metrics and the structure followed please see the 'Options Development' Section of this document. The flight paths developed are applicable to the northern and main runway. All arrival options have been designed based on a standard 3° continuous descent approach.		

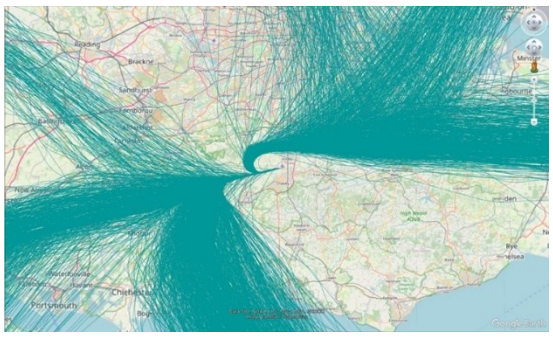
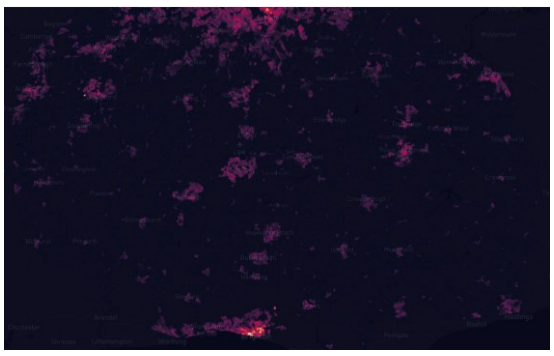
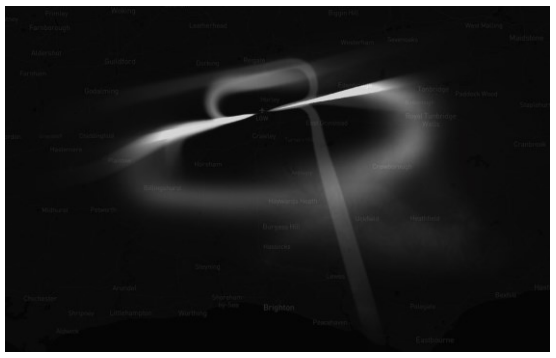
	It's important to note that, at the point of implementation (c.2027), it is anticipated the technology required from the network airspace above 7000ft to operate solely PBN arrivals will not be available, and therefore Gatwick expect there will be a necessity for some tactical controlling (vectoring) of aircraft particularly during peak periods alongside the operation of PBN arrival options. This will be explored in further as part of the detailed design development in Stage 3.

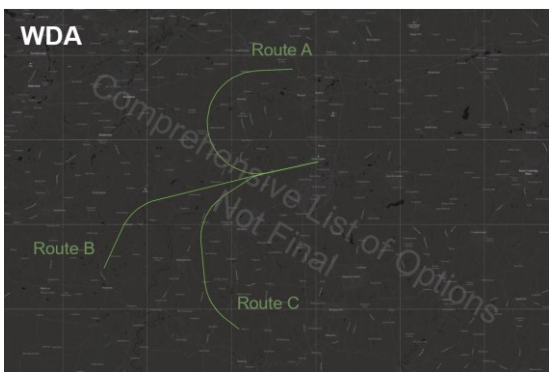
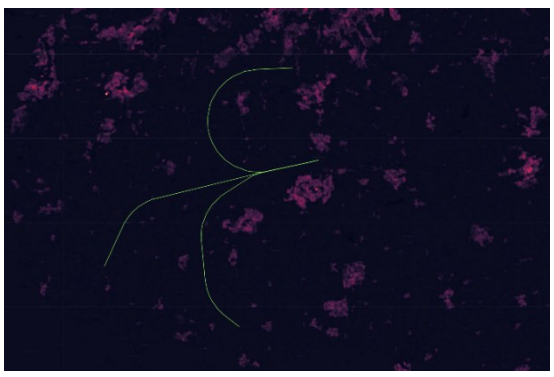
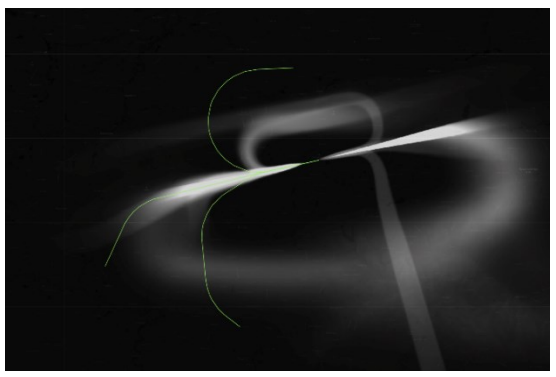


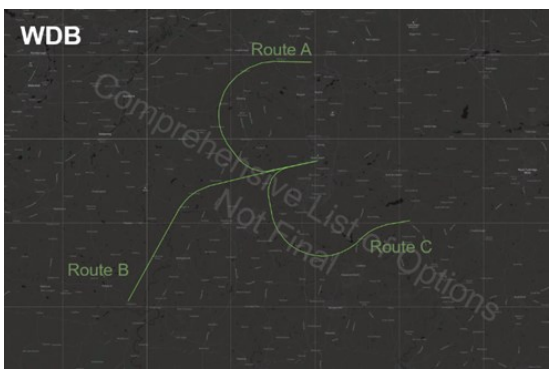
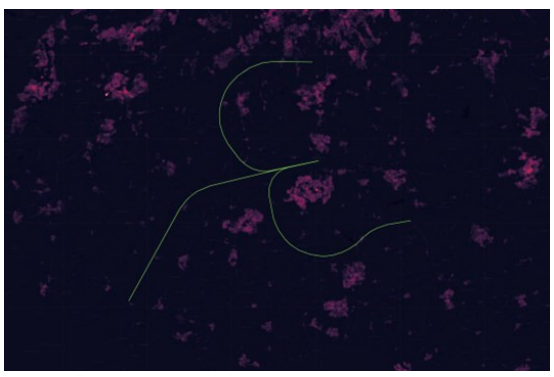
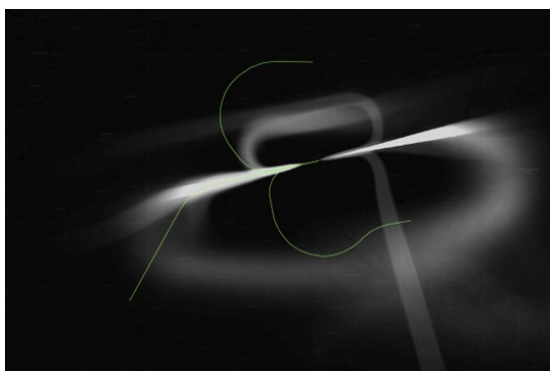
Some arrival and departure options show a green dashed line on the routes between 4000-7000ft. When they were developed, these options had a focus on DP6 (Optimise the use of aircraft capabilities). They apply noise metrics from the database between 0-4000ft and then route directly to the network exit points to minimise track miles from 4000-7000ft although Gatwick will use map data to make small adjustments to the tracks between 4-7000ft to consider noise impacts. This is based around the altitude-based priorities in the Air Navigation Guidance 2017 (ANG 2017). The ANG explains that from the ground to 4000ft the government's environmental priority is to limit and, where possible, reduce the total adverse effects on people. Between 4000ft-7000ft the environmental priority should continue to be minimising the impact of aviation noise unless this would disproportionately increase CO2 emissions. The green dashed lines denote that these sections of the routes will be guided by information about the airspace above 7000ft when available.

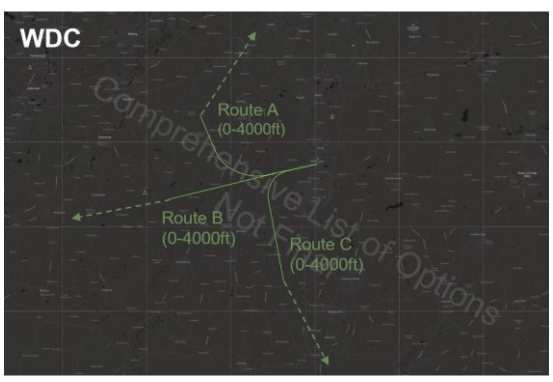
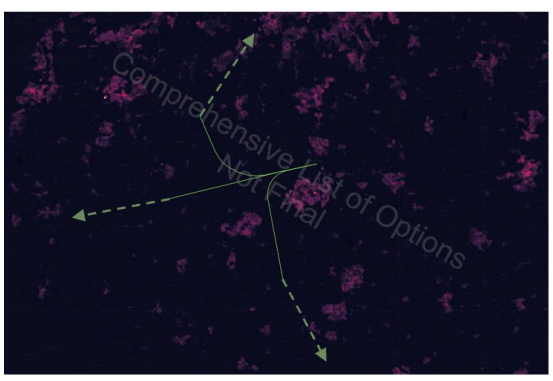
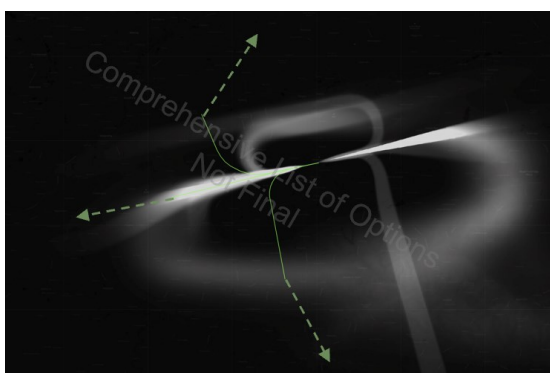
Further information about the evolution of the options and larger images of the options can be found in Annex A: Evolution of the Options Design.

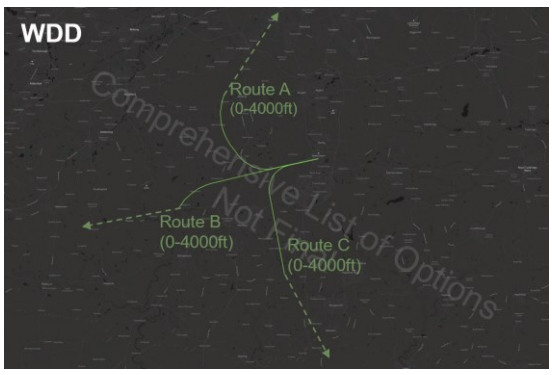
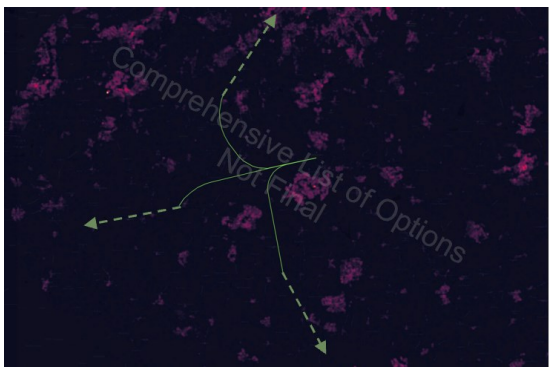
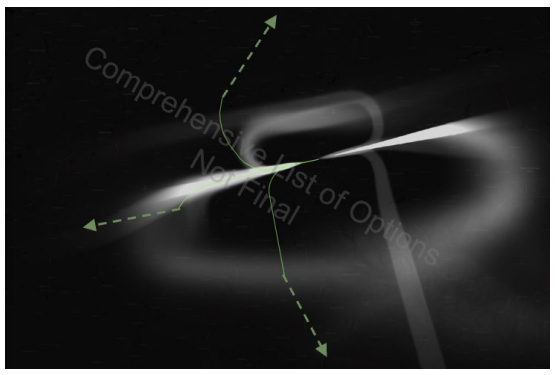
Westerly Departures (WD) (Runway 26)

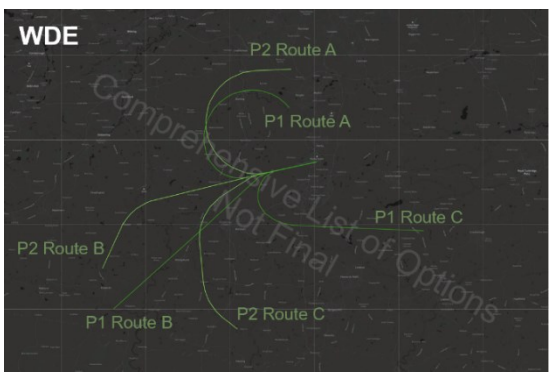
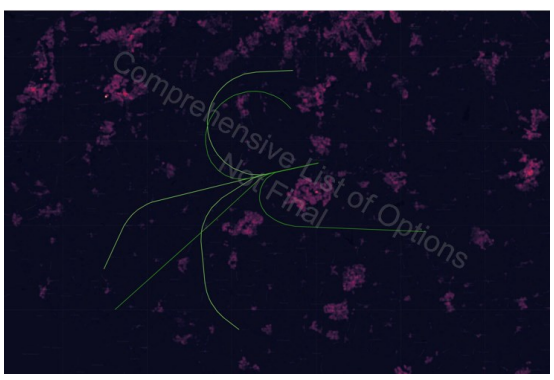
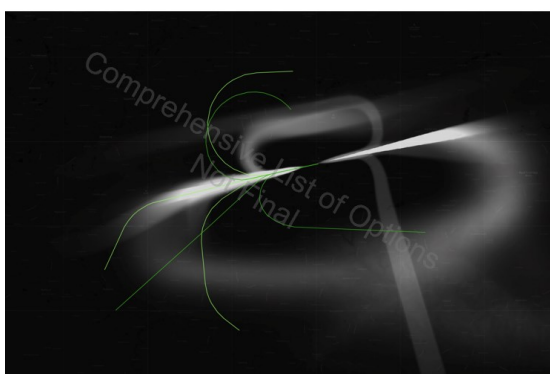
Option	Map	Population underlay	2019 track data underlay
Baseline	 (Image shows 2 weeks of summer flight tracks and includes above 7000ft)		
	The baseline represents the 'Do nothing' scenario immediately prior to implementation. For Stage 2 of this ACP, the baseline uses 2019 actual flight track data which has been adjusted to reflect the extant Route 4 procedures as this is most representative of a scenario where Gatwick has recovered from the operational impacts of Covid-19. More information can be found in the existing airspace arrangements section of this document.		

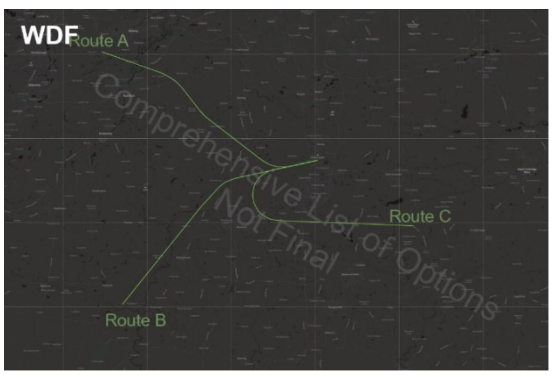
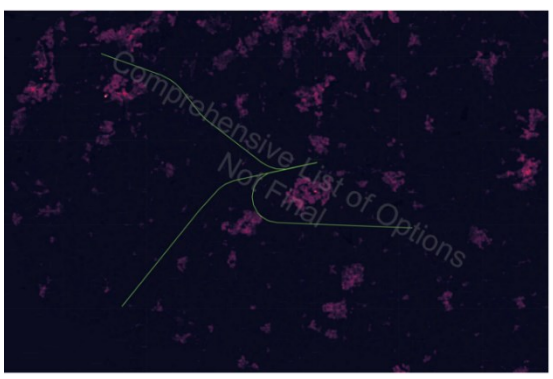
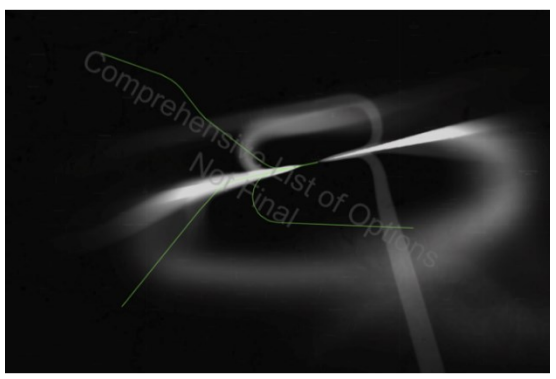
Option	Map	Population underlay	2019 track data underlay
WDA			
	When developing the option there was a focus on DP3 (limit adverse noise effects) and minimising total population overflown. The primary metrics used to identify the high performing notional flight paths are '70dB SEL' and 'total population overflown'. A secondary check of the 80dB SEL, 60dB and 65dB LAmax and Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.		

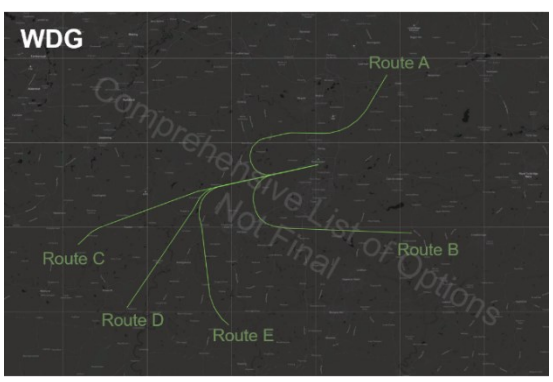
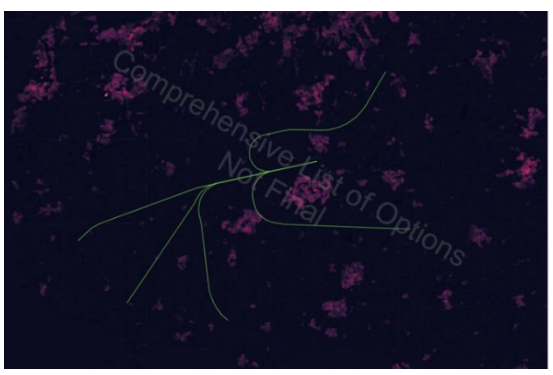
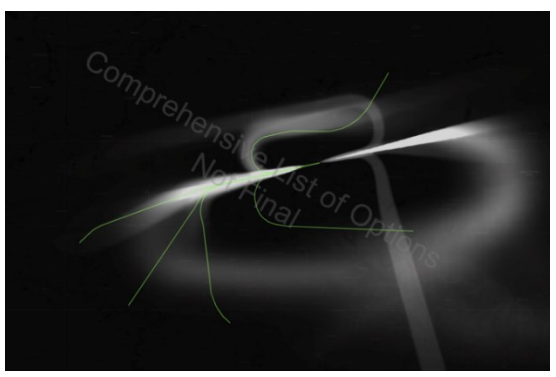
Option	Map	Population underlay	2019 track data underlay
WDB			
	When developing the option there was a focus on DP3 (limit adverse noise effects) and minimising total population overflown. The primary metrics used to identify the high performing notional flight paths are '70dB SEL' and 'total population overflown'. A secondary check of the 80dB SEL, 60dB and 65dB LAmax and Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.		

Option	Map	Population underlay	2019 track data underlay
WDC			
	When developing the option there was a focus on DP3 (limit adverse noise effects), DP6 (optimise use of aircraft capabilities) and minimising total population overflown. To first meet DP3, Gatwick have identified the high performing notional flight paths using the '70dB SEL' and 'total population overflown' metrics for the paths between 0-4000ft. A secondary check of the 80dB SEL, 60dB and 65dB LAmax and Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the AMS. To achieve the aims of DP6 from 4000ft to 7000ft the option will then route directly to the network exit point with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft.		

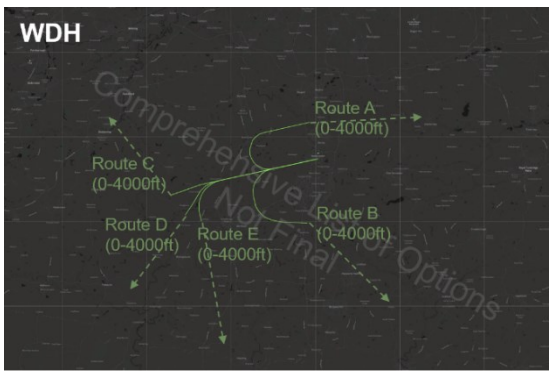
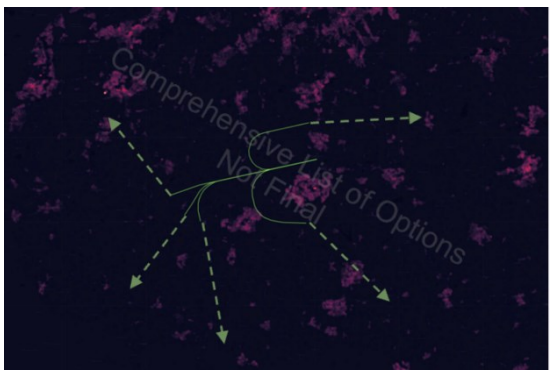
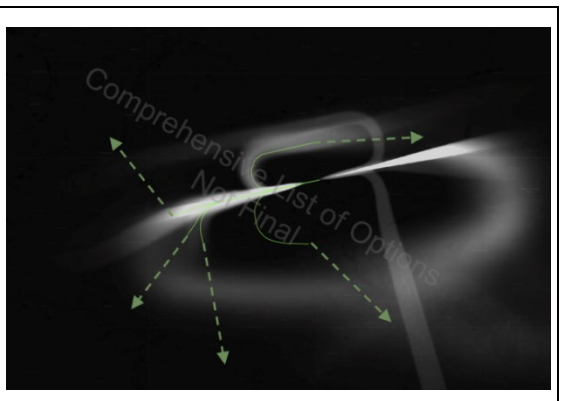
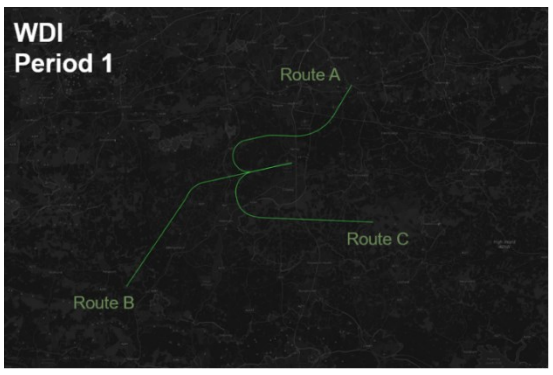
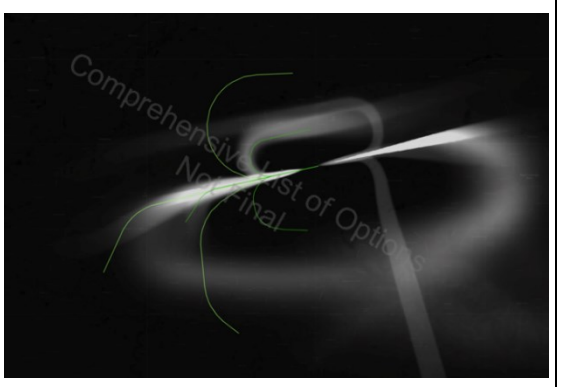
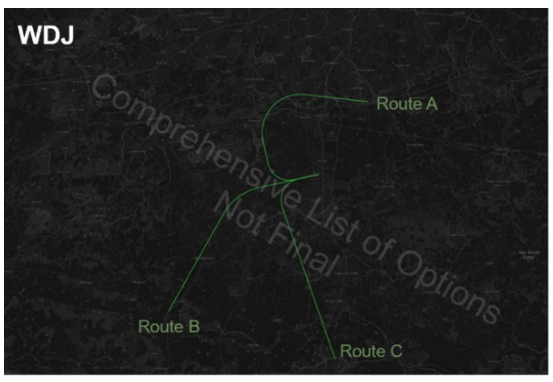
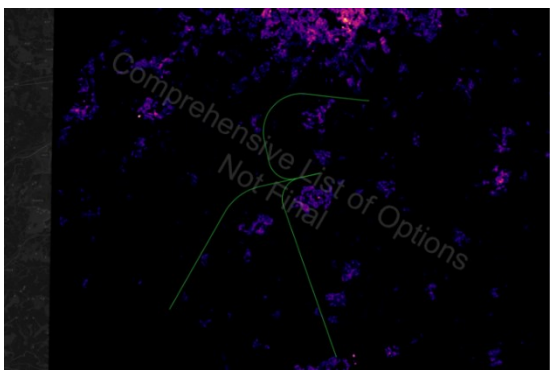
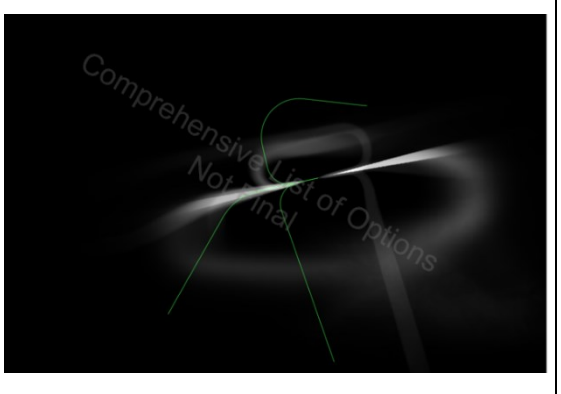
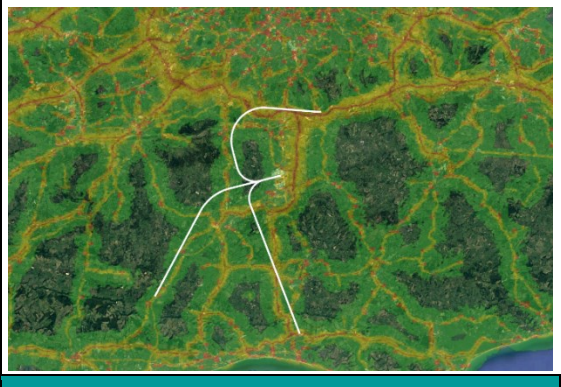
Option	Map	Population underlay	2019 track data underlay
WDD			
	When developing the option there was a focus on meeting DP3 (limit adverse noise effects), DP6 (optimise use of aircraft capabilities) and minimising total population overflown. From 0-4000ft, the same metrics as WDC have been used to identify high performing notional flight paths that have greater than 30° separation. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the AMS. To achieve the aims of DP6, from 4000ft the option will then route directly to the network exit point. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft. As information becomes available, Gatwick will use map underlays to make minor adjustments to the path with regards to noise.		

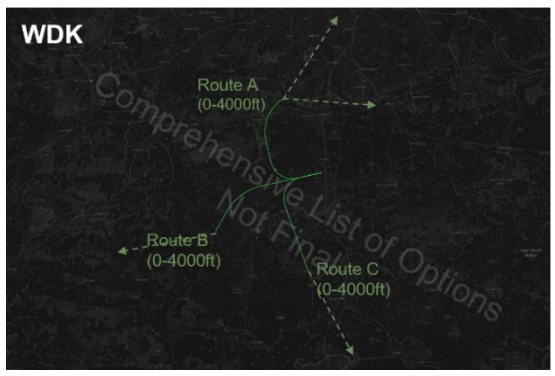
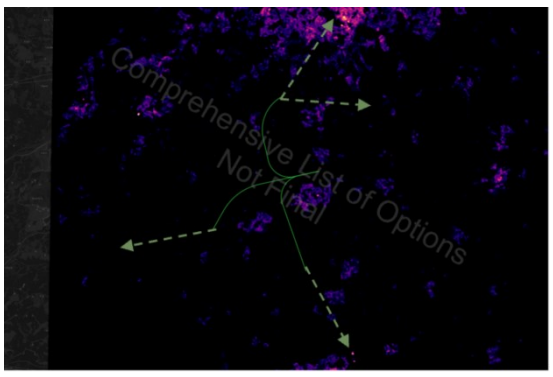
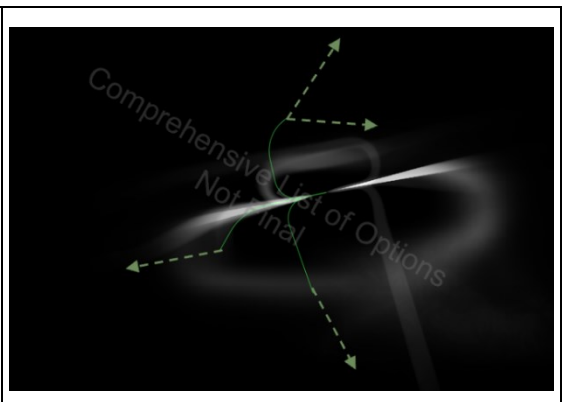
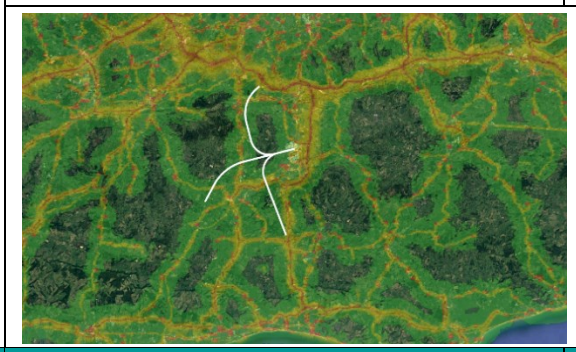
Option	Map	Population underlay	2019 track data underlay
WDE			
	When developing the option there was a focus on meeting DP3 (limit adverse noise effects), minimising total population overflown, and DP7 (Long Term predictability and adaptability). The primary metrics used to identify the high performing notional flight paths were '70dB SEL' and 'total population overflown'. A secondary check of the 80dB SEL, 60dB and 65dB LAmax and Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the AMS. This option is based on WDA and aims to offer respite by variation of the first turn point and subsequent track direction.		

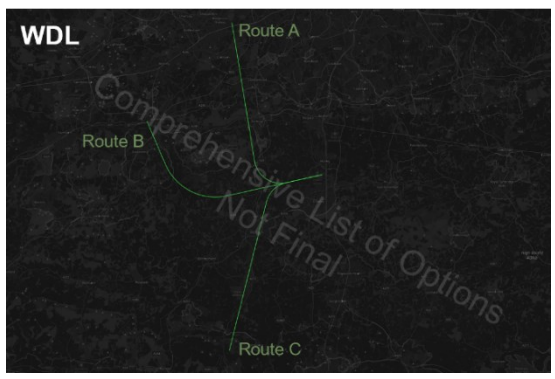
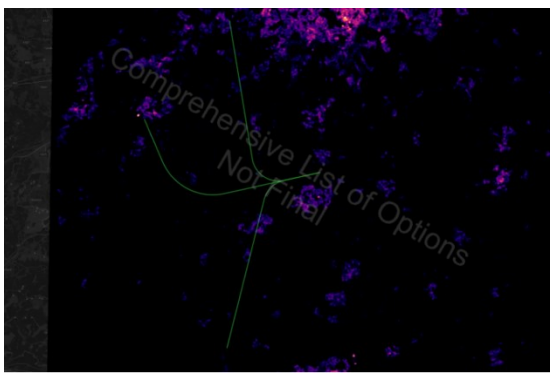
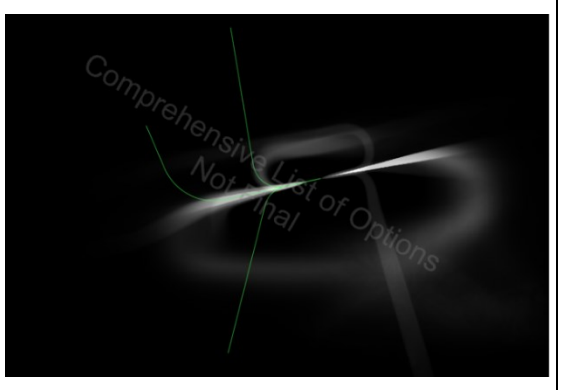
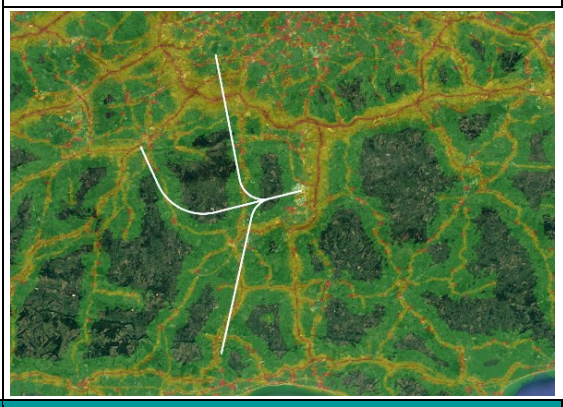
Option	Map	Population underlay	2019 track data underlay
WDF			
	The primary metrics used to identify the high performing notional flight paths focus on minimising total adverse noise effects at night and are '80dB SEL' and 'total population overflown'. A secondary check of the 65dB LAmax was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.		

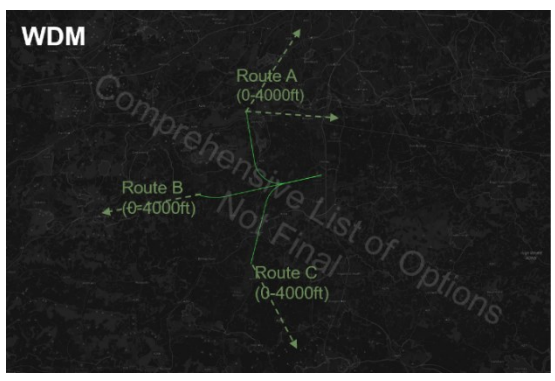
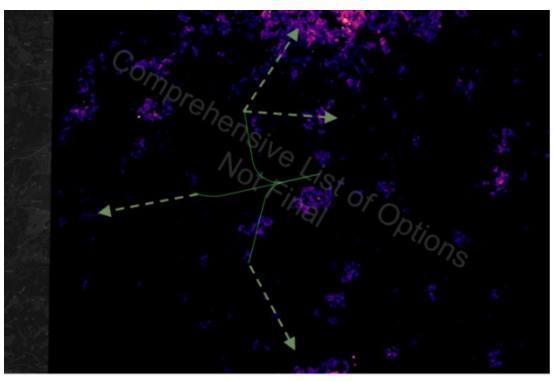
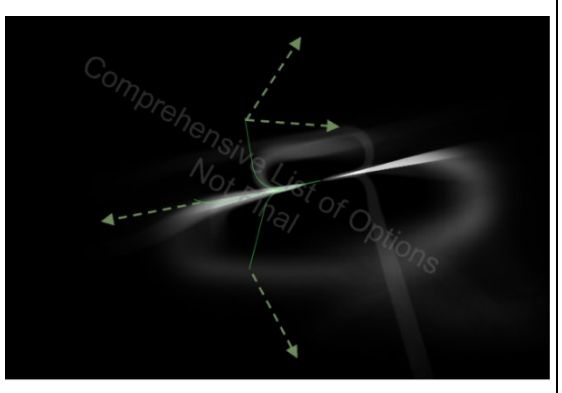
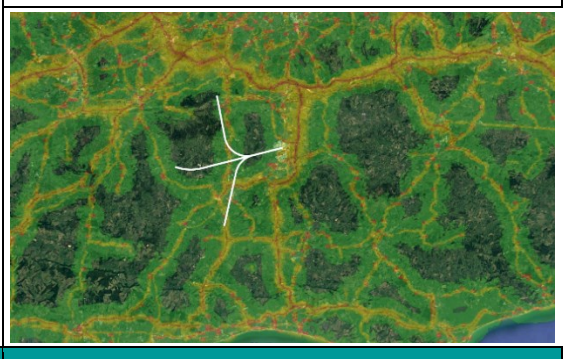
Option	Map	Population underlay	2019 track data underlay
WDG			
	This option is based on the nominal centerlines of the existing departure routes departing from Gatwick however the vertical profile of these routes has been updated to reflect a 6% continuous climb performance. When developing this option there was a focus on meeting DP3 (limit adverse noise effects) and minimising population newly overflown whilst also considering DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.		

Option	Map	Population underlay	2019 track data underlay

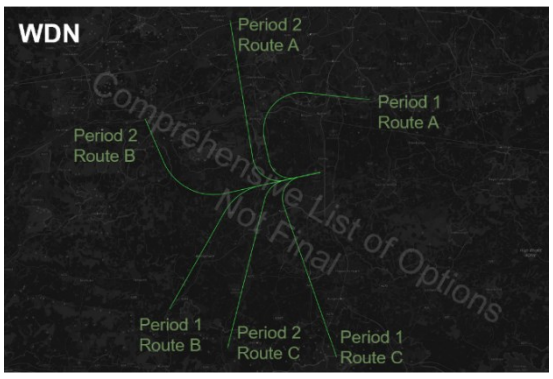
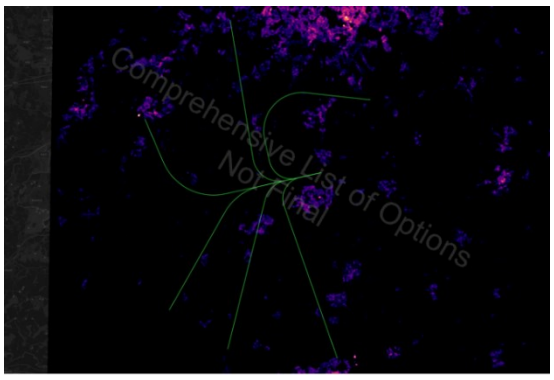
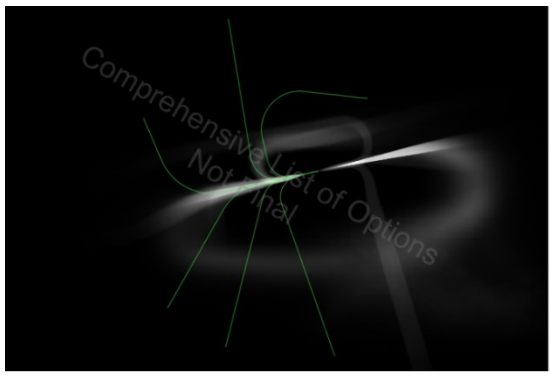
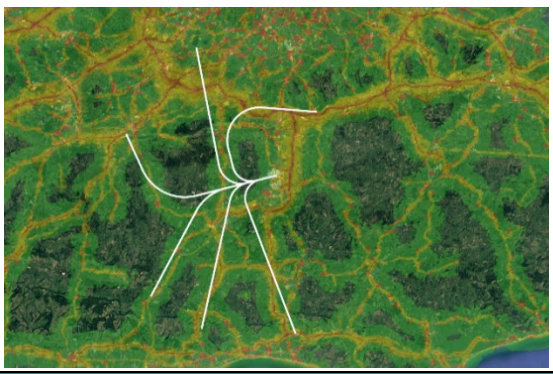
WDH			
	This option is based on the nominal centerlines of the existing departure routes departing from Gatwick however the vertical profile of these routes has been updated to reflect a 6% continuous climb performance. When developing this option there was a focus on DP6 so the route design has been curtailed at 4000ft and the green dashed lines show where aircraft will then fly directly to the network from 4000-7000ft, with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about airspace above 7000ft. When developing this option there was a focus on meeting DP3 (limit adverse noise effects), minimising population newly overflown, and DP6 (optimise use of aircraft capabilities) whilst also considering DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.		
Option	**Map**	**Population underlay**	**2019 track data underlay**
WDI			
		The period 1 configuration of this respite option is based around option WDG which aims to minimise population newly overflown however the two straight ahead routes that head west and south have been removed (Route 1 SAM/KENNET and Route 8 SFD). This has then been configured with WDA to offer an alternative respite configuration. The period 2 configuration is based on option WDA. When developing the option there was a focus on meeting DP3 (limit adverse noise effects), DP7 (Long term predictability and adaptability) and minimising population newly overflown whilst also considering DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.	
Option	**Map**	**Population underlay**	**2019 track data underlay**
WDJ			
		This option was developed following stakeholder feedback and aimed to meet DP3, DP1, DP2, DP5, DP7, DP8, DP9 and the AMS. It follows areas of high ambient road/rail noise as outlined in DEFRA's noise mapping shown in the figure opposite.	
Option	**Map**	**Population underlay**	**2019 track data underlay**

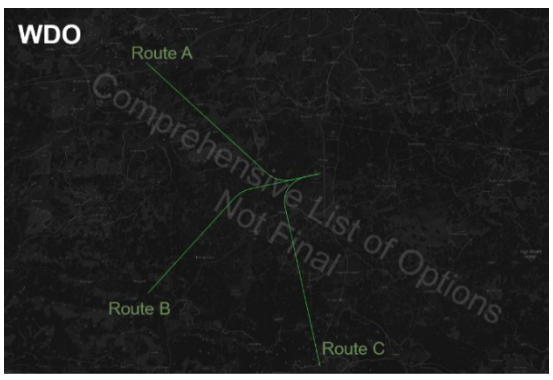
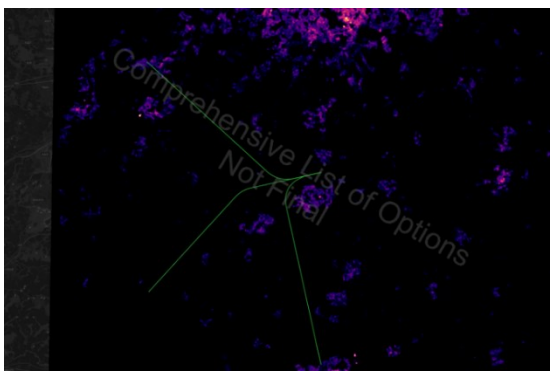
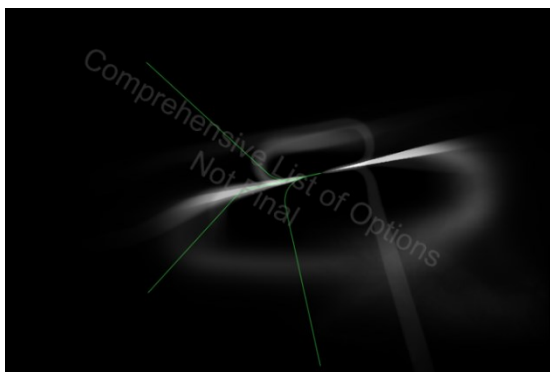
Option	Map	Population underlay	2019 track data underlay
WDK			
		This option was developed following stakeholder feedback and aimed to meet DP3, DP6, DP1, DP2, DP5, DP6, DP7, DP8, DP9 and the AMS. It follows areas of high ambient road/rail noise as outlined in DEFRA's noise mapping shown in the figure opposite. To achieve the aims of DP6 from 4000ft to 7000ft the option will then route directly to the network exit point with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft.	

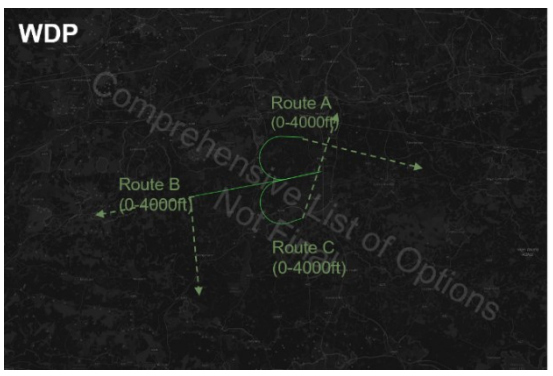
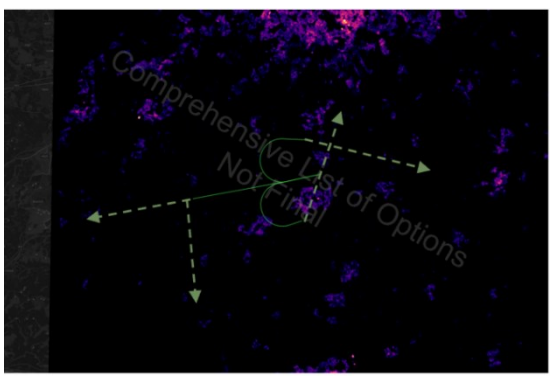
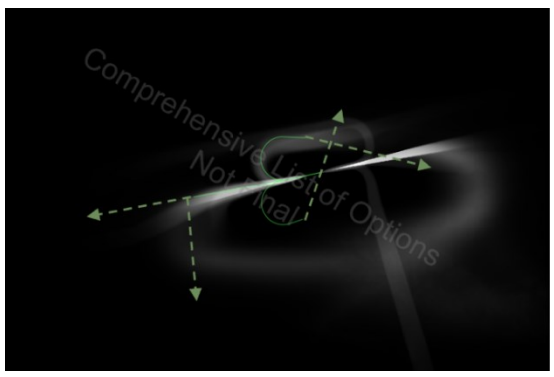
Option	Map	Population underlay	2019 track data underlay
WDL			
		This option was developed following stakeholder feedback and aimed to meet DP3, DP1, DP2, DP5, DP7, DP8, DP9 and the AMS. It follows areas of high ambient road/rail noise as outlined in DEFRA's noise mapping shown in the figure opposite.	

Option	Map	Population underlay	2019 track data underlay
WDM			
		This option was developed following stakeholder feedback and aimed to meet DP3, DP6, DP1, DP2, DP5, DP6, DP7, DP8, DP9 and the AMS. It follows areas of high ambient road/rail noise as outlined in DEFRA's noise mapping shown in the figure opposite. To achieve the aims of DP6 from 4000ft to 7000ft the option will then route directly to the network exit point with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft.	

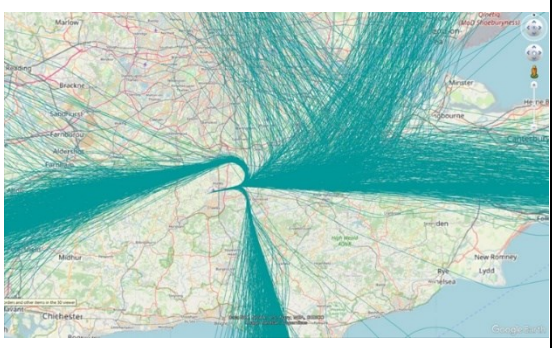
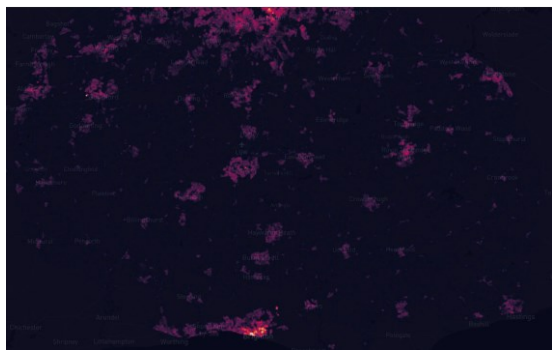
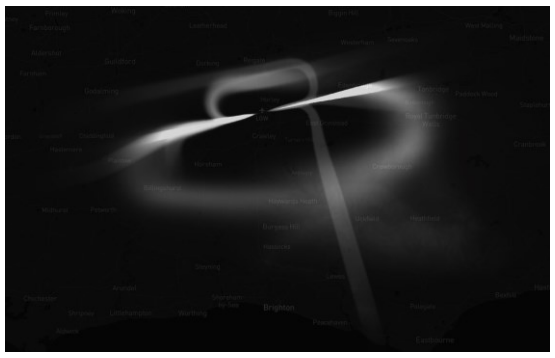
Option	Map	Population underlay	2019 track data underlay

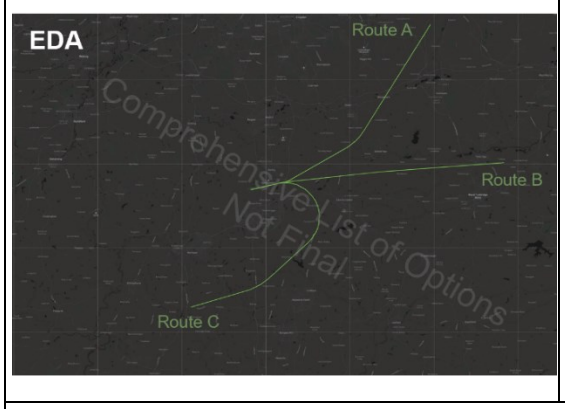
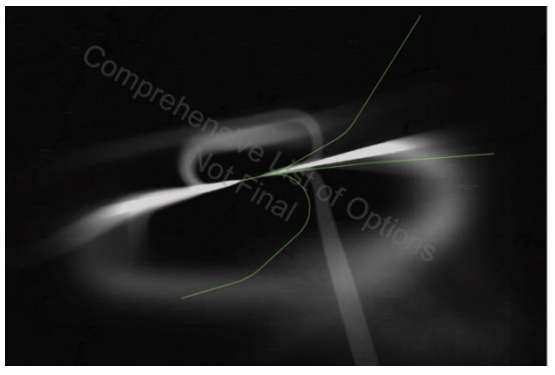
WDN			
		This option was developed following stakeholder feedback and aimed to meet DP3, DP6, DP1, DP2, DP5, DP6, DP7, DP8, DP9 and the parameters of the AMS. The option is based around two respite configurations using options WDJ and WDL.	

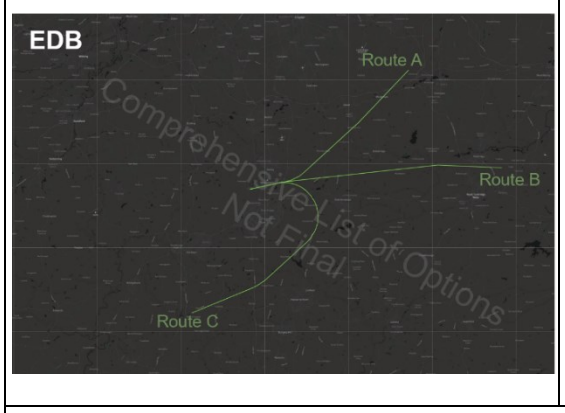
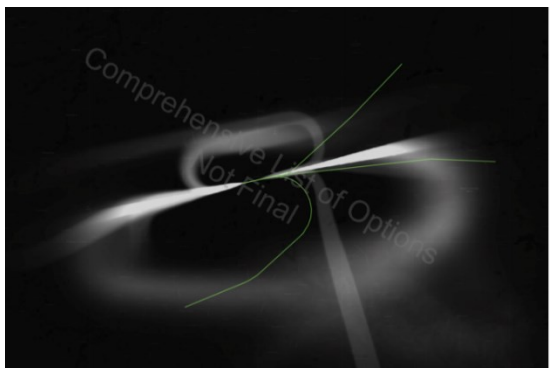
Option	Map	Population underlay	2019 track data underlay
WDO			
	This option was developed following stakeholder feedback and aimed to meet DP3 (limit adverse noise effects), whilst balancing population overflown against minimising population newly overflown. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the parameters of the AMS.		

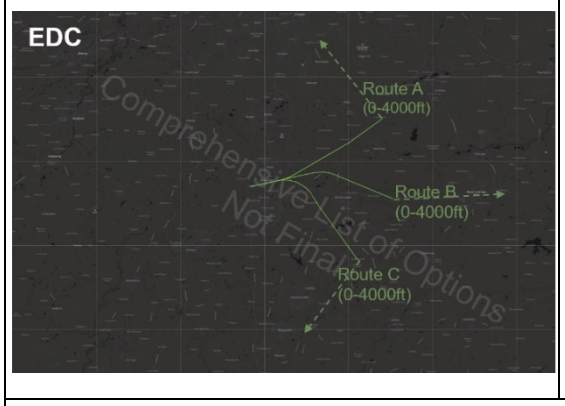
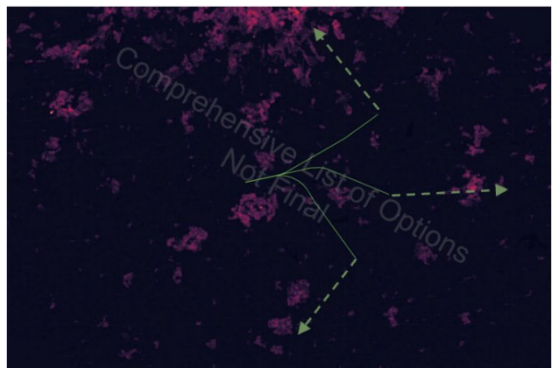
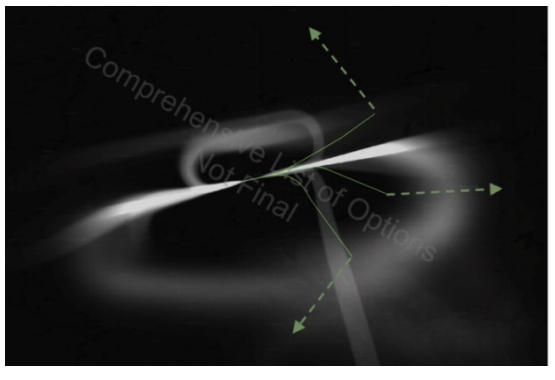
Option	Map	Population underlay	2019 track data underlay
WDP			
	This option was developed following stakeholder feedback and aimed to meet DP3 (limit adverse noise effects), DP6 (optimise use of aircraft capabilities) whilst balancing population overflown against minimising population newly overflown. To first meet DP3, Gatwick have identified the high performing notional flight paths using the total population and population newly overflown metrics for the paths between 0-4000ft. To achieve the aims of DP6, from 4000ft the option will then route directly to the network exit point. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.		

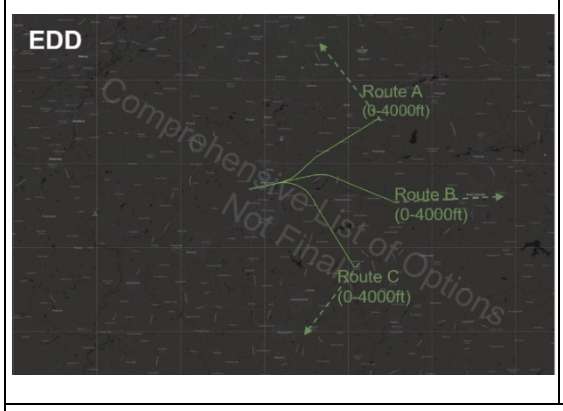
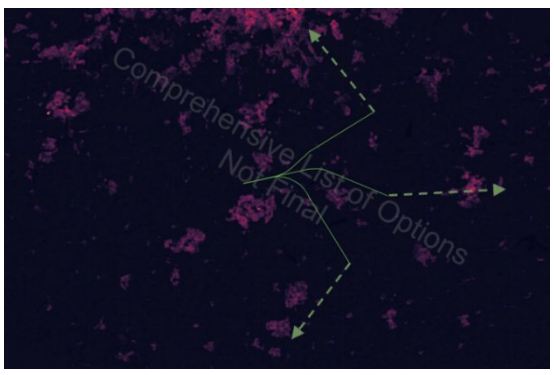
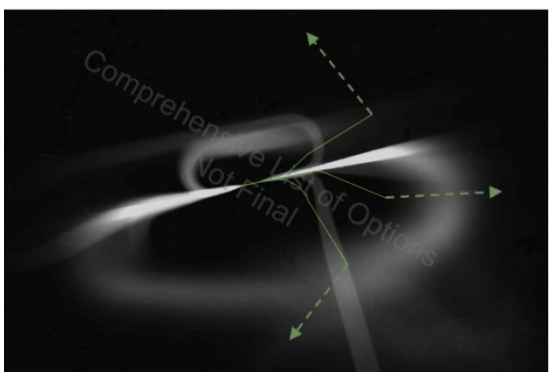
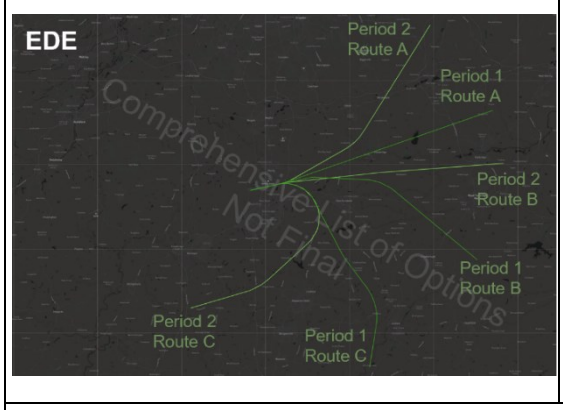
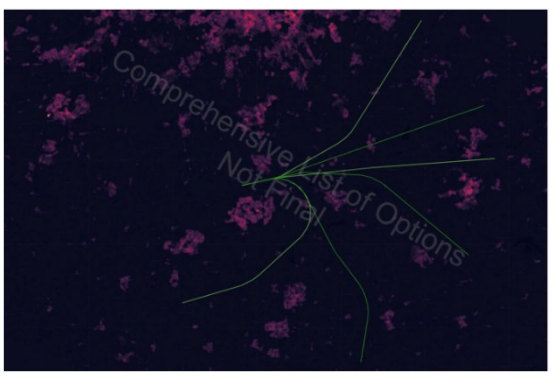
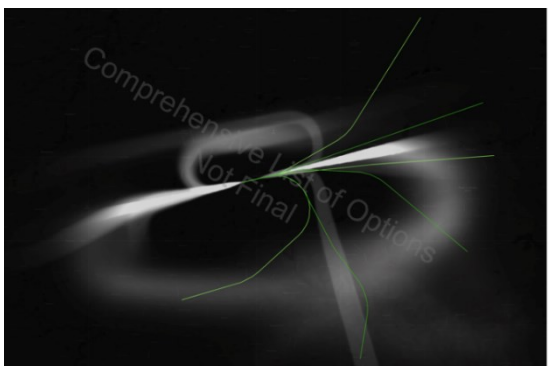
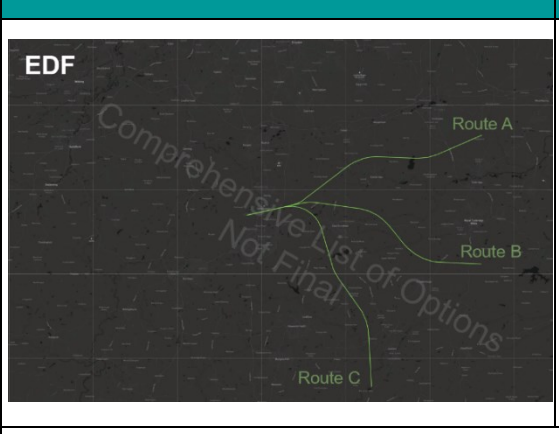
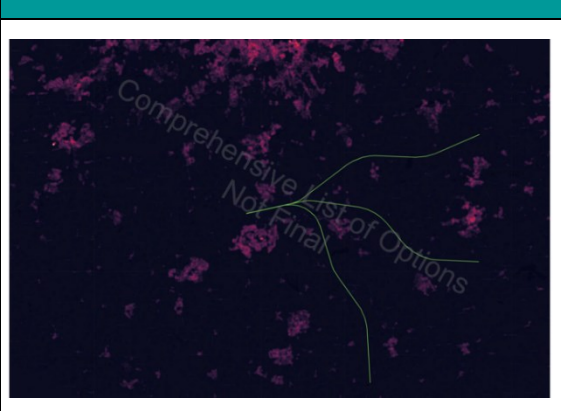
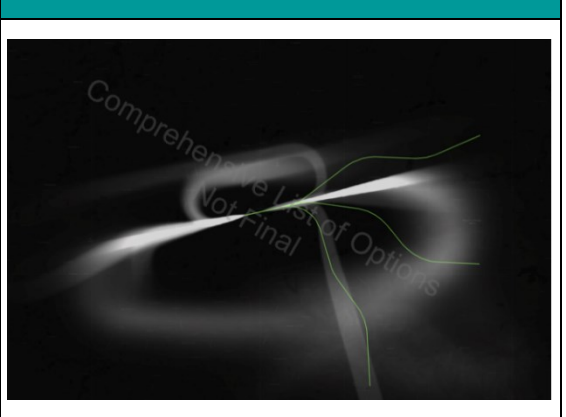
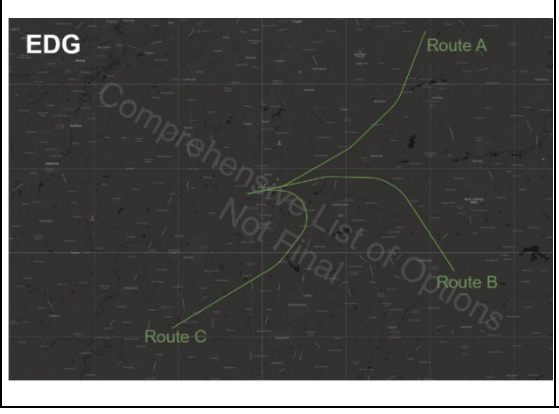
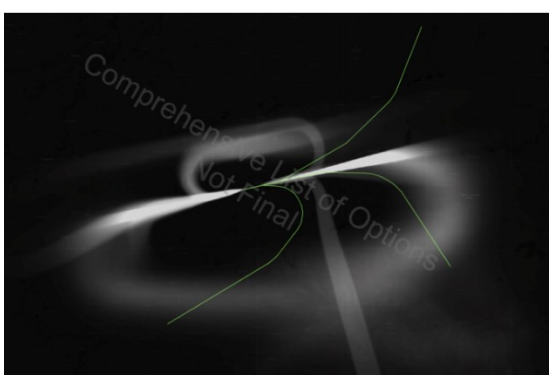
Easterly Departures (ED) (Runway 08)

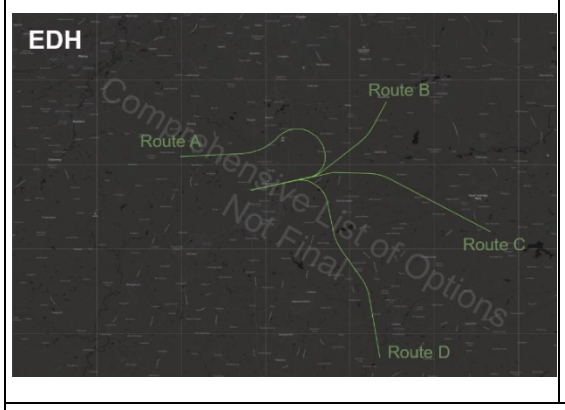
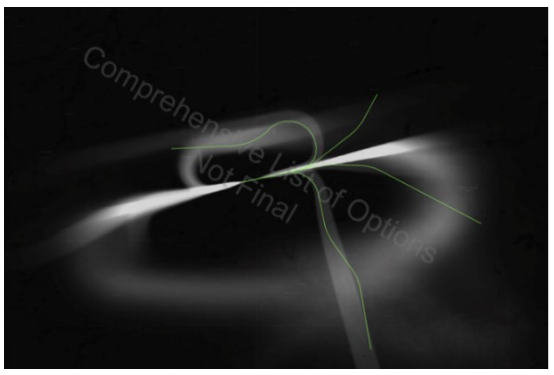
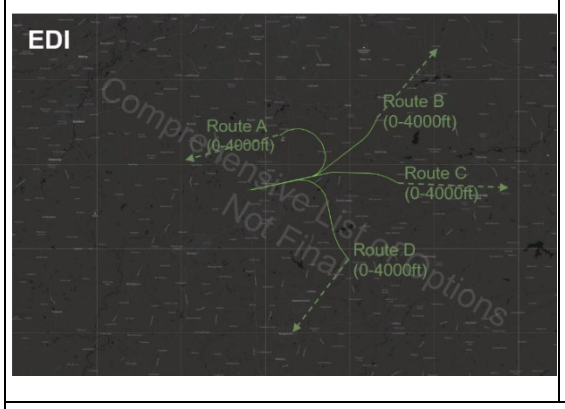
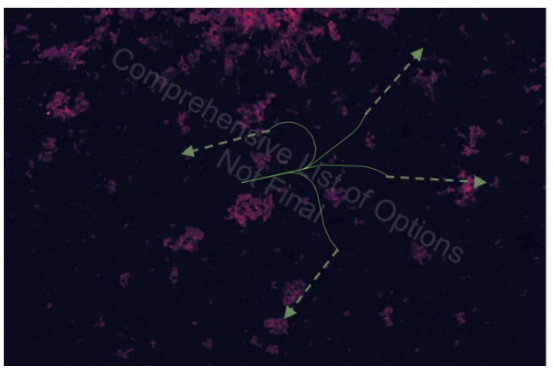
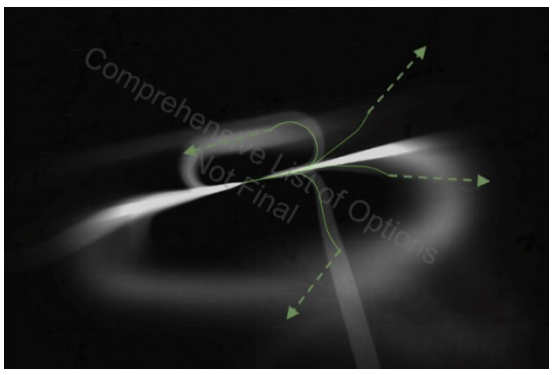
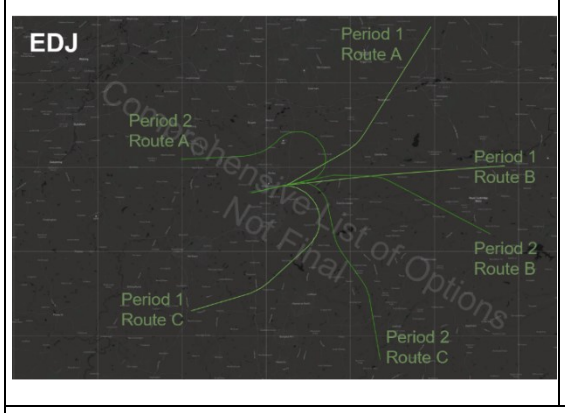
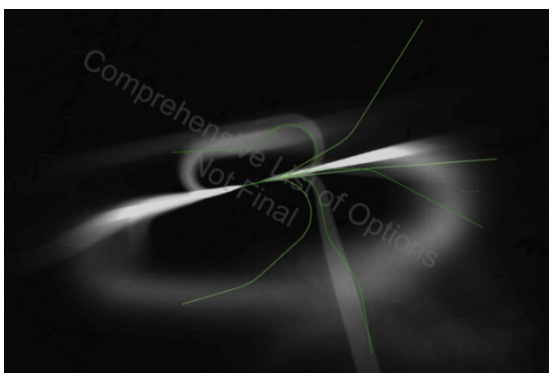
Option	Map	Population underlay	2019 track data underlay
Baseline	 (Image shows 2 weeks of summer flight tracks and includes beyond 7000ft)		
	The baseline represents the 'Do nothing' scenario immediately prior to implementation. For Stage 2 of this ACP, the baseline uses 2019 actual flight track data which has been adjusted to reflect the extant (westerly) Route 4 procedures as this is most representative of a scenario where Gatwick has recovered from the impacts of COVID-19. More information can be found in the existing airspace arrangements section of this document.		

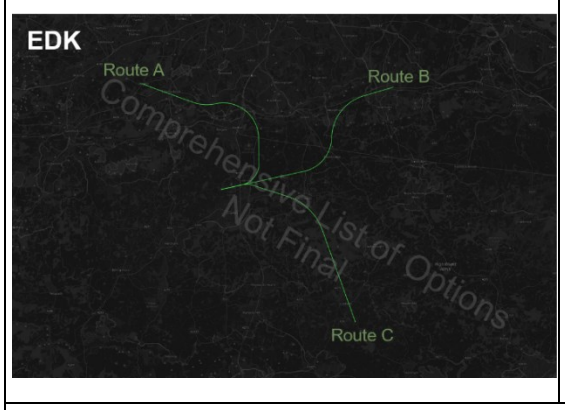
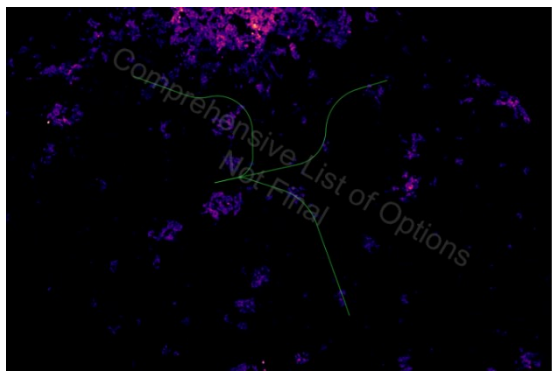
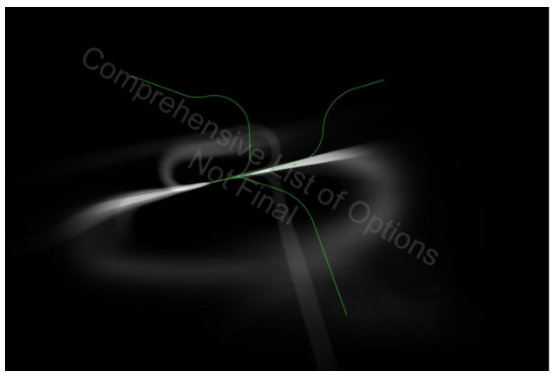
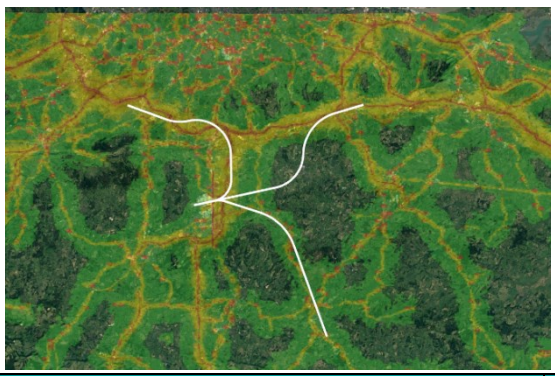
Option	Map	Population underlay	2019 track data underlay
EDA			
	When developing the option there was a focus on DP3 (limit adverse noise effects) and minimising total population overflown. The primary metrics used to identify the high performing notional flight paths are '70dB SEL' and 'total population overflown'. A secondary check of the 80dB SEL, 60dB and 65dB LAmax and Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.		

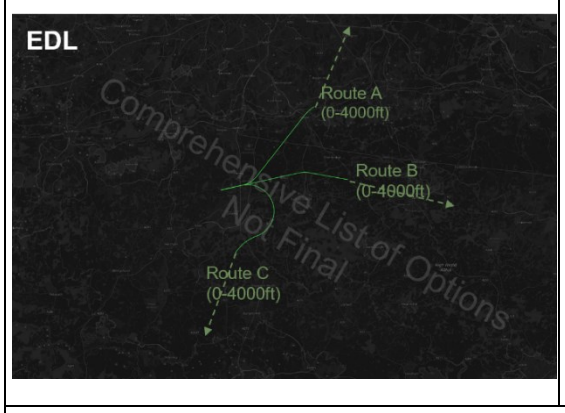
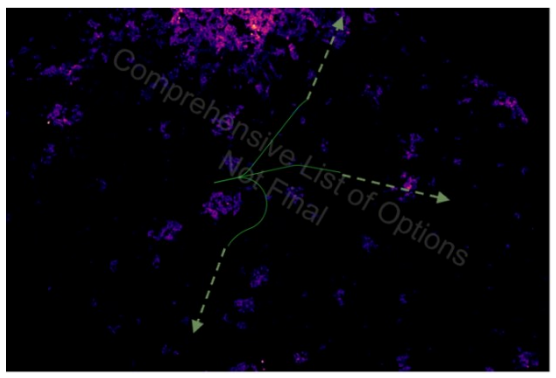
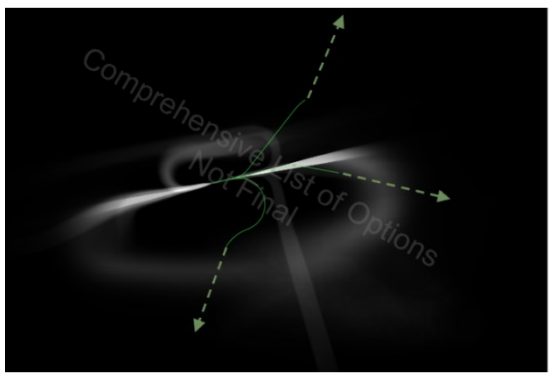
Option	Map	Population underlay	2019 track data underlay
EDB			
	When developing the option there was a focus on DP3 (limit adverse noise effects) and minimising total population overflown. The primary metrics used to identify the high performing notional flight paths are '70dB SEL' and 'total population overflown'. A secondary check of the 80dB SEL, 60dB and 65dB LAmax and Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.		

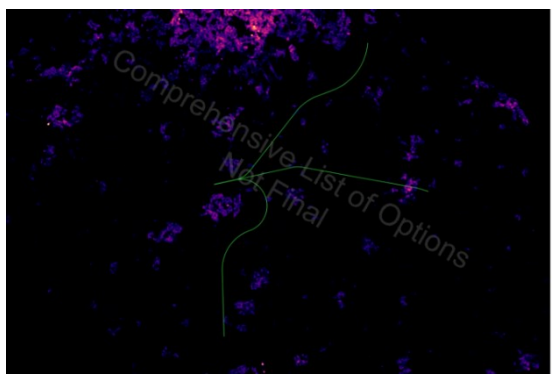
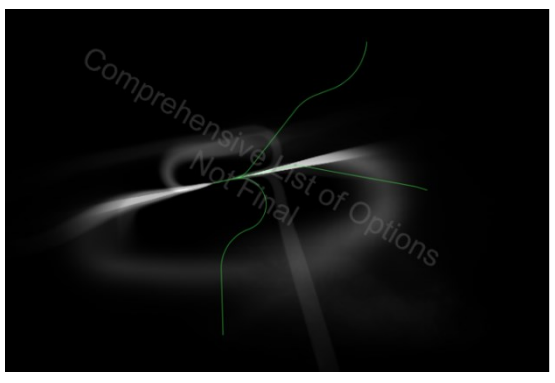
Option	Map	Population underlay	2019 track data underlay
EDC			
	When developing the option there was a focus on DP3 (limit adverse noise effects), DP6 (optimise use of aircraft capabilities) and minimising total population overflown. To first meet DP3, we have identified the high performing notional flight paths using the '70dB SEL' and 'total population overflown' metrics for the paths between 0-4000ft. A secondary check of the 80dB SEL, 60dB and 65dB LAmax and Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.		

Option	Map	Population underlay	2019 track data underlay
	To achieve the aims of DP6 from 4000ft to 7000ft the option will then route directly to the network exit point with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft. This system provides a 17.43° split for the departure tracks which would require additional safety assurance work to be undertaken. We've therefore used the database to identify a separate system that gives greater separation (EDD).		
Option	**Map**	**Population underlay**	**2019 track data underlay**
EDD			
	When developing the option there was a focus on DP3 (limit adverse noise effects), DP6 (optimise use of aircraft capabilities) and minimising total population overflown. To first meet DP3, we have identified the high performing notional flight paths using the '70dB SEL' and 'total population overflown' metrics for the paths between 0-4000ft. A secondary check of the 80dB SEL, 60dB and 65dB LAmax and Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the AMS. To achieve the aims of DP6 from 4000ft to 7000ft the option will then route directly to the network exit point with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft.		
Option	**Map**	**Population underlay**	**2019 track data underlay**
EDE			
	When developing the option there was a focus on meeting DP3 (limit adverse noise effects), minimising total population overflown, and DP7 (Long Term predictability and adaptability). The primary metrics used to identify the high performing notional flight paths were '70dB SEL' and 'total population overflown'. A secondary check of the 80dB SEL, 60dB and 65dB LAmax and Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.		
Option	**Map**	**Population underlay**	**2019 track data underlay**
EDF			
	The primary metrics used to identify the high performing notional flight paths focus on minimising total adverse noise effects at night and are '80dB SEL' and 'total population overflown'. A secondary check of the 65dB LAmax was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.		
Option	**Map**	**Population underlay**	**2019 track data underlay**
EDG			

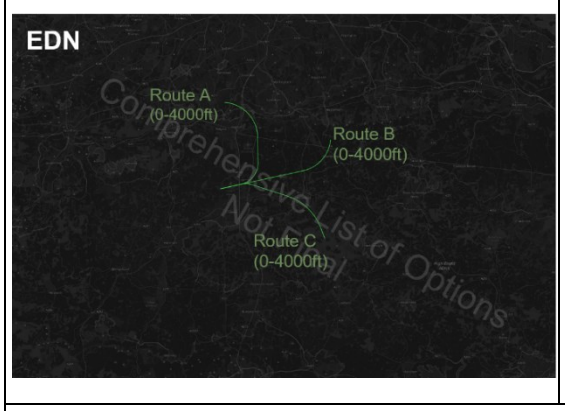
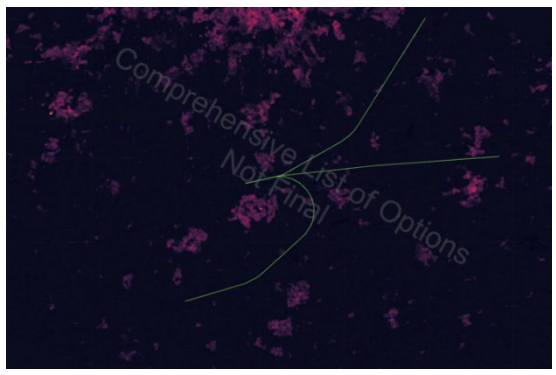
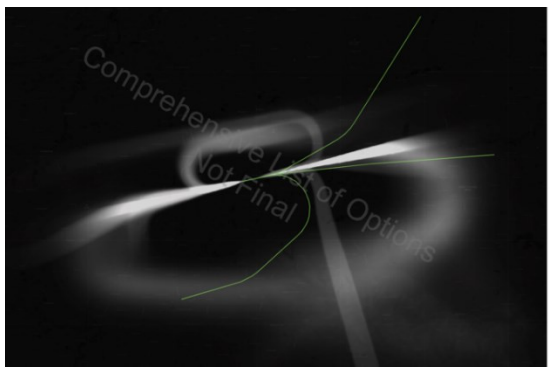
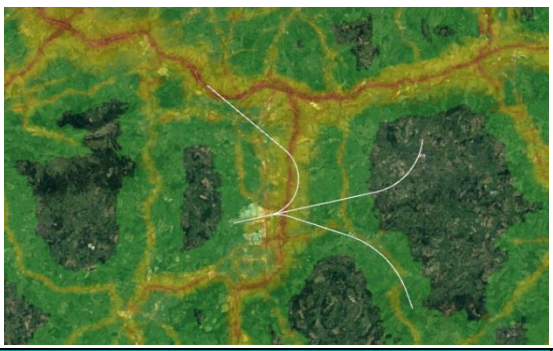
Option	Map	Population underlay	2019 track data underlay
	When developing the option there was a focus on DP3 (limit adverse noise effects) and minimising total population overflown. The primary metrics used to identify the high performing notional flight paths are '70dB SEL' and 'total population overflown'. A secondary check of the 80dB SEL, 60dB and 65dB LAmax and Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the AMS. Although this system option complies with current regulations and conforms to current technological capability, it includes offset departures and turns shortly after take-off, both of which sit close to the defined regulatory limits.		
Option	**Map**	**Population underlay**	**2019 track data underlay**
EDH			
	This option is based on the nominal centerlines of the existing departure routes departing from Gatwick however the vertical profile of these routes has been updated to reflect a 6% continuous climb performance. When developing this option there was a focus on meeting DP3 (limit adverse noise effects) and minimising population newly overflown whilst also considering DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.		
Option	**Map**	**Population underlay**	**2019 track data underlay**
EDI			
	This option is based on the nominal centerlines of the existing departure routes departing from Gatwick however the vertical profile of these routes has been updated to reflect a 6% continuous climb performance. When developing this option there was a focus on DP6 so the route design has been curtailed at 4000ft and the green dashed lines show where aircraft will then fly directly to the network from 4000-7000ft, with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about airspace above 7000ft. When developing this option there was a focus on meeting DP3 (limit adverse noise effects), minimising population newly overflown, and DP6 (optimise use of aircraft capabilities) whilst also considering DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.		
Option	**Map**	**Population underlay**	**2019 track data underlay**
EDJ			
	The period 1 configuration of this respite option is based on EDH however the north-easterly route (LAM) has been removed. The remaining routes are based on the existing RNAV 1 nominal centrelines of the departure routes departing from Gatwick (including NPRs) however the vertical performance of these routes has been updated to reflect continuous climb performance. The period 2 configuration is based on EDA When developing the option there was a focus on meeting DP3 (limit adverse noise effects), DP7 (Long term predictability and adaptability) and minimising population newly overflown whilst also considering DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.		
Option	**Map**	**Population underlay**	**2019 track data underlay**

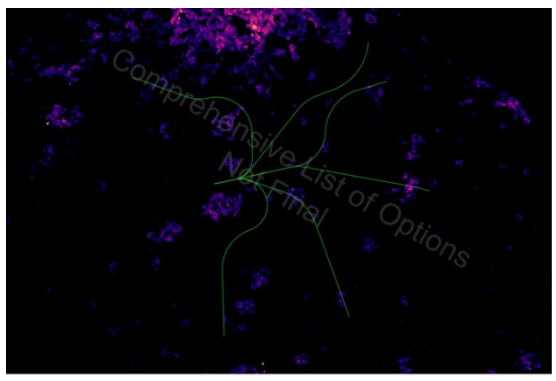
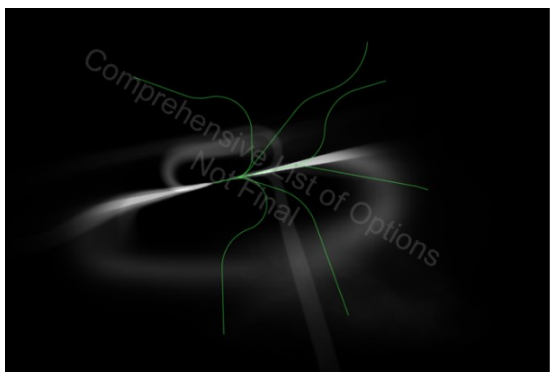
Option	Map	Population underlay	2019 track data underlay
EDK			
		This option was developed following stakeholder feedback and aimed to meet DP3, DP1, DP2, DP5, DP7, DP8, DP9 and the AMS. It follows areas of high ambient road/rail noise as outlined in DEFRA's noise mapping shown in the figure opposite.	

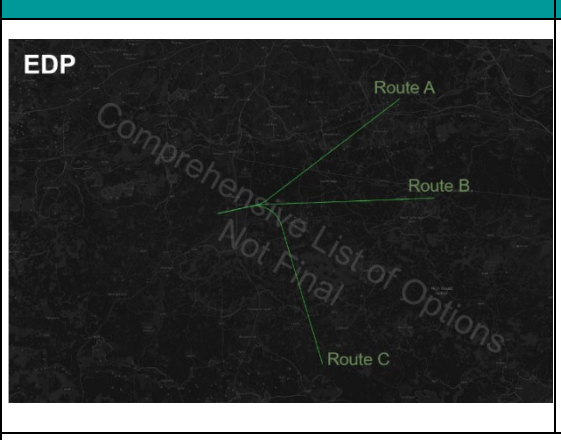
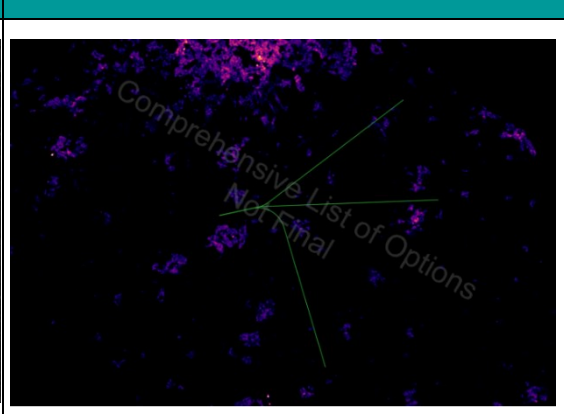
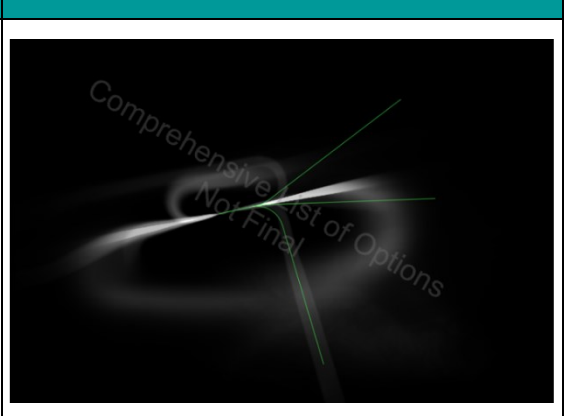
Option	Map	Population underlay	2019 track data underlay
EDL			
		This option was developed following stakeholder feedback and aimed to meet DP3, DP6, DP1, DP2, DP5, DP6, DP7, DP8, DP9 and the AMS. It follows areas of high ambient road/rail noise as outlined in DEFRA's noise mapping shown in the figure opposite. To achieve the aims of DP6, and to align with the Air Navigation Guidance, from 4000ft to 7000ft the option will then route directly to the network exit point with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft.	

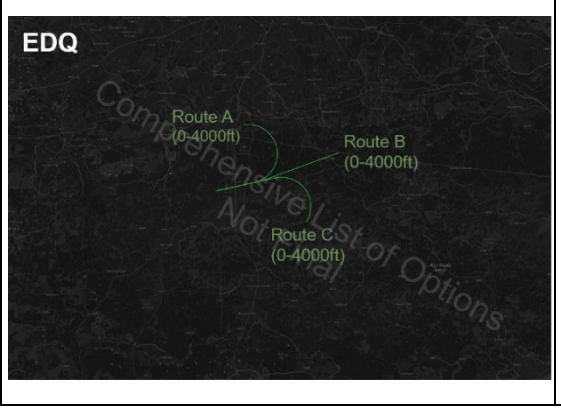
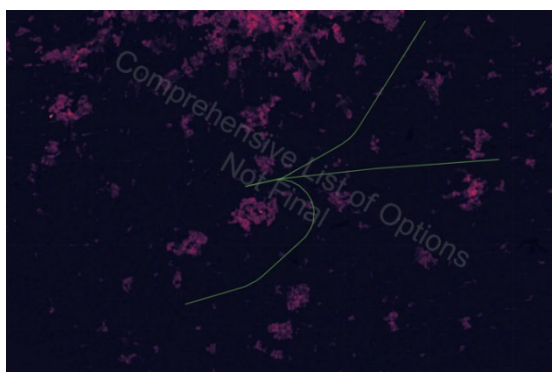
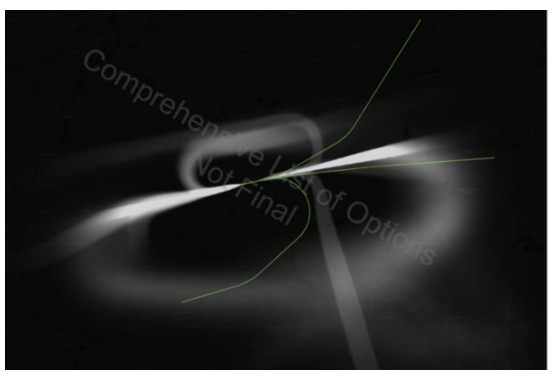
Option	Map	Population underlay	2019 track data underlay
EDM			
		This option was developed following stakeholder feedback and aimed to meet DP3, DP1, DP2, DP5, DP7, DP8, DP9 and the AMS. It follows areas of high ambient road/rail noise as outlined in DEFRA's noise mapping shown in the figure opposite.	

Option	Map	Population underlay	2019 track data underlay

Option	Map	Population underlay	2019 track data underlay
EDN			
		This option was developed following stakeholder feedback and aimed to meet DP3, DP6, DP1, DP2, DP5, DP6, DP7, DP8, DP9 and the AMS. It follows areas of high ambient road/rail noise as outlined in DEFRA's noise mapping shown in the figure opposite. To achieve the aims of DP6, and to align with the Air Navigation Guidance, from 4000ft to 7000ft the option will then route directly to the network exit point with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft.	

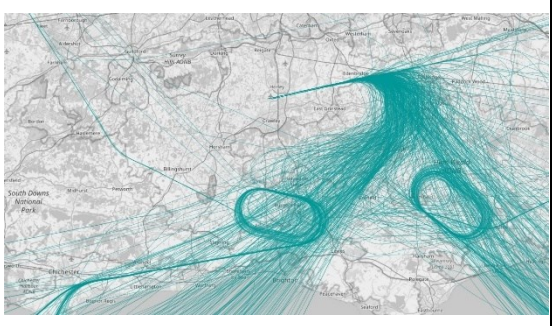
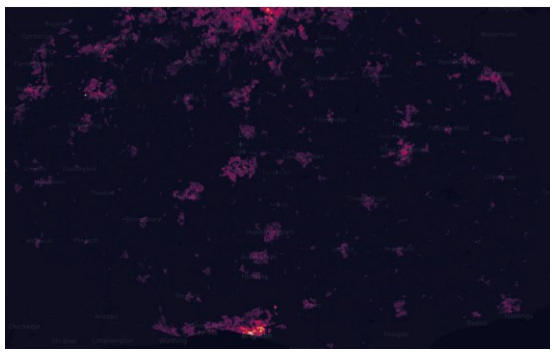
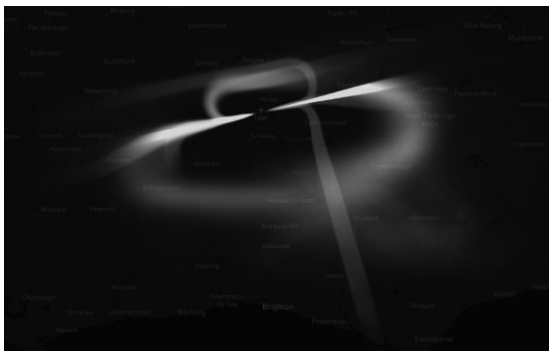
Option	Map	Population underlay	2019 track data underlay
EDO			
		This option was developed following stakeholder feedback and aimed to meet DP3, DP6, DP1, DP2, DP5, DP6, DP7, DP8, DP9 and the parameters of the AMS. The option is based around two respite configurations using options EDK and EDM.	

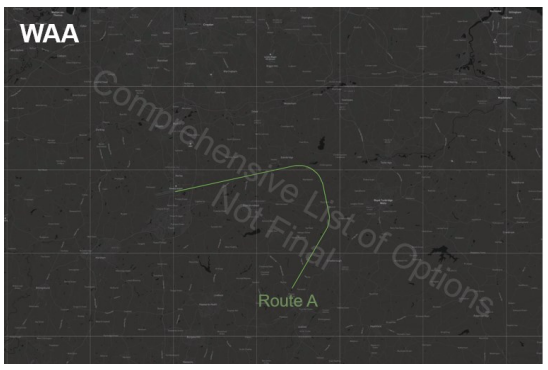
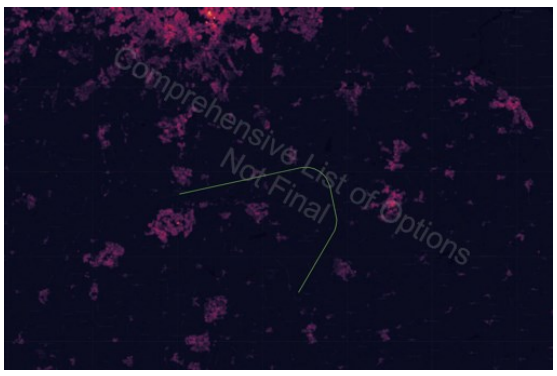
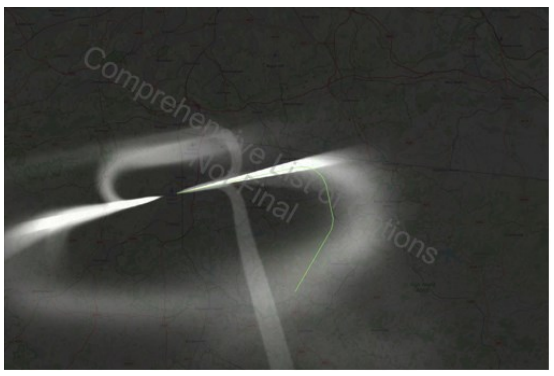
Option	Map	Population underlay	2019 track data underlay
EDP			
	This option was developed following stakeholder feedback and aimed to meet DP3 (limit adverse noise effects), whilst balancing population overflown against minimising population newly overflown. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the parameters of the AMS.		

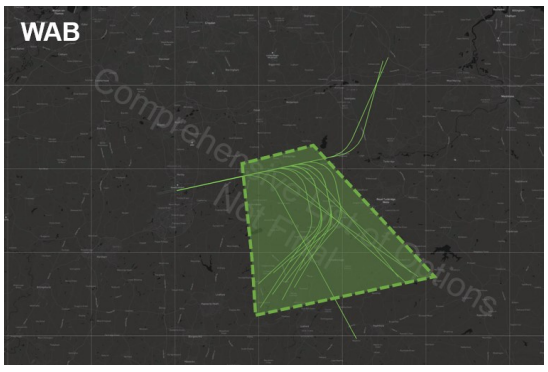
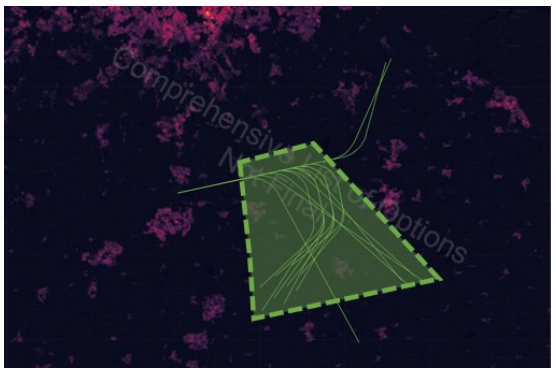
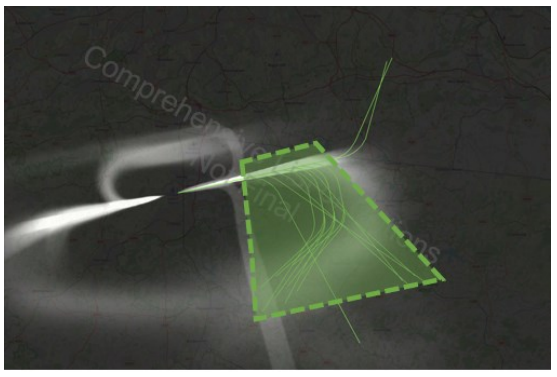
Option	Map	Population underlay	2019 track data underlay
EDQ			

Option	Map	Population underlay	2019 track data underlay
	This option was developed following stakeholder feedback and aimed to meet DP3 (limit adverse noise effects), DP6 (optimise use of aircraft capabilities) whilst balancing population overflown against minimising population newly overflown. To first meet DP3, Gatwick have identified the high performing notional flight paths using the total population and population newly overflown metrics for the paths between 0-4000ft. To achieve the aims of DP6, from 4000ft the option will then route directly to the network exit point. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP5, DP7, DP8, DP9 and the AMS.		

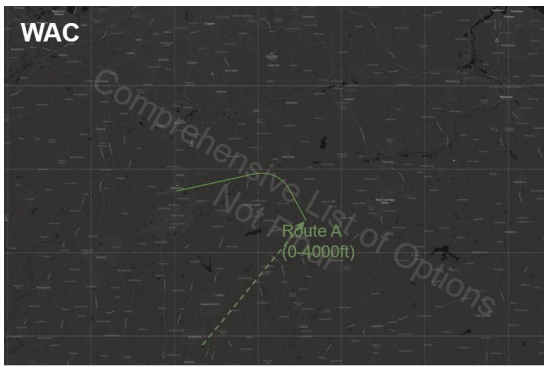
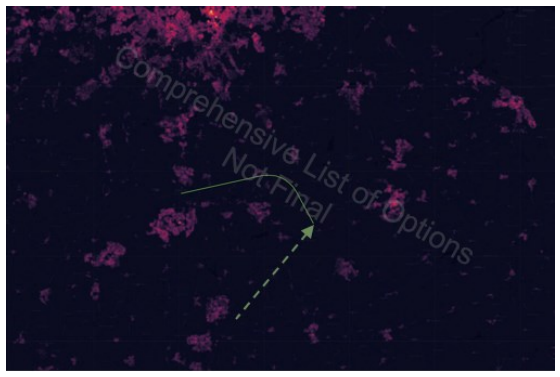
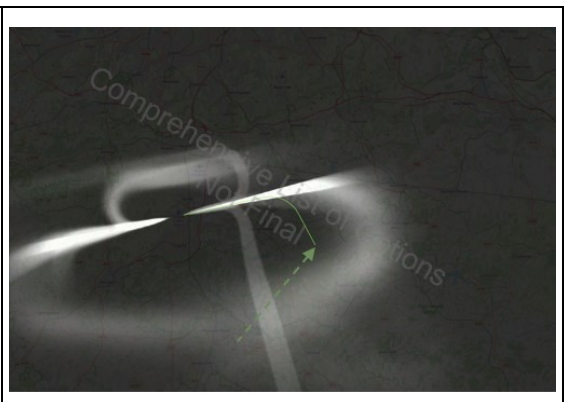
Westerly Arrivals (WA) (Runway 26)

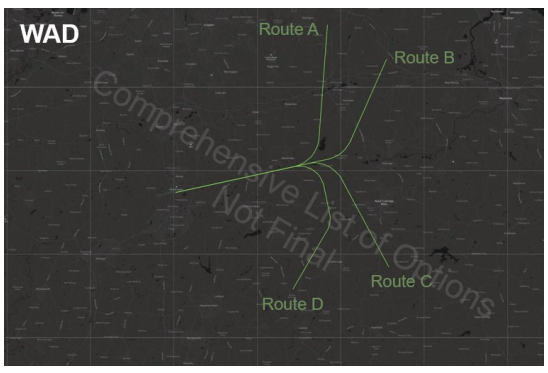
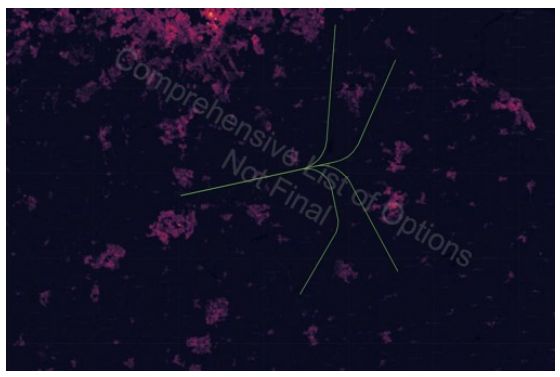
	Map	Population underlay	2019 track data underlay
Baseline	 (Image shows 2 weeks of summer 2019 flight tracks and includes beyond 7000ft)		
	The baseline represents the 'Do nothing' scenario immediately prior to implementation. For Stage 2 of this ACP, the baseline uses 2019 actual flight track data which has been adjusted to reflect the extant (westerly) Route 4 procedures as this is most representative of a scenario where Gatwick has recovered from the impacts of Covid-19. More information can be found in the existing airspace arrangements section of this document.		

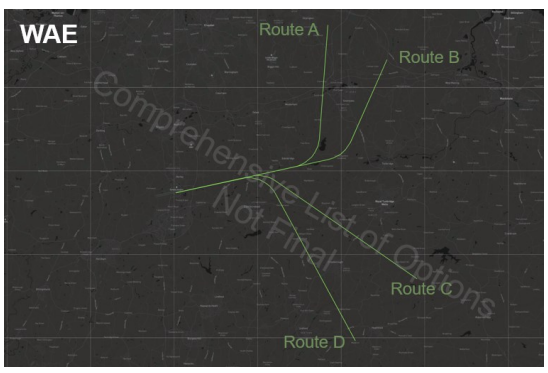
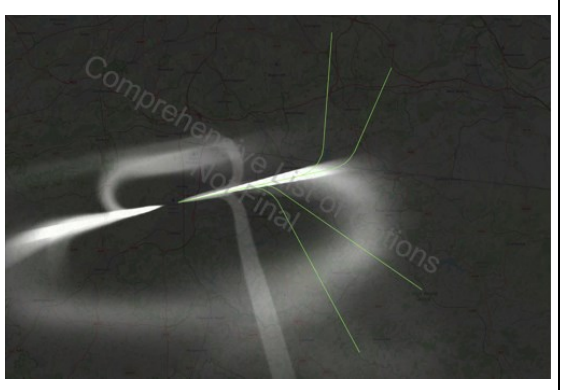
Option	Map	Population underlay	2019 track data underlay
WAA			
	This PBN arrival option joins the final approach at c.10nm. When developing this option there was a focus on meeting DP3 (limit adverse noise effects) and minimising total population overflown also considering DP1, DP2, DP5, DP7, DP8, DP9 and the AMS. The primary metric used to identify the high performing notional flight path is the 'total population overflown'. A secondary check of Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.		

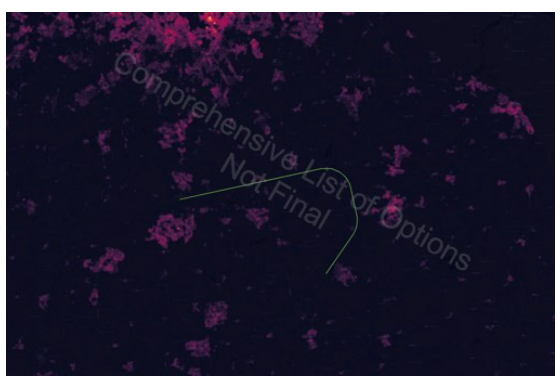
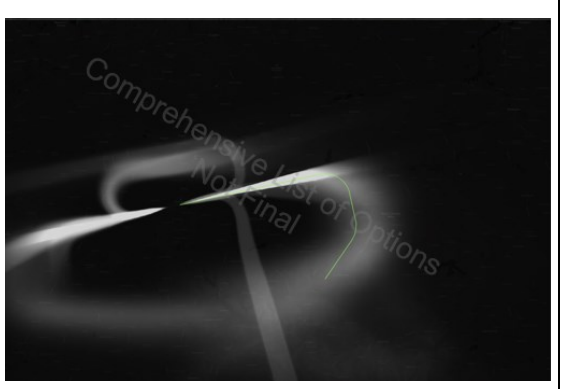
Option	Map	Population underlay	2019 track data underlay
WAB			
	This option incorporates an indicative Radar Manoeuvring Areas (RMA) which is sometimes known as a vectoring area. When developing this option there was a focus on meeting DP3 (limit adverse noise effects) and minimising total population overflown whilst also considering DP1, DP2, DP5, DP7, DP8, DP9 and the AMS. It's important to note that the PBN tracks shown in the image show the outputs from the airspace design database which were used for the purposes of defining the RMA vectoring area.		

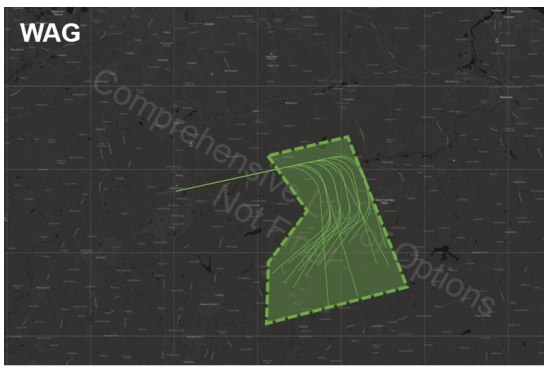
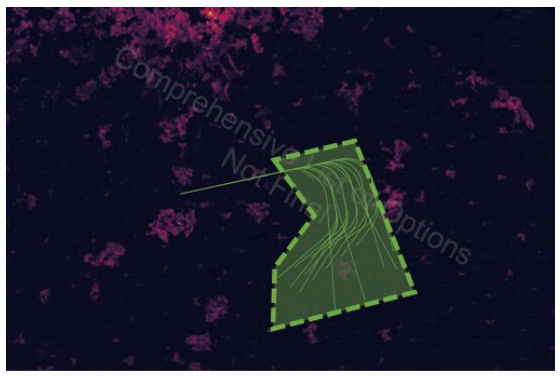
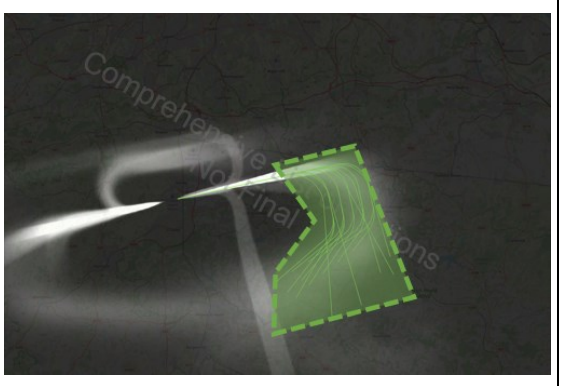
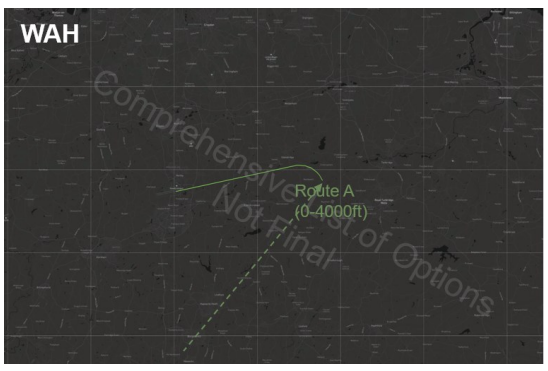
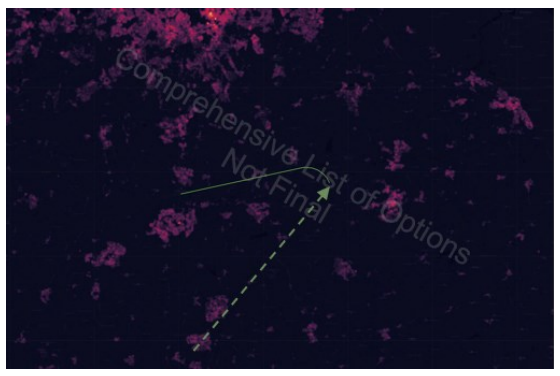
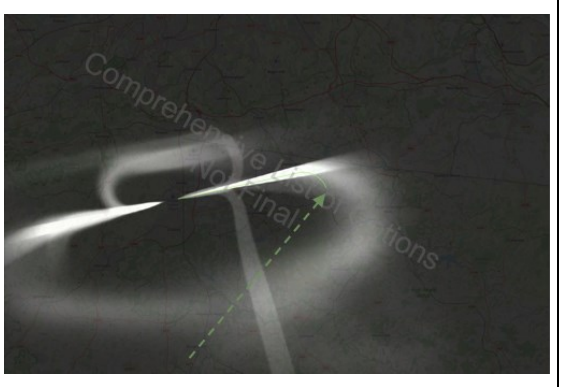
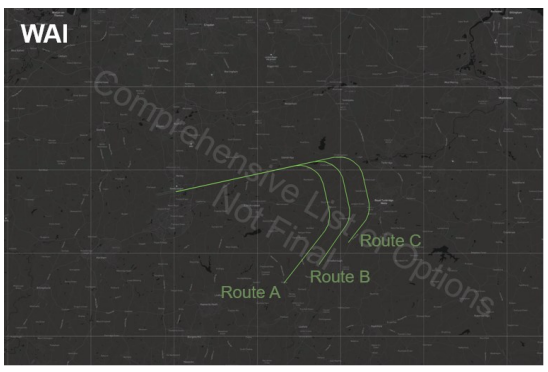
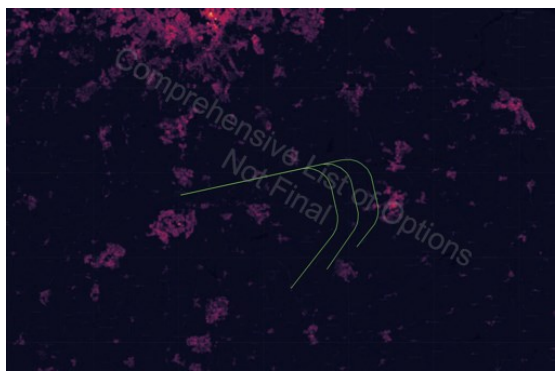
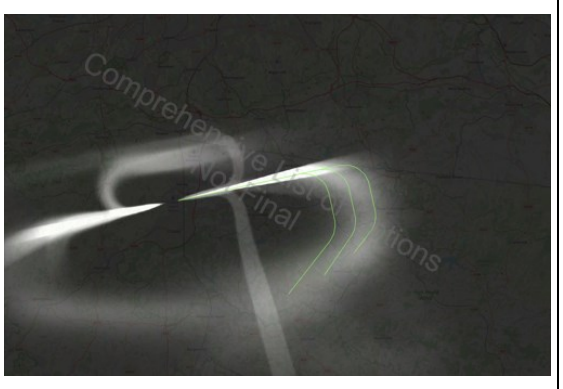
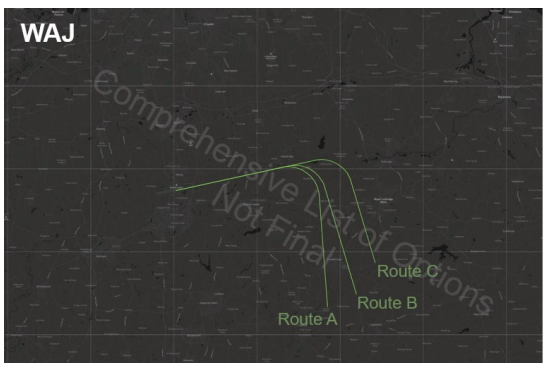
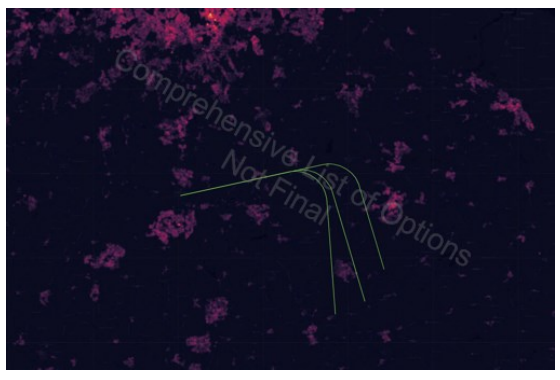
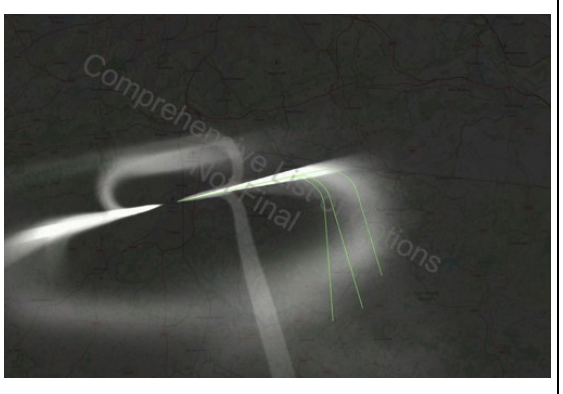
Option	Map	Population underlay	2019 track data underlay

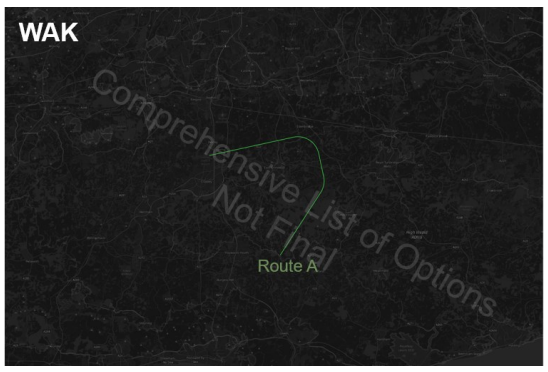
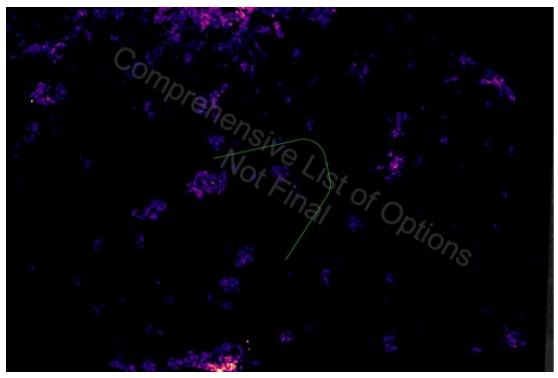
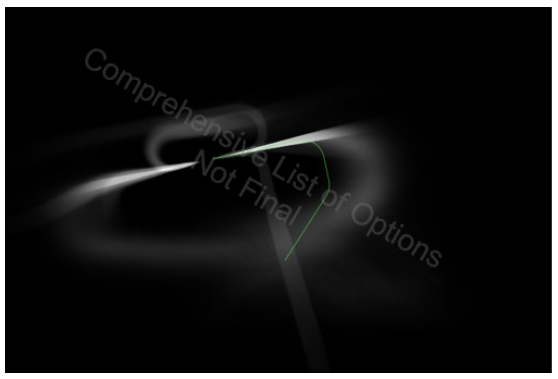
WAC			
	This PBN arrival option joins the final approach at c.6.5nm. When developing this option there was a focus on meeting DP3 (limit adverse noise effects), DP6 (Optimise Use of Aircraft Capabilities) and minimising total population overflown. The primary metric used to identify the high performing notional flight path is the 'total population overflown' overflight contours between 0-4000ft. A secondary check of Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS. To achieve the aims of DP6, from 4000ft to 7000ft the option will then route directly from the network entry point with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft.		

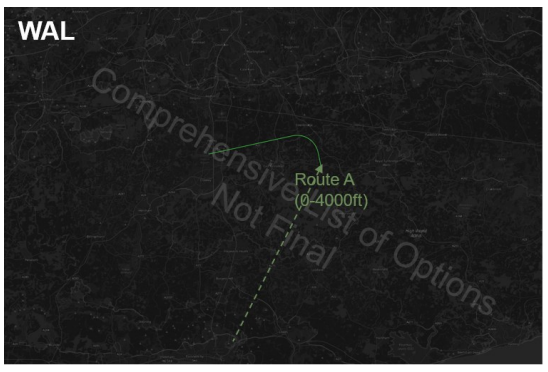
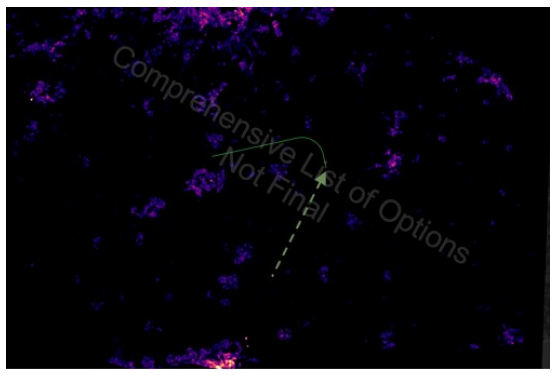
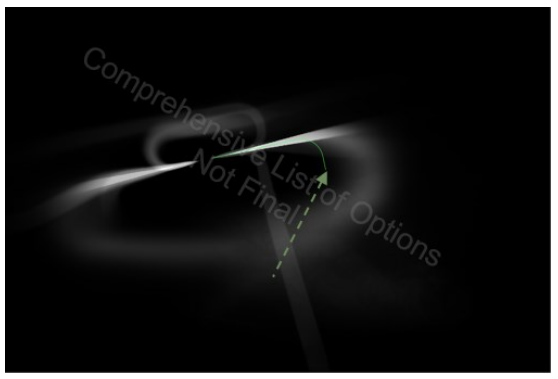
Option	Map	Population underlay	2019 track data underlay
WAD			
	This option offers four PBN arrivals which could be used in a respite configuration. The routes join the final approach at Route A: c.9.5nm, Route B: c.12.5nm, Route C: c.11nm, Route D: c.9.5nm. When developing this option there was a focus on meeting DP3 (limit adverse noise effects), DP7 (Long term predictability and adaptability) and minimise total population overflown. The primary metric used to identify the high performing notional flight path is the 'total population overflown' overflight contours. A secondary check of Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.		

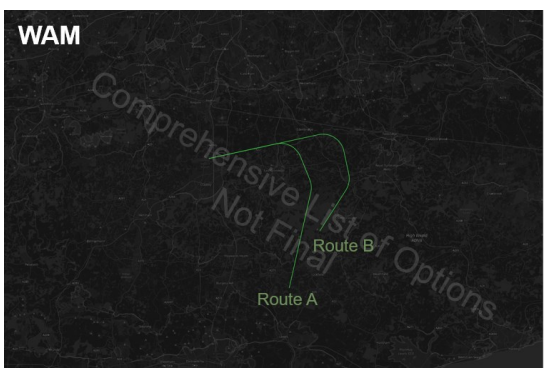
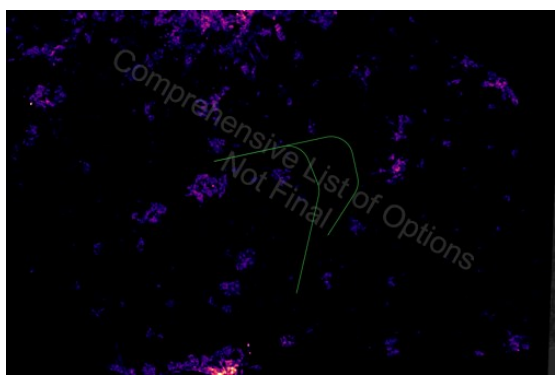
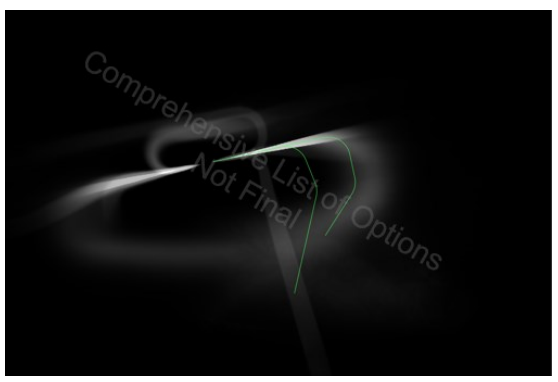
Option	Map	Population underlay	2019 track data underlay
WAE			
	This option offers four PBN arrivals which could be used in a respite configuration. The routes join the final approach at Route A: 9.7nm, Route B: 12.4nm, Route C: c.6nm, Route D: c.5.5nm. When developing this option there was a focus on meeting DP3 (limit adverse noise effects), DP7 (Long term predictability and adaptability) and minimise total population overflown. The primary metric used to identify the high performing notional flight path is the 'total population overflown' overflight contours. A secondary check of Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.		

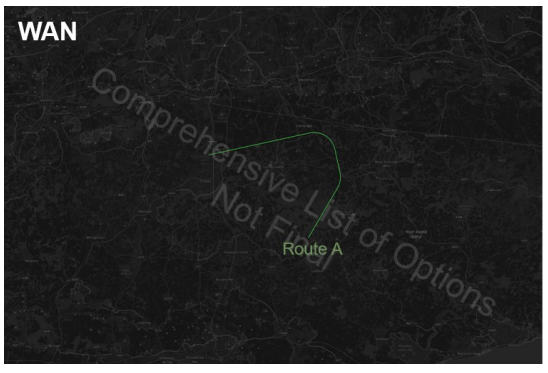
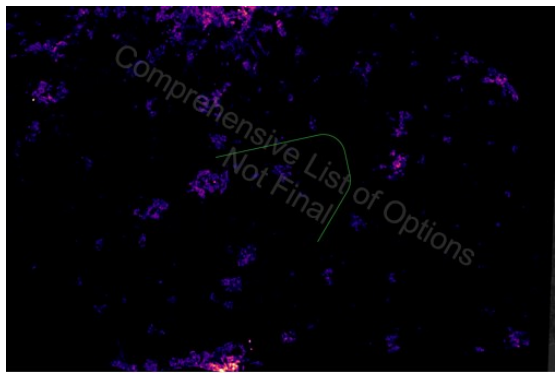
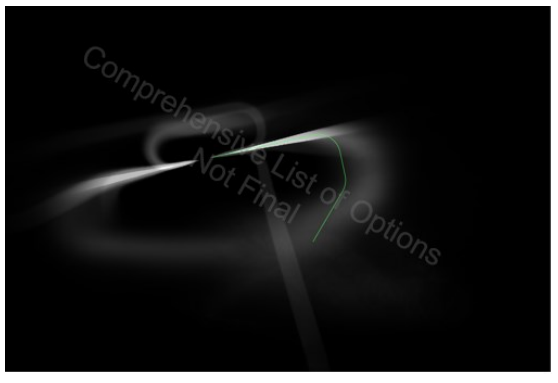
Option	Map	Population underlay	2019 track data underlay
WAF			
	This PBN arrival option joins the final approach at c.11.5nm. When developing this option there was a focus on meeting DP3 (limit adverse noise effects) and minimising population newly overflown. The primary metric used to identify the high performing notional flight path was based on population newly overflown overflight contours and data around existing arrival swathes. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.		

Option	Map	Population underlay	2019 track data underlay
WAG			
	This option incorporates an indicative Radar Manoeuvring Areas (RMA) which is sometimes known as a vectoring area. When developing this option there was a focus on meeting DP3 (limit adverse noise effects) and minimising population newly overflown also considering DP1, DP2, DP5, DP7, DP8, DP9 and the AMS. It's important to note that the PBN tracks shown in the image show the outputs from the airspace design database which were used for the purposes of defining the RMA vectoring area.		
Option	**Map**	**Population underlay**	**2019 track data underlay**
WAH			
	This PBN arrival option joins the final approach at c.9.5nm. When developing this option there was a focus on meeting DP3 (limit adverse noise effects), DP6 (Optimise Use of Aircraft Capabilities) and minimising population newly overflown. The primary metric used to identify the high performing notional flight path is the 'population newly overflown' overflight contours between 0-4000ft. A secondary check of Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS. To achieve the aims of DP6, from 4000ft to 7000ft the option will then route directly from the network entry point with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft.		
Option	**Map**	**Population underlay**	**2019 track data underlay**
WAI			
	This option offers three PBN arrivals which could be used in a respite configuration. The routes join the final approach at c.9.5nm, c.11.5nm and c.13nm. When developing this option there was a focus on meeting DP3 (limit adverse noise effects), DP7 (Long term predictability and adaptability) and minimising population newly overflown. The primary metric used to identify the high performing notional flight paths is the 'population newly overflown' overflight contours. A secondary check of Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.		
Option	**Map**	**Population underlay**	**2019 track data underlay**
WAJ			
	This option offers three PBN arrivals which could be used in a respite configuration. The routes join the final approach at c.8.5nm, c.9nm and c.11.5nm. When developing this option there was a focus on meeting DP3 (limit adverse noise effects), DP7 (Long term predictability and adaptability) and minimising population newly overflown. The primary metric used to identify the high performing notional flight path is the 'population newly overflown' overflight contours. A secondary check of Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.		

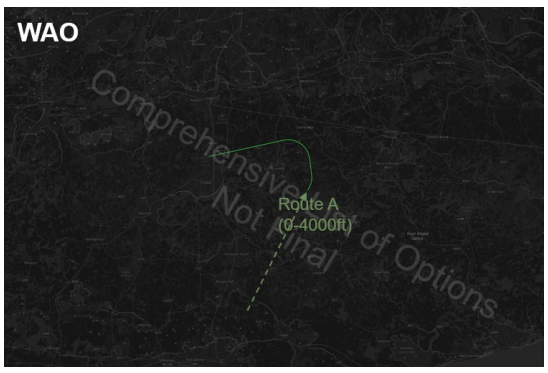
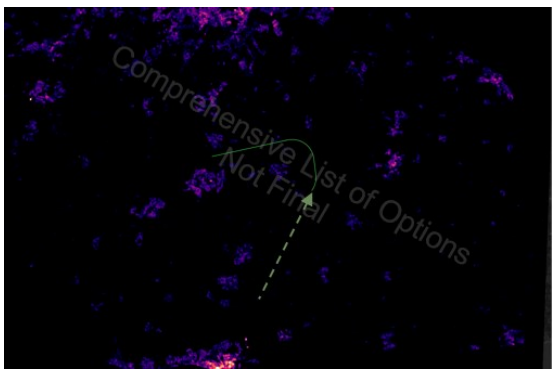
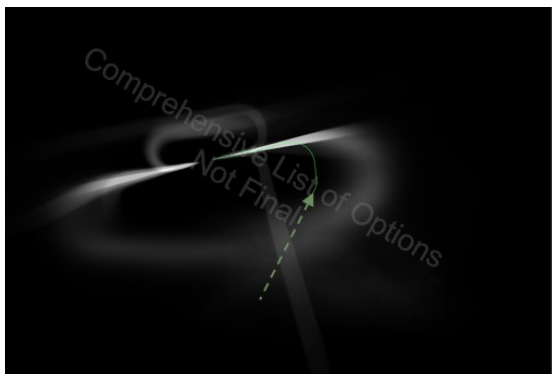
Option	Map	Population underlay	2019 track data underlay
WAK			
	This PBN arrival option joins the final approach at c.8.0nm. This option was developed following stakeholder feedback where there was a request for an option that joins the final approach between 7 – 9nm. When developing this option, there was a focus on DP3 and balancing total population overflown and population newly overflown as this also formed part of the same feedback. The primary metrics used to identify the high performing notional flight path were the total population overflown contours and the population newly overflown overflight contours alongside data around existing arrival swathes. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.		

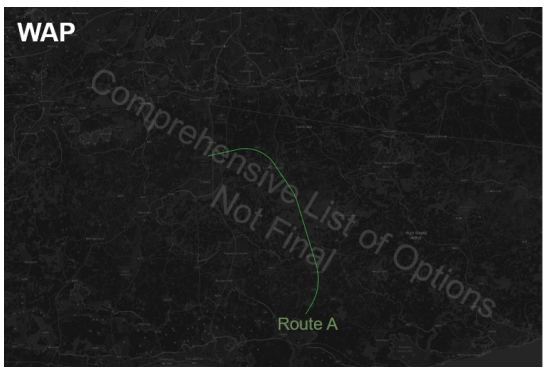
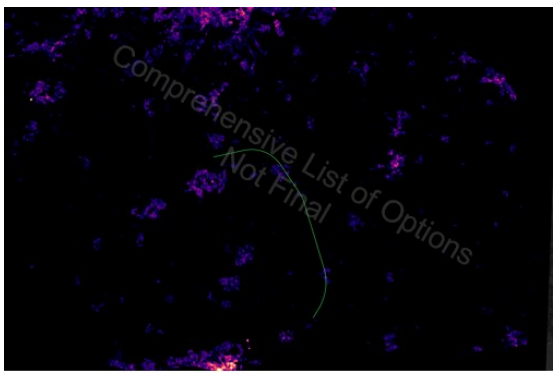
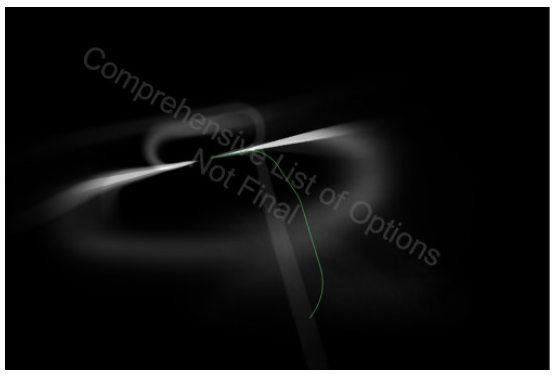
Option	Map	Population underlay	2019 track data underlay
WAL			
	This PBN arrival option joins the final approach at c.8.0nm. This option was developed following stakeholder feedback where there was a request for an option that joins the final approach between 7 – 9nm. When developing this option, there was a focus on DP3, DP6 and balancing total population overflown and population newly overflown as this also formed part of the same feedback. The primary metrics used to identify the high performing notional flight path were the total population overflown contours and the population newly overflown overflight contours alongside data around existing arrival swathes. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS. To achieve the aims of DP6, from 4000ft to 7000ft the option will then route directly from the network entry point with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft.		

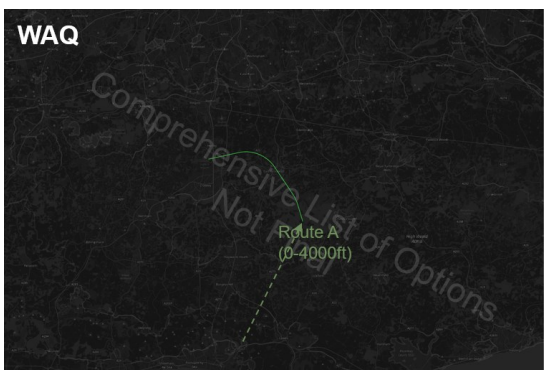
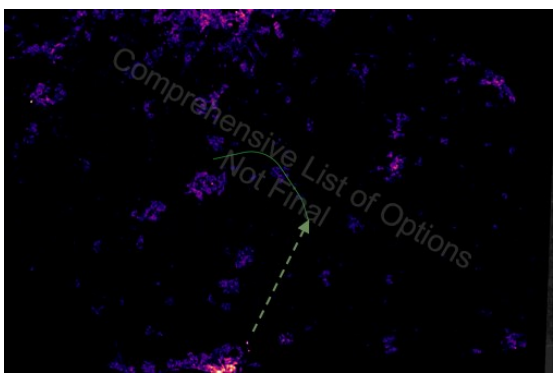
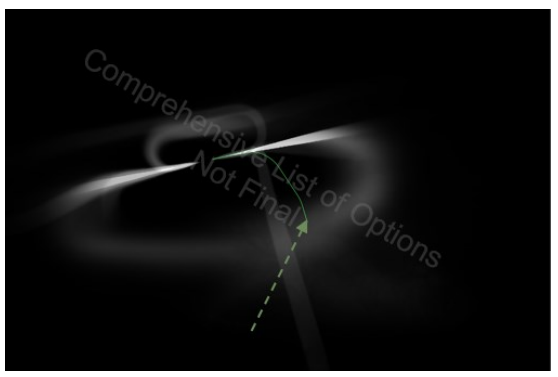
Option	Map	Population underlay	2019 track data underlay
WAM			
	This option offers two PBN arrivals which could be used in a respite configuration. The routes join the final approach at c.6.5nm and c.10.5nm. This option was developed following stakeholder feedback. When developing this option, there was a focus on DP3, DP7 and balancing total population overflown and population newly overflown as this also formed part of the same feedback. The primary metrics used to identify the high performing notional flight path were the total population overflown contours and the population newly overflown overflight contours alongside data around existing arrival swathes. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.		

Option	Map	Population underlay	2019 track data underlay
WAN			
	This PBN arrival option joins the final approach at c.10nm and it was developed following stakeholder feedback. When developing this option there was a focus on meeting DP3 (limit adverse noise effects), whilst balancing population overflown against minimising population newly overflown. The primary metrics		

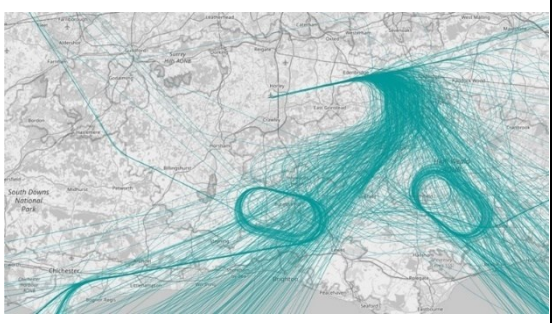
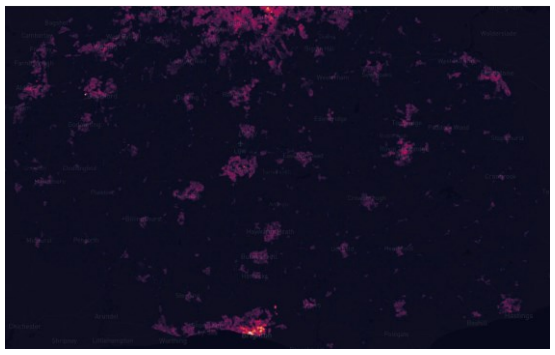
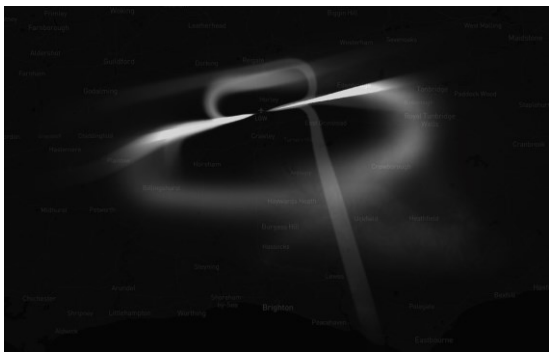
	used to identify the high performing notional flight path were 'population newly overflown' overflight contours and 'total population overflown' contours. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.

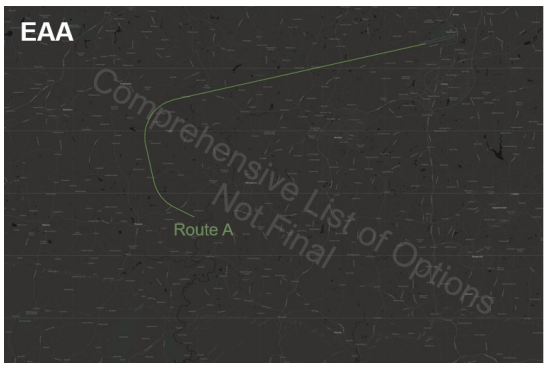
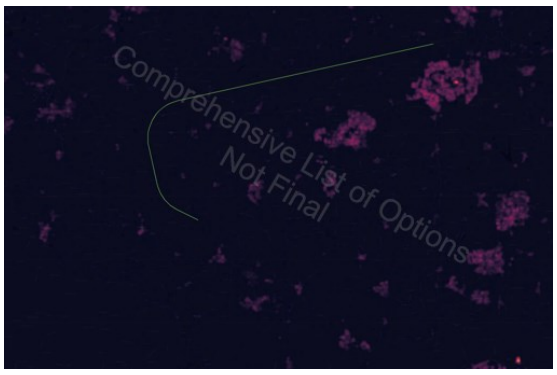
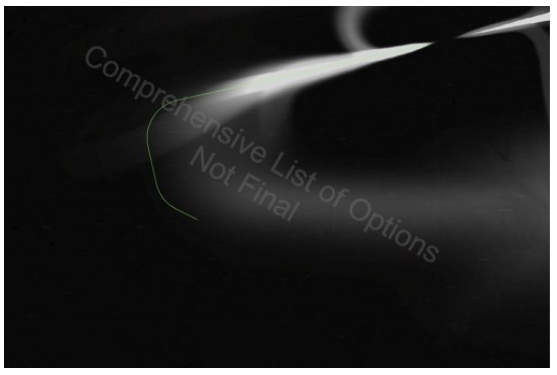
Option	Map	Population underlay	2019 track data underlay
WAO			
	This PBN arrival option joins the final approach at c.7.0nm and it was developed following stakeholder feedback. When developing this option there was a focus on meeting DP3 and DP6, whilst balancing population overflown against minimising population newly overflown. The primary metrics used to identify the high performing notional flight path were 'population newly overflown' overflight contours and 'total population overflown' contours between 0-4000ft. A secondary check of Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS. To achieve the aims of DP6, from 4000ft to 7000ft the option will then route directly from the network entry point with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft.		

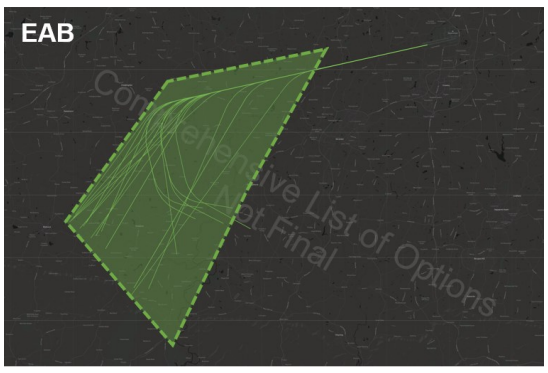
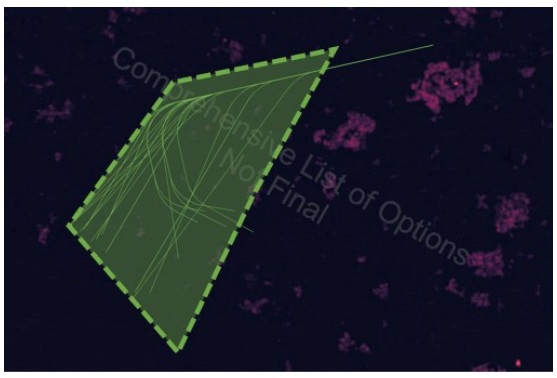
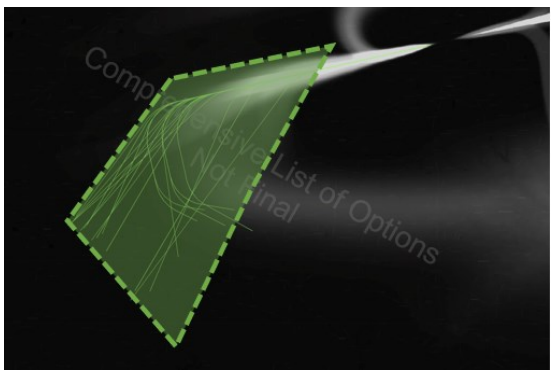
Option	Map	Population underlay	2019 track data underlay
WAP			
	This PBN arrival option joins the final approach at c.3nm. It aims to follow the areas of high road/rail noise as outlined on DEFRA's noise mapping. This option was developed following stakeholder feedback and aimed to meet DP1, DP2, DP3, DP4, DP5, DP7, DP8, DP9 and the AMS. This arrival option would utilise a type of PBN called RNP-AR. Not all aircraft and crews are able to fly RNP-AR and therefore these routes would need to be operated alongside other arrival options.		

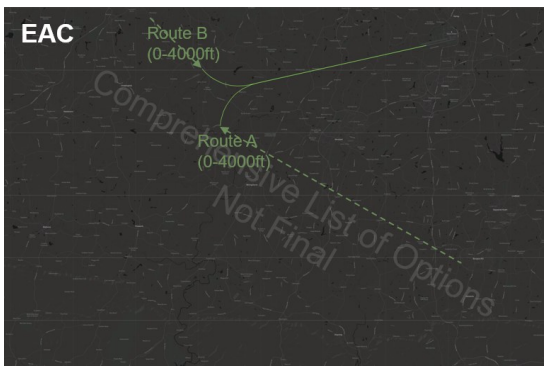
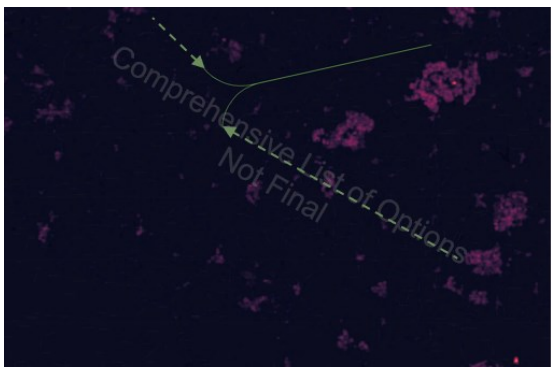
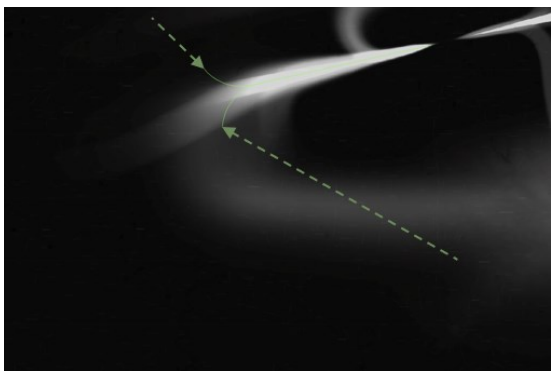
Option	Map	Population underlay	2019 track data underlay
			
	This PBN arrival option joins the final approach at c.3nm. It aims to follow the areas of high road/rail noise as outlined on DEFRA's noise mapping. This option was developed following stakeholder feedback and aimed to meet DP1, DP2, DP3, DP4, DP5, DP6, DP7, DP8, DP9 and the AMS. To achieve the aims of DP6, from 4000ft to 7000ft the option will then route directly from the network entry point with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft. This arrival option would utilise a type of PBN called RNP-AR. Not all aircraft and crews are able to fly RNP-AR and therefore these routes would need to be operated alongside other arrival options.		

Easterly Arrivals (EA) (Runway 08)

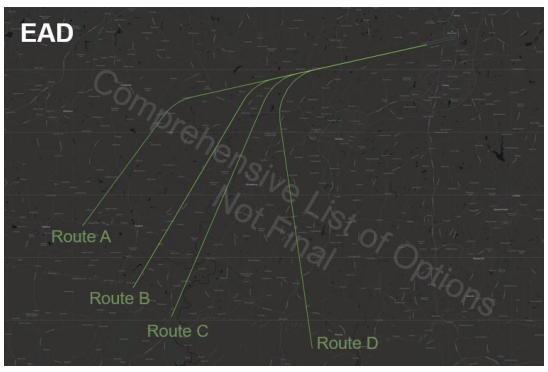
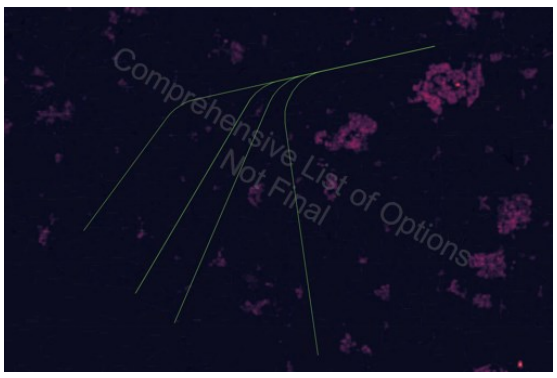
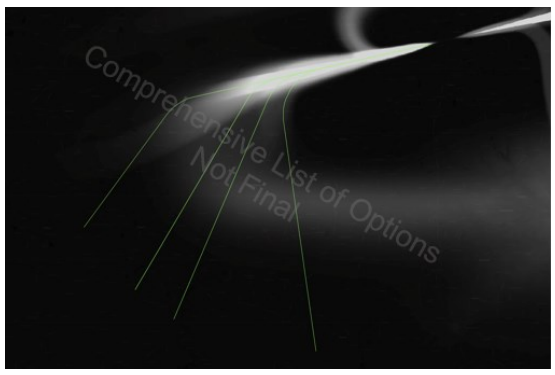
	Map	Population underlay	2019 track data underlay
Baseline	 (Image shows 2 weeks of summer 2019 flight tracks and includes beyond 7000ft)		
	The baseline represents the 'Do nothing' scenario immediately prior to implementation. For Stage 2 of this ACP, the baseline uses 2019 actual flight track data which has been adjusted to reflect the extant (westerly) Route 4 procedures as this is most representative of a scenario where Gatwick has recovered from the impacts of Covid-19. More information can be found in the existing airspace arrangements section of this document.		

Option	Map	Population underlay	2019 track data underlay
EAA			
	This PBN arrival option joins the final approach at c.14nm. When developing this option there was a focus on meeting DP3 (limit adverse noise effects) and minimising total population overflown also considering DP1, DP2, DP5, DP7, DP8, DP9 and the AMS. The primary metric used to identify the high performing notional flight path is the 'total population overflown'. A secondary check of Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.		

Option	Map	Population underlay	2019 track data underlay
EAB			
	This option incorporates an indicative Radar Manoeuvring Areas (RMA) which is sometimes known as a vectoring area. When developing this option there was a focus on meeting DP3 (limit adverse noise effects) and minimising total population overflown also considering DP1, DP2, DP5, DP7, DP8, DP9 and the AMS. It's important to note that the PBN tracks shown in the image show the outputs from the airspace design database which were used for the purposes of defining the RMA vectoring area.		

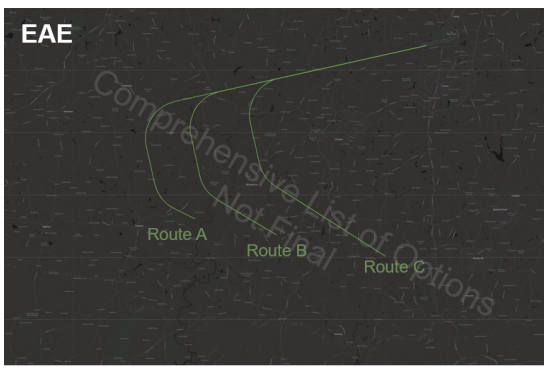
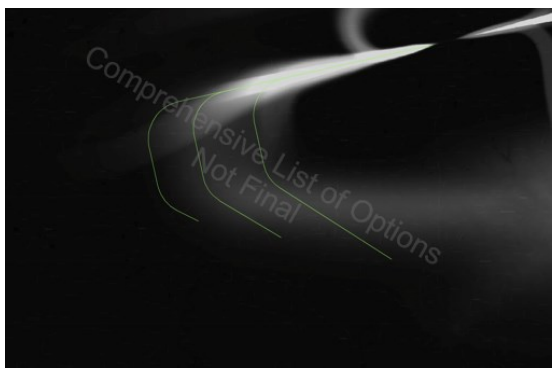
Option	Map	Population underlay	2019 track data underlay
EAC			
	This arrival option offers two PBN routes, one from the north and one from the south, that join the final approach at c.9.5nm. When developing this option there was a focus on meeting DP3 (limit adverse noise effects), DP6 (Optimise Use of Aircraft Capabilities) and minimising total population overflown. The primary metric used to identify the high performing notional flight path is the 'total population overflown' overflight contours between 0-4000ft. A secondary check of Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.		

	To achieve the aims of DP6, from 4000ft to 7000ft the option will then route directly from the network entry point with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft.

Option	Map	Population underlay	2019 track data underlay
EAD			

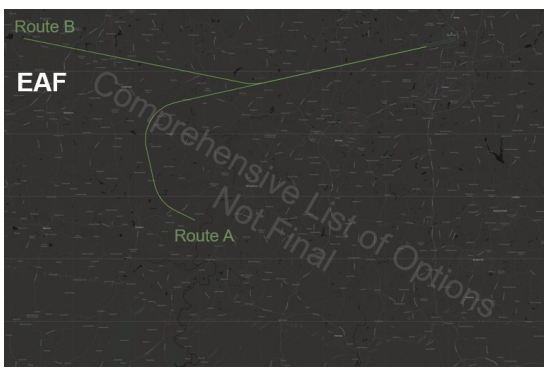
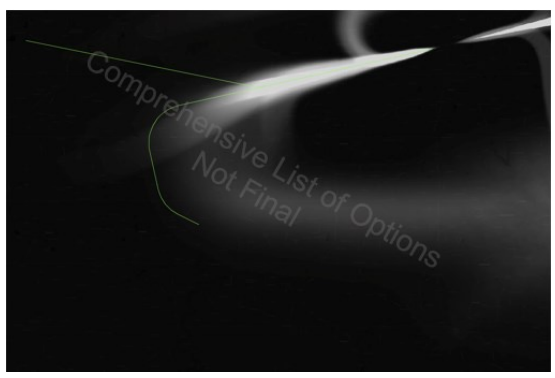
This option offers four PBN arrivals which could be used in a respite configuration. The routes join the final approach at c.13nm, c.8.5nm, c.7.0nm and c.6.0nm.

When developing this option there was a focus on meeting DP3 (limit adverse noise effects), DP7 (Long term predictability and adaptability) and minimise total population overflown. The primary metric used to identify the high performing notional flight path is the 'total population overflown' overflight contours. A secondary check of Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.

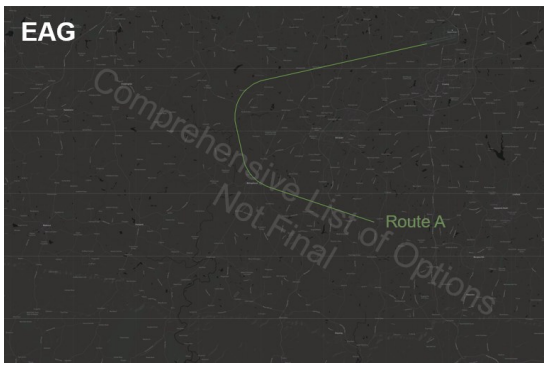
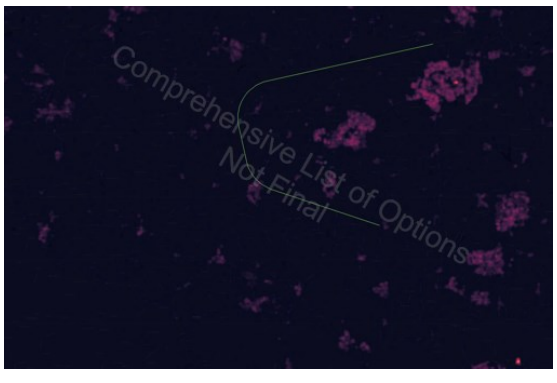
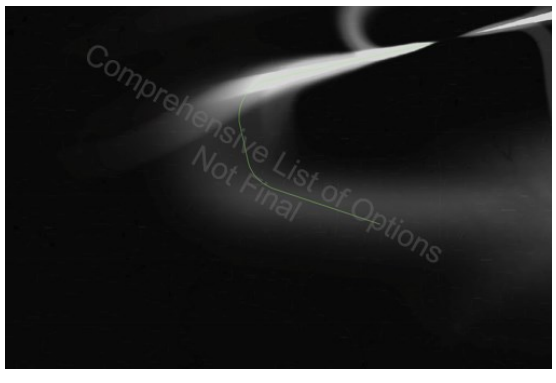
Option	Map	Population underlay	2019 track data underlay
EAE			

This option offers three PBN arrivals which could be used in a respite configuration. The routes join the final approach at c.14nm, c.11.5nm and c.8.0nm.

When developing this option there was a focus on meeting DP3 (limit adverse noise effects), DP7 (Long term predictability and adaptability) and minimise total population overflown. The primary metric used to identify the high performing notional flight path is the 'total population overflown' overflight contours. A secondary check of Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.

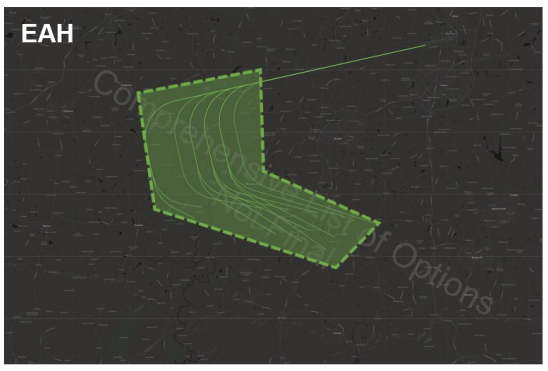
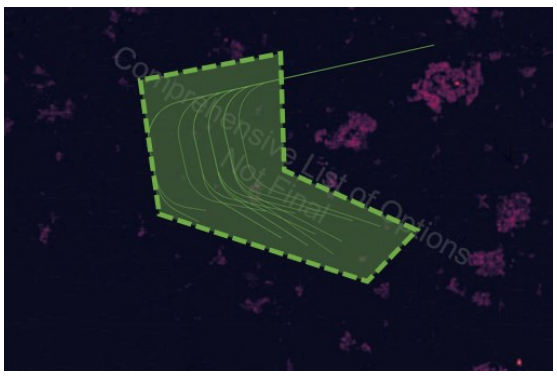
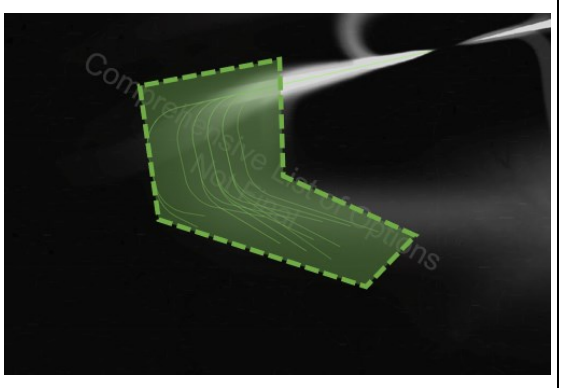
Option	Map	Population underlay	2019 track data underlay
EAF			

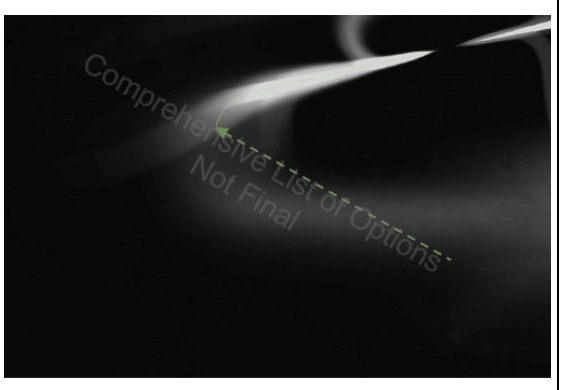
This arrival option offers two PBN routes, one from the north and one from the south, that join the final approach at c.8.8nm and c.13.7nm. When developing this option there was a focus on meeting DP3 (limit adverse noise effects), DP6 (optimise use of aircraft capabilities), DP7 and minimising total population overflown. The northern path of this option has been selected using the total population overflown metric. It would offer a 'short cut' to operators when traffic conditions may be able to facilitate an arrival directly from the north. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.

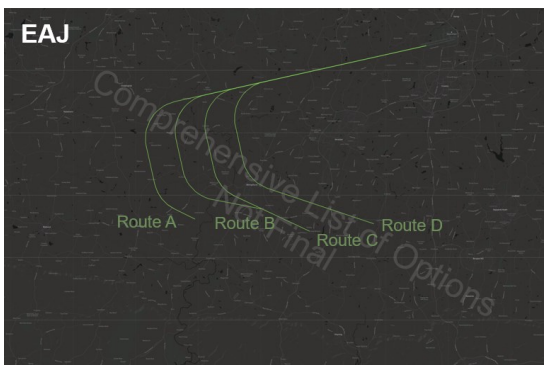
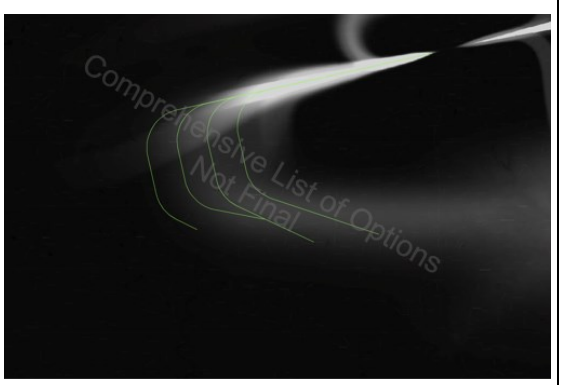
Option	Map	Population underlay	2019 track data underlay
EAG			

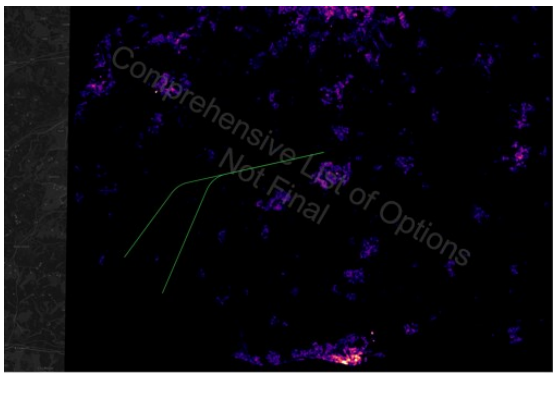
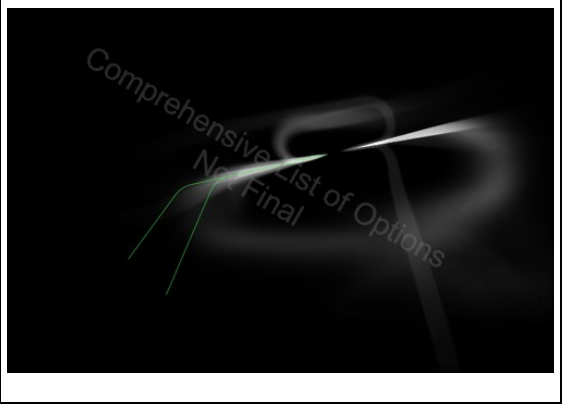
This PBN arrival option joins the final approach at c.9nm. When developing this option there was a focus on meeting DP3 (limit adverse noise effects) and minimising population newly overflown. The primary metric used to identify the high performing notional flight path was based on population newly overflown

	overflight contours and data around existing arrival swathes. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.

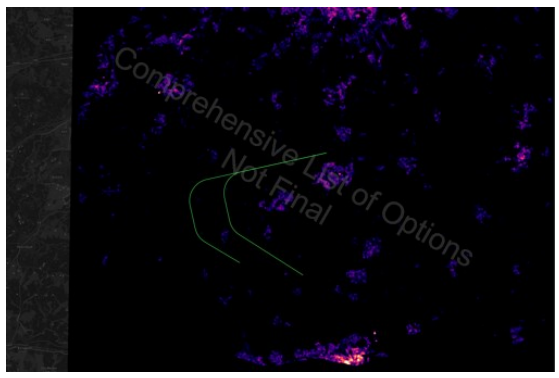
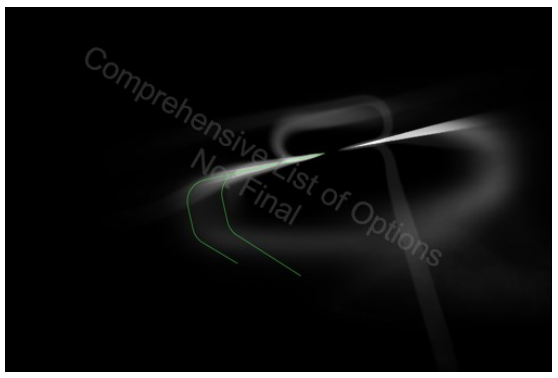
Option	Map	Population underlay	2019 track data underlay
EAH			
	This option incorporates an indicative Radar Manoeuvring Areas (RMA) which is sometimes known as a vectoring area. When developing this option there was a focus on meeting DP3 (limit adverse noise effects) and minimising population newly overflown as well as also considering DP1, DP2, DP5, DP7, DP8, DP9 and the AMS. It's important to note that the PBN tracks shown in the image show the outputs from the airspace design database which were used for the purposes of defining the RMA vectoring area.		

Option	Map	Population underlay	2019 track data underlay
			
	This PBN arrival option joins the final approach at c.10nm. When developing this option there was a focus on meeting DP3 (limit adverse noise effects), DP6 (Optimise Use of Aircraft Capabilities) and minimising population newly overflown. The primary metric used to identify the high performing notional flight path is the 'population newly overflown' overflight contours between 0-4000ft. A secondary check of Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS. To achieve the aims of DP6, from 4000ft to 7000ft the option will then route directly from the network entry point with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft.		

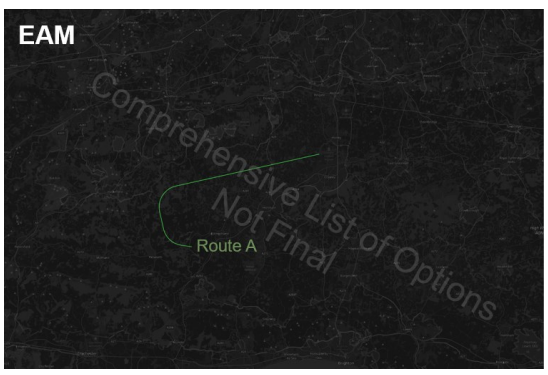
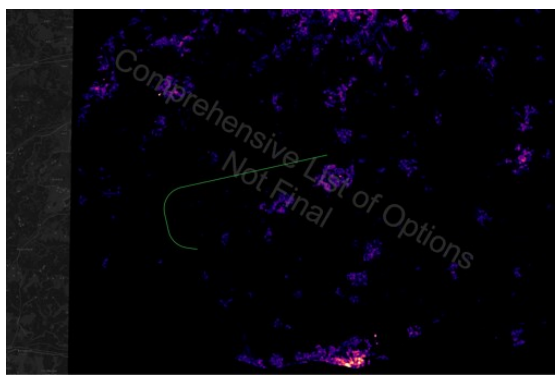
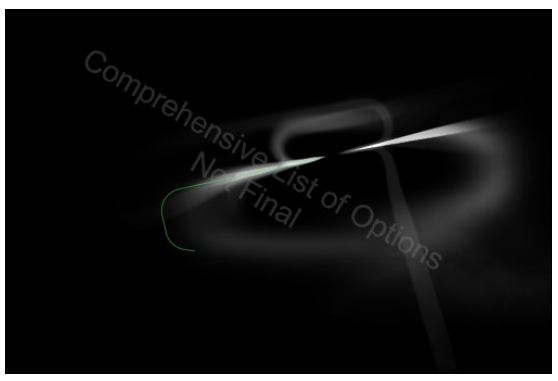
Option	Map	Population underlay	2019 track data underlay
EAJ			
	This option offers four PBN arrivals which could be used in a respite configuration. The routes join the final approach at c.14nm, c.12nm, c.10.5nm and c.8.5nm. When developing this option there was a focus on meeting DP3 (limit adverse noise effects), DP7 (Long term predictability and adaptability) and minimising population newly overflown. The primary metric used to identify the high performing notional flight path is the 'population newly overflown' overflight contours. A secondary check of Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.		

Option	Map	Population underlay	2019 track data underlay
EAK			

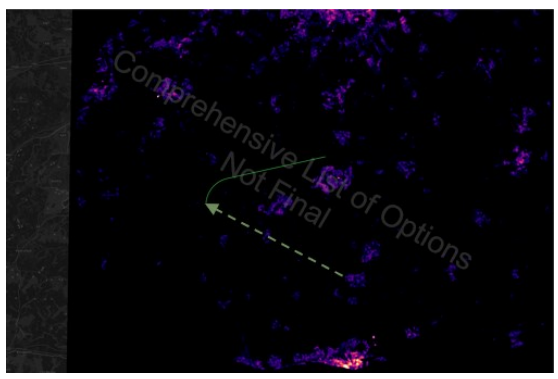
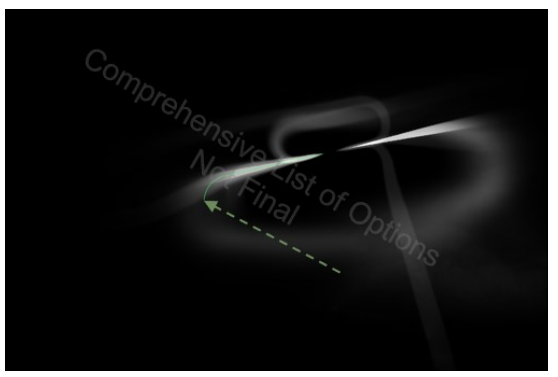
	This option offers two PBN arrivals which could be used in a respite configuration. The routes join the final approach at c.9nm and c.12.5nm. This option was developed following stakeholder feedback. When developing this option, there was a focus on DP3, DP7 and balancing total population overflown and population newly overflown. The primary metrics used to identify the high performing notional flight path were the total population overflown contours and the population newly overflown overflight contours alongside data around existing arrival swathes. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.

Option	Map	Population underlay	2019 track data underlay
EAL			

This option offers two PBN arrivals which could be used in a respite configuration. The routes join the final approach at c.8.0nm and c.11.5nm. This option was developed following stakeholder feedback. When developing this option, there was a focus on DP3, DP7 and balancing total population overflown and population newly overflown. The primary metrics used to identify the high performing notional flight paths were the total population overflown contours and the population newly overflown overflight contours alongside data around existing arrival swathes. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.

Option	Map	Population underlay	2019 track data underlay
EAM			

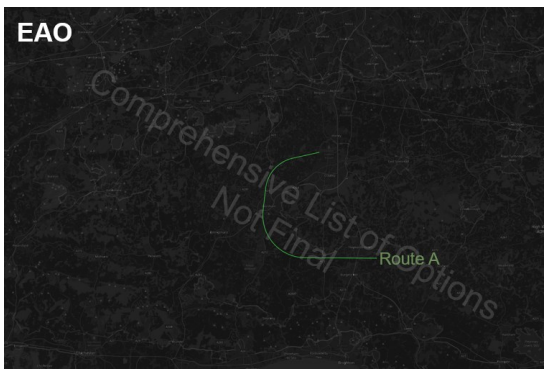
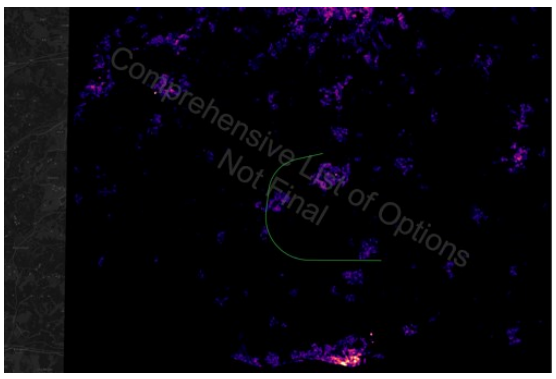
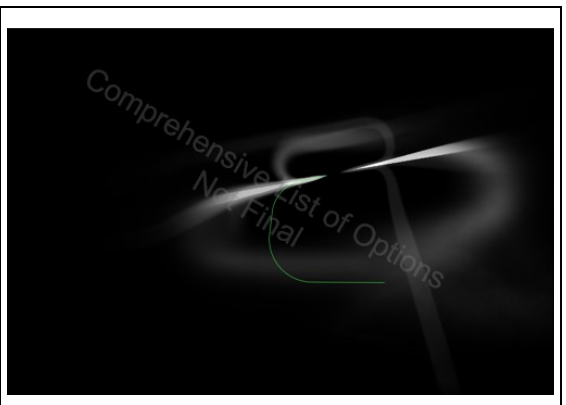
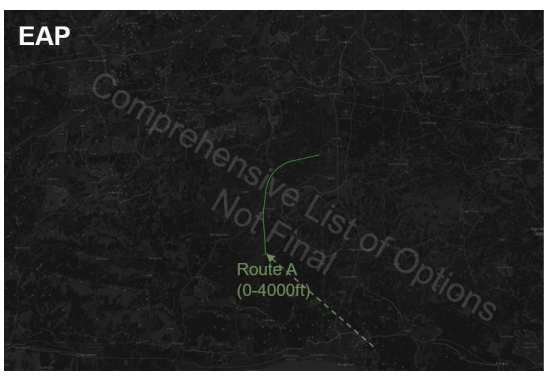
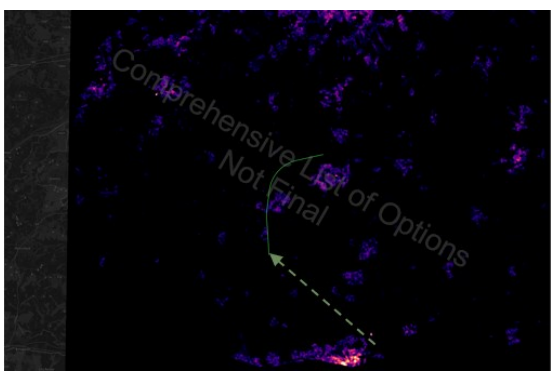
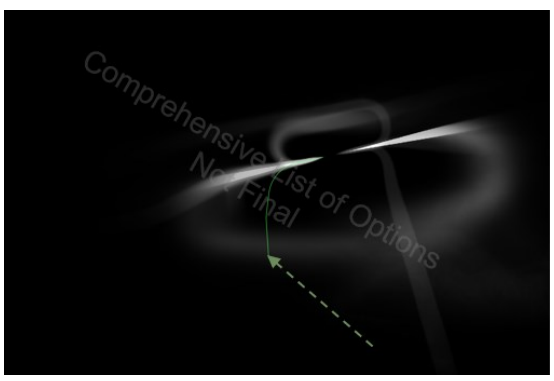
This PBN arrival option joins the final approach at c.14nm. This option was developed following stakeholder feedback. When developing this option there was a focus on meeting DP3 (limit adverse noise effects), whilst balancing population overflown against minimising population newly overflown. The primary metrics used to identify the high performing notional flight path were 'population newly overflown' overflight contours and 'total population overflown' contours. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.

Option	Map	Population underlay	2019 track data underlay
EAN			

This PBN arrival option joins the final approach at c.9.5nm and it was developed following stakeholder feedback. When developing this option there was a focus on meeting DP3 (limit adverse noise effects), whilst balancing population overflown against minimising population newly overflown. The primary metrics used to identify the high performing notional flight path were 'population newly overflown' overflight contours and 'total population overflown' contours between 0-4000ft. A secondary check of Area of AONB metrics was also undertaken. Alongside the outputs from the Airspace Design Database, this option aimed to meet DP1, DP2, DP4, DP5, DP7, DP8, DP9 and the AMS.

To achieve the aims of DP6, from 4000ft to 7000ft the option will then route directly from the network entry point with small adjustments to consider noise. This option will therefore evolve as Gatwick progress through the airspace change process and more information from NERL is known about the airspace above 7000ft.

Option	Map	Population underlay	2019 track data underlay

EAO			
	This PBN arrival option joins the final approach at c.3nm. It aims to follow the areas of high road/rail noise as outlined on DEFRA's noise mapping. This option was developed following stakeholder feedback and aimed to meet DP1, DP2, DP3, DP4, DP5, DP7, DP8, DP9 and the AMS. This arrival option would utilise a type of PBN called RNP-AR. Not all aircraft and crews are able to fly RNP-AR and therefore these routes would need to be operated alongside other arrival options.		
Option	**Map**	**Population underlay**	**2019 track data underlay**
EAP			
	This PBN arrival option joins the final approach at c.3nm. It aims to follow the areas of high road/rail noise as outlined on DEFRA's noise mapping. This option was developed following stakeholder feedback and aimed to meet DP1, DP2, DP3, DP4, DP5, DP7, DP8, DP9 and the AMS. This arrival option would utilise a type of PBN called RNP-AR. Not all aircraft and crews are able to fly RNP-AR and therefore these routes would need to be operated alongside other arrival options.		

Options for Controlled Airspace and other procedures

Options for Controlled Airspace

Airspace containment of Instrument Flight Procedures (IFPs) is very closely related to the design characteristics as well as track performance (flyability) along the route centrelines. IFPs are all required to be contained inside Controlled Airspace in accordance with the CAA Policy for the Design of Controlled Airspace Structures.

The illustrative route centrelines shown as part of the Comprehensive List of Options are likely to move as options are refined throughout the project. Refinement will be on the basis of integration with the wider airspace network below and above 7,000ft, reacting to stakeholder engagement, increasing environmental and operational performance and in accordance with more detailed IFP design and validation in Stages 3 and 4.

The Controlled Airspace (CAS) construct needs to be based on both easterly and westerly operations and there could be many differing CAS designs to support every combination of airspace design options being considered at this stage. It is therefore not proportionate at this stage to design CAS structures to support each possible option and configuration, especially when the fine details of interactions, climb gradients and precise network connectivity are not known.

In Stage 3 of the process when our preferred option(s) is/are being refined, Gatwick will generate CAS proposals and engage with GA stakeholders on those plans ahead of our public consultation.

Options for other procedures (Missed Approaches)

These procedures are part of an Instrument Approach Procedure and enable aircraft to safely reposition for another approach under certain circumstances if they are unable to land from their first approach. This is a safe and routine part of operations for all pilots and controllers.

The design of the Missed Approach is very specific to the type of approach and the airspace construct and sometimes, the initial departure tracks. Gatwick do not yet know if we will need to change the Missed Approach procedures and if we do, cannot attempt to work out what they will look like due to all the variables and it would not be proportional to attempt to do so.

At Stage 3, after the Full Options Appraisal concludes and Gatwick Airport's preferred options are chosen, we can then consider the Missed Approaches to support the safe operation of the design.

8. Design Principle Evaluation Methodology

The Design Principle Evaluation (DPE) involves taking all of the options developed and qualitatively evaluating them against the Design Principles to understand how they respond. This helps to determine which options best meet the design principles and therefore proceed to the next stage of the airspace change process.

At Stage 2A DPE, CAP1616 requires airspace change sponsors to qualitatively evaluate options against the design principles, and categorises each evaluation as either 'met', 'partially met' or 'not met'. This section outlines the methodology Gatwick have followed when evaluating the options to ensure each option is assessed in a fair and transparent way.

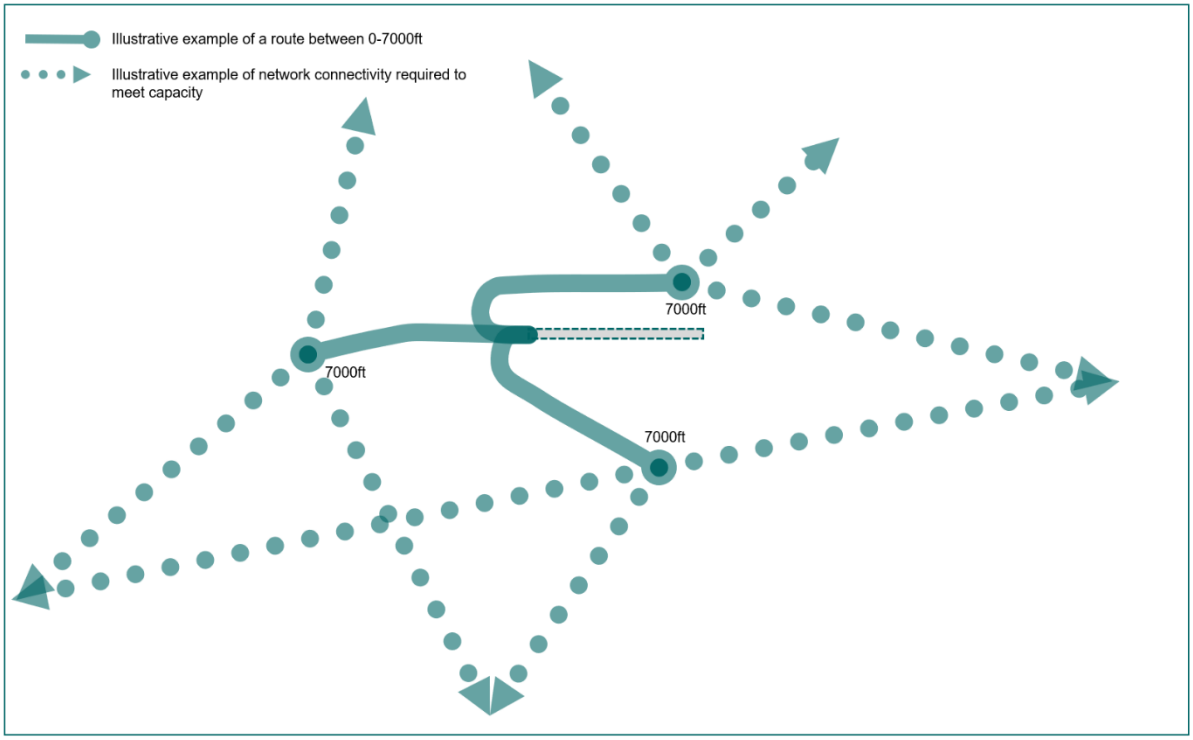
Integration with the airspace above 7000ft.

Throughout Stage 2A Gatwick has engaged with NATS NERL, who are responsible for the airspace above 7000ft, to understand their plans for the future design of network airspace. This forms part of the first steps in the process to integrate NERL and Gatwick Options.

At the time of developing our Comprehensive List of Options, our timeline was ahead of NERLs in terms of developing potential Airspace Change designs, and the NERL proposals were not yet at a stage where they could be relied upon for design purposes. Gatwick subsequently choose to take a 'open minded' approach when developing options, and Gatwick noted as part of our engagement the next steps would be to take feedback from NERL (and where available surrounding airports) to help develop and refine our options in order to integrate them into the surrounding airspace.

As part of our engagement with NERL, Gatwick supplied the Comprehensive List of Options with indications of the network connectivity Gatwick would require in order to meet current and future capacity requirements. At the time, without any indication of the network design, Gatwick assumed that one departure route below 7000ft could serve multiple departure directions within the modernised network above 7000ft. Gatwick based the network connectivity on the existing entry/exit points of UK airspace with the wider European airspace design as this was an assumed constraint of future UK network design at the point of implementation in 2027. An illustrative example is shown in Figure 36.

Figure 36 Illustrative example of Gatwick Departure Network Connectivity requested by Gatwick to NERL



Following bilateral discussions with NERL, Gatwick understand the broad departure flows within the network airspace will remain largely similar to today and specific routes to serve these flows would be required. These broad flows are illustrated in Figure 37 and the information helped inform some assessments around, safety, track mileage and continuous climb performance within the Design Principle Evaluation.

Figure 37 Illustration of broad departure flows expected within the airspace above 7000ft

This information also helped us to understand the broad flows of traffic likely to occur from neighbouring airports. This helped with the assessments of potential interdependencies with other airports, and the likelihood of a route achieving continuous climb.

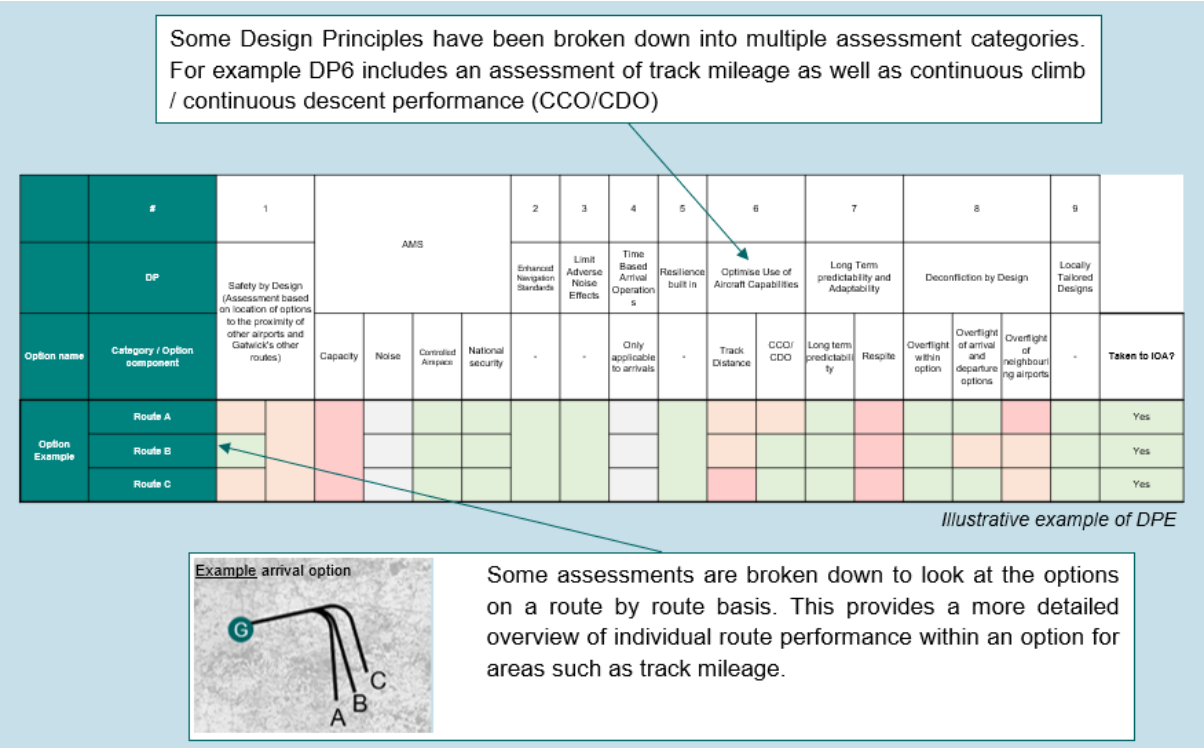
With regards to achieving future capacity requirements within the airspace, which is a key driver of the Airspace Modernisation Strategy, NERL have indicated that Gatwick's comprehensive list of option departure configurations which intend to serve multiple network exit points (as illustrated in Figure 36 above), would not be entirely compatible with the network airspace design. NERL have indicated that additional routes, intended to serve particular departure flows and the broad flows shown in Figure 37 would be required in order to achieve capacity and integrate with the airspace above 7000ft.

Based on the information above, NERL also provided some specific feedback around the viability of some of the routes. Gatwick have incorporated this feedback into our safety assessment as part of the design principle evaluation.

What does this mean for Gatwick's Comprehensive List of Options and Design Principle Evaluation?

This information became available after the main Comprehensive List of Option engagement period ended, therefore Gatwick chose to incorporate it into the assessments in the Design Principle Evaluation.

Some parts of the DPE have been broken down to analyse the performance of each route, rather than the system option as a whole; this allows identification of high performing routes within an option, which can then be used to evolve our existing options into those compatible with the network airspace.



The outcomes of the Design Principle Evaluation will be used to develop and refine the shortlisted options. This will consider all outcomes of the DPE as well as the integration with the network airspace. More details of this can be found in the conclusion section.

Design Principle 1: Safety by Design

Description	Methodology	Component	Met	Partially Met	Not Met
Must at least maintain, and ideally enhance, aviation safety, by reducing or removing safety risk factors, provided enhancement does not have a detrimental impact on other benefits. (Core Principle)	Qualitative subject matter expert (SME) analysis of each option with input from Gatwick air traffic control (ATC) and NATS NERL (responsible for the airspace above 7000ft). This is broken down into two components: - **Integration with airspace:** SME assessment of airspace integration and safety informed by feedback from NATS NERL (see NERL feedback section for further details). For departures, this assessment includes consideration of the broad direction of traffic after passing through 7000ft as shown in Figure 37 Illustration of broad departure flows expected within the airspace above 7000ft. For example, a departure route may have been proposed that would allow two routes, one each to the south and the east above 7000ft, and NERL feedback may suggest that only south is possible given the separations required with other routes. When considering integration below 7000ft, the evaluation will look at potential interactions between the arrival and departure options at Gatwick. - **Other safety:** SME evaluation of any other safety considerations that may be pertinent to the option. This assessment will be undertaken on a whole system basis.	Integration with airspace	The route is considered 'viable' to be safely integrated into the airspace above and below 7000ft. Note: Further investigation and potential trade-offs may need to be made in the future once all FASI-S airport shortlists are known.	The route is considered potentially 'viable' to be safely integrated into the airspace above and below 7000ft however interactions have been identified that would require additional resolution or safety assurances	The route is not expected to be safely integrated into the airspace network and is therefore not operationally viable
		Other safety	The option is expected to be as safe or is safer than today. If investigation or mitigation is required, an acceptable safety argument is expected to be generated.	The option has some safety concerns which would require further investigation should the option progress to generate an acceptable safety argument. or The option has safety concerns that would detrimentally impact other areas in order to be safely mitigated.	The option is expected to be detrimental to safety.

Design Principle 2: Enhanced Navigation Standards

Description	Methodology	Component	Met	Partially Met	Not Met
Should adopt the most beneficial enhanced navigation standards for new routes. (Core Principle)	Qualitative SME evaluation of whether an option is expected to adopt enhanced navigation standards.	n/a	The option widely adopts the most beneficial enhanced navigation standards within its structure.	The option utilises enhanced navigation standards, however in some circumstances may require tactical intervention from ATC	The option does not utilise the most beneficial form of enhanced navigation standards.

Design Principle 3: Limit Adverse Noise Effects

Description	Methodology	Component	Met	Partially Met	Not Met
Shall aim to limit and where possible reduce the adverse impacts of aircraft noise. (Core Principle)	Qualitive assessment of whether an option has been designed to limit and where possible reduce the adverse impact of aircraft noise. This will consider the methodology and indicative noise data used when developing the option, alongside information about improved climb performance. The term 'limit and where possible reduce the adverse impacts of aircraft noise' is taken from the Government's environmental objectives in the Air Navigation Guidance 2017. This guidance makes reference to the Lowest Observed Adverse Effect Level (LOAEL) contours (51dB $L_{Aeq16hr}$ for daytime noise and 45dB L_{Aeq8hr} for night time noise)[5].	n/a	The option has been designed with the aim to limit and where possible reduce adverse impacts of aircraft noise based on the CAP1616 primary and secondary metrics.	The option has been designed with the aim of reducing noise impacts, although these may not align with the primary and secondary metrics of CAP1616	The option does not aim to reduce adverse impacts

[5] Paragraph 3.5 and 3.6 https://www.gov.uk/government/publications/uk-air-navigation-guidance-2017

	As part of the CAP1616 process, the L_{Aeq} contours are a primary metric for quantifying significant noise impacts as they form inputs into WebTAG. Alongside these primary metrics, there are a number of secondary metrics which are those that are not being used to determine significant impacts but which are still able to convey noise effects. These metrics include N60/N65 contours and L_{Max} levels. While not a noise metric, overflight contours are also a secondary metric for the purposes of decision-making. The DPE is a qualitative evaluation that forms the first in several stages of analysis of the options. As part of the Initial Options Appraisal, in the next step of the ACP, Gatwick will undertake detailed noise assessments of the options that progress which will be based as a minimum on the primary and secondary metrics outlined in the paragraph above.				

Design Principle 4: Time-based Arrival Operations

Description	Methodology	Component	Met	Partially Met	Not Met
Should be compatible with the adoption of time-based arrival operations. (This Design Principle is only applicable to the arrival options)	Qualitative SME analysis of each option supported by information from NATS NERL around expected plans for future technology. The implementation on time-based arrivals is dependent on the technology available from aircraft and the airspace network above 7000ft. With the most sophisticated systems available today in an ideal operating environment, the tolerance for aircraft arriving at a given point is still +/-30 seconds. To fully adopt time-based arrival operations requires a full systemised Air Traffic Management System that ideally would be integrated with Airport Collaborative Decision Making (A-CDM). It's therefore anticipated that, at the point of implementation (currently estimated as 2027) time-based arrival operation technology will not be fully available, however where possible and appropriate, Gatwick will aim for options to be compatible with intended technology changes in order to future proof our airspace design.	n/a	The option is expected to be compatible with time-based arrivals should the technology become available within the network.	The option is expected to be compatible with time-based arrivals should the technology become available within the network, however, the option may reduce the extent of future technology implementation.	The option is not expected to make use of time-based arrival technology

Design Principle 5: Resilience Built In

Description	Methodology	Component	Met	Partially Met	Not Met
Should be materially unaffected by most disruptions, including poor weather and technical failures, through the provision of adequate contingencies.	Qualitative SME assessment of the resilience of each option.	n/a	The option is expected to improve resilience compared to today	The option is expected to offer similar resilience levels to today	The option decreases resilience compared to today

Design Principle 6: Optimise Use of Aircraft Capabilities

Description	Methodology	Component	Met	Partially Met	Not Met
Should enable aircraft operators to optimise the use of their fleet capabilities to improve operational efficiency and environmental performance.	Qualitative assessment of whether an option is optimised to suit aircraft capabilities. This is broken down into two components. - **Operational efficiency and environmental performance - track distance;** Track distance compared against the baseline. At this early stage in assessment, track distance is a proxy indicator for potential fuel burn and CO_2 impacts and benefits. For SIDs, this is calculated using 6 typical network exit points (see Integration with NERL section below) and for arrivals this is calculated using an indicative arrival point. When evaluating departure track distance, following the feedback from NERL, Gatwick have assessed each route based on the expected broad departure directions within the network the route would serve. Within the DPE, Gatwick have labelled each route with the broad directions being evaluated. - **Continuous climb operations (CCO) and continuous descent operations (CDO);** following information from NATS around the airspace above 7000ft, and informed by the ACOG Interdependency Map showing neighbouring airports, Gatwick will qualitatively evaluate whether an option is expected to achieve CCO / CDO to/from FL90[6]	Track length	The route has the potential to reduce track distance and associated CO_2 emissions	The route has the potential to maintain track distance and associated CO_2 emissions	The route has the potential to increase track distance and associated CO_2 emissions
		CCO/CDO	The route option has the potential to achieve CCO/CDO to/from FL90 subject to neighbouring airports and NERL designs	The route option has the potential to improve CCO/CDO compared to the baseline however CCO/CDO to/from FL90 may not be available	The route option is not expected to achieve CCO/CDO and would degrade CCO/CDO compared to the baseline

[6] Please see the transition altitude section of this document for more information about CCO/CDO to/from 7000ft.

Design Principle 7: Long Term Predictability & Adaptability

Description	Methodology	Component	Met	Partially Met	Not Met
Should offer long term predictability of flight paths and respite and offer adaptation for the future airport development scenarios outlined in our draft Masterplan.	Qualitative SME assessment of each option. This is broken down into two components: - **Long term predictability:** the evaluation will review whether the option offers the potential for long term predictability. At this stage, Gatwick have assumed that all aircraft will be able to climb on the SID centrelines to above 7000ft without tactical intervention, however there may be a number of constraints from the design of the LTMA and the transition altitude which will prevent this; this is initially explored as part of the 'Optimise Use of Aircraft Capabilities' section above and will be assessed as Gatwick progress through the process and have further information from NERL around the airspace above 7000ft. - **Respite:** Gatwick will review whether the option offers the potential for predictable respite within the option itself. If the option offers noise relief through a different mechanism such as dispersion, we have also noted this. Note: all options have been developed to be operated on the northern and southern (main) runway.	Long term predictability	The option offers long term predictability for stakeholders	The option offers a degree of predictability, however in certain scenarios, there may be an element of unpredictability	The option does not offer predictability.
		Respite	The option offers the potential opportunity for predictable respite	The option offers the potential opportunity for unpredictable noise relief through dispersion	The option does not offer an opportunity for respite or noise relief

Design Principle 8: Deconfliction by Design

Description	Methodology	Component	Met	Partially Met	Not Met
Should seek, where possible, to deconflict routes by design below 7000ft, and the prevalence of overflight of a community by flights on different routes and/or by neighbouring airport traffic.	Qualitative assessment of the options will be undertaken to understand whether an option is deconflicted by design. This is broken down into three components: - **Overflight within the option:** Gatwick will assess whether the option potentially creates cumulative impacts through multiple routes overflying the same area between 0-7000ft. - **Overflight of arrivals and departures:** This has been assessed from 0-7000ft only. Gatwick will evaluate whether there is the potential for conflicts between the arrivals and departures options. At this stage, where we have not yet combined our arrivals systems and departure systems into options, we will assess this by looking at each option against all of the corresponding systems, for example we will assess one easterly departure option against all easterly arrival options to understand any potential conflicts. Gatwick will also then compare against all the westerly arrival systems. - **Overflight of neighbouring airports:** This has been assessed from 0-7000ft only. At this early stage, where available, Gatwick will assess against neighbouring airport options and, where not available, we will assess the likelihood of cumulative overflight using the ACOG map as per iteration 2 of the masterplan (as shown in Appendix C). Following the publication of Iteration 2 of the Masterplan, Farnborough Airport have joined the FASI-S programme and therefore we have also added Farnborough to the map. Within the ACOG map, the Airport is located in an area where dependencies with Heathrow and Biggin Hill have been identified and therefore it is not possible for any option at this stage to be assessed as not having any dependencies on neighbouring airports. Routes to the south of the airport are less likely to have fewer dependencies.	Overflight (within option)	The option avoids cumulative impacts where it is possible to do so within the system.	The option has some overlapping areas of overflight.	The option has significant cumulative impacts within the option
		Overflight (between arrival and departure options)	The route avoids cumulative overflight or has small areas of cumulative impact that have the potential to be refined to reduce.	The route has areas of potential cumulative impact however these are not significant and that have the potential to be refined to reduce.	The route has significant areas of cumulative impact.
		Overflight neighbouring airports	The route, where possible to do so, avoids areas of potential cumulative overflight with other airports, or where small areas could occur, there is the potential for routes to be refined to reduce impacts.	The route is located in areas where cumulative overflight is likely to occur. There may be opportunities for the impacts to be refined once neighbouring airport options are known.	The route has areas of potential cumulative overflight with other airports which are expected to be difficult to be refined to reduce cumulative impacts

Design Principle 9: Locally Tailored Designs

Description	Methodology	Component	Met	Partially Met	Not Met
Should enable decisions which affect how aircraft noise is best distributed to be informed by local circumstances and consideration of different options.	Qualitative assessment of whether the development of the option has taken into account different local circumstances. The DPE is a high-level qualitative evaluation that forms the first in several stages of analysis of the options. As part of the Initial Options Appraisal (IOA) in the next step of the process, Gatwick will undertake detailed qualitative and some quantitative noise assessments of the options that will enable us to analyse the benefits and impacts of each option in more detail. Alongside the primary and secondary metrics (see DP3), the IOA includes assessments of impacts to noise sensitive buildings such as hospitals, schools, and places of worship, as well as assessment of areas of tranquillity and biodiversity. Outcomes of this IOA assessment may be used to tailor and refine the options further. Gatwick is also working on the Fair and Equitable Distribution study (FED Study), and the IOA will review any suitable outcomes of the study, and if available, any appropriate second phase outcomes.	n/a	The option has been developed to tailor to local circumstances. There could be opportunities as the option evolves for further development to tailor for the local environment.	The option has been developed to tailor to local circumstances however these have been balanced against other Design Principles or offer limited opportunities for further development to tailor to the local environment.	The option is not tailored to local circumstances.

Airspace Modernisation Strategy

The CAA has requested evidence that the Design Principle Evaluation includes an assessment of how the different Design Options respond to the Airspace Modernisation Strategy (AMS):

"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."

Description	Methodology	Component	Met	Partially Met	Not Met
Evidence that the change sponsor's Design Principle Evaluation includes an assessment of how the different Design Options respond to the relevant AMS Design Principle.	This DPE will qualitatively assess an option against the objective and parameters of the Airspace Modernisation Strategy (AMS). CAP1711 describes the objective as: Deliver quicker, quieter and cleaner journeys and more capacity for the benefit of those who use and are affected by UK airspace For this DPE, we've assessed against each of the four objectives outlined in the AMS: - **Safety:** Maintaining and, where possible, improving the UK's high levels of aviation safety has priority over all other 'ends' to be achieved by airspace modernisation - **Integration of diverse users:** Airspace modernisation should wherever possible satisfy the	**Safety**	See Design Principle 1		
		Integration **Controlled Airspace (CAS):** Qualitative SME assessment of whether the option is expected to require any more, less or the same volume of CAS than today. This assessment is linked closely to whether the option enables CCO/CDO (DP4) or not and whether it is contained within the existing CAS volumes. It is assumed that CCO/CDO will enable a reduction in CAS. Details of CAS and the potential for to integrate with diverse airspace users	Option is expected to reduce CAS requirements and provide an opportunity to simplify the boundaries and facilitate safe access.	Option is expected to maintain similar levels of CAS and access to today.	Option is expected to increase CAS requirements and/or increase complexity and not facilitate access.

	requirements of operators and owners of all classes of aircraft, including the accommodation of existing users (such as commercial, General Aviation, military, taking into account interests of national security) and new or rapidly developing users (such as remotely piloted aircraft systems, advanced air mobility, spacecraft, high-altitude platform systems) - **Simplification, reducing complexity and improving efficiency:** Consistent with the safe operation of aircraft, airspace modernisation should wherever possible secure the most efficient use of airspace and the expeditious flow of traffic*, accommodating new demand and improving system resilience to the benefit of airspace users, thus improving choice and value for money for consumers - **Environmental sustainability:** Environmental sustainability will be an overarching principle applied through all airspace modernisation activities. Modernisation should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance and, in doing so, will take account of the interests of all	will be investigated in further detail as part of the IOA on the options which progress. **National Security:** Qualitative assessment of an options potential to impact national security requirements – this will include any feedback received as part of our engagement on the comprehensive list of options.	The option is not expected to affect defence and security objectives.	n/a	The option is expected to conflict with defence and security objectives
		Simplification **Capacity:** Qualitative assessment of whether the option is expected to meet or not meet capacity requirements. **Resilience**	The option is expected to meet capacity requirements	n/a	The option is expected to not meet capacity requirements
			See Design Principle 5		
		Environment	See Design Principles 3, 6, 7, 8, and 9		

	stakeholders affected by the use of airspace These are qualitative SME assessments supported by some of the assessments already undertaken for the Design Principles.		

Note: Annex A: Evolution of Design Options contains a presentation from our stakeholder engagement in January and February 2023 which included details of the methodology used to assess the AMS and the outcomes however at this time, this assessment was based on the previous version of the AMS. An updated AMS document was published on the 23rd January 2023. As part of this Stage 2 submission, Gatwick have updated the methodology and assessment to reflect the new parameters of the AMS. This did not change the outcome of the DPE in terms of what options proceeded to the Initial Options Appraisal.

Assessment of Design Principles with multiple components

Within our DPE, Gatwick have chosen to break some Design Principles into components in order to fairly and transparently evaluate different aspects of the Design Principle. For example the assessment of Design Principle 8 'Deconfliction by design' is broken down into three components; overflight (within option), overflight (between arrival and departure options) and overflight neighbouring airports.

In order to assess an option's overall performance against the Design Principle, the following methodology has been applied to all Design Principles that have been broken down into components:

Overall Met	**Overall Partially Met**	**Overall Not Met**
All components of the Design Principle are 'Met'	All components of the Design Principle are 'Partially Met' or there is a mix of 'Met', 'Partially Met' and/or 'Not met'	All components of the Design Principle are 'Not met' or the majority of the components are 'Not met'

Working Example: Taking DP8 as an example:

DP	Component	Met	Partially Met	Not Met	Overall Outcome
Example #1					
Deconfliction by design	Overflight (within option)				Met
	Overflight (between arrival and departure options)				
	Overflight neighbouring airports				
Example #2					
Deconfliction by design	Overflight (within option)				Partially met
	Overflight (between arrival and departure options)				
	Overflight neighbouring airports				
Example #3					

Deconfliction by design	Overflight (within option)				Partially met
	Overflight (between arrival and departure options)				
	Overflight neighbouring airports				
Example #4					
Deconfliction by design	Overflight (within option)				Not met
	Overflight (between arrival and departure options)				
	Overflight neighbouring airports				
Example #5					
Deconfliction by design	Overflight (within option)				Not met
	Overflight (between arrival and departure options)				
	Overflight neighbouring airports				

The outcome of the overall performance is shown in the 'Design Principle Evaluation Outcomes' section of this document below. The full DPE shown in Annex B shows the breakdown of the performance against each of the components.

Special case (Not Met): Using the methodology outlined above, in the context of the AMS the baseline scenario would be considered as partially met however a 'do nothing' scenario would not result in any Airspace Modernisation for Gatwick Airport and therefore would fundamentally not meet the AMS. This baseline option therefore is categorised as 'not met' for the AMS design principle.

9. Design Principle Evaluation Outcomes (Conclusion)

Arrivals

The following tables show a summarised outcome of the easterlies and westerlies arrivals DPE. Full details of can be found in Annex B.

Westerly Arrivals		1	AMS	2	3	4	5	6	7	8	9	
		Safety by Design		Enhanced Navigation Standards	Limit Adverse Noise Effects	Time Based Arrival Operations	Resilience built in	Optimise Use of Aircraft Capabilities	Long Term predictability and Adaptability	Deconfliction by Design	Locally Tailored Designs	**Taken to IOA?**
Option	WA_BL											No
	WAA											Yes
	WAB											Yes*
	WAC											Yes
	WAD											Yes
	WAE											Yes
	WAF											Yes
	WAG											Yes*
	WAH											Yes
	WAI											Yes
	WAJ											Yes
	WAK											Yes
	WAL											Yes
	WAM											Yes
	WAN											No
	WAO											Yes
	WAP											Yes
	WAQ											Yes

*See RMA section below

Easterly Arrivals		1 Safety by Design	AMS	2 Enhanced Navigation Standards	3 Limit Adverse Noise Effects	4 Time Based Arrival Operations	5 Resilience built in	6 Optimise Use of Aircraft Capabilities	7 Long Term predictability and Adaptability	8 Deconfliction by Design	9 Locally Tailored Designs	**Taken to IOA?**
Option	EA_BL											No
	EAA											Yes
	EAB											Yes*
	EAC											Yes
	EAD											Yes
	EAE											Yes
	EAF											Yes
	EAG											Yes
	EAH											Yes*
	EAI											Yes
	EAJ											Yes
	EAK											Yes
	EAL											Yes
	EAM											Yes
	EAN											Yes
	EAO											Yes
	EAP											Yes

*See RMA section below

Discontinuing Arrival Options

When considering which options to discontinue, originally Gatwick proposed to discontinue four options. The discontinuation methodology and the proposed options were shared with stakeholders as part of engagement workshops in January and February 2023. As part of the workshops, stakeholders told us that they would prefer for all arrivals options to progress to the Initial Options Appraisal (IOA) for further noise analysis before an option is discontinued. Gatwick considered this feedback and agreed to continue all PBN arrivals options through to the IOA. More details around this can be found in Annex A: Evolution of Options Design.

Radar Manoeuvring Area (RMA)

Within the DPE, Gatwick assessed four (Radar Manoeuvring Area) RMA options: **EAB, EAH, WAB, WAG**. The RMA options did not perform as well as some of the other PBN options within the DPE however an RMA will be required to be implemented alongside any potential PBN options as the technology required within the airspace above 7000ft to accommodate only PBN arrivals in high traffic scenarios is unlikely to be available at the point of implementation.

The shape and size of the RMA cannot be defined by data alone and the DPE established that all four options would require refinement to integrate with the airspace above 7000ft and with Gatwick departures. Gatwick expected the final arrival solution will be developed and refined to reflect integration with the network above 7000ft, neighbouring airport's options and Gatwick's shortlisted PBN arrival and departure options. Therefore, an outcome of the DPE was that Gatwick have merged options EAB and EAH, and WAB and WAG into two options; an RMA for easterlies and an RMA for westerlies.

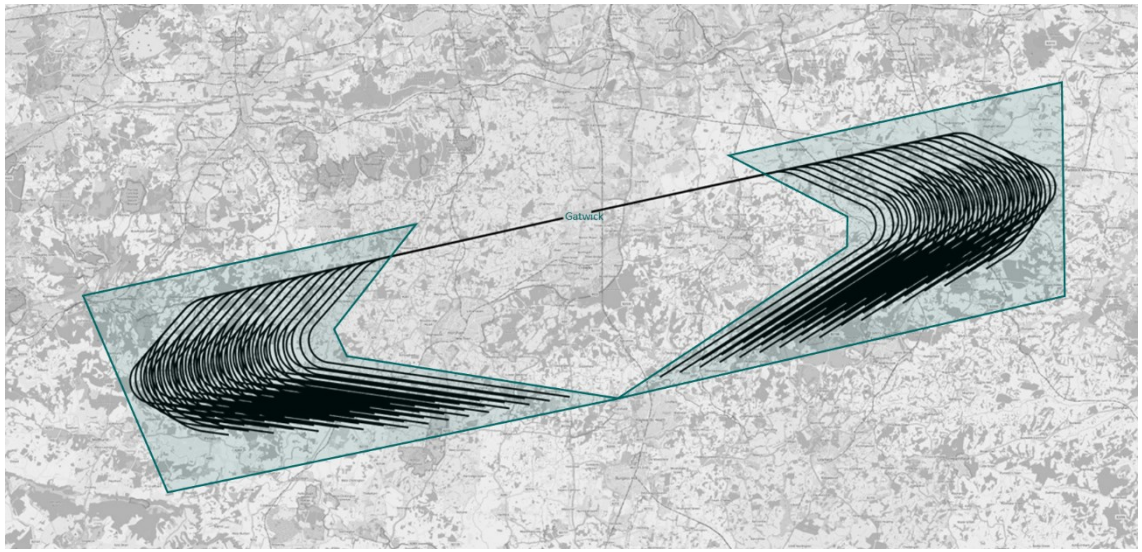


Figure 38 Illustrative example of the Easterly and Westerly RMA options (0-7000ft) and notional flight paths for assessment

Gatwick have then flooded these two options with further notional flight paths for the purposes of analysis. In the IOA, Gatwick will undertake assessment of these in 4nm bands. E.g joining at 8-12nm, 9-13nm, 10-14nm, 11-15nm and 12-16nm.

Departures

Discontinuing Departure Options

When considering the departure options, Gatwick have initially looked at performance against the Safety Design Principle which holds the highest priority. The feedback from NERL identified that some routes within some options were not safely viable and therefore any individual routes that were categorised as 'not viable' were discontinued.

Next, Gatwick reviewed against the AMS assessment, given the CAA states; "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."

Options WDG, WDH, EDH and EDI performed well against the 6 categories evaluated against the AMS and also overall they performed well in the DPE and therefore these will proceed into the Initial Options Appraisal. The centrelines of these options have been updated to reflect the most recent 5-year IFP review.

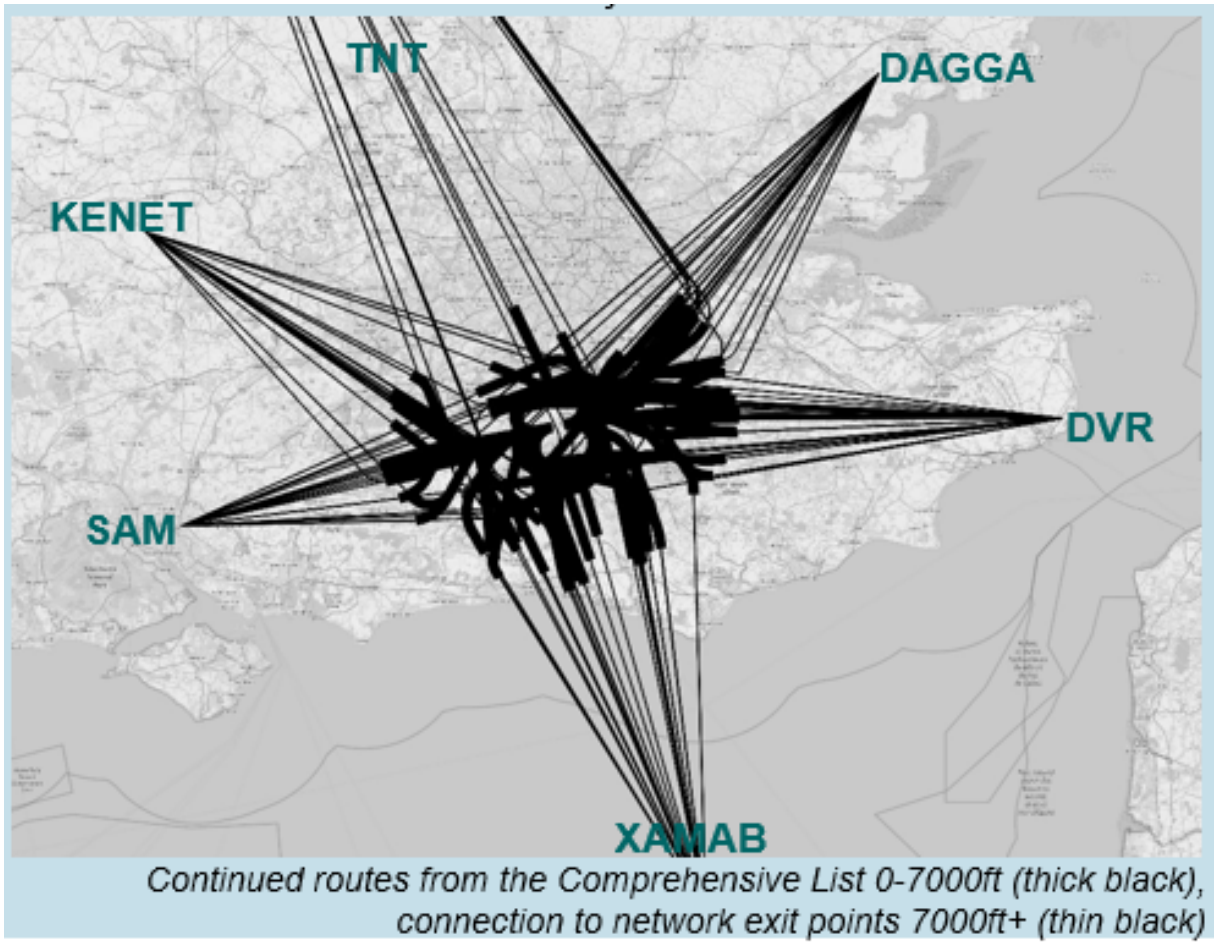
As explained in the 'Integration with the airspace above 7000ft' section above, the remaining configurations of the departure options will not integrate within the NERL airspace above 7000ft and therefore will not meet current and future capacity. This means that they will not meet one of the main parameters of the AMS to simplify, reduce complexity and improve efficiency in the airspace. Also in the case of some options, particularly with westerly departures, many of the configurations have routes which are not viable and have been discontinued as part of this DPE process.

Gatwick have therefore evolved these remaining options in order to integrate them with the airspace above 7000ft. To do this, as described above, Gatwick first discontinued any routes which were identified as not safely viable. The respite options were also discontinued as these wouldn't be suitable for the evolved configurations. **This doesn't mean Gatwick won't investigate options with respite in future, but we will explore respite in further detail once the configuration of the shortlist of options is known.**

Figure 39 shows the remaining departure routes following this step.

Figure 39 Remaining Departure Options following first steps of discontinuing methodology

Gatwick next connected all the remaining routes to network exit points they could potentially serve. These are based on the broad flows indicated by NERL.



The routes now needed to be assembled back together into systems. At this stage, a system is a viable group of departure routes for either easterlies or westerlies.

To achieve this, owing to the number of routes, these have been grouped together based on similar operational compatibility characteristics in order to undertake an operational feasibility

assessment. Each route that has progressed from the DPE has been allocated a group(s). The group is detailed as part of the Design Principle Evaluation in Annex B.

The operational feasibility assessment took information available about the airspace above 7,000ft, regulation around the safe separation of routes, and airspace safety regulation and assessed whether each group of routes would be safely compatible with the other groups serving different exit points.

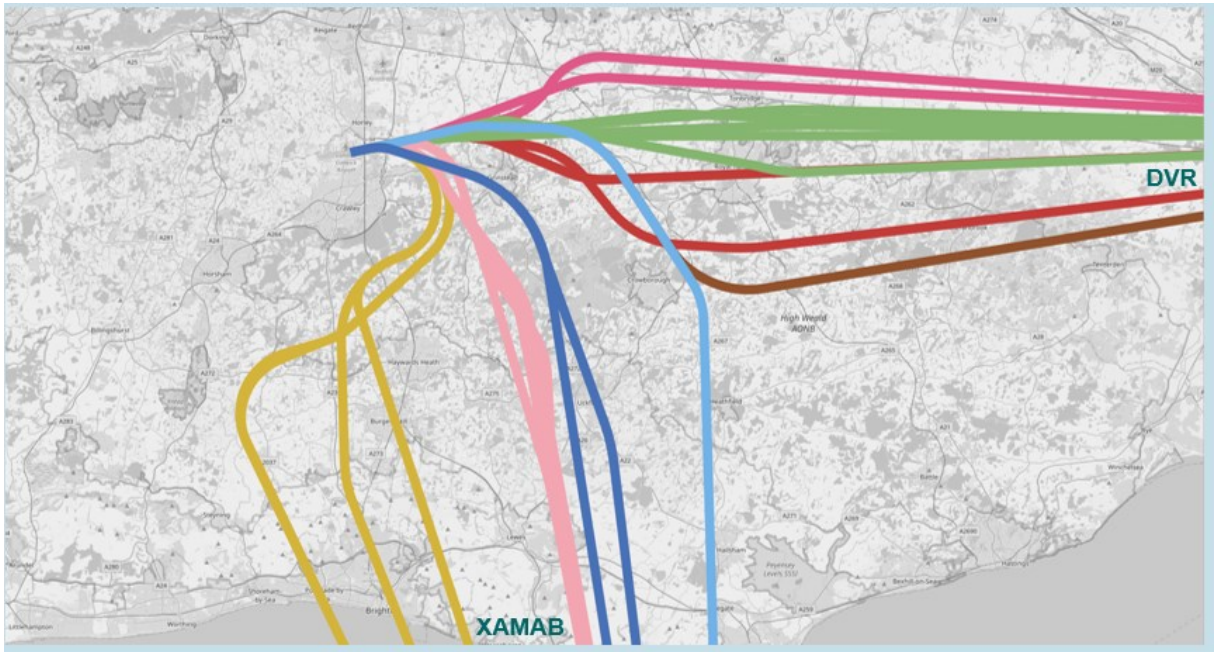


Figure 40 Example of XAMAB and DVR Groups in Operational Feasibility Assessment

This example in Figure 40 shows easterly departure tracks for XAMAB and DVR. The XAMAB (south) tracks have been grouped into four groups. The DVR tracks have also been grouped into four groups. These are denoted by different colours on the image above.

The operational compatibility assessment reviewed each XAMAB group against each DVR group to establish which groups would be safely compatible together within a system. This was repeated for all the departure route groups.

Using information from the assessment, the remaining viable groups were combined into operationally compatible systems with every viable group included in at least one option**.**

As Gatwick progress through the process, we may look to reconfigure the groups if the environmental and operational assessments suggest that this would be beneficial.

What does this mean for the options in the Initial Options Appraisal (IOA)?

Going into the IOA the departure options are now built with groups. Today's existing centerlines have also been incorporated into the groups.

The routes will be used to generate data that allows analysis of the benefits and impacts compared to the do nothing baseline. As Gatwick progress through the process, the groups will be refined until the point where Gatwick have a single route centerline that serves each network exit point. This refinement will be based on the Initial Options Appraisal assessments and integration with the network and neighbouring airports. Respite and other mechanisms for fair and equitable distribution of noise will also be explored in further detail once a shortlist of options is known.

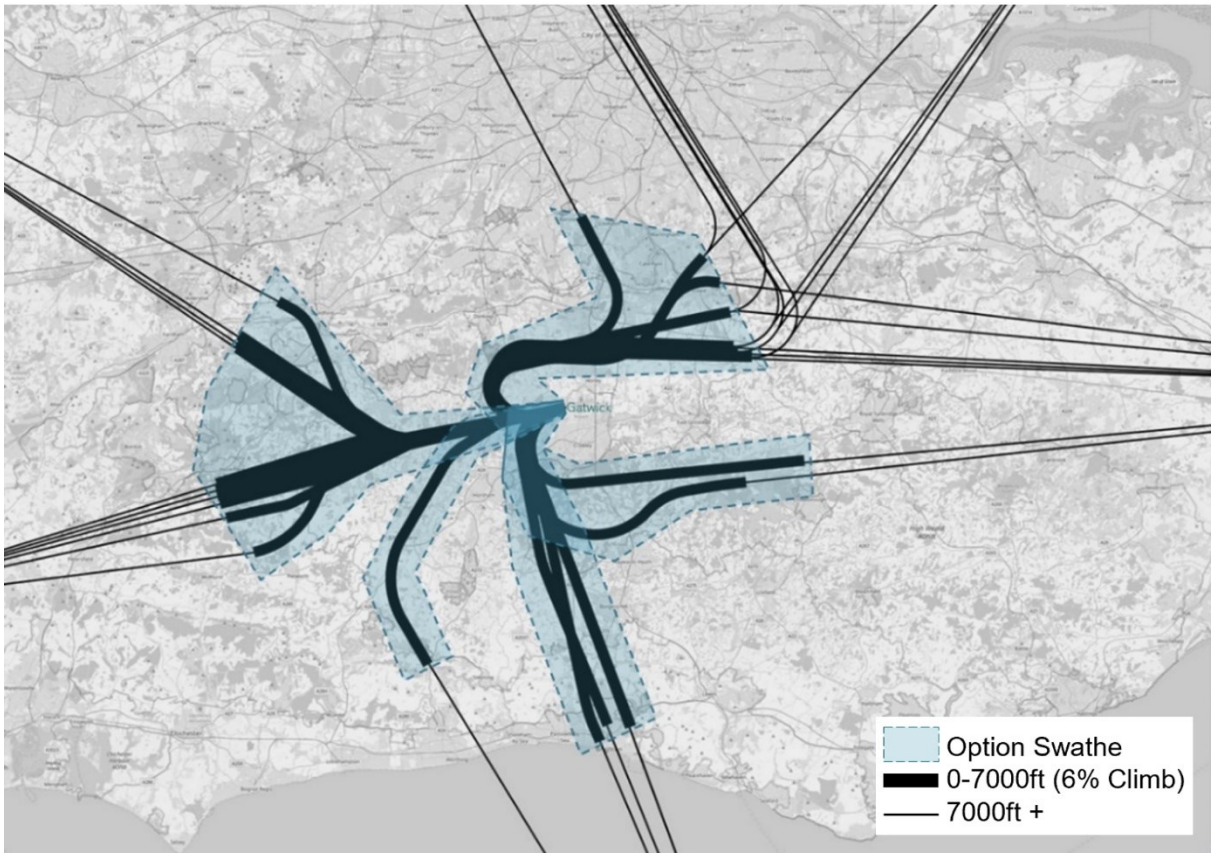
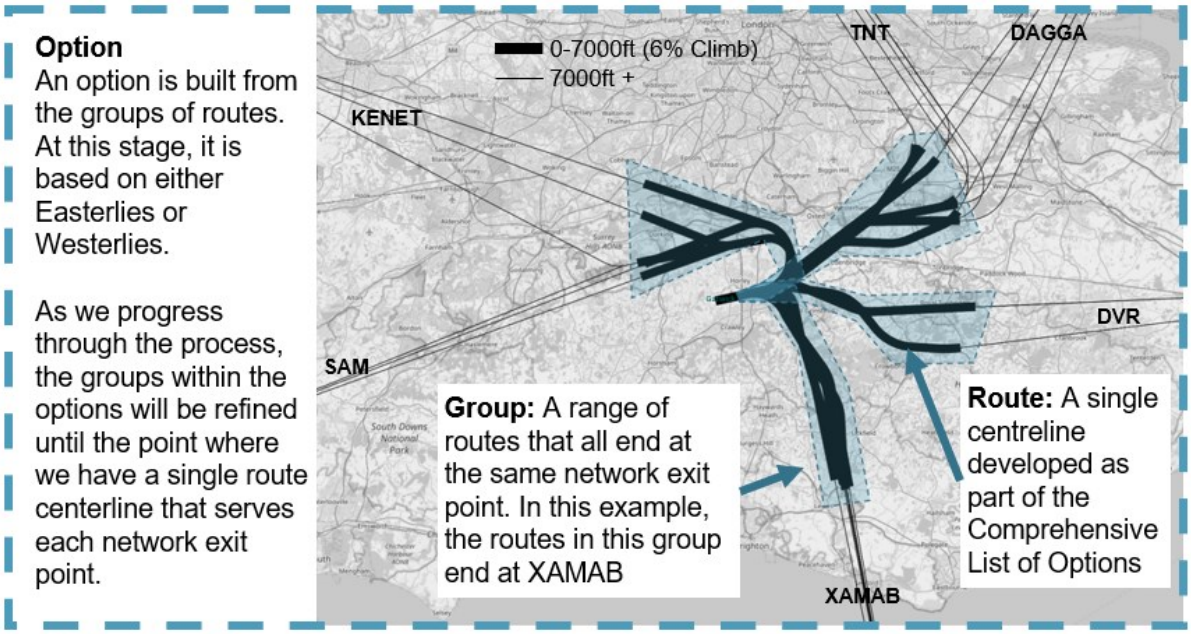


Figure 41 Example Westerly Departure Option for IOA



The following tables show a summarised outcome of the easterlies and westerlies departures DPE. Full details of can be found in Annex B.

Westerly Departures		1 Safety by design.	AMS	2 Enhanced Navigation Standards	3 Limit Adverse Noise Effects	4 Time Based Arrival Operations	5 Resilience built in	6 Optimise Use of Aircraft Capabilities	7 Long Term predictability and Adaptability	8 Deconfliction by Design	9 Locally Tailored Designs	Taken to IOA?
WD_ BL	Route 4 (Right turn to E)											No
	Route 1 (Straight ahead W)											
	Route 7 (Straight ahead S)											
	Route 8 (Straight ahead SE)											
	Route 9 (Left turn to SE)											
WDA	Route A EAST/NORTH											No
	Route B WEST											Yes
	Route C SOUTH											Yes
WDB	Route A EAST/NORTH											No
	Route B WEST/SOUTH											Yes
	Route C EAST/NORTH											Yes
WDC	Route A EAST/NORTH											No
	Route B WEST											Yes
	Route C SOUTH											Yes
WDD	Route A EAST/NORTH											No
	Route B WEST											Yes
	Route C SOUTH											No*
WDE	Period 1 Route A EAST/NORTH											No
	Period 1 Route B WEST/SOUTH											
	Period 1 Route C EAST											
	Period 2 Route A (WDA) EAST/NORTH											
	Period 2 Route B (WDA) WEST											
	Period 2 Route C (WDA) SOUTH											
WDF Daytime	Route A NORTH											No
	Route B WEST/SOUTH											Yes
	Route C EAST											Yes
WDF Nighttime Respite	Route A NORTH											No
	Route B WEST/SOUTH											
	Route C EAST											
WDG	Route A NORTH											Yes

Westerly Departures		1 Safety by design.	AMS	2 Enhanced Navigation Standards	3 Limit Adverse Noise Effects	4 Time Based Arrival Operations	5 Resilience built in	6 Optimise Use of Aircraft Capabilities	7 Long Term predictability and Adaptability	8 Deconfliction by Design	9 Locally Tailored Designs	Taken to IOA?
	Route B EAST											
	Route C WEST											
	Route D SOUTH											
	Route E SOUTH											
WDH	Route A EAST/NORTH											Yes
	Route B EAST/NORTH											
	Route C WEST											
	Route D SOUTH											
	Route E SOUTH											
WDI	Period 1 Route A (WDG) NORTH											No
	Period 1 Route B (WDG) WEST/SOUTH											
	Period 1 Route C (WDG) EAST											
	Period 2 Route A (WDA) EAST/NORTH											
	Period 2 Route B (WDA) WEST											
	Period 2 Route C (WDA) SOUTH											
WDJ	Route A EAST/NORTH											No
	Route B WEST											Yes
	Route C SOUTH											Yes
WDK	Route A EAST/NORTH											No
	Route B WEST											Yes
	Route C SOUTH											Yes
WDL	Route A NORTH											No
	Route B WEST											Yes
	Route C SOUTH/EAST											Yes
WDM	Route A NORTH/EAST											No
	Route B WEST											Yes
	Route C SOUTH											Yes
WDN	Period 1 Route A (WDJ) NORTH/EAST											No
	Period 1 Route B (WDJ) WEST											
	Period 1 Route C (WDJ) SOUTH											
	Period 2 Route A (WDL) NORTH/EAST											
	Period 2 Route B (WDL) WEST											
	Period 2 Route C (WDL) SOUTH											

Westerly Departures		1 Safety by design.	AMS	2 Enhanced Navigation Standards	3 Limit Adverse Noise Effects	4 Time Based Arrival Operations	5 Resilience built in	6 Optimise Use of Aircraft Capabilities	7 Long Term predictability and Adaptability	8 Deconfliction by Design	9 Locally Tailored Designs	Taken to IOA?
WDO	Route A NORTH											No
	Route B WEST											Yes
	Route C SOUTH/EAST											Yes
WDP	Route A EAST											Yes
	Route B WEST/SOUTH											Yes
	Route C NORTH											Yes

Easterly Departures		1 Safety by design	AMS	2 Enhanced Navigation Standards	3 Limit Adverse Noise Effects	4 Time Based Arrival Operations	5 Resilience built in	6 Optimise Use of Aircraft Capabilities	7 Long Term predictability and Adaptability	8 Deconfliction by Design	9 Locally Tailored Designs	Taken to IOA?
ED_BL	Route 3 (Left turn W) SAM KENNET											No
	Route 6 (NE) LAM											No
	Route 5 E (FRANE/CLN BIG DVR)											No
	Route 2 S (SFD)											No
EDA	Route A NORTH											Yes
	Route B EAST											Yes
	Route C WEST/SOUTH											Yes
EDB	Route A NORTH											Yes
	Route B EAST											Yes
	Route C WEST/SOUTH											Yes
EDC	Route A NORTH											Yes
	Route B EAST											Yes
	Route C WEST/SOUTH											Yes
EDD	Route A NORTH											Yes
	Route B EAST											Yes
	Route C WEST/SOUTH											Yes
EDE	Period 1 Route A NORTH											No
	Period 1 Route B EAST											

Easterly Departures		1 Safety by design	AMS	2 Enhanced Navigation Standards	3 Limit Adverse Noise Effects	4 Time Based Arrival Operations	5 Resilience built in	6 Optimise Use of Aircraft Capabilities	7 Long Term predictability and Adaptability	8 Deconfliction by Design	9 Locally Tailored Designs	Taken to IOA?
	Period 1 Route C SOUTH/WEST											
	Period 2 Route A (EDA) NORTH											
	Period 2 Route B (EDA) EAST											
	Period 2 Route C (EDA) WEST/SOUTH											
EDF	Route A NORTH											Yes
	Route B EAST											Yes
	Route C WEST/SOUTH											Yes
EDG	Route A NORTH											Yes
	Route B EAST/SOUTH											Yes
	Route C WEST											Yes
EDH	Route A WEST											Yes
	Route B NORTH											
	Route C EAST											
	Route D SOUTH											
EDI	Route A WEST											Yes
	Route B NORTH											
	Route C EAST											
	Route D SOUTH											
EDJ	Period 1 NW (EDA) NORTH											No
	Period 1 SE (EDA) EAST											
	Period 1 S (EDA) SOUTH/WEST											
	Period 2 WEST											
	Period 2 E EAST/NORTH											
	Period 2 SOUTH											
EDK	Route A WEST											No
	Route B EAST/NORTH											Yes
	Route C SOUTH											Yes
EDL	Route A NORTH											Yes

Easterly Departures		1 Safety by design	AMS	2 Enhanced Navigation Standards	3 Limit Adverse Noise Effects	4 Time Based Arrival Operations	5 Resilience built in	6 Optimise Use of Aircraft Capabilities	7 Long Term predictability and Adaptability	8 Deconfliction by Design	9 Locally Tailored Designs	Taken to IOA?
	Route B EAST											Yes
	Route C SOUTH/WEST											Yes
EDM	Route A NORTH											Yes
	Route B EAST											Yes
	Route C SOUTH/WEST											Yes
EDN	Route A WEST											Yes
	Route B NORTH/EAST											Yes
	Route C SOUTH											Yes
EDO	Period 1 Route A (EDK) WEST											No
	Period 1 Route B (EDK) NORTH/EAST											
	Period 1 Route C (EDK) SOUTH											
	Period 2 Route A (EDM) NORTH											
	Period 2 Route B (EDM) EAST											
	Period Route C S (EDM) SOUTH/WEST											
EDP	Route A NORTH											Yes
	Route B EAST											Yes
	Route C SOUTH/WEST											Yes
EDQ	Route A WEST											Yes
	Route B EAST											Yes
	Route C SOUTH/NORTH											Yes

Baseline 'Do nothing' Scenarios

The DPE showed that the four baseline scenarios did not perform as well as the PBN arrival and departure options. This was because the baseline scenarios do not meet the Government's AMS, nor do they address the Statement of Need or enable any environmental, controlled airspace or operational benefits. The baseline 'do nothing' scenarios have therefore been discontinued however they will remain present throughout the ACP for baseline comparative purposes only.

Departure Options for the Initial Options Appraisal

The following figures show the outcome of the operational feasibility assessment and the departure systems what will proceed to the Step 2B Initial Options Appraisal:

Departures
Easterly System 1

Option Swathe
0-7000ft (6% Climb)
7000ft +

All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

Departures Easterly System 2

Option Swathe
0-7000ft (6% Climb)
7000ft +

All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

Departures Easterly System 3

Option Swathe
0-7000ft (6% Climb)
7000ft +

All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

Departures Easterly System 4

Option Swathe
0-7000ft (6% Climb)
7000ft +

All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

Departures Easterly System 5

Option Swathe
0-7000ft (6% Climb)
7000ft +

All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

Departures Easterly System 6

Option Swathe
0-7000ft (6% Climb)
7000ft +

All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

Departures Easterly System 7

Option Swathe
0-7000ft (6% Climb)
7000ft +

All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

Departures Easterly System 8

Option Swathe
0-7000ft (6% Climb)
7000ft +

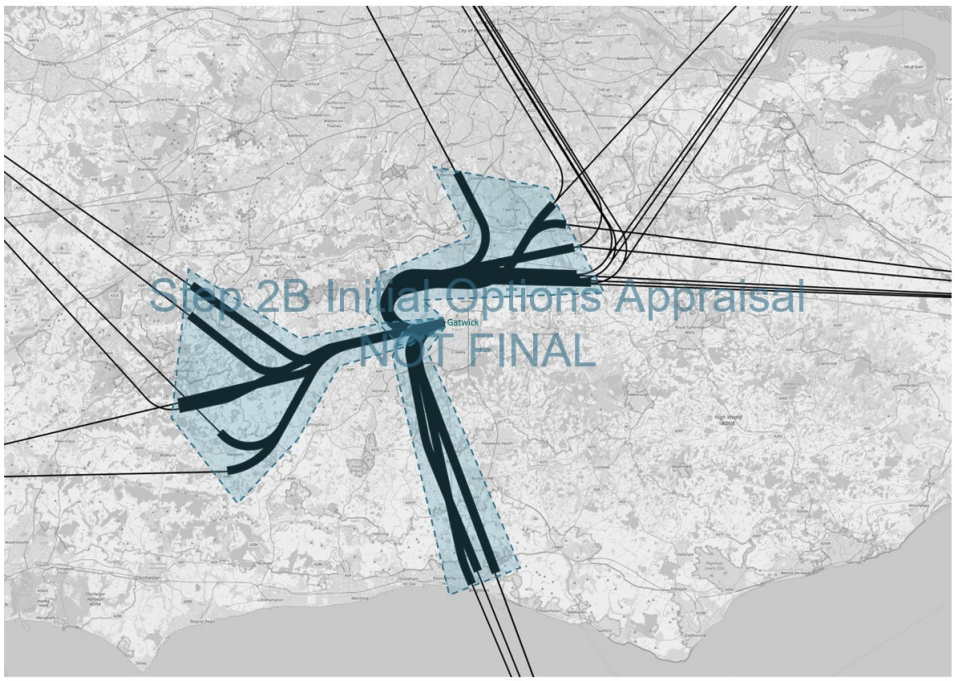
All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

Departures Easterly System 9

Option Swathe
0-7000ft (6% Climb)
7000ft +

All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

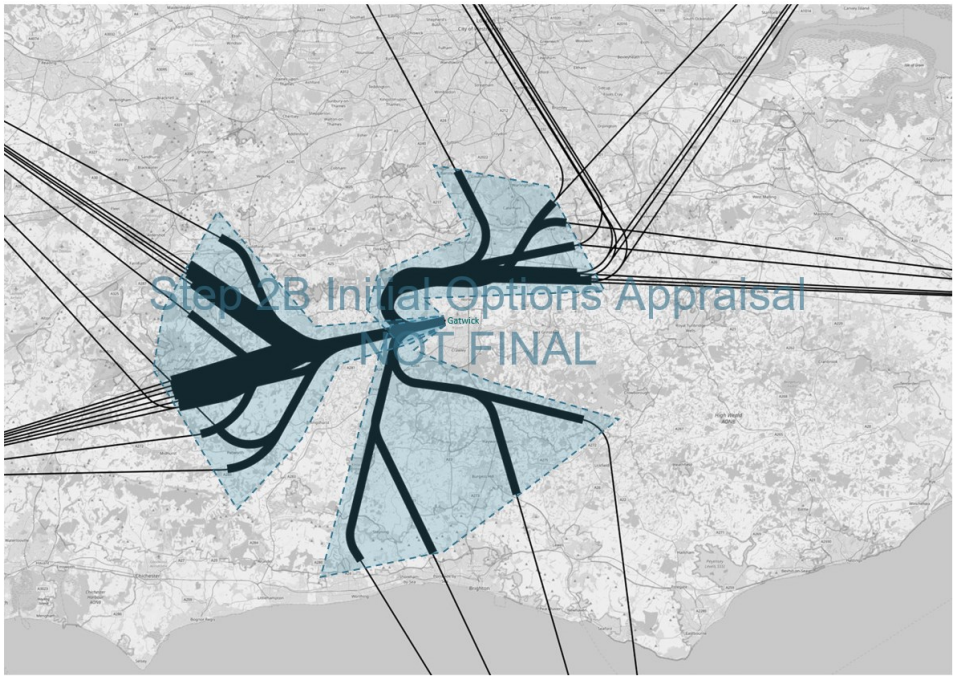
Departures Westerly System 1



Option Swathe
0-7000ft (6% Climb)
7000ft +

All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

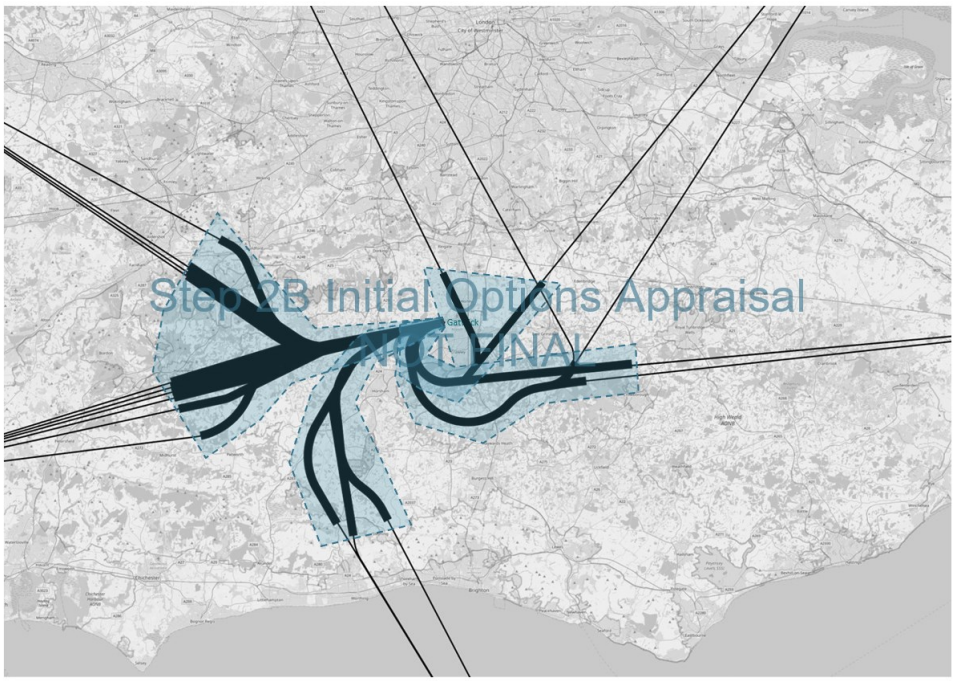
Departures Westerly System 2



Option Swathe
0-7000ft (6% Climb)
7000ft +

All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

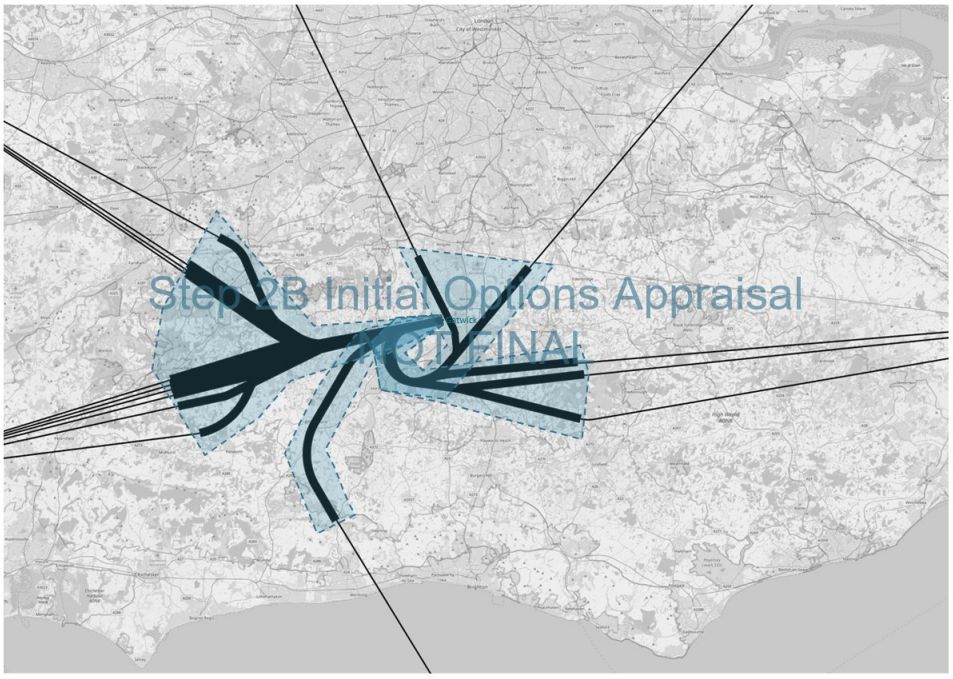
Departures
Westerly System 3



Option Swathe
0-7000ft (6% Climb)
7000ft +

All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

Departures
Westerly System 4



Option Swathe
0-7000ft (6% Climb)
7000ft +

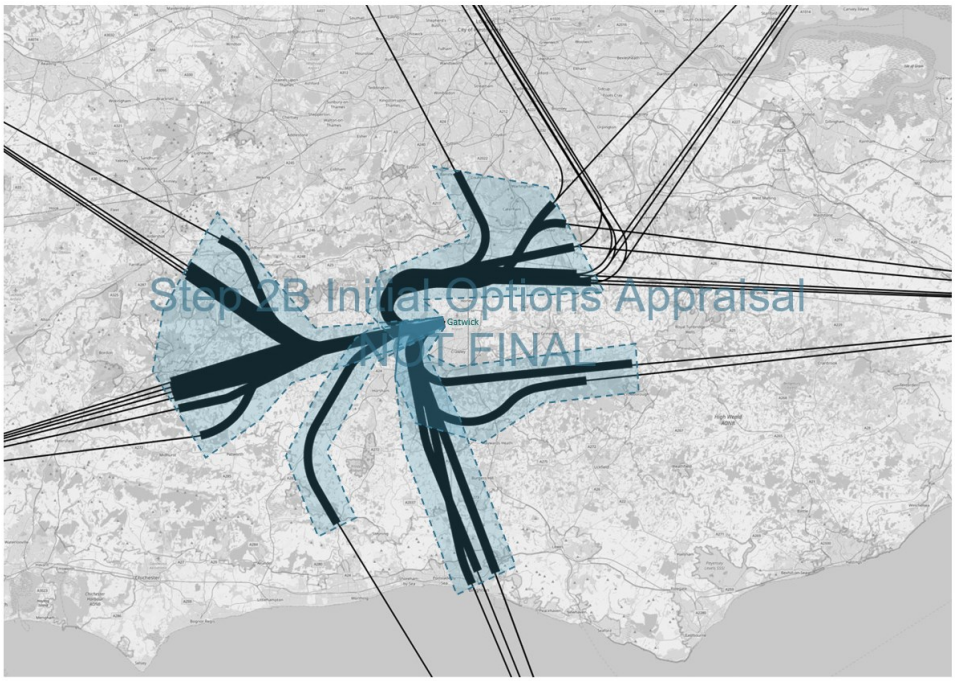
All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

Departures Westerly System 5

Option Swathe
0-7000ft (6% Climb)
7000ft +

All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

Departures Westerly System 6



Option Swathe
0-7000ft (6% Climb)
7000ft +

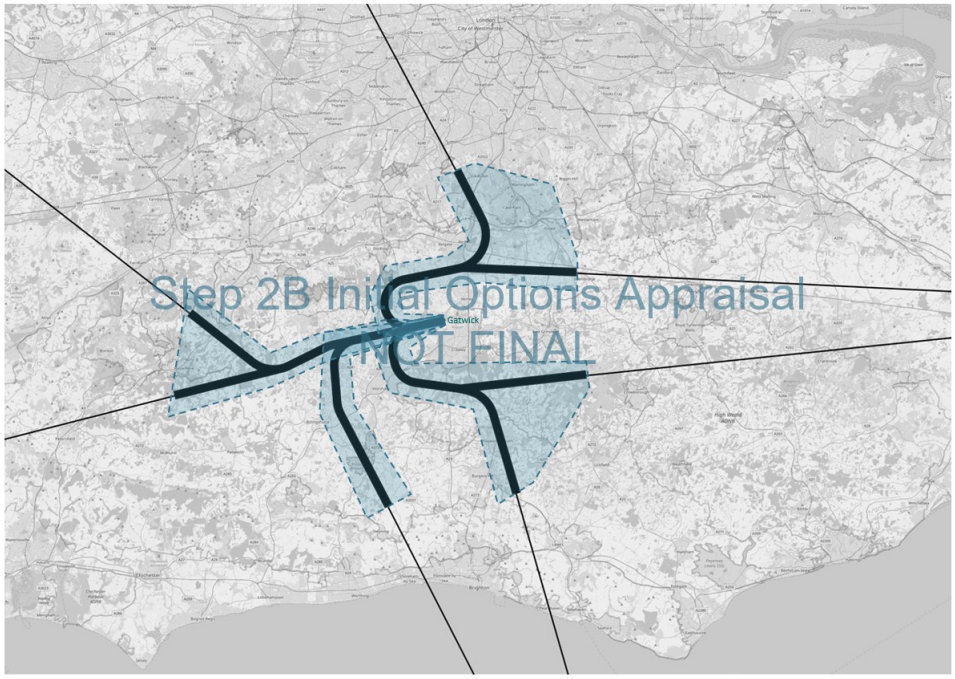
All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

Departures
Westerly System 7

Option Swathe
0-7000ft (6% Climb)
7000ft +

All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

Departures
Westerly System 8



Option Swathe
0-7000ft (6% Climb)
7000ft +

All airspace design options are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, our design principles, our appraisals and stakeholder engagement and consultation.

10. Next steps

Gatwick's ACP now progresses to the next step of the CAP1616 process which is called Step 2B Initial Options Appraisal (IOA).

The IOA requires sponsors to carry out an initial qualitative assessment of the benefits and impacts of each option, tested against the 'do nothing' pre-implementation baseline scenario. The purpose of this initial appraisal is to highlight to change sponsors, stakeholders, and the CAA the relative differences between the impacts, both positive and negative, of each option.

As part of the Step 2B IOA document, change sponsors are required to:

- Provide an overview of the options taken to the Initial Options Appraisal
- Provide details of the criteria and methodology for assessing the options
- Describe the baseline 'do nothing' pre-implementation scenario
- Detail the benefits and impacts of each option tested against the baseline
- Draw qualitative conclusions on the outcome of the IOA and shortlist options

Gatwick expect the outcome of the IOA to be a shorter list of options that will be progressed into Stage 3.

The Step 2B **Initial Options Appraisal (IOA)** is the first stage in a three-phase appraisal of airspace change options. It involves the mainly qualitative appraisal of the airspace change options that have proceeded from Step 2A (the DPE). The Stage 3 **Full Options Appraisal (FOA)** is then required to provide more rigorous evidence, typically through quantitative evaluation, of the option(s) that will be taken to the public Stage 3 consultation compared against the 'do nothing' pre-implementation scenario. Finally, the Stage 4 **Final Option Appraisal,** repeats the Full Options Appraisal on the final design which will be submitted for the ACP.

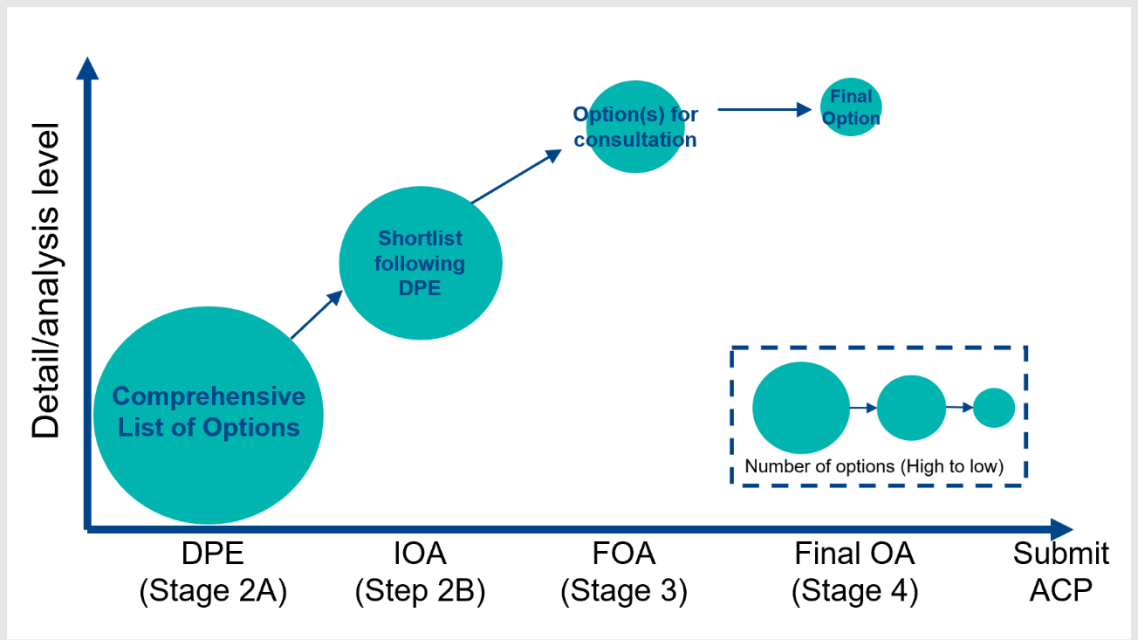


Figure 42 Stages of options evaluation/appraisal

11. Appendix A: Stakeholder List and Engagement Log

The tables below outline the stakeholder groups engaged on the Gatwick FASI-S ACP to date, and their participation in our workshops.

Key: I=Invited, A=Attended, F=provided feedback

Table 12 List of Stakeholder Groups Engaged

Stage 2A Stakeholder Information		Engaged at Stage 1B	Event A - Airspace Awareness			Event B - Round 1 Community			Event C - Round 1 GA			Event D - Round 1 Airline & ANSP			Event E - December Briefing			Event F - Round 2 CLOO			Event G - Round 3 DPE			Event H - Round 3 Parish Councils			Event I - Round 3 IOA			Event J - Round 3 IOA Outcomes		
GAL Org Ref	Stakeholder Organisation		I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F
1	Kenley Aerodrome (Glider)	Y							Y						Y			Y	Y		Y						Y			Y		
2	Redhill Aerodrome (GA)	Y							Y						Y			Y			Y						Y			Y		
3	Chichester (GA) – Goodwood Flying School	Y							Y						Y			Y			Y						Y			Y		
4	Dunsfold (GA-Bus))	Y							Y						Y			Y			Y						Y			Y		
5	Fairoaks (GA-Bus)	Y							Y						Y			Y			Y						Y			Y		
6	Farnborough (GA-Bus)	Y							Y				Y		Y			Y			Y	Y					Y			Y		
7	Lashenden (Para)	Y							Y						Y			Y			Y						Y			Y		
8	Rochester Aerodrome (GA)	Y							Y						Y			Y			Y						Y			Y		
9	Shoreham (GA) – Brighton City Airport	Y							Y						Y			Y			Y						Y			Y		
10	Aer Lingus >4k	Y										Y			Y			Y			Y						Y			Y	Y	
11	Air Baltic	Y										Y			Y			Y			Y						Y			Y		
12	Air Europa	Y										Y			Y			Y			Y						Y			Y		
13	Air Transat	Y										Y			Y			Y			Y						Y			Y		
14	Aurigny >4k	Y										Y			Y			Y			Y						Y			Y		
15	BA (IAG) >4k	Y										Y	Y		Y			Y	Y		Y						Y			Y		
16	Cathay Pacific	Y										Y			Y			Y			Y						Y			Y		
17	easyJet >4k	Y										Y			Y			Y	Y		Y						Y			Y		
18	Emirates	Y										Y			Y			Y			Y						Y			Y		
19	Flybe (Removed from Stage 2)	Y		-		-	-		-	-		-	-		-	-		-	-		-	-	-		-	-		-	-		-	-	

Stage 2A Stakeholder Information		Engaged at Stage 1B	Event A - Airspace Awareness		Event B - Round 1 Community			Event C - Round 1 GA			Event D - Round 1 Airline & ANSP			Event E - December Briefing			Event F - Round 2 CLOO			Event G - Round 3 DPE			Event H - Round 3 Parish Councils			Event I - Round 3 IOA			Event J - Round 3 IOA Outcomes		
GAL Org Ref	Stakeholder Organisation		I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F
20	Iberia	Y										Y			Y			Y			Y						Y			Y		
21	rwegian >4k	Y										Y			Y			Y			Y						Y			Y		
22	Qatar	Y										Y			Y			Y			Y						Y			Y		
23	Ryanair >4k	Y										Y			Y			Y			Y						Y			Y		
24	TAP Air Portugal	Y										Y			Y			Y			Y						Y			Y		
25	Thomas Cook >4k (Removed from Stage 2)	Y	-	-		-	-		-	-		-	-		-	-		-	-		-	-		-	-		-	-		-	-	
26	TUI >4k	Y										Y			Y			Y			Y						Y			Y		
27	Turkish Airlines	Y										Y			Y			Y			Y						Y			Y		
28	Ukraine International	Y										Y			Y			Y			Y						Y			Y		
29	Virgin >4k (Removed from Stage 2)	Y	-	-		-	-		-	-		-	-		-	-		-	-		-	-		-	-		-	-		-	-	
30	Vueling >4k	Y										Y			Y			Y			Y						Y			Y		
31	Westjet	Y										Y			Y			Y			Y						Y			Y		
32	Error - Organisation number 32 skipped in Stage 1	Y	-	-		-	-		-	-		-	-		-	-		-	-		-	-	-	-	-		-	-		-	-	
33	Biggin Hill Airport	Engaged through separate bi-lateral meetings.																														
34	City Airport																															
35	Heathrow Airport																															
36	Southampton Airport																															
37	Bournemouth Airport																															
38	Air Navigation Services	Y				Y						Y	Y		Y			Y			Y						Y			Y		
39	NATS En-Route Ltd	Y				Y	Y					Y	Y		Y	Y		Y	Y	Y	Y						Y	Y		Y	Y	
40	KSS Air Ambulance	Y							Y						Y			Y			Y						Y			Y		
41	Sussex Police Helicopter – NPAS – Redhill	Y							Y						Y			Y			Y						Y			Y		
42	British Helicopter Association (Fairoaks)	Y							Y						Y			Y	Y		Y						Y			Y	Y	
43	General Aviation Alliance	Y							Y						Y			Y			Y						Y			Y		

Stage 2A Stakeholder Information		Engaged at Stage 1B	Event A - Airspace Awareness			Event B - Round 1 Community			Event C - Round 1 GA			Event D - Round 1 Airline & ANSP			Event E - December Briefing			Event F - Round 2 CLOO			Event G - Round 3 DPE			Event H - Round 3 Parish Councils			Event I - Round 3 IOA			Event J - Round 3 IOA Outcomes		
GAL Org Ref	Stakeholder Organisation		I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F
44	Gatwick Airline Operators Committee (captured as part of airlines above)	Y	-	-		-	-		-	-		-	-		-	-		-	-		-	-	-	-	-		-	-		-	-	
45	Ministry of Defence - Defence Airspace and Air Traffic Management (MoD DAATM)	Y							Y	Y					Y			Y	Y	Y	Y	Y					Y	Y		Y	Y	
46	AOA	Y													Y			Y			Y						Y			Y		
47	Airlines UK - Association of UK Airlines	Y										Y			Y			Y			Y						Y			Y		
48	Gatwick Airport Consultative Committee (GATCOM)	Y		Y		Y	Y	Y							Y	Y		Y	Y		Y						Y			Y		
49	East Sussex County Council	Y		Y		Y									Y	Y		Y	Y		Y				Y		Y			Y		
50	Kent County Council	Y				Y									Y			Y	Y		Y	Y					Y			Y		
51	Surrey County Council	Y				Y									Y			Y	Y		Y	Y					Y			Y	Y	
52	West Sussex County Council	Y		Y		Y	Y								Y	Y		Y	Y	Y	Y	Y					Y	Y		Y	Y	
53	Adur & Worthing District Council	Y				Y									Y			Y			Y						Y			Y		
54	Arun District Council	Y													Y			Y			Y						Y			Y		
55	Brighton & Hove City Council	Y				Y									Y			Y			Y						Y			Y		
56	Crawley Borough Council	Y				Y									Y			Y			Y	Y					Y			Y		
57	Lewes District & Eastbourne Borough Council	Y				Y									Y			Y			Y						Y			Y		
58	Guildford Borough Council	Y				Y									Y			Y			Y	Y					Y			Y		
59	Hastings District Council	Y													Y			Y			Y						Y			Y		
60	Horsham District Council	Y		Y		Y									Y	Y		Y	Y	Y	Y	Y					Y	Y		Y	Y	
61	Maidstone District Council	Y				Y									Y			Y			Y						Y			Y		
62	Mid-Sussex District Council	Y		Y		Y	Y								Y	Y		Y	Y		Y	Y					Y	Y		Y	Y	
63	Mole Valley District Council	Y				Y	Y								Y	Y		Y	Y	Y	Y	Y					Y	Y		Y	Y	
64	Reigate & Banstead Borough Council	Y		Y		Y	Y								Y	Y		Y	Y		Y	Y	Y				Y	Y		Y	Y	
65	Rother District Council	Y				Y									Y			Y			Y						Y			Y		
66	Sevenoaks District Council	Y				Y									Y	Y		Y			Y	Y					Y	Y		Y	Y	
67	Tandridge District Council	Y		Y		Y	Y								Y			Y	Y	Y	Y	Y			Y		Y			Y	Y	
68	Tonbridge & Malling District Council	Y		Y		Y									Y			Y			Y						Y			Y		

Stage 2A Stakeholder Information		Engaged at Stage 1B	Event A - Airspace Awareness			Event B - Round 1 Community			Event C - Round 1 GA			Event D - Round 1 Airline & ANSP			Event E - December Briefing			Event F - Round 2 CLOO			Event G - Round 3 DPE			Event H - Round 3 Parish Councils			Event I - Round 3 IOA			Event J - Round 3 IOA Outcomes		
GAL Org Ref	Stakeholder Organisation		I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F
69	Tunbridge Wells District Council	Y				Y	Y								Y			Y			Y						Y			Y		
70	Waverly District Council	Y				Y									Y			Y	Y	Y	Y						Y			Y	Y	
71	Wealden District Council	Y				Y									Y			Y			Y	Y					Y	Y		Y	Y	
72	Tunbridge Wells Anti Aircraft Noise Group (TWAANG)	Y		Y		Y	Y								Y			Y		Y	Y	Y					Y			Y	Y	
73	East Sussex Communities for the control of air noise (ESCCAN)	Y		Y		Y									Y			Y			Y						Y			Y		
74	Association of Parish Councils Aviation Group (APCAG)	Y		Y		Y									Y			Y			Y						Y			Y		
75	High Weald Council Aviation Action Group (HWCAAG)	Y		Y		Y									Y			Y			Y						Y			Y		
76	CAGNE	Y		Y		Y	Y	Y							Y	Y		Y	Y	Y	Y	Y					Y		Y	Y	Y	Y
77	PAGNE	Y		Y		Y	Y								Y	Y		Y	Y	Y	Y	Y					Y			Y	Y	Y
78	GON[7]	Y		Y		Y	Y								Y	Y		Y	Y	Y	Y	Y					Y		Y	Y	Y	Y
79	Plane Justice	Y		Y		Y	Y								Y	Y		Y	Y	Y	Y						Y	Y		Y	Y	
80	Plane Wrong	Y		Y		Y	Y								Y	Y		Y	Y	Y	Y	Y					Y	Y		Y	Y	
81	Error - Organisation number 81 skipped in Stage 1	Y	-	-		-	-		-	-		-	-		-	-		-	-		-	-		-	-		-	-		-	-	
82	High Weald AONB	Y				Y									Y	Y		Y			Y						Y			Y		
83	Surrey Hills AONB	Y				Y	Y								Y			Y	Y	Y	Y						Y	Y		Y		
84	South Downs National Park	Y				Y									Y			Y			Y						Y			Y		
85	Gatwick Area Conservation Campaign (GACC)	Y				Y									Y			Y	Y	Y	Y						Y	Y		Y		
86	Chichester District Council					Y									Y			Y	Y	Y	Y	Y			Y		Y			Y	Y	
87	Speldhurst Parish Council			Y		Y									Y	Y		Y			Y			Y	Y		Y	Y		Y	Y	
88	TWANSG			Y		Y	Y								Y	Y		Y	Y	Y	Y	Y					Y	Y		Y		Y
89	NMB Chair			Y		Y	Y								Y	Y		Y	Y	Y	Y	Y					Y	Y		Y		
90	Burstow Parish Council			Y		Y									Y			Y	Y	Y	Y	Y		Y			Y	Y		Y		
91	Horley Town			Y		Y	Y								Y	Y		Y	Y		Y	Y		Y	Y		Y			Y	Y	

[7] Gatwick received feedback from members of GON for engagement events I & J, responding as individuals rather than as members of the group

Stage 2A Stakeholder Information		Engaged at Stage 1B	Event A - Airspace Awareness		Event B - Round 1 Community		Event C - Round 1 GA		Event D - Round 1 Airline & ANSP		Event E - December Briefing		Event F - Round 2 CLOO		Event G - Round 3 DPE		Event H - Round 3 Parish Councils		Event I - Round 3 IOA		Event J - Round 3 IOA Outcomes	
GAL Org Ref	Stakeholder Organisation		I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A
92	General Aviation Awareness Council (GAAC)						Y				Y		Y		Y				Y		Y	
93	Airspace4All						Y				Y		Y		Y				Y		Y	
94	Aircraft Owners and Pilots Association (AOPA)						Y				Y		Y		Y				Y		Y	
95	Airspace Change Organising Group (ACOG)										Y		Y		Y				Y		Y	
96	Association of Remotely Piloted Aircraft Systems UK (ARPAS-UK)						Y				Y		Y		Y				Y		Y	
97	British Airways (BA)								Y	Y	Y		Y		Y				Y		Y	
98	British Airline Pilots Association (BALPA)								Y		Y		Y	Y	Y				Y		Y	
99	British Balloon and Airship Club						Y				Y		Y		Y				Y		Y	
100	British Business and General Aviation Association (BBGA)						Y				Y		Y		Y				Y		Y	
101	British Gliding Association (BGA)						Y	Y			Y		Y	Y	Y				Y		Y	Y
102	British Hang Gliding and Paragliding Association (BHPA)						Y				Y		Y		Y				Y		Y	
103	British Microlight Aircraft Association (BMAA) / General Aviation Safety Council (GASCo)						Y				Y		Y		Y				Y		Y	
104	British Model Flying Association (BMFA)						Y				Y		Y		Y				Y		Y	
105	British Skydiving						Y				Y		Y		Y				Y		Y	
106	Drone Major						Y				Y		Y		Y				Y		Y	
107	Guild of Air Traffic Control Officers (GATCO)								Y		Y		Y		Y				Y		Y	
108	Honourable Company of Air Pilots (HCAP)								Y		Y		Y		Y				Y		Y	
109	Helicopter Club of Great Britain (HCGB)						Y				Y		Y		Y				Y		Y	
110	Virgin Atlantic Airways Limited								Y		Y		Y		Y				Y		Y	
111	Light Aircraft Association (LAA)						Y				Y		Y		Y				Y		Y	
112	Military Aviation Authority (MAA)						Y				Y		Y		Y				Y		Y	
113	NATS								Y		Y		Y	Y	Y	Y			Y	Y	Y	
114	Navy Command HQ						Y				Y		Y		Y				Y		Y	
115	PPL/IR (Europe)						Y				Y		Y		Y				Y		Y	
116	United States Air Force Europe (3rd Air Force-Directorate of Flying (USAFE (3rd AF-DOF))						Y				Y		Y		Y				Y		Y	

Stage 2A Stakeholder Information		Engaged at Stage 1B	Event A - Airspace Awareness			Event B - Round 1 Community			Event C - Round 1 GA			Event D - Round 1 Airline & ANSP			Event E - December Briefing			Event F - Round 2 CLOO			Event G - Round 3 DPE			Event H - Round 3 Parish Councils			Event I - Round 3 IOA			Event J - Round 3 IOA Outcomes		
GAL Org Ref	Stakeholder Organisation		I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F
117	Bucklands Surrey Parish Council																							Y	Y		Y			Y	Y	
118	Shipley Parish Council																							Y			Y			Y		
119	Hever Parish Council																							Y			Y			Y		
120	Brockham Parish Council																							Y			Y			Y		
121	Cuckfield Parish Council																							Y	Y		Y			Y	Y	
122	Balcombe Parish Council																							Y			Y	Y		Y		
123	Rusper Parish Council																					Y		Y			Y			Y	Y	
124	Wizz Air																										Y			Y		
125	London Chamber of Commerce and Industry																					Y								Y		
126	Salfords and Sidlow Parish Council																							Y	Y		Y	Y		Y		
127	Lasham Gliding Society																	Y	Y									Y		Y		
128	Abinger Parish Council																							Y			Y			Y		
129	Addington Parish Council																							Y			Y			Y		
130	Albourne Parish Council																							Y			Y			Y		
131	Alciston Parish Council																							Y			Y			Y		
132	Alfold Parish Council																							Y			Y			Y		
133	Alfriston Parish Council																							Y			Y			Y		
134	Amberley Parish Council																							Y			Y			Y		
135	Ansty and Staplefield Parish Council																							Y			Y			Y		
136	Ardingly Parish Council																							Y			Y			Y		
137	Arlington Parish Council																							Y			Y			Y		
138	Ashington Parish Council																							Y			Y			Y		
139	Ashurst Parish Council																							Y			Y			Y		
140	Ashurst Wood Village Council																							Y			Y			Y		
141	Aylesford Parish Council																							Y			Y			Y		

Stage 2A Stakeholder Information		Engaged at Stage 1B	Event A - Airspace Awareness			Event B - Round 1 Community			Event C - Round 1 GA			Event D - Round 1 Airline & ANSP			Event E - December Briefing			Event F - Round 2 CLOO			Event G - Round 3 DPE			Event H - Round 3 Parish Councils			Event I - Round 3 IOA			Event J - Round 3 IOA Outcomes		
GAL Org Ref	Stakeholder Organisation		I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F
142	Benenden Parish Council																							Y			Y			Y		
143	Berwick Parish Council																							Y			Y			Y		
144	Betchworth Parish Council																							Y			Y			Y		
145	Bewbush/Gossops Green/Maidenbower																							Y			Y			Y		
146	Bidborough Parish Council																							Y			Y			Y		
147	Billingshurst Parish Council																							Y			Y			Y		
148	Birling Parish Council																							Y			Y			Y		
149	Bletchingley Parish Council																							Y			Y		Y	Y		
150	Bolney Parish Council																							Y			Y			Y		Y
151	Borough Green Parish Council																							Y			Y			Y		
152	Bramber Parish Council																							Y			Y			Y		
153	Brasted Parish Council																							Y			Y			Y		
154	Brenchley Parish Council																							Y			Y			Y		
155	Broadbridge Heath Parish Council																							Y			Y			Y		
156	Broadfield/Tilgate/Furnace Green																							Y			Y			Y		
157	Burgess Hill Town Council																							Y			Y			Y		
158	Burham Parish Council																							Y			Y			Y		
159	Buxted Parish Council																							Y			Y			Y		
160	Capel Parish Council (Kent)																							Y	Y		Y			Y		
161	Capel Parish Council (Surrey)																							Y			Y			Y		
162	Caterham on the hill Parish Council																							Y			Y			Y		
163	Caterham Valley Parish Council																							Y			Y			Y		
164	Chaldon Parish Council																							Y			Y			Y		
165	Chalvington with Ripe Parish Council																							Y			Y			Y		
166	Charlwood Parish Council																							Y	Y		Y			Y		

Stage 2A Stakeholder Information		Engaged at Stage 1B	Event A - Airspace Awareness			Event B - Round 1 Community			Event C - Round 1 GA			Event D - Round 1 Airline & ANSP			Event E - December Briefing			Event F - Round 2 CLOO			Event G - Round 3 DPE			Event H - Round 3 Parish Councils			Event I - Round 3 IOA			Event J - Round 3 IOA Outcomes		
GAL Org Ref	Stakeholder Organisation		I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F
167	Chelsham and Farleigh Parish Council																							Y			Y			Y		
168	Chevening Parish Council																							Y			Y			Y		
169	Chichester District Council																							Y			Y			Y		
170	Chiddingly Parish Council																							Y			Y			Y		
171	Chiddingstone Castle																							Y			Y			Y		
172	Chiddingstone Parish Council																							Y			Y			Y		
173	Coldwaltham Parish																							Y			Y			Y		
174	Colgate Parish Council																							Y			Y			Y	Y	
175	Cowden Parish Council																							Y			Y			Y		
176	Cowfold Parish Council																							Y			Y			Y		
177	Cranbrook & Sissinghurst Parish Council																							Y			Y			Y		
178	Cranleigh Parish Council																							Y			Y			Y		
179	Crockenhill Parish Council																							Y			Y			Y		
180	Crowborough Town Council																							Y			Y			Y		
181	Crowhurst Parish Council (East Sussex)																							Y			Y			Y		
182	Crowhurst Parish Council (Surrey)																							Y			Y			Y		
183	Cuckmere Valley Parish Counci																							Y			Y			Y		
184	Danehill Parish Council																							Y			Y			Y		
185	Ditchling Parish Council																							Y			Y			Y		
186	Ditton Parish Council																							Y			Y			Y		
187	Dormansland Parish Council																							Y			Y			Y		
188	Dunton Green Parish Council																							Y			Y			Y		
189	East Dean and Friston Parish Council																							Y			Y			Y		
190	East Grinstead Town Council																							Y			Y			Y	Y	
191	East Hoathly with Halland PC																							Y			Y			Y		

Stage 2A Stakeholder Information		Engaged at Stage 1B	Event A - Airspace Awareness			Event B - Round 1 Community			Event C - Round 1 GA			Event D - Round 1 Airline & ANSP			Event E - December Briefing			Event F - Round 2 CLOO			Event G - Round 3 DPE			Event H - Round 3 Parish Councils			Event I - Round 3 IOA			Event J - Round 3 IOA Outcomes		
GAL Org Ref	Stakeholder Organisation		I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F
192	East Malling and Larkfield Parish Council																							Y			Y			Y		
193	East Peckham Parish Council																							Y			Y			Y		
194	Ebernoe Parish Council																							Y			Y			Y	Y	
195	Edenbridge Town Council																							Y			Y			Y		
196	Ewhurst and Ellen's Green Parish Council																							Y			Y			Y		
197	Eynsford Parish Council																							Y			Y			Y	Y	
198	Farningham Parish Council																							Y			Y			Y		
199	Fawkham Parish Council																							Y			Y			Y		
200	Felbridge Parish Council																							Y			Y			Y		
201	Fletching Parish Council																							Y			Y			Y		
202	Forest Row Parish Council																							Y			Y			Y		
203	Forge Wood																							Y			Y			Y		
204	Framfield Parish Council																							Y			Y			Y		
205	Frant Parish Council																							Y			Y			Y		
206	Frittenden Parish Council																							Y			Y			Y		
207	Fulking Parish Council																							Y			Y			Y		
208	Godstone Parish Council																							Y			Y			Y		
209	Gossops Green																							Y			Y			Y		
210	Goudhurst Parish Council																							Y			Y			Y		
211	Hadlow Down Parish Council																							Y			Y			Y		
212	Hadlow Parish Council																							Y			Y			Y		
213	Hailsham Town Council																							Y			Y			Y		
214	Halstead Parish Council																							Y			Y			Y		
215	Hartfield Parish Council																							Y			Y			Y		
216	Hartley Parish Council																							Y			Y			Y		

Stage 2A Stakeholder Information		Engaged at Stage 1B	Event A - Airspace Awareness			Event B - Round 1 Community			Event C - Round 1 GA			Event D - Round 1 Airline & ANSP			Event E - December Briefing			Event F - Round 2 CLOO			Event G - Round 3 DPE			Event H - Round 3 Parish Councils			Event I - Round 3 IOA			Event J - Round 3 IOA Outcomes		
GAL Org Ref	Stakeholder Organisation		I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F
217	Hassocks Parish Council																							Y			Y			Y		
218	Hawkhurst Parish Council																							Y			Y			Y		
219	Haywards Heath Town Council																							Y			Y			Y		
220	Headley Parish Council																							Y			Y			Y		
221	Heathfield & Waldron Parish Council																							Y			Y			Y		Y
222	Hellingly Parish Council																							Y			Y			Y		
223	Henfield Parish Council																							Y			Y			Y		
224	Herstmonceux Parish Council																							Y			Y			Y		
225	Hextable Parish Council																							Y			Y			Y		
226	Hildenborough Parish Council																							Y			Y			Y		
227	Holmwood Parish Council																							Y			Y			Y		
228	Hooe Parish Council																							Y			Y			Y		
229	Horam Parish Council																							Y			Y			Y		
230	Horne Parish Council																							Y			Y			Y		
231	Horsham: Denne Neighbourhood Council																							Y			Y			Y		
232	Horsham: Forest Neighbourhood Council																							Y			Y			Y		
233	Horsham: Trafalgar Neighbourhood Council																							Y			Y			Y		
234	Horsmonden Parish Council																							Y			Y			Y		
235	Horsted Keynes Parish Council																							Y			Y			Y		
236	Horton Kirby & South Darenth Parish Council																							Y			Y			Y		
237	Hurstpierpoint and Sayers Common Parish Council																							Y			Y			Y		
238	Ifield - Talk Ifield																							Y			Y			Y		
239	Ightham Parish Council																							Y			Y			Y		
240	Isfield Parish Council																							Y			Y			Y		
241	Itchingfield Parish Council																							Y			Y			Y		

Stage 2A Stakeholder Information		Engaged at Stage 1B	Event A - Airspace Awareness			Event B - Round 1 Community			Event C - Round 1 GA			Event D - Round 1 Airline & ANSP			Event E - December Briefing			Event F - Round 2 CLOO			Event G - Round 3 DPE			Event H - Round 3 Parish Councils			Event I - Round 3 IOA			Event J - Round 3 IOA Outcomes		
GAL Org Ref	Stakeholder Organisation		I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F
242	Kemsing Parish Council																							Y			Y			Y		
243	Kings Hill Parish Council																							Y			Y			Y		
244	Kingswood Residents Association																							Y			Y			Y		
245	Knockholt Parish Council																							Y			Y			Y		
246	Lamberhurst Parish Council																							Y			Y			Y		
247	Langley Green Forum																							Y			Y			Y		
248	Langton Green Village Society																							Y			Y			Y		
249	Laughton Parish Council																							Y			Y			Y		
250	Leigh Parish Council (Kent)																							Y			Y			Y		
251	Leigh Parish Council (Surrey)																							Y			Y			Y		
252	Leybourne Parish Council																							Y			Y			Y		
253	Limpsfield Parish Council																							Y			Y			Y		
254	Lindfield Rural Parish Council																							Y			Y			Y		
255	Lingfield Parish Council																							Y			Y			Y		
256	Little Horsted Parish Council																							Y			Y			Y		
257	Long Man Parish Council																							Y			Y			Y		
258	Lower Beeding Parish Council																							Y			Y			Y		
259	Loxwood Parish Council																							Y			Y			Y		
260	Maidenbower Park Community Club																							Y			Y			Y		
261	Maresfield Parish Council																							Y			Y			Y		
262	Mayfield & Five Ashes Parish Council																							Y			Y			Y		
263	Mereworth Parish Council																							Y			Y			Y		
264	Mickleham Parish Council																							Y			Y			Y		
265	Newdigate Parish Council																							Y			Y			Y		
266	Newtimber Parish Council																							Y			Y			Y		

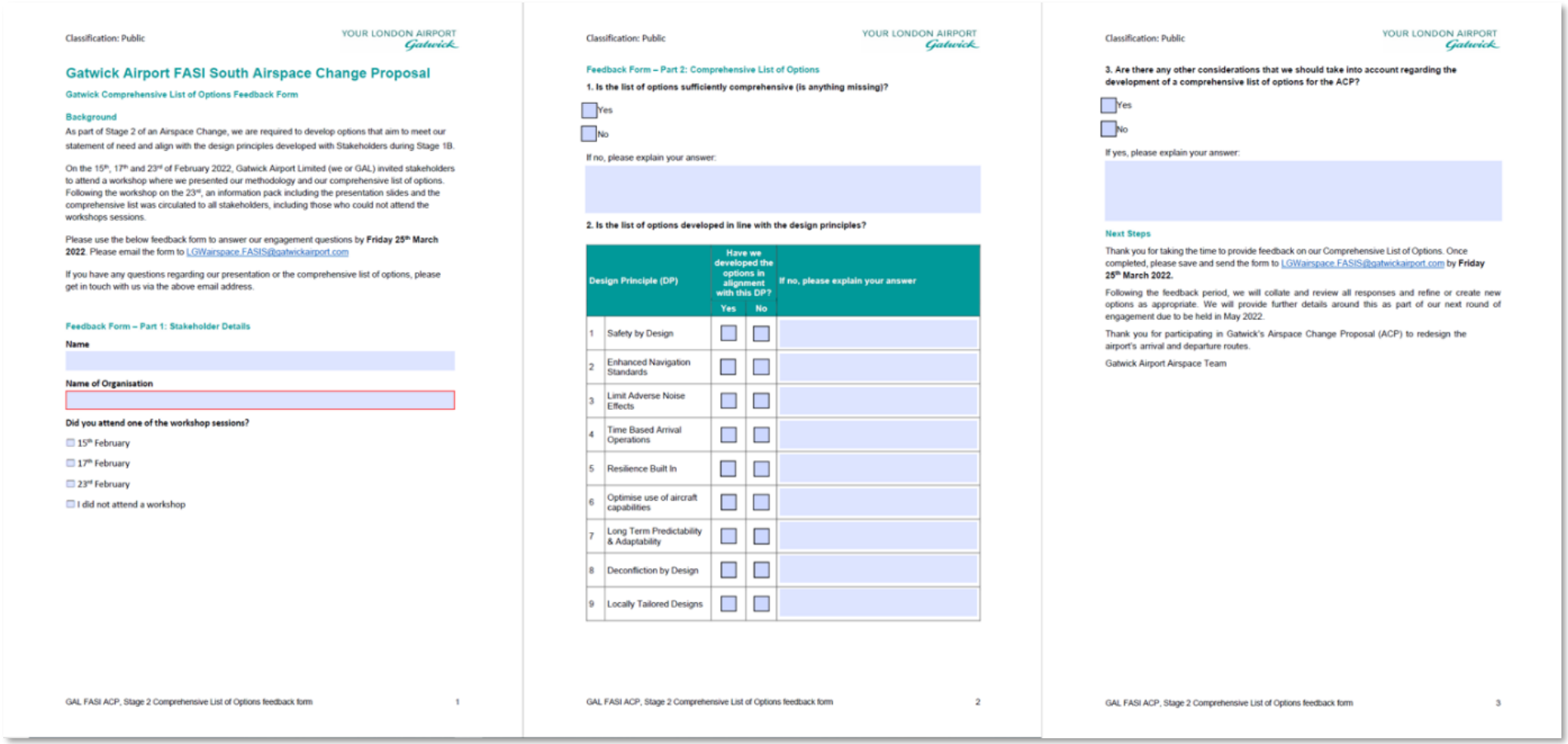
Stage 2A Stakeholder Information		Engaged at Stage 1B	Event A - Airspace Awareness			Event B - Round 1 Community			Event C - Round 1 GA			Event D - Round 1 Airline & ANSP			Event E - December Briefing			Event F - Round 2 CLOO			Event G - Round 3 DPE			Event H - Round 3 Parish Councils			Event I - Round 3 IOA			Event J - Round 3 IOA Outcomes		
GAL Org Ref	Stakeholder Organisation		I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F
267	Ninfield Parish Council																							Y			Y			Y		
268	North Horsham Parish Council																							Y			Y			Y		
269	Northgate Matters																							Y			Y			Y		
270	Nutfield Parish Council																							Y			Y			Y		
271	Nuthurst Parish Council																							Y			Y			Y		
272	Ockley Parish Council																							Y			Y			Y		
273	Offham Parish Council																							Y			Y			Y		
274	Otford Parish Council																							Y			Y			Y		
275	Outwood Parish Council																							Y	Y		Y			Y		
276	Oxted Parish Council																							Y			Y			Y		
277	Paddock Wood Town Council																							Y			Y			Y		
278	Parham Parish Council																							Y			Y			Y		
279	Pembury Parish Council																							Y			Y			Y		
280	Penshurst Parish Council																							Y			Y			Y		
281	Petworth Town Council																							Y			Y			Y		
282	Pevensey Parish Council																							Y			Y			Y		
283	Plaistow and Ifold Parish Council																							Y			Y			Y		
284	Platt Parish Council																							Y			Y			Y		
285	Plaxtol Parish Council																							Y			Y			Y		
286	Polegate Town Council																							Y			Y			Y		
287	Pound Hill (North) Residents Association																							Y						Y		
288	Pound Hill/ West Green/Forge Wood																							Y			Y			Y		
289	Poynings Parish Council																							Y			Y			Y		
290	Pulborough Parish Council																							Y			Y			Y		
291	Pyecombe Parish Council																							Y			Y			Y		

Stage 2A Stakeholder Information		Engaged at Stage 1B	Event A - Airspace Awareness			Event B - Round 1 Community			Event C - Round 1 GA			Event D - Round 1 Airline & ANSP			Event E - December Briefing			Event F - Round 2 CLOO			Event G - Round 3 DPE			Event H - Round 3 Parish Councils			Event I - Round 3 IOA			Event J - Round 3 IOA Outcomes		
GAL Org Ref	Stakeholder Organisation		I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F
292	Riverhead Parish Council																							Y			Y			Y		
293	Rotherfield Parish Council																							Y			Y			Y		
294	Rudgwick Parish Council																							Y			Y			Y		
295	Rusthall Parish Council																							Y			Y			Y		
296	Ryarsh Parish Council																							Y			Y			Y		
297	Sandhurst Parish Council																							Y			Y			Y		
298	Seal Parish Council																							Y			Y			Y		
299	Selmeston Parish Council																							Y			Y			Y		
300	Sevenoaks Town Council																							Y			Y			Y		
301	Sevenoaks Weald Parish Council																							Y			Y			Y		
302	Shermanbury Parish Council																							Y			Y			Y		
303	Shipbourne Parish Council																							Y			Y			Y		
304	Shoreham Parish Council																							Y			Y			Y		
305	Slaugham Parish Council																							Y			Y			Y		
306	Slinfold Parish Council																							Y			Y			Y		
307	Snodland Town Council																							Y			Y			Y		
308	Southborough Town Council																							Y			Y			Y		
309	Southgate Community Forum																							Y			Y			Y		
310	Southwater Parish Council																							Y			Y			Y		
311	Stansted Parish Council																							Y			Y			Y		
312	Steyning Parish Council																							Y			Y			Y		
313	Storrington and Sullington Parish Council																							Y			Y			Y		
314	Sundridge with Ide Hill Parish Council																							Y			Y			Y		
315	Swanley Town Council																							Y			Y			Y		
316	Talk Bewbush																							Y			Y			Y		

Stage 2A Stakeholder Information		Engaged at Stage 1B	Event A - Airspace Awareness			Event B - Round 1 Community			Event C - Round 1 GA			Event D - Round 1 Airline & ANSP			Event E - December Briefing			Event F - Round 2 CLOO			Event G - Round 3 DPE			Event H - Round 3 Parish Councils			Event I - Round 3 IOA			Event J - Round 3 IOA Outcomes		
GAL Org Ref	Stakeholder Organisation		I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F
317	Talk Broadfield																							Y			Y			Y		
318	Tandridge Parish Council																							Y			Y			Y		
319	Tatsfield Parish Council																							Y			Y			Y		
320	Thakeham Parish Council																							Y			Y			Y		
321	Tilgate Community Forum																							Y			Y			Y		
322	Trottiscliffe Parish Council																							Y			Y			Y		
323	Turners Hill Parish Council																							Y			Y			Y		
324	Twineham Parish Council																							Y			Y			Y		
325	Uckfield Town Council																							Y			Y			Y		
326	Upper Beeding Parish Council																							Y			Y			Y		
327	Wadhurst Parish Council																							Y			Y			Y		
328	Warbleton Parish Council																							Y			Y			Y		
329	Warlingham Parish Council																							Y			Y			Y		
330	Warnham Parish Council																							Y		Y	Y			Y		Y
331	Wartling Parish Council																							Y			Y			Y		
332	Washington Parish Council																							Y			Y			Y		
333	Wateringbury Parish Council																							Y			Y			Y		
334	West Chiltington Parish Council																							Y			Y			Y		
335	West Green Community Form																							Y			Y			Y		
336	West Grinstead Parish Council																							Y			Y			Y		
337	West Hoathly Parish Council																							Y			Y			Y		
338	West Kingsdown Parish Council																							Y			Y			Y		
339	West Malling Parish Council																							Y			Y			Y		
340	West Peckham Parish Council																							Y			Y			Y		
341	Westerham Town Council																							Y		Y	Y			Y		

Stage 2A Stakeholder Information		Engaged at Stage 1B	Event A - Airspace Awareness			Event B - Round 1 Community			Event C - Round 1 GA			Event D - Round 1 Airline & ANSP			Event E - December Briefing			Event F - Round 2 CLOO			Event G - Round 3 DPE			Event H - Round 3 Parish Councils			Event I - Round 3 IOA			Event J - Round 3 IOA Outcomes		
GAL Org Ref	Stakeholder Organisation		I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F	I	A	F
342	Westham Parish Council																							Y			Y			Y		
343	Whyteleafe Parish Council																							Y			Y			Y		
344	Willingdon & Jevington Parish Council																							Y			Y			Y		
345	Wisborough Green Parish Council																							Y			Y			Y		
346	Wiston Parish Council- unsubscribe?																							Y			Y			Y		
347	Withyham Parish Council																							Y			Y			Y		Y
348	Wivelsfield Parish Council																							Y			Y			Y		
349	Woldingham Parish Council																							Y			Y			Y		Y
350	Woodmancote Parish Council																							Y			Y			Y		
351	Worth Parish Council																							Y			Y			Y		
352	Wotton Parish Council																							Y			Y			Y		
353	Wouldham Parish Council																							Y			Y			Y		
354	Wrotham Parish Council																							Y			Y			Y		
355	Airfield Operators Group (AOG)																													Y		
356	Aviation Environment Federation (AEF)																													Y		
357	BAe Systems																													Y		
358	Iprosurv																													Y		
359	Isle of Man CAA																													Y		
360	UK Airprox Board (UKAB)																													Y		
361	UK Flight Safety Committee (UKFSC)																													Y		
362	Southend Airport	Engaged through separate bi-lateral meetings																														
363	Northolt																															
364	Luton Airport																															
365	Stansted Airport																															

12. Appendix B: Comprehensive List of Options Feedback Form



Classification: Public

YOUR LONDON AIRPORT Gatwick

Gatwick Airport FASI South Airspace Change Proposal

Gatwick Comprehensive List of Options Feedback Form

Background

As part of Stage 2 of an Airspace Change, we are required to develop options that aim to meet our statement of need and align with the design principles developed with Stakeholders during Stage 1B.

On the 15th, 17th and 23rd of February 2022, Gatwick Airport Limited (we or GAL) invited stakeholders to attend a workshop where we presented our methodology and our comprehensive list of options. Following the workshop on the 23rd, an information pack including the presentation slides and the comprehensive list was circulated to all stakeholders, including those who could not attend the workshops sessions.

Please use the below feedback form to answer our engagement questions by **Friday 25th March 2022**. Please email the form to LGWairspace.FASIS@gatwickairport.com

If you have any questions regarding our presentation or the comprehensive list of options, please get in touch with us via the above email address.

Feedback Form – Part 1: Stakeholder Details

Name

Name of Organisation

Did you attend one of the workshop sessions?

- ☐ 15th February
- ☐ 17th February
- ☐ 23rd February
- ☐ I did not attend a workshop

GAL FASI ACP, Stage 2 Comprehensive List of Options feedback form 1

Classification: Public

YOUR LONDON AIRPORT Gatwick

Feedback Form – Part 2: Comprehensive List of Options

1. Is the list of options sufficiently comprehensive (is anything missing)?

- ☐ Yes
- ☐ No

If no, please explain your answer:

2. Is the list of options developed in line with the design principles?

	Design Principle (DP)	Have we developed the options in alignment with this DP? Yes	No	If no, please explain your answer
1	Safety by Design	☐	☐	
2	Enhanced Navigation Standards	☐	☐	
3	Limit Adverse Noise Effects	☐	☐	
4	Time Based Arrival Operations	☐	☐	
5	Resilience Built In	☐	☐	
6	Optimise use of aircraft capabilities	☐	☐	
7	Long Term Predictability & Adaptability	☐	☐	
8	Deconfliction by Design	☐	☐	
9	Locally Tailored Designs	☐	☐	

GAL FASI ACP, Stage 2 Comprehensive List of Options feedback form 2

Classification: Public

YOUR LONDON AIRPORT Gatwick

3. Are there any other considerations that we should take into account regarding the development of a comprehensive list of options for the ACP?

- ☐ Yes
- ☐ No

If yes, please explain your answer:

Next Steps

Thank you for taking the time to provide feedback on our Comprehensive List of Options. Once completed, please save and send the form to LGWairspace.FASIS@gatwickairport.com by **Friday 25th March 2022.**

Following the feedback period, we will collate and review all responses and refine or create new options as appropriate. We will provide further details around this as part of our next round of engagement due to be held in May 2022.

Thank you for participating in Gatwick's Airspace Change Proposal (ACP) to redesign the airport's arrival and departure routes.

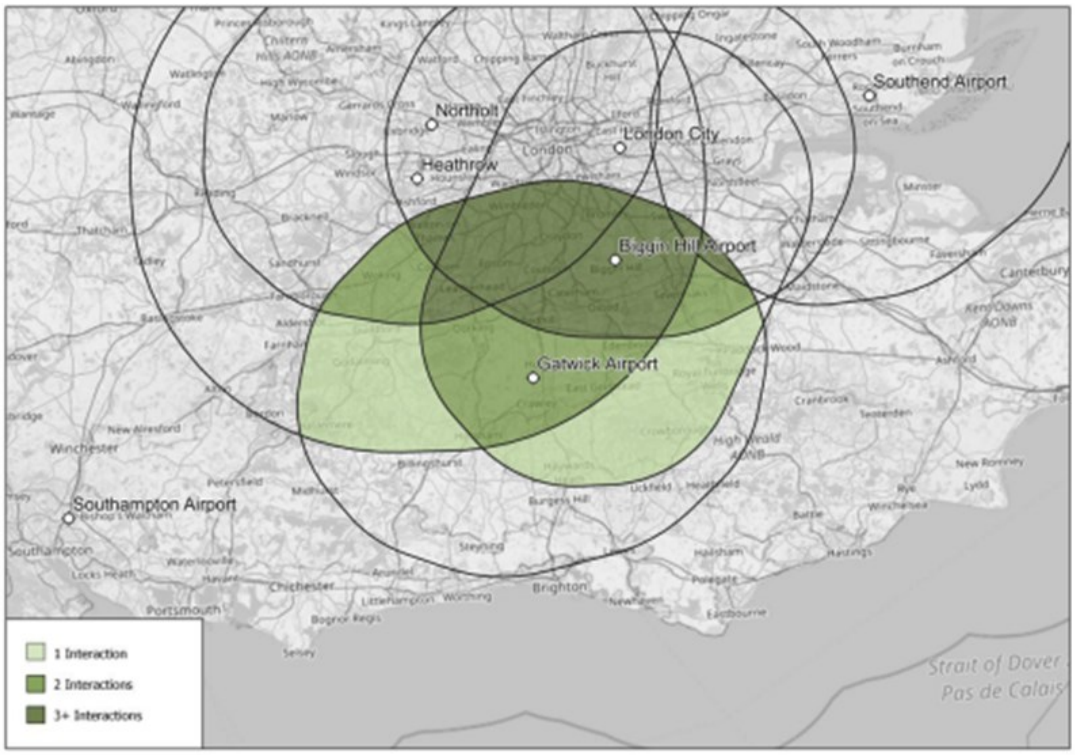
Gatwick Airport Airspace Team

GAL FASI ACP, Stage 2 Comprehensive List of Options feedback form 3

13. Appendix C: ACOG Interdependency Map

Figure 43 shows ACOG's Potential Interdependences map associated with the Gatwick ACP taken from Masterplan Iteration 2. Since publication of the map, Farnborough Airport have now also joined FASI-S.

Figure 43 ACOG Masterplan Iteration 2: Potential Interdependencies associated specifically with Gatwick ACP.



14. Annex A: Evolution of the Options Design

Published on the CAA's Airspace Change Portal

15. Annex B: Design Principle Evaluation

Published on the CAA's Airspace Change Portal

16. Annex C: Stakeholder Engagement Report

Published on the CAA's Airspace Change Portal