LONDON GATWICK

Airspace Modernisation Gatwick Airport

Step 2B
Submission Document

Initial Options Appraisal

DOCUMENT CONTROL

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Version History

Following submission of Gatwick FASI ACP Step 2B Submission Document V1.0, the CAA requested Gatwick make the following updates to the documents in order to conclude their review. 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
Text updated in the CAP2091 noise methodology section to reflect Gatwick's requirement, as an airport designated by the Secretary of State for noise purposes, to model to Category A standards.	Noise Modelling and CAP2091 (Page 29)
Within the 'Information to collect at Stage 3' section, additional text added to reflect the requirement to undertake a Habitats Regulations Assessment (HRA) in Stage 3.	Preferred option and information to collect as part of the Full Options Appraisal (Page 69)
Text added that explains that options discontinued at Stage 2 could be reintroduced at Stage 3 after integration occurs for masterplan reasons.	Preferred option and information to collect as part of the Full Options Appraisal (Page 68)
Text added which explains that detailed mapping of the options will be generated for the public consultation at Stage 3.	Preferred option and information to collect as part of the Full Options Appraisal (Page 69)

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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.

1. 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 22 airports in the UK that form part of 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.

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, 99% of the current commercial air transport fleet aircraft are able 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 relief 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) 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.

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.

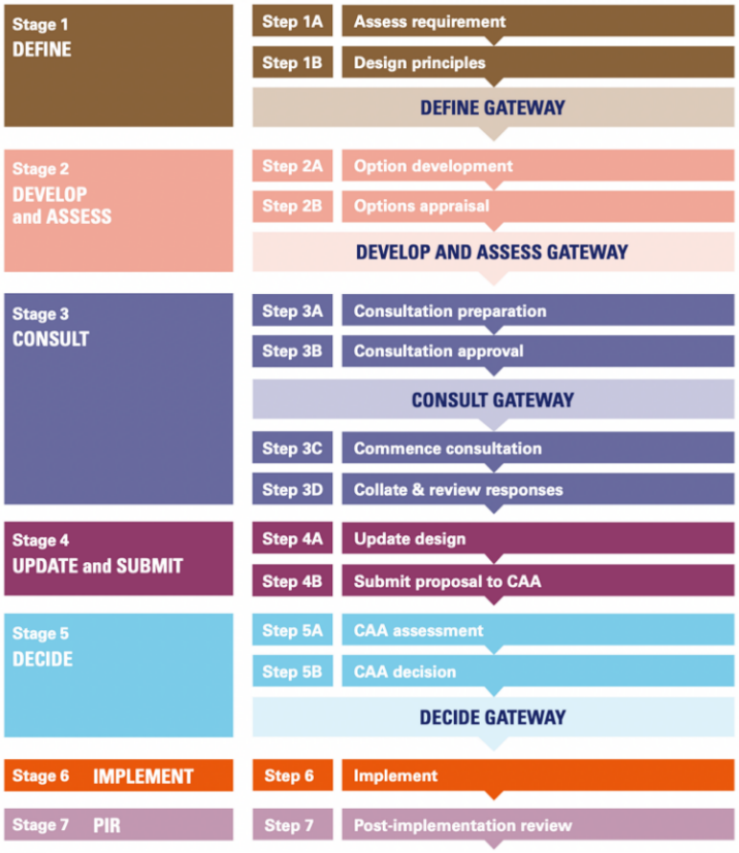


Figure 1 CAP1616 Stages. Source: Civil Aviation Publication 1616

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)
	In October 2018, GAL submitted a statement of need (SoN) to the CAA.	Statement of Need
Stage 1A	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 shared those options with our Stakeholder representatives (the same ones engaged with on the Design Principles). Feedback from the engagement was then used to refine and/or generate further options where feasible. Finally, Gatwick qualitatively assessed all options developed against the Design Principles and produced a Design Principle Evaluation.	Stage 2A Design Principle Evaluation

Stage 2B	At Stage 2B an Airspace Change Sponsor is required to undertake an Initial Options Appraisal (IOA) of the airspace change options which proceed from Stage 2A. This is where we are now (September 2023). The following sections of the document initially describe the options under assessment and the baseline option, followed by explaining the methodology used to assess each option, and then the IOA outcome. At the end of the document we explain, based on the IOA, the options which we intend to take forward to Stage 3 and our preferred option.	**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 Initial Options Appraisal document

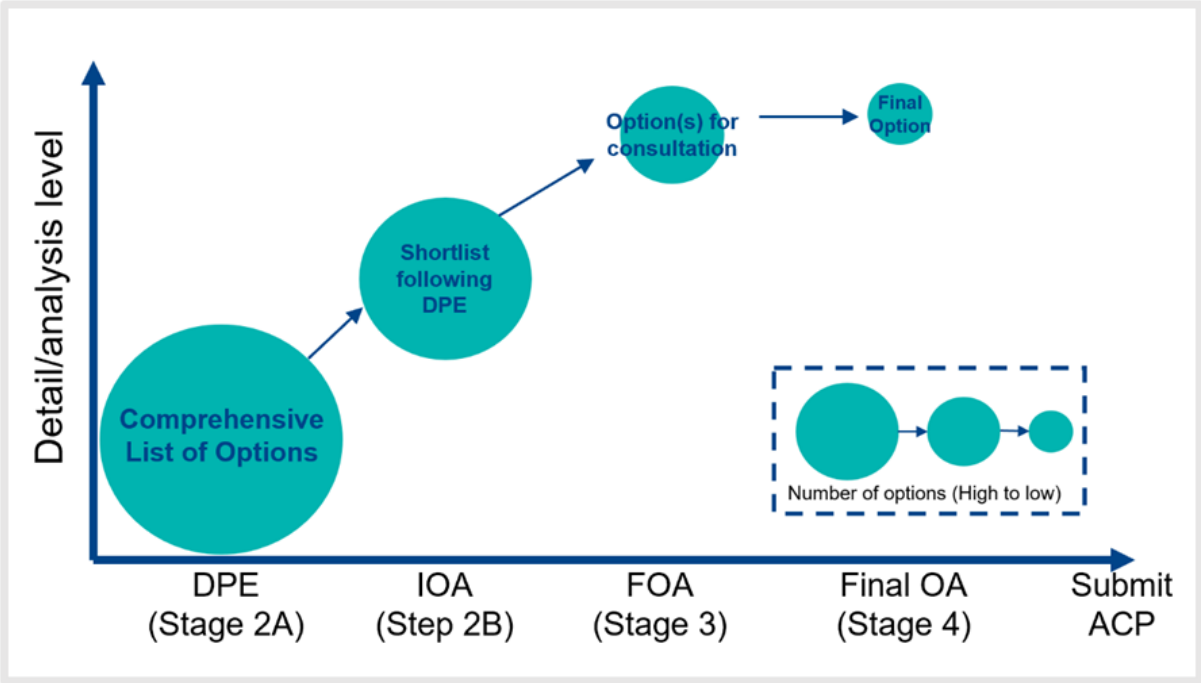
The Initial Options Appraisal (IOA) requires sponsors to carry out an initial qualitative assessment of the benefits and impacts of each option, tested against the 'do nothing' pre-implementation baseline scenario. The purpose of this initial appraisal is to highlight to change sponsors, stakeholders, 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 (Section 3 of this document)
- Provide details of the criteria and methodology for assessing the options (Section 4 of this document)
- Describe the baseline 'do nothing' pre-implementation scenario (Section 5 of this document)
- Detail the benefits and impacts of each option tested against the baseline, including initial indication of safety implications (Section 5 of this document)
- Draw qualitative conclusions on the outcome of the IOA and shortlist options (Section 6 of this document)

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 options that will be taken to the public Stage 3 consultation compared against the 'do nothing' pre-

implementation scenario. Finally, the Stage 4 **Final Options Appraisal,** repeats the Full Options Appraisal on the final design which will be submitted for the ACP.



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

Figure 2 Stage 2 Submission Documents

2. Overview of Options under Assessment

As part of Stage 2A, Gatwick developed a comprehensive list of options based on the Stage 1 Design Principles and the Statement of Need. Following Stakeholder engagement, there were 70 options on the comprehensive list: 17 westerly departure options, 18 easterly departure options, 18 westerly arrival options and 17 easterly arrival options. These 70 options went through to the Design Principle Evaluation where each option was evaluated against each Design Principle. There were several outcomes of the Design Principle Evaluation;

Departure and Arrival Baseline: The DPE showed that the four baseline scenarios did not perform as well as the 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.

Arrivals: All PBN arrivals options proceeded to this IOA[1]. The Easterly and Westerly Radar Maneuvering areas (RMA) options (WAB, WAG, EAB and EAH) were evolved into a single option for each runway end. Gatwick have then flooded these two options with further notional flight paths for the purposes of analysis which have been grouped into 4nm bands e.g. joining at 8-12nm, 9-13nm, 10-14nm, 11-15nm and 12-16nm.

As noted throughout the arrival option development it is expected that, in order to maintain capacity at Gatwick, a hybrid approach will be required for arrivals – this means that an RMA with vectoring will be required alongside any PBN arrival transitions, should they be implemented. At this stage, the split of vectoring / PBN usage is not known; this will be informed by development simulations that will be undertaken as part of the detailed design work in Stage 3. For the purposes of this IOA we have set about to determine the optimum PBN routes and we have separately assessed the RMA.

Departures: Following feedback from NATS NERL regarding the airspace above 7000ft, the departure options were evolved to integrate with the network airspace. More details regarding this can be found in the Stage 2A submission document.

Understanding the terminology of the departure options

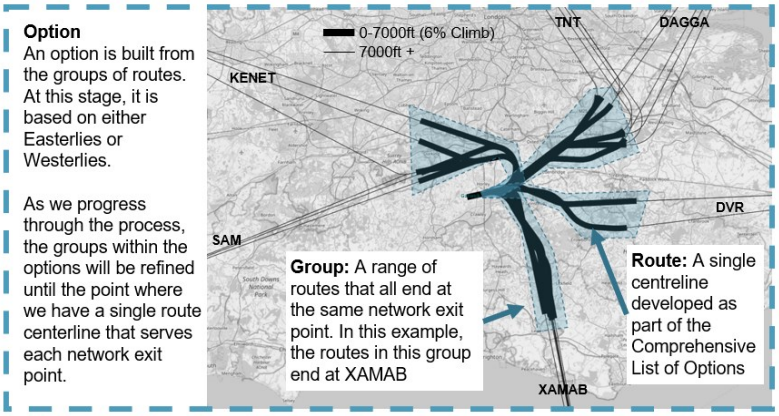


Figure 3 Description of departure terminology

[1] Note: WAN was developed following stakeholder engagement and followed the same route as WAA therefore only WAA is shown in the IOA.

Evolution of some departure routes following the Design Principle Evaluation

Following the outcomes of the Design Principle Evaluation, Gatwick started the next step of the process which is this Initial Options Appraisal (IOA).

Until this point, the departure and arrival options have been developed in isolation. Although the arrival and departure options aren't being combined and appraised at this stage (this will happen ahead of the Full Options Appraisal in Stage 3), Gatwick is now at the stage where the number of options on the shortlist makes it appropriate to start looking at how these options might integrate in future. Therefore, in preparation for the Initial Options Appraisal (IOA), Gatwick looked at how the departure options might integrate with the arrival options developed.

It was found that some of the departure groups would have significant interactions with the arrivals which would be very difficult to overcome without either compromising on continuous climb/descent or requiring changes to the lateral tracks. This applied to the left turn DVR/TNT/DAGGA groups for westerlies, and the right turn SAM/KENET group for easterlies.

Gatwick therefore evolved some of the departure routes within these groups to better integrate with the arrival options. This work was based on the broad geographic areas of the arrivals and mainly turned the later parts of the departure routes further north to reduce interdependencies with the descending arrivals. An example is shown in Figure 4.

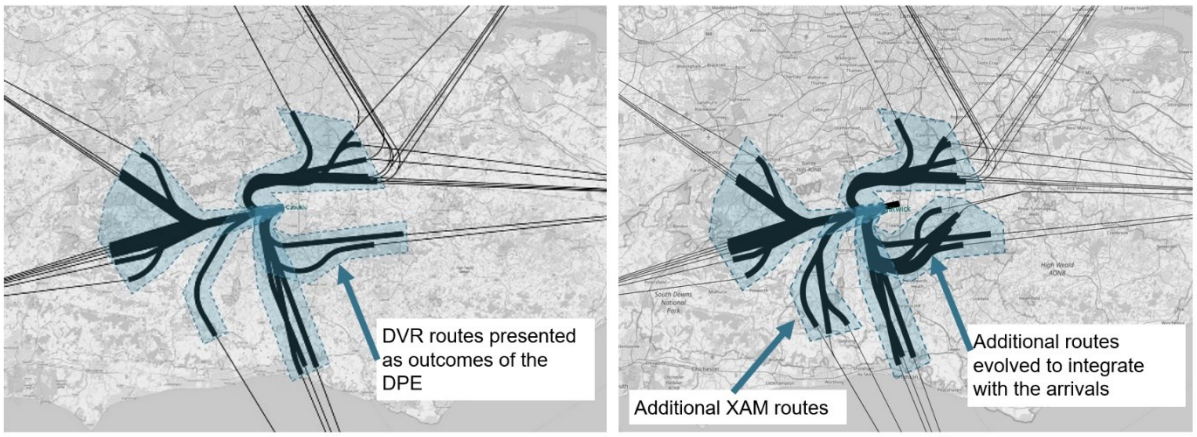


Figure 4 Example of DVR options evolved to integrate with arrivals

The original routes and the addition routes are both assessed within the IOA.

Following feedback from NERL around the potential configuration of the departure options, additional XAM routes taken from the Comprehensive List of Options were also added into some of the options as these were now viable. An example is shown in Figure 4.

It is expected that all routes will continue to evolve as Gatwick progress through the process as options are matured in detail and refined. The integration of the arrival and departure options will be revisited in detail as part of Stage 3 following the outcomes of this IOA.

Options taken to Initial Options Appraisal

Gatwick have taken the following options through to this IOA. For more information about how the options were developed and evaluated, please see the Stage 2A submission document on the CAA Airspace Change Portal. For images and descriptions of the options the IOA section of this document contains links to the dashboards where this information is shown.

Easterly Arrivals	Westerly Arrivals
EAA	WAA
EAC	WAC
EAD	WAD
EAE	WAE
EAF	WAF
EAG	WAH
EAI	WAI
EAJ	WAJ
EAK	WAK
EAL	WAL
EAM	WAM
EAN	WAO
EAO	WAP
EAP	WAQ
Easterly Departures	**Westerly Departures**
Easterly System 1	Westerly System 1
Easterly System 2	Westerly System 2
Easterly System 3	Westerly System 3
Easterly System 4	Westerly System 4
Easterly System 5	Westerly System 5
Easterly System 6	Westerly System 6
Easterly System 7	Westerly System 7
Easterly System 8	Westerly System 8
Easterly System 9	

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.

3. Initial Options Appraisal Methodology

The Initial Options Appraisal (IOA) is the first stage in a three-phase appraisal of airspace change options. It involves the mainly qualitative and some quantitative appraisal of the airspace change options that have proceeded from Step 2A. As options progress through the airspace change process, the two following appraisals, the Full Options Appraisal and Final Options Appraisal undertaken at Stage 3 and 4, will quantitively evaluate options in further detail. The following sections outline the methodology Gatwick has followed whilst appraising our airspace change options as part of this IOA.

Defining the 'Do nothing' baseline

As part of this IOA CAP1616 requires airspace change sponsors to set a baseline which is used for environmental appraisal of the options. CAP1616 explains that this will be a 'do nothing' scenario and will largely reflect the current-day scenario, although taking due consideration of known or anticipated factors that might affect that baseline, for example a planned housing development close to an airport or forecast growth in air traffic. Therefore, all environmental assessments must illustrate the difference between a pre-implementation ('do nothing') scenario and a post-implementation scenario, ensuring that the periods are comparable.

Year of Implementation and Forecast

As part of an airspace change, sponsors are required to model the pre and post-implementation scenarios for the year of implementation and ten years hence. At present, the exact implementation date for the Future Airspace Strategy Implementation - South (FASI-S) airspace changes is unknown, as the timeline for implementation will be dependent on several factors, including the airspace changes above 7000ft which form part of a separate ACP sponsored by NATS Enroute Limited (NERL). Current deployments of the future London Terminal Manoeuvring Area (LTMA) within Masterplan Iteration 2, suggest an implementation date of not before 2027, however this will be subject to alignment with Masterplan Iteration 3.

For the purposes of this IOA, 2019 data has been used as the baseline year. At the point of implementation (2027 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 has been developed to reflect the known and anticipated factors when describing the pre-implementation scenario such as adjusting the 2019 data to reflect the extant Route 4 procedure with 2019 traffic levels.

Figure 5 shows Gatwick's actual Air Traffic Movements (ATMs) from 2012 to 2022 and forecast ATMs from 2023 to 2047. As shown on the graph, movement levels in 2027 are forecast to be very similar to 2019 and hence 2019 was chosen as a **Error! Reference source not found.**representative year to reflect the expected operation of the 2027 airspace immediately before implementation.

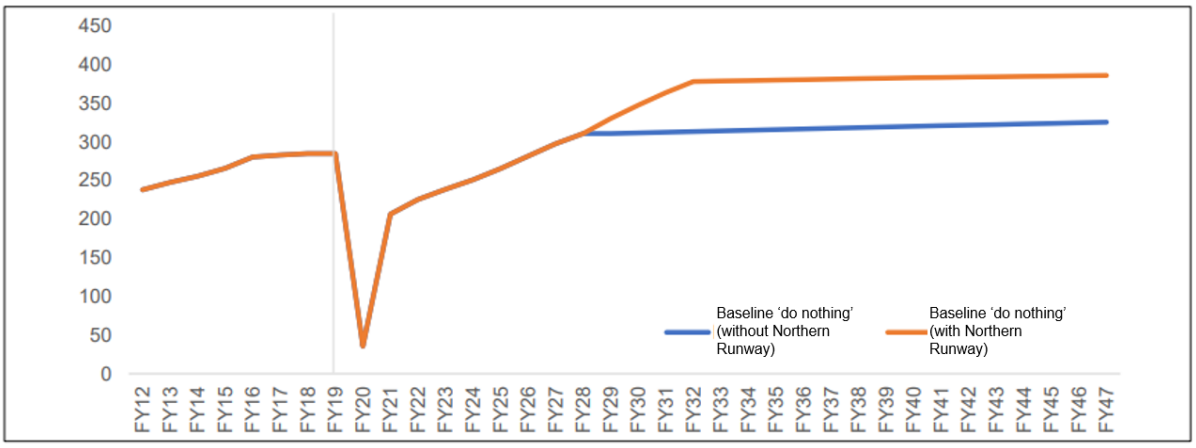


Figure 5 Gatwick Forecast Annual Commercial ATMs (000s) Source: CAA/GAL Statistics, excludes non-commercial ATMs

To generate the 'do nothing' baseline, 2019 data was gathered from the Airport Noise and Operations Management System (ANOMS) which is the main Noise and Track Keeping (NTK) system at Gatwick. ANOMS receives radar data from National Air Traffic Services (NATS) Air Traffic Control; this data provides information on the lateral position of an aircraft and its altitude, as well as other information about the call sign, aircraft type and operator.

The 2019 92-day summer period (16 June to 15 September inclusive) has been used as the basis of the baseline operations. All tracks (as recorded by ANOMS) have been extracted and used to model the departure and arrival baselines. In addition, the baseline tracks were extended from the first or last recorded ANOMS track point to an appropriate network waypoint to allow a fair track mileage comparison against the options which were also extended to the common waypoint. For Westerly Route 4, tracks were taken from the 92-day summer period in 2022 and 2019 traffic levels applied.

The baseline scenario was modelled, using the actual tracks that were flown, to generate a set of environmental metrics that have been used to compare against each option. Each of the options was then modelled and appraised in the same way, assuming the 2019 operations occurred using the option design. This assessment also assumes that the option adopts the same vertical profiles as flown in 2019 i.e. no benefit has been given within the comprehensive list of options assessments to account for an anticipated improved Continuous Climb Operations (CCO) / Continuous Descent Operations (CDO) at this stage. The only variable is the airspace design.

When considering the future forecast and fleet mix (10 years after the year of implementation) within this IOA, given the large number of options that form part of this appraisal and the part qualitative, part quantitative methodology applied, it is not considered proportionate to also appraise all options against this future traffic scenario in Stage 2. However, as part of the Stage 3 Full Options Appraisal, Gatwick will fully appraise this future year of implementation plus 10 years scenario.

Northern Runway Development Consent Order (DCO)

In July 2023, Gatwick submitted a Development Consent Order (DCO) to the Planning Inspectorate (PINS), outlining the plan to make use of its existing infrastructure by bringing the airport's existing Northern Runway into routine use. At the point of undertaking the analysis for this IOA, the DCO had not been submitted. At the time of publishing this document (September 2023) the DCO has now moved to detailed examination by the planning inspectorate (PINS).

Like the 10-year future forecast above, given the large number of options that form part of this appraisal and the part qualitative, part quantitative methodology applied, it is not considered proportionate to also appraise all options against a future DCO traffic scenario in Stage 2. However, subject to the outcome of the DCO application, Gatwick will model a DCO scenario as part of the Stage 3 Full Options Appraisal.

Planned Local Developments

CAP1616 (para 139) states each 'people overflown' metric used in the appraisal must apply national policy and therefore include housing, hospitals, schools etc that have planning permission.

As part of our preparation of the baseline, Gatwick have identified the following planned developments in the area surrounding Gatwick Airport. Further details are included in Appendix A. As part of preparation for the Stage 3 Full Options Appraisal, there will be further engagement with local authorities to take into account local developments.

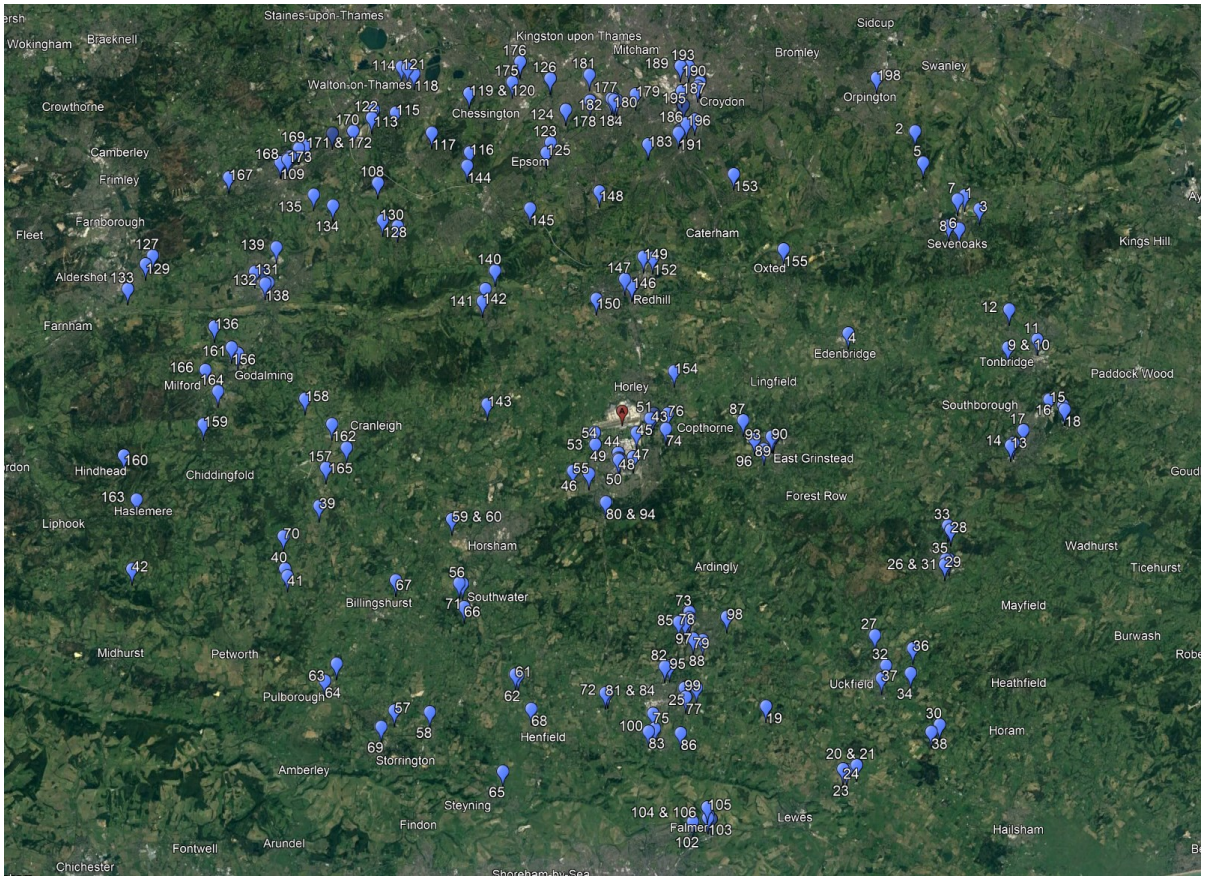


Figure 6 Local Developments around Gatwick Airport

'Do Minimum'

A pre-implementation 'do nothing' baseline's primary purpose is to enable sponsors, the CAA and stakeholders to understand the impact/effect of each option against the environment they experience today. Therefore, the baseline must already exist however, it may not necessarily be a design option that is taken forward from either Step 2A to Step 2B or from Stage 2 through the Develop & Assess (D&A) Gateway to Stage 3. In this circumstance, it is necessary to keep the baseline included for comparative purposes to enable stakeholders to understand the impact/effect the various options have on them.

CAP1616 also caters for a potential "Do Minimum" scenario where 'in certain cases, doing nothing is not a feasible option'. For example, airspace may need to be changed to reflect the UK's international obligations. A do-minimum baseline would usually be used when there is no environment currently in place to compare against. i.e the do-nothing baseline would equate to zero so a minimum option is required or alternatively there is a minimum change needed to address any issues identified, for example a requirement to implement PBN. In the latter, the 'Do Minimum' may be suitable to describe the option of PBN replication of existing routes however this would not align with the overall objectives of Airspace Modernisation around Safety, Integration of diverse users, Simplification, reducing complexity and improving efficiency, and Environmental Sustainability. In the case of this Gatwick, with the exception of Route 4, there are already PBN SIDs therefore for the FASI-S ACP, do minimum is not considered feasible to be defined at this stage and the 'do nothing' scenario is the most appropriate baseline from which to compare options.

Methodology Overview

At this stage the options are based around workable groups of arrival or departure routes from the same runway end. The assessments within this IOA therefore provide partial indicative outputs and an indication of the option's contribution to the overall impact on the airport operations.

In Stage 3, full systems will be developed from our shortlist of options taken forward from the IOA. A full system is a group of westerly arrival and departure flight paths that can safely operate together, which also work with a group of easterly arrival and departure flight tracks. The assessment at the Full Options Appraisal (FOA) will consider these full system options.

Configuration of the options: Arrivals

As noted throughout the arrival option development it is expected that a hybrid approach will be required for arrivals – this means that an RMA with vectoring will be required alongside any PBN arrival transitions implemented. At this stage, the split of vectoring / PBN usage is not known; this will be informed by development simulations that will be undertaken as part of the detailed design work in Stage 3 ahead of Consultation.

For the purposes of this IOA Gatwick have set about to determine the optimal PBN routes and have separately assessed the RMA.

The analysis has assessed all PBN arrival options from the south as though 100% of arriving traffic will fly these PBN options.

Any routes from the north have been assessed as though 10% of traffic will fly these routes. At this point, 10% is considered likely to be an overestimate, however the exact usage will be determined in Stage 3 following integration with other airports options and the wider airspace.

Within the IOA, the northerly arrival routes have been assessed separately from their corresponding southerly route; this is because theoretically the northerly arrival route could be combined with any of the southerly arrival routes and separating out the assessment allows fair comparison of the southerly route component against other options.

Finally for the RMA option, the assessment has been broken down into 4nm joining 'bands' e.g joining at 8-12nm, 9-13nm, 10-14nm, 11-15nm and 12-16nm. For each of these 4nm bands, 100% of arriving traffic has been applied.

PBN Arrivals joining final approach at less than 8nm

Within the IOA we sometimes refer to PBN options and whether they join final approach within 8nm from touchdown or further out from the runway than that. This is because there are different types of PBN arrivals; those that use PBN all the way to the runway or those that may use PBN to then establish onto the Instrument Landing System. (For more information about existing arrivals into Gatwick, please see the Stage 2A document on the CAA's Airspace Change Portal).

The ILS will always give the best minima for arrivals. i.e. The best performance when visibility is poor. Pure PBN arrivals cannot match Gatwick's ILS in terms of performance in these weather conditions.

In order to ensure the PBN arrivals can be used by all aircraft in the poorest of weather conditions, they will need to 'connect' to the ILS and when using the ILS, particularly in either busy arrival conditions and/or in poor visibility, the aircraft need to establish onto the ILS by no later than approximately 8nm. This allows ATC to provide accurate final approach spacing but also protect the ILS signal and ground movement operation in the poorest of weather conditions.

It is possible to have PBN arrivals that join the extended centreline closer than 8nm and that don't use the ILS but such arrivals would be limited in their use at Gatwick. This limitation is a factor in the qualitative appraisals as it affects their usability (runway throughput, resilience, safety etc) and also how effective they could be as noise mitigation measures.

Configuration of the options: Departure

The routes within the departure options have been extended to an appropriate network exit point and the 2019 traffic, identified within the baseline analysis for each waypoint, has been applied to each option.

The departure options are built from groups of routes departing to each network exit point. Within Gatwick's departure options, there are a number of options where there are two groups proposed to the same network exit point. An example is shown in Figure 7 where there are two groups of routes to DVR; a group of left turn routes and a group of right turn routes.

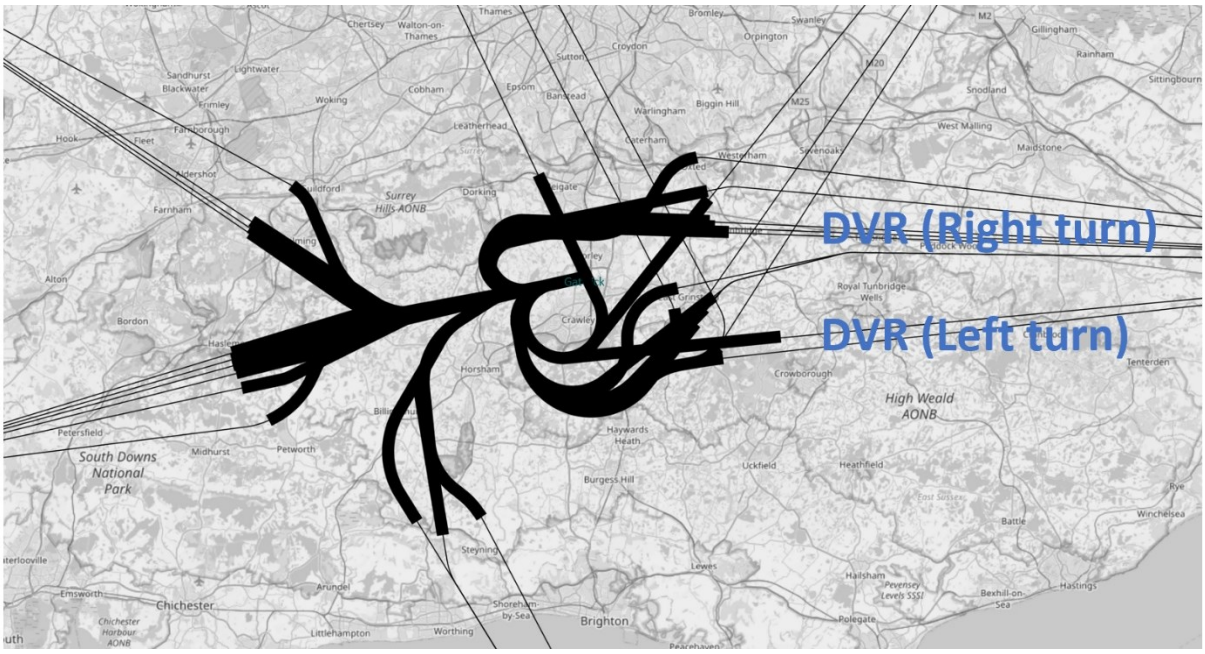
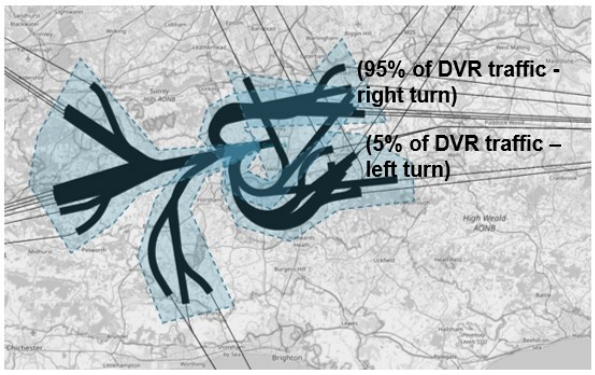
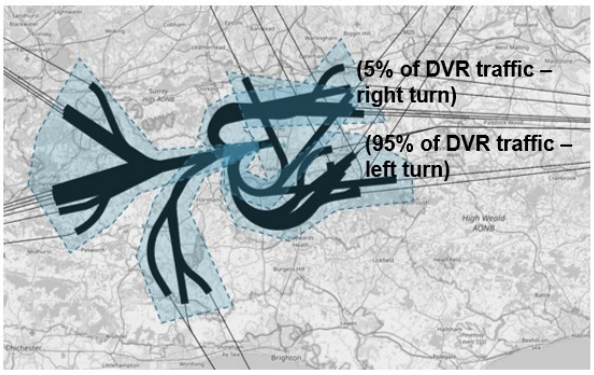


Figure 7 Westerly Departure Option 6: Example of where there are two groups of DVR routes

As part of the ongoing development of the FASI-S ACP, Gatwick have engaged with NATS NERL around the airspace above 7000ft and how Gatwick's options may integrate with the future network. As part of this engagement, NERL have said that the network airspace would not be able to accommodate a 50/50 split of traffic between two groups to the same network exit point. Based on the example in Figure 7, this means that it would not be possible for 50% of DVR traffic to turn left, and the other 50% of DVR traffic to turn right. It may however be possible to have two routes to a network exit point with one route used on a tactical basis when traffic allowed, or it may be possible for the routes to be used as part of a respite configuration.

Cognisant of this feedback, we have estimated that the primary route would be used for c.95% of traffic to a given exit point, and the secondary tactical route would be used for c.5% of traffic. Within the IOA we have appraised all viable scenarios. Continuing with the example from Figure 7, this means that Gatwick have appraised a scenario where 95% of the DVR traffic turns right and 5% turns left, and a scenario where 95% of the DVR traffic turns left and 5% turns right.





Ahead of the Stage 3 consultation, the detailed design development and ATC development simulations will provide further information about the potential usage of the tactical routes.

Comparison against the 'Do nothing' pre-implementation baseline

For the quantitative assessments, data for the baseline has been generated and the data for each option is then compared against this baseline. This has been colour coded to indicate whether the option is a positive benefit or negative impact compared to the baseline or whether it broadly performs the same as the baseline.

At this stage in process, the options are still relatively immature and will require further evolution through detailed Instrument Flight Procedure (IFP) design, as well as evolution based on safety requirements, our design principles, our appraisals and stakeholder engagement and consultation. Accordingly, the categorisation of quantitative performance against the baseline has applied a +/- 10% buffer.

Table 3 Categorisation of options performance

Colour code within IOA	Colour meaning – Qualitative Assessments	Colour meaning - Quantitative Assessments
	Option is expected to have negative impacts compared to the baseline or a route that has been assessed as 'not viable'.	Option is greater than 10% worse than the baseline
	The option is expected to perform similarly to the baseline	The option is within +/- 10% of the baseline
	The option is expected to offer positive benefits compared to the baseline	The option is greater than 10% better than the baseline

This approach was taken because in some cases the options performance against the baseline is very similar, for example the majority of easterly PBN arrival options have a difference in population of 8 when looking at the Indicative Partial Daytime LOAEL metric (more information about noise metrics is given within the subsections below). Given the fidelity of the designs at this stage, it was considered inappropriate to categorise these options as 'better than the baseline' when the improvement is extremely small.

Qualitative assessments of the options compare against the 'do nothing' pre-implementation baseline and a baseline assessment is shown within the IOA. When categorising the qualitative assessments, the core ACP team have applied professional judgement on how the option performs against the baseline.

Initial Options Appraisal Assessment Criteria

Gatwick's assessment criteria shown in the subsections below have been categorised based on the example in CAP1616 Appendix E, however an additional category called 'Interdependencies, conflicts and trade-offs' has been added to satisfy the requirements to outline potential interdependencies with other FASI-S ACPs. Additionally, a category named 'Airspace Modernisation Strategy' (AMS) has been added to assess whether the Stage 2 submission accords with the AMS, including iteration 2 of the Masterplan.

Communities – Noise impact on health & quality of life

The potential positive benefits and negative impacts of each option have been assessed quantitatively against the 'do nothing' baseline. Alongside the noise data, a qualitative noise assessment of the options has also been undertaken. The following sub sections describe the noise analysis undertaken.

CAP1616 Noise Metric Requirements

CAP1616 (B54) explains *When considering noise impacts, the CAA will weight the outcomes from 'primary' metrics over 'secondary' metrics. Primary metrics will be those that are used to quantify significant noise impacts, such as WebTAG outputs. Secondary metrics will be those that are not being used to determine significant impacts but which are still able to convey noise effects, such as N65 contours and Lmax levels. While not a noise metric, overflight contours will be a secondary metric for the purposes of decision-making.*

The following subsections describe these noise metrics.

Primary Noise Metrics: WebTAG

WebTAG (**https://www.gov.uk/guidance/transport-analysisguidance-webtag**) is the Department for Transport's suite of guidance on how to assess the expected impacts of transport policy proposals and projects. The webTAG workbooks can be used to monetise certain aspects of the noise impact. The data from $L_{Aeq,16hr}$ (daytime noise) and $L_{Aeq,8hr}$ (night-time noise) contours form a key input into WebTAG – please see the section below for more information around these contours.

At this stage, the IOA is assessing workable groups of arrival and departure routes from one runway end, rather than full system options and therefore it is not possible to generate the full L_{Aeq} detail needed to populate a webTAG workbook. Monetising noise using only partial information is not considered representative given the granularity of the options at this stage. At Stage 3 we will develop full system options and at this point the noise impacts will be monetised.

Primary Noise Metrics: LAeq Contours

51dB $L_{Aeq,16hr}$ (daytime noise) and 45dB $L_{Aeq,8hr}$ (night-time noise) contours form part of the primary CAP1616 metrics used to evaluate the benefits and impacts of airspace changes. These contours represent the daytime and night-time lowest observable adverse effect level (LOAEL) contour defined in UK airspace policy. They are generated from full system options (a group of westerly arrival and departure flight paths and a group of easterly arrival and departure flight tracks).

L_{Aeq} contours, are the equivalent sound level of aircraft noise in dBA. This is based on the daily average movements that take place in the 16-hour period (07:00-23:00 local time) or 8-hour period (23:00-07:00) during the 92-day period 16 June to 15 September inclusive. This metric is the measure of noise exposure adopted by Government for the purposes of

considering adverse effects from aircraft noise. It forms the basis of the Government's policies in relation to aircraft noise.

Secondary Noise Metrics: Noise Events above 65dB and 60 dB LAmax (N65 and N60)

N60 and N65 are noise metrics which respectively describe the number (N) of aircraft noise events above a noise level of 60dB L_{Amax} in the night-time period and 65dB L_{Amax} for the daytime period. These are event-based metrics, which can be used to better understand the number of noise events that occur and their location.

Secondary Noise Metrics: Overflight Contours

Overflight contours are generated using the CAA's 48.5 degree definition of overflight as outline in CAP1498, this means 'an aircraft in flight passing an observer at an elevation angle of 48.5˚ from the ground at an altitude below 7000ft'.

Although overflight contours are not considered a nose metric, they do enable calculation of the number of times a location may be considered to be overflown. This is an event-based metric, which can be used to better understand the number of noise events that occur and their location.

Indicative Partial LOAEL Contours within this IOA

At this stage, Gatwick's options are defined as a group of either arrival or departure routes from the same runway end. This means they are broken down into Easterly / Westerly / Arrival / Departure components.

In policy (ANG17), the LOAEL and other environmental metrics relate to the airport as a whole and the airspace as a system (i.e. a complete system of easterly and westerly arrival and departure routes). Within this IOA, Gatwick have generated indicative partial LOAELs which provide an indication of the option's individual contribution to the total noise impact of the airport's overall operations. They still represent average noise exposure across the day and night periods, but only for the 'component' option. This method has allowed Gatwick to appraise far more 'components' than if full system options had been modelled and developed at this stage. In Stage 3, full airport system options will be developed from the shortlist of options and then full airport system LAeq contours will be generated.

An example of the partial LOAEL generated for a easterly departure option is shown in Figure 8 below:

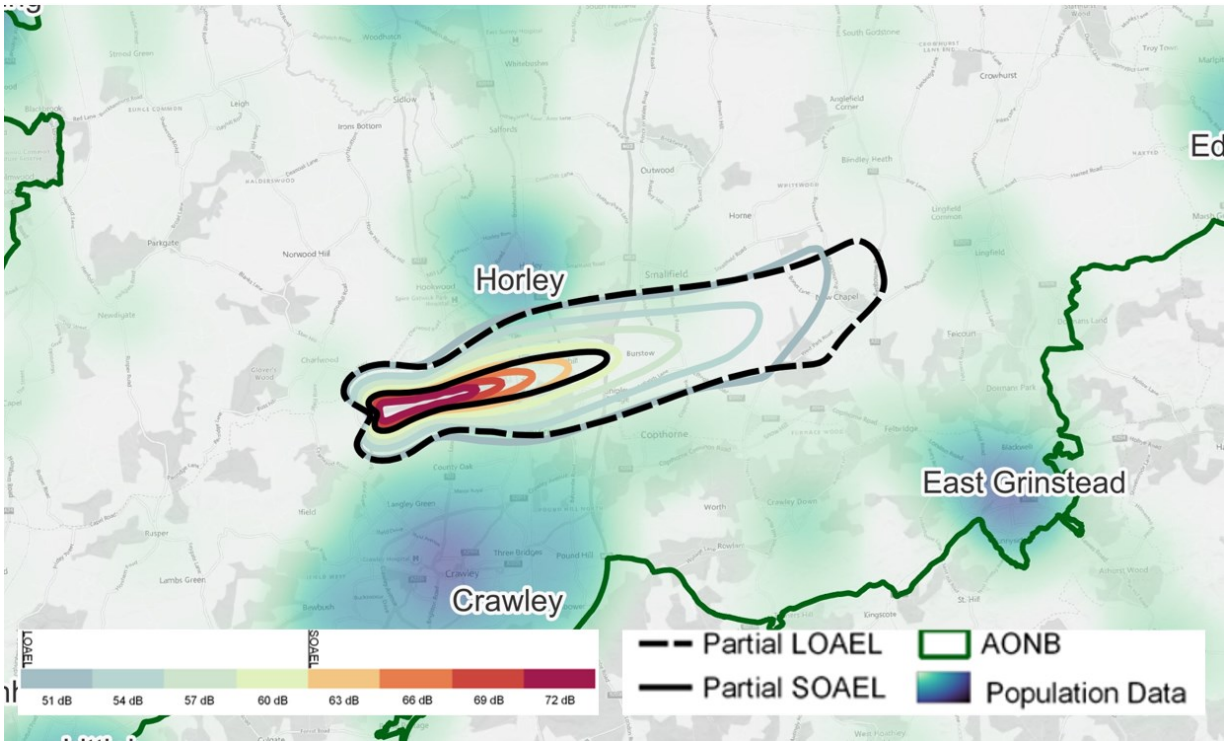


Figure 8 Example Indicative Partial Daytime LOAEL contour

Noise Assessment within this IOA: Arrivals

For the baseline and each of the options, the following noise assessments have been carried out based only on the arrival component:

- Indicative Partial $L_{Aeq\ 16hr}$ and $L_{Aeq,8hr}$ contours
- Indicative Noise events above 65dB and 60 dB L_{Amax} (N65 and N60)
- Overflight between 0-7000ft
- A qualitative assessment of the positive benefits and negative impacts to noise

Noise Assessment within this IOA: Departures

For the baseline and each of the options, the following noise assessments have been carried out based only on the departure component:

- Indicative Partial $L_{Aeq\ 16hr}$ and $L_{Aeq,8hr}$ contours
- Indicative Noise events above 65dB and 60 dB $_{Amax}$ (N65 and N60)
- Overflight between 0-7000ft on a route by route basis
- A qualitative assessment of the positive benefits and negative impacts to noise

The departure options are based on groups of routes and therefore at this stage there are sometimes multiple route centrelines for each network exit point.

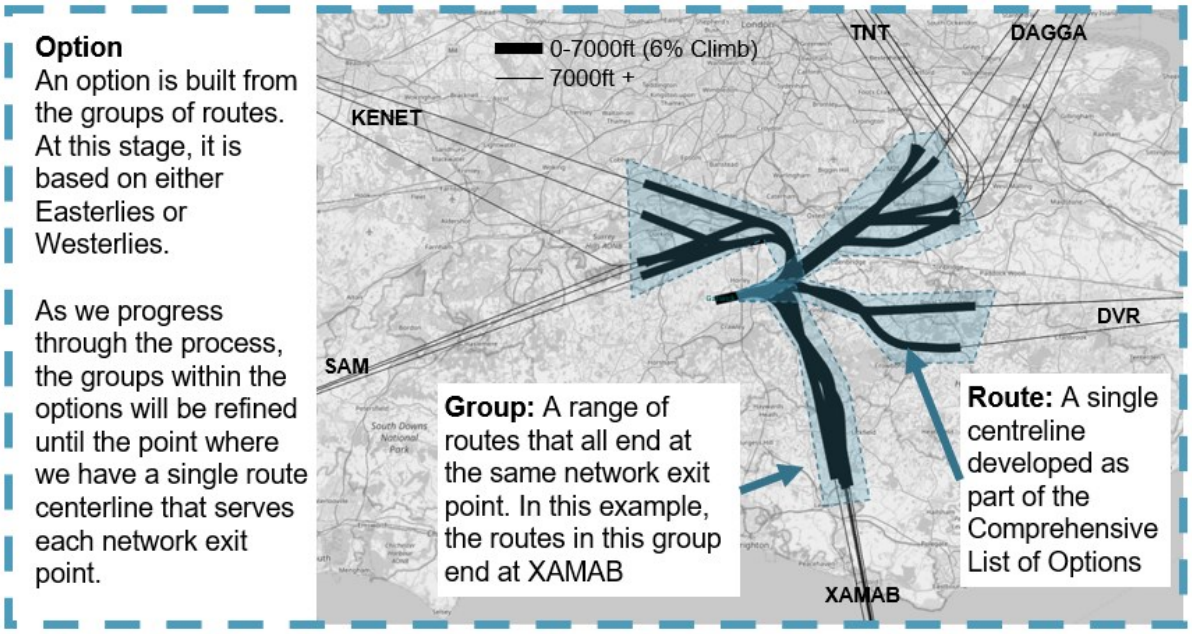


Figure 9 Departure Option, Group and Route definition

The intention is that as options progress through the process, the groups will be refined to a single centreline and therefore the noise methodology needed to provide data that evidenced the noise performance of the option overall, and on a route by route basis.

The methodology was therefore split with the L_{Aeq} and Nabove data generated from indicative average centreline(s) drawn for each group, and the overflight data generated on a route by route basis. This meant that the L_{Aeq} and Nabove metrics provided data about the impacts below c.4000ft, where the variance between the different routes within a group was minimal, and the overflight metrics provided data about the route performance up to 7000ft where typically there was more variation in the lateral position. Within the IOA this is denoted with a '.2' for example data is provided for 'Westerly System 1' and 'Westerly System 1.2'.

Noise Modelling and CAP2091

The L_{Aeq} and Nabove metrics have been developed using the Aviation Environmental Design Tool (AEDT) in accordance with CAP2091 requirements. CAP2091 sets out the minimum requirements for noise modelling with respect to the level of detail that shall be afforded to aircraft noise data and track information. Within CAP2091, the CAA defines 'categories' of noise modelling based on likely population experiencing an average noise exposure above the daytime and night-time LOAEL i.e. 51dB $L_{Aeq,16hr}$ for daytime and 45dB $L_{Aeq,8hr}$ for night.

As Gatwick Airport is designated by the Secretary of State for noise purposes, as per the no decrement criterion, the minimum noise modelling Category applicable to the ACP is therefore Category A.

The AEDT model has been developed to align with flight profiles and aircraft noise event contours provided by the CAA from their ANCON model. For the main aircraft types operating at Gatwick, a flight profile has been created within AEDT to match the profile used within ANCON, and the noise data adjusted to match the corresponding aircraft event contours. This approach has therefore allowed the model to be developed in line with Category A of CAP2091.

Owing to the number of route options, the overflight metrics have used a 6% climb gradient. At the Stage 3 Full Options appraisal, when each group has been narrowed down to a single route centreline, then overflight contours for the full fleet mix will be generated.

Northern Runway

All arrival and departure options developed have been designed to be able to be operated on both the main and northern runway. The northern runway is located c.200m north of Gatwick's main runway and runs parallel. Its use 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.

There is an ongoing Development Consent Order (DCO) application for Gatwick to bring the existing Northern Runway into routine use alongside the Main Runway. The planning application proposes repositioning the centre line of the Northern Runway 12 metres north to allow dual runway operations, aligning with international safety standards. This would mean the northern runway is located 210m north of 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.

Owing to the number of options, the methodology of appraisal (with indicative system and route by route assessments), and due to the very small lateral difference between the northern and southern runway, for the purposes of the quantitative analysis within this IOA the noise model has generated data for the main runway only. At Stage 3, the analysis on the full airport system options will account for the expected use of the northern runway and may include scenarios with or without the northern runway DCO.

It is expected that aircraft departing the northern runway would undertake a small track adjustment on departure before flying to the same first waypoint as the main runway procedure. This is anticipated to make a very small difference to the noise metrics and would be consistent across all options, therefore it was considered not proportionate to split traffic between the northern and southern runway at this stage.

With or without DCO, arrivals will continue to routinely arrive on the main runway, with the northern runway only being used for arrivals in emergency/standby scenarios.

Categorisation of the Noise Assessments

The data based noise assessments have been categorised as per the methodology outline in the 'Methodology Overview' section. In the case of the qualitative noise assessment, at this stage the qualitative statements have not been categorised as in most cases there are a mix of benefits and impacts, for example an option may offer opportunities to share noise compared to the baseline, however in doing so it overflies new areas.

As part of the detailed design work and Full Options Appraisal at Stage 3, Gatwick have committed to incorporate the outcomes of the Fair and Equitable Distribution (FED) Study. The FED study is an independent study, commissioned by Gatwick Airport Limited, on behalf of the Noise Management Board (NMB). The study aims to help airspace managers and aircraft operators to design solutions to meet the aspirational objective of Fair and Equitable Distribution of noise.

Communities – Air Quality

CAP 1616a Airspace Change: Environmental requirements technical annex (para 1.96 and 1.97) states: 'Due to the effects of mixing and dispersion, emissions from aircraft above 1,000 feet are unlikely to have a significant impact on local air quality. Therefore, the impact of airspace design on local air quality is generally negligible compared to changes in the volume of air traffic, and local transport infrastructures feeding the airport. However, airspace change sponsors must include consideration of whether local air quality could be impacted when assessing airspace change proposals.

Change sponsors must produce information on local air quality impacts only where there is the possibility of pollutants breaching legal limits following the implementation of an airspace change (or worsening an existing breach of legal limits). The CAA deems that this is only likely to become a possibility where:

- there is likely to a change in aviation emissions (by volume or location) below 1,000 feet, and
- the location of the emissions is within or adjacent to an identified AQMA.

For the IOA, a qualitative screening assessment was undertaken to identify whether a route has the potential to change laterally below 1000ft, based on a 6% climb gradient.

In Stage 3, full airport system options will be developed and following this detailed design work, further work will be required to better understand any impacts on local air quality. If the CAA conditions outlined above are met, then this could result in a full air quality assessment.

Wider Society – Greenhouse Gas Impact

As emissions of greenhouse gases arise from the combustion of aviation fuel and fuel burn is linked to track mileage, for this IOA, where possible, we have estimated the differences in track miles between the baseline and each route which forms part of the options.

For departures, the 2019 ANOMS tracks and the options were extended and connected to set points in the network to give an indication of anticipated track miles. As the departure options are built from groups of routes, at this stage the overall system performance for fuel burn has not been calculated however we have provided a qualitative statement informed by the route performance about the expected system wider performance.

For arrivals, there is limited information about the location of the future arrivals delay mechanism; based on NERLs Stage 2 submission it is known that arrivals will fly from the south however the exact location will be determined as part of NERLs development work in Stage 3.

For the PBN arrivals component for this IOA, at this stage given the uncertainty around the future arrival delay mechanism and how this will be different to today (where some arrivals are held below 7000ft), a quantitative assessment of each option against the baseline has not been undertaken. Gatwick have however joined all arrivals from the south to a common point 30nm perpendicular from Gatwick airport to provide indicative quantitative data and side by side comparison of the PBN arrival options. This information has been supplemented by a qualitative assessment of track mileage compared to the baseline based around the distance joining final approach compared to the baseline which is considered an indicator of the expected positive benefits or negative impacts to fuel burn and greenhouse gas emissions.

For the RMA assessment of the vectored arrivals a qualitative comparison has been made compared to the baseline based on the distance from the threshold of aircraft joining final approach.

As part of the detailed design work ahead of the FOA in Stage 3, Gatwick's options will be connected with the NERL proposals for the airspace above 7000ft and at this stage more detailed fuel burn / CO2 calculations will be undertaken. Carbon has not been monetised in the IOA owing to the lack of system options with complete vertical profiles required to inform WebTAG assessments. Monetising carbon using only partial information is not considered representative given the granularity of the options at this stage.

Wider Society – Tranquillity and Biodiversity

Tranquillity

CAP1616 references Areas of Natural Beauty (AONB) and National Parks with respect to impacts upon tranquillity, given these are "designated areas with specific statutory purposes to ensure their continued protection in relation to landscape and scenic beauty" (CAP1616 B77). It also states that "other areas for consideration" might be "identified through community engagement" (CAP1616 B76).

CAP1616 notes that "There is no universally accepted definition of tranquillity and therefore there is no accepted metric by which it can be measured". (CAP1616 Appendix J p280).

The overall tranquillity impact of each option has been assessed by considering the total areas of AONBs and National Parks (NPs) with respect to the Nabove (LAMax 65dB (20)) and overflight (1) (km2) metrics. Data has been generated for the baseline scenario and used to compare against the performance of each option.

In June 2023 the Surrey AONB undertook a consultation on a proposed revised boundary and Natural England will publish its response to the consultation in Consultation Analysis Report likely in early 2024. At the point of undertaking the IOA analysis, which commenced prior to June 2023, information was not available on the extent of any proposed changes to the boundary and given the outcome of the consultation is not yet known, we have not quantified this as part of this IOA. We will however continue to monitor the consultation as the Airspace Change Progresses and we will incorporate information, should it be available, as part of the Stage 3 Full Options Appraisal.

Biodiversity

The effects of airspace change on ecology or biodiversity are expected to be minimal. CAA guidance states that "In general, airspace change proposals are unlikely to have an impact upon biodiversity because they do not involve ground-based infrastructure. As such they are unlikely to have a direct impact that would engage the Birds or Habitats legislation". Though there is limited research available on the effects of aircraft noise on wildlife, there is some evidence that disturbance effects associated with aircraft can occur during take-off and landing where aircraft are below around 500m (~1640ft). [Drewitt, A. (1999) Disturbance effects of aircraft on birds. English Nature Birds Network Information Note].

Data has been generated for the baseline and option overflight contours which considers biodiversity impacts at sites recognised within policy as RAMSAR sites, Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). Potential impacts on biodiversity may arise where there is either an increase in aircraft events over the site and/or a change in the location and potential habitats overflown, particularly between 0

and 1640ft altitude range. Our IOA has therefore considered how many sites experience a change in location overflown between 0-1640ft.

Wider Society – Capacity/Resilience

The departure capacity assessment has considered whether the option design has the potential to improve departure throughput. This is measured by the time required between departures taking off on different routes to network exit points.

Table 4 provides an example of the departure throughput assessment. The numbers in the cells refer to the expected minutes of time needed between departures based on the combination of network exit points. For example, a CLN departure followed by a SAM/KENET departure in the baseline would be separated by 2 minutes and in the option would be 1 minute. The colour coding denotes whether the option is expected to improve throughput (green), or possibly impact it (orange).

Table 4 Example Departure Throughput Assessment

		Baseline				
		LEADER				
		DVR	TNT	CLN	XAMAB	SAM/KENET
FOLLOWER	DVR	2	2	2	1	1
	TNT	2	2	2	1	2
	CLN	2	2	2	1	2
	XAMAB	1	1	1	2	1
	SAM/KENET	1	2	2	1	2
		Easterly System 3				
		LEADER				
		DVR	TNT	CLN	XAMAB	SAM/KENET
FOLLOWER	DVR	2	1	1	1	1
	TNT	1	2	2	1	1
	CLN	1	2	2	1	1
	XAMAB	1	1	1	2	1-2
	SAM/KENET	1	1	1	1-2	2

It should be noted that this is an initial high-level assessment which will require further interrogation and potential safety cases as options progress through the process. It's important to note that at this stage, this assessment does not consider the full aerodrome capacity; this will be appraised at Stage 3 when full system options are developed.

This is therefore a qualitative assessment of changes to runway departure throughput capacity and resilience compared with the do-nothing baseline.

For the PBN Arrivals as noted throughout the arrival option development it is expected that, in order to maintain capacity at Gatwick, a hybrid approach will be required for arrivals – this means that an RMA with vectoring will be required alongside any PBN arrival transitions implemented. At this stage, the split of vectoring / PBN usage is not known; this will be informed by development simulations that will be undertaken as part of the detailed design work in Stage 3.

When considering the arrival options, Gatwick has considered how resilience and runway throughput is affected by the design of the option and specifically whether the option can be

operated as a PBN transition to join the Instrument Landing System (ILS). The ILS continues to be the 'gold standard' and preferred option for operators when arriving at Gatwick, particularly during poorer weather conditions, and any PBN option that cannot be integrated with the ILS may offer reduced capacity compared to other options.

Finally, when considering the RMA (vectoring area) options, which have been split into 4nm joining bands, we know that vectoring of arrivals can deliver the required landing rate however we performed a qualitative assessment of whether the vectored swathe within each option could be expected to result in any degradation of the required landing rate.

General Aviation - Access

The General Aviation (GA) assessment has been split into two areas of assessment. The first is whether the option is expected to require any additional Controlled Airspace (CAS) compared to the baseline. The other part of the assessment is a qualitative assessment of the potential benefits and impacts to GA access.

At this stage, without full system options of arrival and departure routes, it is not possible to quantify the areas of CAS, and this will be undertaken as part of the Stage 3 Full Options Appraisal.

General Aviation / Commercial Airlines – Economic impact from increased effective capacity

Commercial Airlines: The economic impact assessment is informed by the capacity / resilience assessment.

General Aviation: It is possible that the release of Controlled Airspace may lead to positive benefit for GA outside of CAS. At this stage, the options have been assessed to understand if they would require any additional controlled airspace. At Stage 3, when there are full system options, the proposed CAS will be determined, and areas of Controlled Airspace will be quantified. This will be used to inform the qualitative assessment of whether there is any increased effective capacity to GA as a result of any CAS release.

Commercial Airlines – Training costs

A qualitative assessment to identify potential costs associated with the re-equipage of fleets (if applicable) and/or the associated licensing and regulatory approval costs.

General Aviation/Commercial Airlines – Fuel burn

As the combustion of aviation fuel is linked to track mileage, for this IOA we have calculated the differences in track miles between the baseline and each route which forms part of the options. For more information, please see the wider society – Greenhouse Gas impact section.

Commercial Airlines – Other costs

A qualitative assessment of whether the option could result in any other costs for commercial airlines.

Airport/ANSP - Infrastructure costs

A qualitative assessment of changes to ANSP/Airport infrastructure costs compared with the do-nothing baseline. Due to the fidelity of the designs at this stage, and without full system options, it is difficult to quantify infrastructure costs at this stage, however the IOA identifies if Infrastructure changes may be required. It is important to note that due to the reasons above, at this stage there

is no differentiating factor between options when considering infrastructure costs. This will be explored in further detail as part of the Stage 3 FOA.

Airport/ANSP - Operational costs

A qualitative assessment of changes to ANSP/Airport operational costs compared with the 'Do-Nothing' baseline.

Some airspace change options may have the potential to impact properties within Gatwick's amended 60dBA noise contour boundary used for the noise insulation scheme. Without full system options it is not possible to directly compare this boundary to understand if an option would result in a benefit or impact to the boundary. Therefore, for the IOA our assessment has acknowledged that there may be a change, however the FOA at Stage 3 will be able to identify this and quantify it in further detail. There is therefore nothing to differentiate between the options in terms of operational costs at this stage.

Airport/ANSP - Deployment costs

A qualitative assessment of ANSP/Airport deployment costs compared with the do-nothing baseline. Similar to the infrastructure and operational cost sections above, due to the fidelity of the designs at this stage, and without full system options, it is difficult to estimate deployment costs. The IOA assessment has acknowledged that considerable costs may be involved, but Gatwick has not differentiated between options at this stage.

Safety

A qualitative safety assessment of each option to identify if new or revised safety assurances may be needed and whether an acceptable safety argument is envisaged to be achievable.

The safety assessment has been split into two areas of assessment. The first looks at the route by route safety performance, such as understanding whether the route is expected to meet Instrument Flight Procedure (IFP) design and/or SID departure split requirements. The second assessment looks at the option to understand if there are any safety concerns which may require revised safety assurances.

Interdependencies, conflicts and trade-offs

An airspace change proposal at a Stage 2 Gateway in the CAP1616 process should specify any interdependencies with other airspace changes identified in Iteration 2 of ACOG's Airspace Change Masterplan.

The IOA includes an interdependency assessment on a route basis based on other airport's Stage 2 options (where available) and where not available, we have used the maps available in the ACOG Masterplan Issue 2. The assessment has also been informed by the NERL and the plans for the network airspace above 7000ft.

Categorisation of the Interdependency Assessments

At this stage, it is very difficult to determine in detail whether an option is expected to have greater or lesser interdependencies compared to the baseline as this requires the designs to be integrated into the wider network airspace above 7000ft and it also requires neighbouring airport designs and for combination of departure and arrival options. Therefore, most assessments have been categorised as 'broadly similar to the baseline' with the only exception being those routes that have been categorised as 'not viable'.

Airspace Modernisation Strategy

The Airspace Modernisation Strategy (AMS) is co-sponsored by the CAA and the Department for Transport (DfT). The vision of the AMS is to 'Deliver quicker, quieter and cleaner journeys and more capacity for the benefit of those who use and are affected by UK airspace'. There are four objectives or 'ends' within the AMS as shown in Figure 10.

Figure 10 Airspace Modernisation Strategy 'Ends'

Within the IOA, a qualitative assessment has been undertaken against these four ends.

4. Initial Options Appraisal

The full quantitative and qualitative IOA assessments are published as a detailed assessment table within Annex D on the Airspace Change Portal. This includes an IOA assessment of the baseline scenarios as well as each option compared to the 'do nothing' pre implementation baseline scenarios.

Alongside this detailed table, Gatwick have generated dashboards which include a summary of the assessments and noise contours/mapping of each option.

Table 5 explains the structure of the IOA submission and provides links to where the documentation can be found.

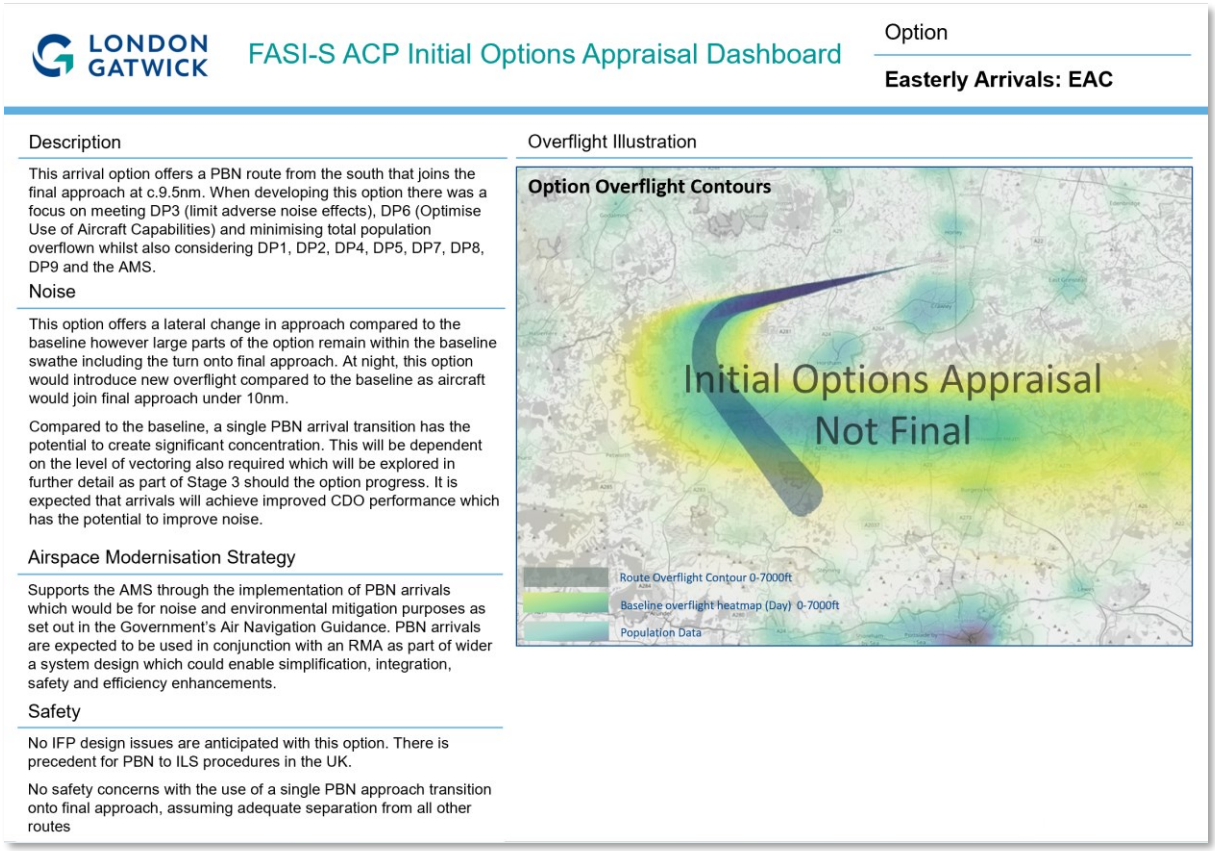
Table 5 IOA Structure and Submission Material

Stage 2B IOA Submission Materials		Link
Step 2B Submission Document	The Step 2B submission document contains details of the options for appraisal, the IOA methodology, links to where the full IOA information can be found and details of the discontinuing methodology and conclusions	**(This Document)**
Dashboards (Annex D)	The IOA dashboards provide an overview of the key IOA assessments and include maps and noise contour information about the options. The aim of the dashboards is to provide a summary of the IOA.	Published on the CAA Airspace Change Portal
Initial Options Appraisal (Annex D)	Annex D contains the Initial Options Appraisal in detailed table format. This includes all the qualitative and quantitative assessments that form part of the IOA.	Published on the CAA Airspace Change Portal

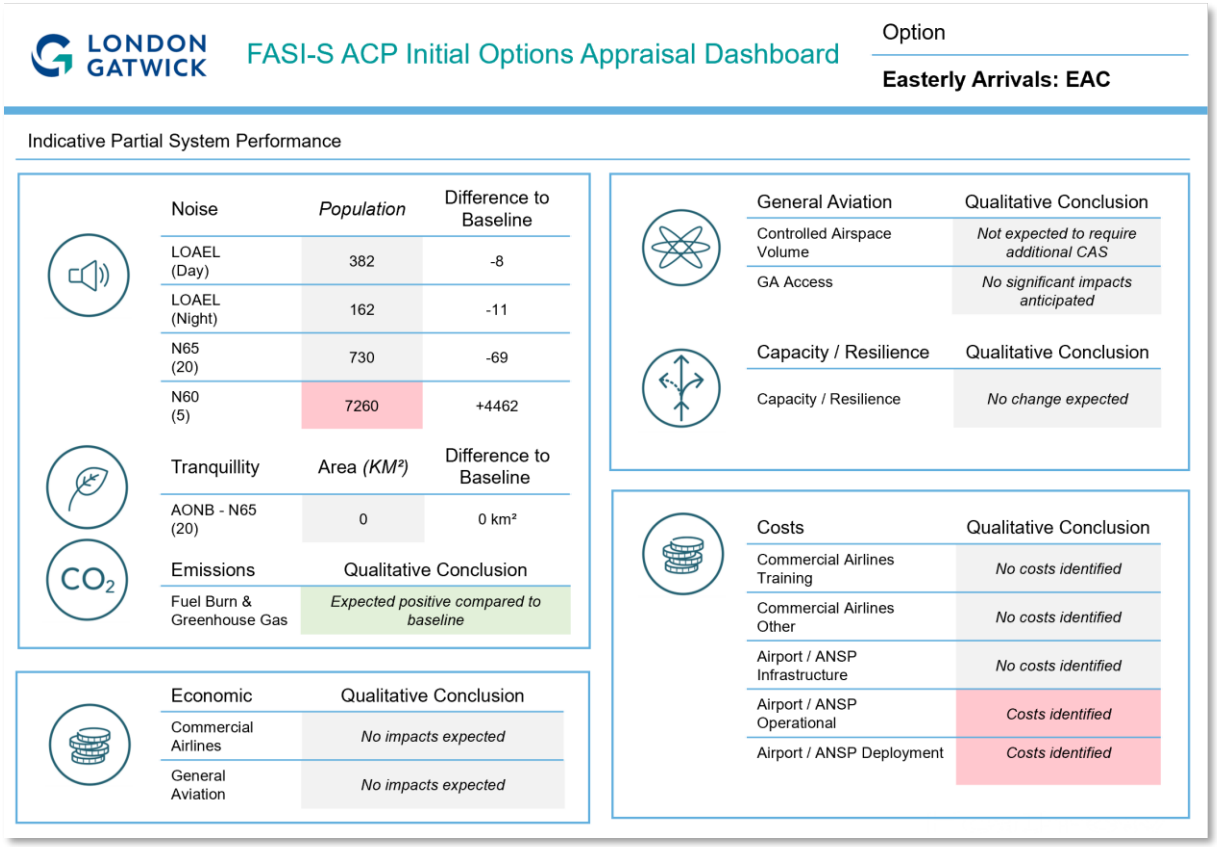
IOA Dashboards

The IOA dashboards provide an overview of the key IOA assessments and include maps and noise contour information about the options. The aim of the dashboards is to provide a summary of the IOA. The full IOA information is contained within the Annex D IOA table.

The first page of the dashboard provides an overview of the option, including a map with the overflight contour. A description of the option, and a qualitative assessment against noise, the AMS and Safety is included on this page.



The second page of the dashboard provides a summary of the Annex D IOA table indicative partial system assessments:



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FASI-S ACP Initial Options Appraisal Dashboard

Option

Easterly Arrivals: EAC

Indicative Partial System Performance

Noise	*Population*	Difference to Baseline
LOAEL (Day)	382	-8
LOAEL (Night)	162	-11
N65 (20)	730	-69
N60 (5)	7260	+4462

Tranquillity	Area *(KM²)*	Difference to Baseline
AONB - N65 (20)	0	0 km²

Emissions	Qualitative Conclusion
Fuel Burn & Greenhouse Gas	*Expected positive compared to baseline*

Economic	Qualitative Conclusion
Commercial Airlines	*No impacts expected*
General Aviation	*No impacts expected*

General Aviation	Qualitative Conclusion
Controlled Airspace Volume	*Not expected to require additional CAS*
GA Access	*No significant impacts anticipated*

Capacity / Resilience	Qualitative Conclusion
Capacity / Resilience	*No change expected*

Costs	Qualitative Conclusion
Commercial Airlines Training	*No costs identified*
Commercial Airlines Other	*No costs identified*
Airport / ANSP Infrastructure	*No costs identified*
Airport / ANSP Operational	*Costs identified*
Airport / ANSP Deployment	*Costs identified*

It includes some of the key noise metrics, categorised as red/grey/green against the ‘do nothing’ baseline as well as a **high level summary** of the qualitative assessments contained within the main Annex D IOA.

The next pages provide further data and assessments which have been categorised against the ‘do nothing’ pre-implementation baseline. In the case of departures, the route by route assessments are shown on these pages.

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FASI-S ACP Initial Options Appraisal Dashboard

Option

Easterly Arrivals: EAC

Option Name	Noise			Air Quality	Tranquillity (Overflight area km²)	Biodiversity (RAMSAR, SEC, SPA, SSSI overflown between 0-1640ft		Continued?
	Overflight Daytime / Nighttime (1) (Population)	Population Newly overflown Daytime (1)	Population Newly overflown Nighttime (1)			Number of sites overflown between 0-1640ft	Area (km2) of sites overflown between 0-1640ft	
EAC	10919	36	115	No	0	1	0.1	✓ Yes
Interdependencies, conflicts & trade-offs								
Option has potential interactions with some departure routes however interactions are minimised with those departure routes that have been evolved to reduce interactions with arrivals.								

Finally the last page shows the noise contour information for the option. This includes the indicative partial daytime and nighttime LOAEL contour, and the indicative partial N60 and N65 contour. For more information about the noise contours, please see the noise section here.

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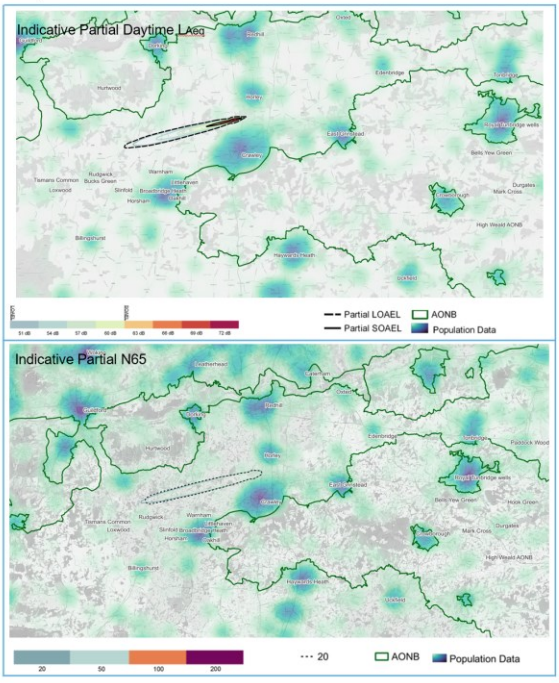
FASI-S ACP Initial Options Appraisal Dashboard

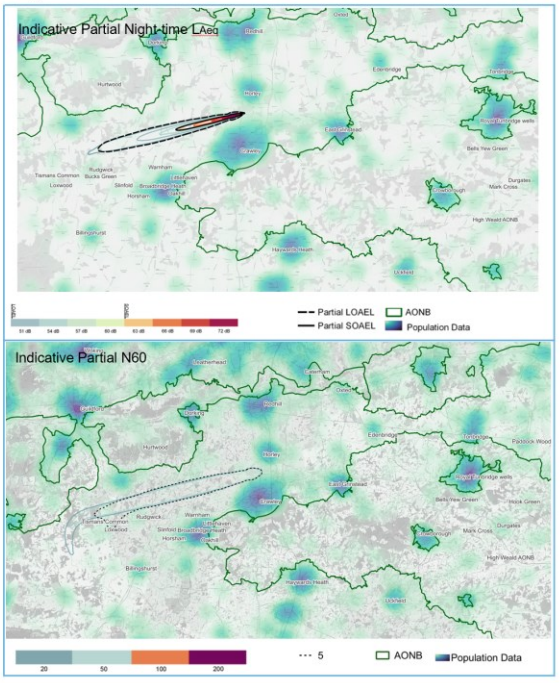
Option

Easterly Arrivals: EAC

Day



Night



Annex D Initial Options Appraisal

Annex D IOA contains the Initial Options Appraisal in detailed table format. This includes all the qualitative and quantitative assessments that form part of the IOA. The assessment categories run across the top of the page, with the options running down the side. There are separate pages for Easterlies / Westerlies / Arrivals / Departures / RMA. The cells of the table have been shaded red / grey / green based on comparison against the 'do nothing' pre-implementation baseline.

5. Initial Options Appraisal: Summary and Conclusion

Discontinuing Methodology

There is a requirement within CAP1616 to ensure a transparent approach when discontinuing options however CAP1616 does not define a shortlisting methodology.

When determining which options to shortlist as part of this IOA, Gatwick have considered the detailed assessments against each IOA category in Appendix E CAP1616. We considered whether there are any significant impacts in each category and then in some cases, if multiple options perform similarly against the 'do nothing' pre-implementation baseline, we have also looked at the comparative performance of each option and this is explained in more detail in the outcome tables below. The threshold for discounting an option cannot be based on quantitative assessments alone but must also come down to the qualitative appraisals and professional judgment, as there are many factors and IOA categories to balance.

When considering the environmental assessments within the IOA, we have looked to the Air Navigation Guidance 2017 (https://www.gov.uk/government/publications/uk-airnavigation-guidance-2017).

The Air Navigation Guidance is 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. The ANG outlines the Government's altitude based priorities for consideration of the environmental impacts arising from airspace change proposals.

Table 6 outlines these altitude based priorities and how they have applied to the environmental assessments within the IOA.

Table 6 Altitude Based Priorities and how they are assessed within the discontinuation methodology

Altitude Based Priority (See B29, CAP1616 and ANG 2017)	How it's assessed within the IOA	How it's considered when shortlisting
In the airspace from the ground to below 4,000 feet, the Government's environmental priority is to limit and, where possible, reduce the total adverse noise effects on people	The day time and night time indicative partial LOAEL contours are an indicator for adverse effects from noise	The discontinuing methodology considers whether the option is expected to increase total adverse impacts compared to the baseline and where a population increase occurs the option has been \\\\\\\\\\\\\discontinued.[2]
Where options for route design from the ground to	The IOA dashboards include figures which show the	When options perform similarly in terms of total

[2] The benefits/impacts to noise in terms of N60/N65 and overflight have also been considered when reviewing the options performance against the categories outlined in Appendix E CAP1616.

below 4,000 feet are similar in terms of the number of people affected by total adverse noise effects, preference should be given to that option which is most consistent with existing published airspace arrangements	differences between the baseline and the option when considering the indicative partial L_{Aeq}, N60/N65 and overflight contours.	adverse noise effects, we have considered how options compare against the 'do nothing' baseline airspace arrangements using overflight data.
In the airspace at or above 4,000 feet to below 7,000 feet, the environmental priority should continue to be minimising the impact of aviation noise in a manner consistent with the Government's overall policy on aviation noise, unless the CAA is satisfied that the evidence presented by the sponsor demonstrates this would disproportionately increase CO2 emissions	Within the IOA an indicative track mileage has been assessed on a route by route and system wide basis.	When options perform similarly in terms of total adverse noise effects, we have considered the track mileage assessments and compared whether options would be expected to result in an increase in CO2 emissions
Where practicable, it is desirable that airspace routes below 7,000 feet should seek to avoid flying over Areas of Outstanding Natural Beauty (AONB) and National Parks	The IOA contains data on the overflight and N65 metrics for AONBs and National Parks	Benefits/Impacts to tranquillity has been considered when reviewing the options performance against the categories outlined in Appendix E CAP1616
All changes below 7,000 feet should take into account local circumstances in the development of the airspace design, including the actual height of the ground level being overflown, and should not be agreed to by the CAA before appropriate community engagement has	The IOA contains data on Schools, Hospitals and Places of worship overflown as well as sites of tranquillity and biodiversity. Actual height above ground level is incorporated into the noise model.	Benefits/Impacts to local circumstances have been considered when reviewing the options performance against the categories outlined in Appendix E CAP1616

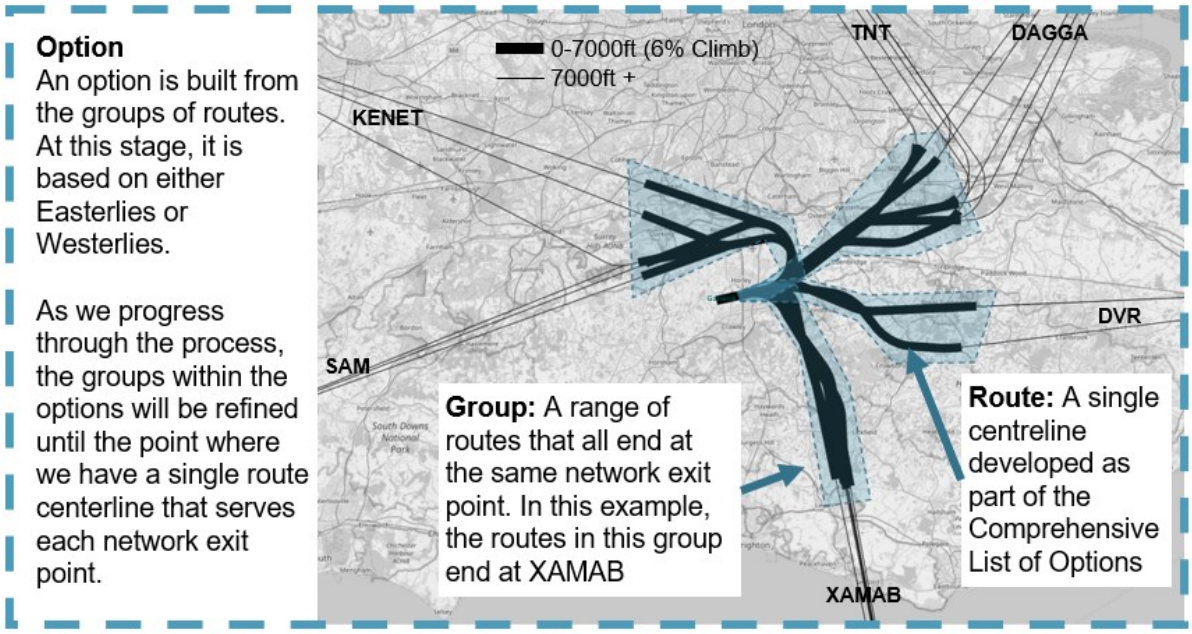
been conducted by the sponsor.		

The threshold for discounting an option cannot be based on quantitative assessments alone but must also come down to the qualitative appraisals and professional judgment, as there are many factors and IOA categories to balance.

The following sections provide the conclusions from this Initial Options Appraisal based on the Options.

Route Discontinuation

The departure options are built from groups of routes that all end at the same network exit point. As the options progress through the process it is intended the groups will be refined until the point where there is a single route centreline that serves each network exit point (or possibly multiple in a respite configuration).



At this stage, the discontinuation methodology of the IOA focuses on the options performance as a whole rather than the specific routes that make up any option, however routes which have been identified as having prohibitive safety or interdependency assessments have been discontinued.

As part of the detailed design work in stage 3 it is expected that the options will evolve as they are integrated with neighbouring airports and the airspace above 7000ft and Gatwick plans to use the information from the route by route assessments as part of this process.

Easterly Departures

The following table provides details of the easterly departure options to be taken through to Stage 3.

Table 7 Easterly Departures Shortlisting Rationale

Option Name	Continued to Stage 3	Shortlisting Rationale
Easterly System 1	**No**	This option is expected to increase population within the indicative partial daytime LOAEL from 3429 to 6292 (+84%). Population within the indicative partial nighttime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small increase from 3190 to 3293 (+3%). As per the discontinuing methodology which has been guided by the Government's Altitude Based Priorities, as the option is expected to increase total adverse impacts compared to the baseline it has been discontinued.
Easterly System 2	**Yes**	Population within the indicative partial daytime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small decrease from 3429 to 3121(-9%). Within the indicative partial nighttime LOAEL, the option is expected to reduce population from 3190 to 2788 (-13%) and therefore offer a positive benefit compared to the baseline. Within the secondary CAP1616 noise metrics, the option is expected to improve population within the daytime N65 (20) from 13762 to 10116 (-27%). Population within the nighttime N60 (5) contour is similar to today but does show a small decrease from 15593 to 14292 (-8%). Looking to the other assessments within the IOA, Easterly System 2 has the potential to reduce track mileage and offer improvements to fuel burn and CO2 emissions. It offers potential improvements to tranquillity, and biodiversity would remain the same as the baseline. The earlier turns offer some sharing of noise and also improve the departure separations. For General Aviation, the option is not expected to require additional CAS and may offer opportunities for CAS release, subject to further detailed design work in Stage 3. For these reasons combined, Easterly System 2 has been continued to the Full Options Appraisal.
Easterly System 3	**No**	This option is expected to increase population within the indicative partial daytime LOAEL from 3429 to 4096 (+19%). Population within the indicative partial nighttime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small decrease from 3190 to 3099 (-3%).

Option Name	Continued to Stage 3	Shortlisting Rationale
		Although the option does have similar performance to the baseline at nighttime, the secondary N60 (5) metrics show an increase in population within the partial indicative nighttime contour from 15593 to 17621 (+13%) whereas other options offer better indicative partial LOAEL performance with better N60 (5) performance. As the option is expected to increase total adverse impacts compared to the baseline, and for the reasons outlined above, it has been discontinued.
Easterly System 4	**No**	This option is expected to increase population within the indicative partial daytime LOAEL from 3429 to 3891 (+13%). Population within the indicative partial nighttime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small decrease from 3190 to 3088 (-3%). Although the option does have similar performance to the baseline at nighttime, the secondary N60 (5) metrics show an increase in population within the partial indicative nighttime contour from 15593 to 17693 (+13%) whereas other options offer better indicative partial LOAEL performance with better N60 (5) performance. As the option is expected to increase total adverse impacts compared to the baseline, and for the reasons outlined above, it has been discontinued.
Easterly System 5	**No**	Easterly System 5 is the same as Easterly System 2 with the exception of the XAMAB routes to the south. The IOA has found that the XAMAB routes in Easterly System 5 are not viable due to integration with arrivals and the network airspace above 7000ft therefore Easterly System 2 has proceeded to Stage 3 and Easterly System 5 has been discontinued.
Easterly System 6	**No**	This option is expected to increase population within the indicative partial daytime LOAEL from 3429 to 4052 (+18%) / 4470 (+30%). Population within the indicative partial nighttime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small decrease from 3190 to 3049 (-4%) / 3030 (-5%). The option does have similar indicative partial LOAEL performance to the baseline at nighttime and the secondary N60 (5) nighttime metrics also suggest the option performs similarly to the baseline, however it is just below the 10% threshold, with an increase in population from 15593 to 17083 (+10%) / 16900 (+8%). Other options offer better indicative partial LOAEL and N60 (5) performance, and given the increased total adverse impacts during the day, this option has been discontinued.

Option Name	Continued to Stage 3	Shortlisting Rationale
Easterly System 7	**No**	This option is expected to increase population within the indicative partial daytime LOAEL from 3429 to 6193 (+81%). Population within the indicative partial nighttime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small increase from 3190 to 3268 (+2%). As per the discontinuing methodology which has been guided by the Government's Altitude Based Priorities, as the option is expected to increase total adverse impacts compared to the baseline it has been discontinued.
Easterly System 8	**Yes**	Population within the indicative partial daytime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small decrease from 3429 to 3324 (-3%). Within the indicative partial nighttime LOAEL, the option is expected to reduce population from 3190 to 2832 (-11%) and therefore offer a positive benefit compared to the baseline. Within the secondary CAP1616 noise metrics, the option is expected to improve population within the daytime N65 (20) from 13762 to 9467 (-31%). Population within the nighttime N60 (5) contour is similar to today but does show a small decrease from 15593 to 14749 (-5%). Looking to the other assessments within the IOA, Easterly System 8 has the potential to reduce track mileage and offer improvements to fuel burn and CO2 emissions. It offers potential improvements to tranquillity and biodiversity would remain the same as the baseline. For General Aviation, the option is not expected to require additional CAS and may offer opportunities for CAS release, subject to further detailed design work in Stage 3. For these reasons combined, Easterly System 8 has been continued to the Full Options Appraisal.
Easterly System 9	**Yes**	Population within the indicative partial daytime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small decrease from 3429 to 3324 (-3%). Within the indicative partial nighttime LOAEL, the option is expected to reduce population from 3190 to 2832 (-11%) and therefore offer a positive benefit compared to the baseline. Within the secondary CAP1616 noise metrics, the option is expected to improve population within the daytime N65 (20) from 13762 to 9467 (-31%). Population within the nighttime N60 (5) contour is similar to today but does show a small decrease from 15593 to 14749 (-5%). Looking to the other assessments within the IOA, Easterly System 8 has the potential to reduce track mileage and offer improvements to fuel

Option Name	Continued to Stage 3	Shortlisting Rationale
		burn and CO2 emissions. It offers potential improvements to tranquillity and biodiversity would remain the same as the baseline. For General Aviation, the option is not expected to require additional CAS and may offer opportunities for CAS release, subject to further detailed design work in Stage 3. For these reasons combined, Easterly System 8 has been continued to the Full Options Appraisal.

Westerly Departures

The following table provides details of the westerly departure options to be taken through to Stage 3.

Table 8 Westerly Departures Shortlisting Rationale

Option Name	Continued to Stage 3	Shortlisting Rationale
Westerly System 1	**No**	This option is expected to increase population within the indicative partial daytime LOAEL from 6079 to 7214 (+19%) / 7207 (+19%). Population within the indicative partial nighttime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small increase from 5242 to 5371 (+2%) / 5181 (-1%). As per the discontinuing methodology which has been guided by the Government's Altitude Based Priorities, as the option is expected to increase total adverse impacts compared to the baseline it has been discontinued.
Westerly System 2	**No**	Population within the indicative partial daytime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small increase from 6079 to 6685 (+10%). Within the nighttime indicative partial LOAEL, the option is expected to reduce population from 5242 to 4686 (-11%) and therefore offer a positive benefit compared to the baseline. When looking at the secondary N60/N65 noise metrics this option would result in significant increases. The daytime N65 (20) increases from 8004 to 24,579 (+207%) and the nighttime N60 (5) increases from 24317 to 53388 (+120%). Looking to the other assessments within the IOA, this option is expected to maintain or improve track mileage and have the potential to improve CAS/GA access however there are other options that also offered these improvements but also offered

Option Name	Continued to Stage 3	Shortlisting Rationale
		comparatively better indicative partial LOAEL performance and N60/N65 performance. Westerly System 2 was therefore discontinued.
Westerly System 3	**Yes**	Westerly System 3 and Westerly System 4 both follow the same broad configuration; in these options all DAGGA/TNT/DVR departures turn left to the south before routing towards the network exit point. Westerly System 3 is expected to maintain population within the indicative partial daytime and night-time LOAEL broadly the same as the 'do nothing' baseline with a small increase in daytime from 6079 to 6286 (+3%), and a small decrease in nighttime from 5242 to 4768 (-9%) When looking at the secondary N60 and N65 noise metrics, this option would result in decreases in the daytime N65 (20) from 8004 in the baseline to 6921 (-14%), and decreases in the night-time N60 (5) from 24317 to 20704 (-15%) however this does result in an increase in the area of AONB within the N65 contour. Looking to the other assessments within the IOA, Westerly System 3 has the potential to reduce track mileage and offer improvements to fuel burn and CO2 emissions. For General Aviation, the option is not expected to require additional CAS and may offer opportunities for CAS release, subject to further detailed design work in Stage 3. Traffic turning left to the south before routing north reduces interdependencies with airports to the north of Gatwick which may result in improved climb performance. There are however interdependencies with arrivals which would require further detailed investigation as part of the work in Stage 3.
Westerly System 4	**No however DVR departure tracks incorporated into Westerly System 3.**	Westerly System 3 and Westerly System 4 both follow the same broad configuration; in these options all DAGGA/TNT/DVR departures turn left to the south before routing towards their network exit point. The interdependency assessment for Westerly System 4, informed by feedback from NERL, concluded that the DAGGA/TNT routes would have significant and prohibitive interdependencies with the Heathrow Arrival Mechanism and potentially with Biggin Hill traffic. The safety assessment also noted that the DAGGA/TNT routes are close to the regulatory limits in terms of IFP design and would require further investigation to understand viability. When considering noise, although both scenarios assessed for this option suggested an indicative partial daytime LOAEL broadly similar to the baseline, and an indicative partial nighttime LOAEL

Option Name	Continued to Stage 3	Shortlisting Rationale
		improved compared to the baseline however there are increases in the secondary N60/N65 metrics. The daytime N65 (20) increases from 8004 to 23,887 (+198%) / 22986 (187%). In one scenario the nighttime N60 (5) increases from 24317 to 41051 (+69%) and in the other is similar to the baseline with a small decrease from 24317 to 23854 (-2%). Given the viability of the TNT/DAGGA routes, this option is discontinued however the DVR departure routes associated with scenario 2 will be incorporated into westerly system 3.
Westerly System 5 (Majority of DVR traffic turning north)	**Yes**	Population within the indicative partial daytime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small decrease from 6079 to 5883 (-3%). Within the indicative partial nighttime LOAEL, the option is expected to reduce population from 5242 to 3865 (-26%) and therefore offer a positive benefit compared to the baseline. When looking at the secondary N60/N65 noise metrics this option is expected to result in an increase in the daytime N65 (20) from 8004 to 9537 (+19%) however this option aims to share some of the cumulative noise impacts of the existing DVR/DAGGA/TNT departures by turning the DAGGA/TNT departures left rather than right as they do in the baseline. This does however increase the area of AONBs within the N65 (20) contour. The nighttime N60 (5) is expected to decrease from 24317 to 19670 (-19%). Looking to the other assessments within the IOA, Westerly System 5 has the potential to reduce track mileage and offer improvements to fuel burn and CO2 emissions. For General Aviation, the option is not expected to require additional CAS and may offer opportunities for CAS release, subject to further detailed design work in Stage 3. The improved departure splits and tactical DVR route available improved capacity. The DAGGA/TNT traffic turning left to the south before routing north reduces interdependencies with airports to the north of Gatwick which may result in improved climb performance. There are however interdependencies with arrivals and with the crossing of the right trun DVR departures which would require further detailed investigation as part of the work in Stage 3.
Westerly System 5	**Yes**	Population within the indicative partial daytime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small increase from 6079 to 6286 (+3%). Within the indicative partial nighttime LOAEL, the option is expected to reduce population

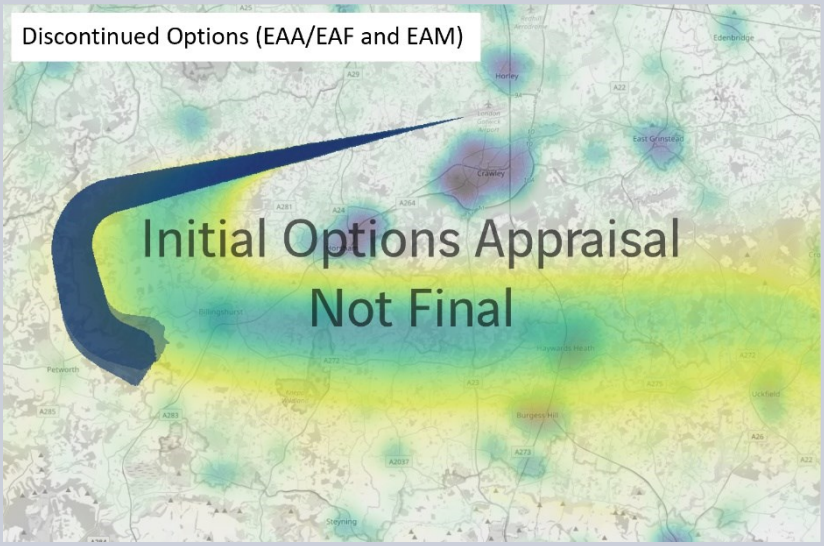
Option Name	Continued to Stage 3	Shortlisting Rationale
(Majority of DVR traffic turning south)		from 5242 to 4717 (-10%) and therefore offer a positive benefit compared to the baseline. When looking at the secondary N60/N65 noise metrics this option offers improvements to population, with decreases in the daytime N65 (20) from 8004 to 6921 (-14%) and night-time N60 (5) from 24317 to 20568 (-15%). This does however increase the area of AONBs within the N65 (20) contour. Looking to the other assessments within the IOA, Westerly System 5 has the potential to reduce track mileage and offer improvements to fuel burn and CO2 emissions. For General Aviation, the option is not expected to require additional CAS and may offer opportunities for CAS release, subject to further detailed design work in Stage 3. The improved departure splits and tactical DVR route available improved capacity. It is proposed that both westerly system 5 configurations will be taken through to Stage 3. As part of Stage 3 we have committed to looking at the outcomes of the fair and equitable distribution (FED) of noise study and it may be that these two options could be combined to share noise i.e. for a period of time the DVR traffic could turn north, and for another period the DVR traffic could turn south.
Westerly System 6 (Majority of DVR traffic turning north)	**No**	This option is expected to increase population within the indicative partial daytime LOAEL from 6079 to 6772 (+11%) / 6759 (+11%). Population within the indicative partial nighttime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small decrease from 5242 to 4723 (-10%) / 4727 (-10%). As the option is expected to increase total adverse impacts in the day compared to the baseline, and it does not offer a material improvement in the indicative partial nighttime LOAEL, it has been discontinued.
Westerly System 6 (Majority of DVR traffic turning south)	**Yes**	Population within the indicative partial daytime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small decrease from 6079 to 5891 (-3%) / 5855 (-4%). Within the indicative partial nighttime LOAEL, the option is expected to reduce population from 5242 to 4591 (-12%) / 4618 (-12%) and therefore offer a positive benefit compared to the baseline. When looking at the secondary N60/N65 noise metrics this option is expected to result in an increase in the daytime N65 (20) from 8004 to 8849 (+11%) / 8853 (+11%) however this option aims to share

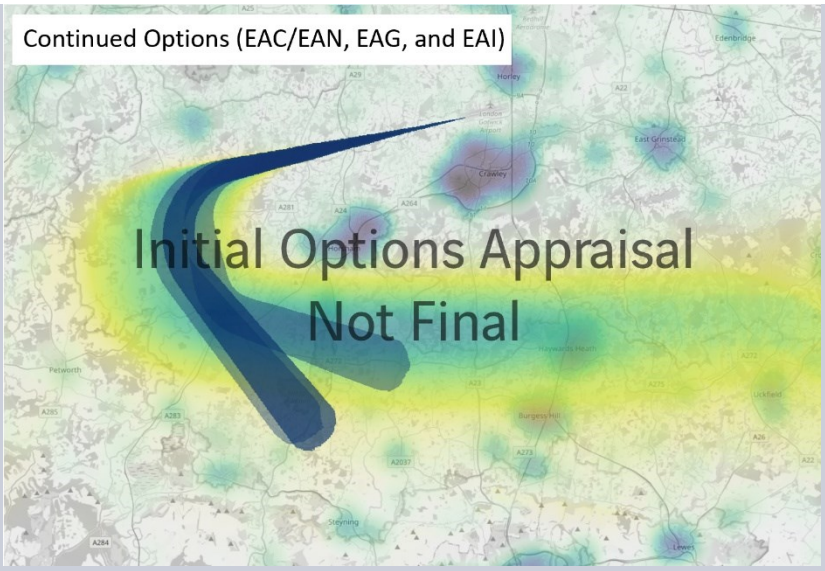
Option Name	Continued to Stage 3	Shortlisting Rationale
		some of the cumulative noise impacts of the existing DVR/DAGGA/TNT departures by turning the DVR departures left rather than right as they do in the baseline. This does however increase the area of AONB within the N65 (20) contour. The nighttime N60 (5) is expected to decrease from 24317 to 18484 (-24%). Looking to the other assessments within the IOA, Westerly System 6 has the potential to reduce track mileage and offer improvements to fuel burn and CO2 emissions. For General Aviation, the option is not expected to require additional CAS and may offer opportunities for CAS release, subject to further detailed design work in Stage 3. The two DVR routes and two XAM routes along with improved departure splits offer improvements to capacity.
Westerly System 6 (Majority of DVR traffic turning north and XAM traffic turning early left)	**No**	This option is expected to increase population within the indicative partial daytime LOAEL from 6079 to 7189 (+18%) / 7035 (+16%). Population within the indicative partial nighttime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small decrease from 5242 to 5209 (-1%) / 4973 (-5%). As the option is expected to increase total adverse impacts in the day compared to the baseline, and it does not offer a material improvement in the indicative partial nighttime LOAEL, it has been discontinued.
Westerly System 7 (Majority of DVR traffic turning north)	**No**	This option is expected to increase population within the indicative partial daytime LOAEL from 6079 to 7468 (+23%). Population within the indicative partial nighttime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small decrease from 5242 to 5234 (-<1%). As the option is expected to increase total adverse impacts in the day compared to the baseline, and it does not offer a material improvement in the indicative partial nighttime LOAEL, it has been discontinued.
Westerly System 7 (Majority of DVR traffic turning south)	**No**	Population within the indicative partial daytime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small decrease from 6079 to 5787 (-5%). Within the indicative partial nighttime LOAEL, the option is expected to reduce population from 5242 to 4051 (-23%) and therefore offer a positive benefit compared to the baseline.

Option Name	Continued to Stage 3	Shortlisting Rationale
		When looking at the secondary N60/N65 noise metrics this option would result in significant increases. The daytime N65 (20) increases from 8004 to 14569 (+82%) and the nighttime N60 (5) increases from 24317 to 36327 (+49%). Looking to the other assessments within the IOA, this option is expected to maintain or improve track mileage and have the potential to improve CAS/GA access however there are other options that also offered these improvements but also offered comparatively better indicative partial LOAEL performance and N60/N65 performance. Westerly System 7 was therefore discontinued.
Westerly System 8 (Majority of DVR traffic turning north)	**No**	This option is expected to increase population within the indicative partial daytime LOAEL from 6079 to 7468 (+23%). Population within the indicative partial nighttime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small decrease from 5242 to 5234 (-<1%) As the option is expected to increase total adverse impacts in the day compared to the baseline, and it does not offer a material improvement in the indicative partial nighttime LOAEL, it has been discontinued.
Westerly System 8 (Majority of DVR traffic turning south)	**No**	Population within the indicative partial daytime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small decrease from 6079 to 5787 (-5%). Within the indicative partial nighttime LOAEL, the option is expected to reduce population from 5242 to 4070 (-22%) and therefore offer a positive benefit compared to the baseline. When looking at the secondary N60/N65 noise metrics this option would result in significant increases. The daytime N65 (20) increases from 8004 to 14569 (+82%) and the nighttime N60 (5) increases from 24317 to 36436 (+50%). Looking to the other assessments within the IOA, this option is expected to maintain or improve track mileage and have the potential to improve CAS/GA access however there are other options that also offered these improvements but also offered comparatively better indicative partial LOAEL performance and N60/N65 performance. Westerly System 8 was therefore discontinued.

Easterly Arrivals

Single Route PBN Arrivals

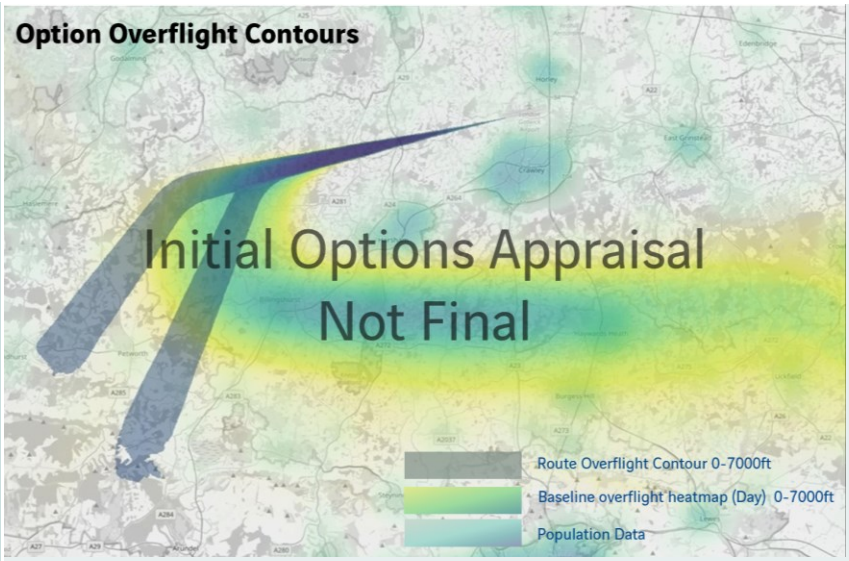
Option Name	Continued to Stage 3	Shortlisting Rationale
EAA / EAF	**No**	Options EAA/EAF, EAC, EAG, EAI, EAM and EAN have the same performance in terms of the indicative partial daytime and night time LOAEL (all are broadly similar to the baseline). Gatwick therefore looked to the other IOA assessment categories and the ANG altitude based priorities to understand any key differentiators between the options. Options EAA/EAF and EAM have a long final approach, joining at c.14nm and they are expected to increase track miles compared to the average baseline arrival and the other options. This longer join onto final approach is also outside of the main swathe of concentration in the 'do nothing' existing airspace arrangements although there are some flights in this area as shown in the figure below: 
EAC/EAN	**Yes**	
EAG	**Yes**	
EAI	**Yes**	
EAM	**No**	

		 Although not a determining factor in discontinuation alone, in addition to the reasons outlined above, the interdependency assessment and feedback from NERL noted that options EAA/EAF and EAM are highly likely to have interactions with Farnborough and Heathrow traffic which means they are likely to reduce CDO performance at Gatwick. For these reasons combined, EAA/EAF and EAM were discontinued and the remaining options, EAC/EAN, EAG, EAI are continued to Stage 3.
EAO	**No**	This option is expected to increase population within the indicative partial daytime LOAEL from 390 to 447 (+15%) and decrease population within the indicative partial nighttime LOAEL from 173 to 132 (-24%). Although it is important to note that due to the RNP-AR specification, this route could not be operated by all Gatwick arrivals and this impacts the amount of benefits/impacts the option can realise. When looking at the secondary N60/N65 noise metrics this option would result in significant increases. The daytime N65 (20) increases from 799 to 7988 (+900%) and the nighttime N60 (5) increases from 2798 to 29072 (+939%). The option is outside of the existing airspace arrangements although it does offer a very direct route which has some track mileage / fuel burn / CO2 benefits. Although it has been developed following stakeholder feedback regarding ambient noise, there is currently no mechanism for assessing ambient noise, and the noise metrics required by CAP1616 and government policy suggest an increase in the number of people adversely affected by noise.

		The interdependency assessment raised significant concerns with integrating option EAO with the departure options and the network airspace above 7000ft. The route design is also on the limits of IFP design criteria. For these reasons combined, option EAO has been discontinued.
EAP	**No**	Population within the indicative partial daytime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small increase from 390 to 425 (+9%). Within the indicative partial nighttime LOAEL, the option is expected to reduce population from 173 to 132 (-24%) and therefore offer a positive benefit compared to the baseline. Although it is important to note that due to the RNP-AR specification, this route could not be operated by all Gatwick arrivals and this impacts the amount of benefits/impacts the option can realise. When looking at the secondary N60/N65 noise metrics this option would result in significant increases. The daytime N65 (20) increases from 799 to 8125 (+917%) and the nighttime N60 (5) increases from 2798 to 33376 (+1093%). The option is outside of the existing airspace arrangements although it does offer a very direct route which has some track mileage / fuel burn / CO2 benefits. The interdependency assessment raised significant concerns with integrating option EAO with the departure options and the network airspace above 7000ft. The route design is also on the limits of IFP design criteria. For these reasons combined, option EAO has been discontinued.

Two Route PBN Arrivals

Option Name	Continued to Stage 3	Shortlisting Rationale
EAK	**No**	Options EAK and EAL have the same performance in terms of the indicative partial daytime and night time LOAEL (both are broadly similar to the baseline). Gatwick therefore looked to the other IOA assessment categories and the ANG altitude based priorities to understand any key differentiators between the options. **EAK:**
EAL	**Yes**	



EAL:

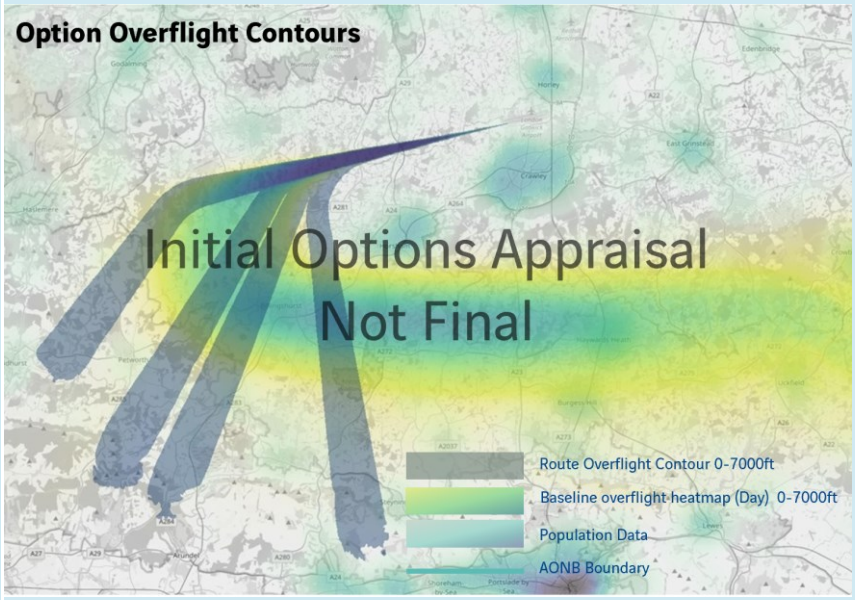
Option EAL is closest to existing airspace arrangements as shown in the figure above whereas the two routes that form EAK are initial outside of the main swathe of today's arrivals before joining final approach.

When considering track mileage / fuel burn / CO2 benefits and impacts, based on the indicative information from NERL around the arrival mechanism above 7000ft, it is expected that EAK would increase track mileage compared to the baseline whereas EAL is expected to remain similar to the baseline.

Finally, although not a determining factor in discontinuation alone, in addition to the reasons outlined above, the interdependency assessment noted that EAK is likely to have significant interactions with the flows of Farnborough and Heathrow traffic within the wider airspace and would therefore likely require evolution or reduced CDO

		performance (which could then have a knock on for CAS and GA impacts). This means that the portion of the routes from 7000-c.4000ft would likely need to be moved laterally, in order to integrate with the wider airspace network. For these reasons combined, EAK has been discontinued and EAL is continued to Stage 3.

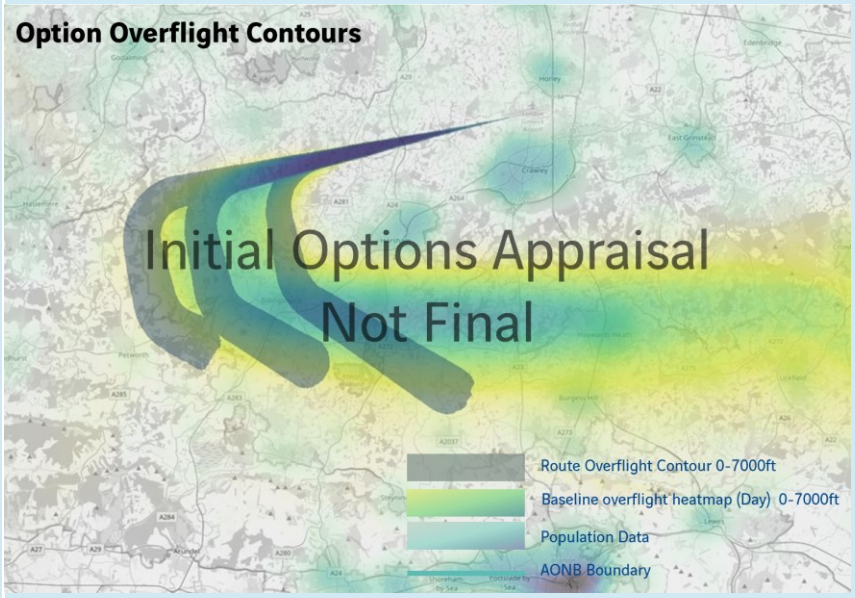
Three/four Route PBN Arrivals

Option Name	Continued to Stage 3	Shortlisting Rationale
EAD	**No**	These options have the same performance in terms of the indicative partial daytime and night time LOAEL (all are broadly similar to the baseline). We therefore looked to the other IOA assessment categories and the ANG altitude based priorities to understand any key differentiators between the options. **EAD:**  Two of the four routes in EAD join the ILS at less than 8nm – this means they cannot be operated as PBN to ILS transitions which impacts the frequency they can be used and therefore the amount of benefit the option can realise. In addition to this, compared to EAE and EAJ the routes in EAD converge at lower altitudes and therefore other options may offer greater opportunities for respite. Finally, EAD is expected to increase track miles / fuel burn / CO2 emissions compared to the average baseline and the other options. For these reasons combined, EAD was discontinued.
EAE	**No**	
EAJ	**Yes**	

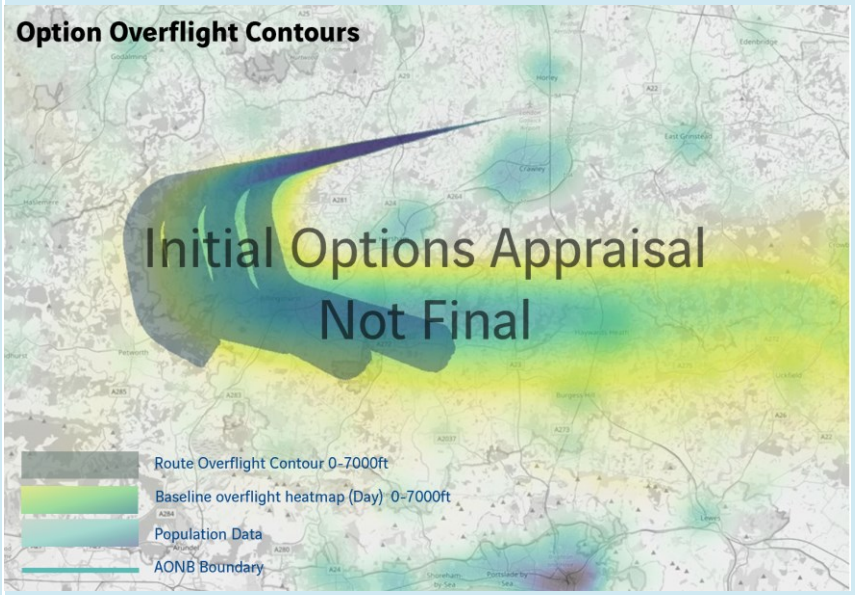
When comparing EAE and EAJ:

EAE:

Note: Option EAE uses the same routes as option EAL (which has been continued to Stage 3) with one additional route that joins final approach at c.14nm.



EAJ:



Although not a determining factor in discontinuation alone, the interdependency assessment noted the western most route on both options (which is the same route in both options) is highly likely to have interactions with Farnborough and Heathrow traffic which means it is likely to reduce CDO performance at Gatwick. The route is also expected to increase track mileage compared to the average arrival centreline.

		In the single PBN route section, options that join at the same distance have been discontinued on the basis of being outside of the existing arrangements, having the potential to increase track mileage, and due to the interdependency assessment. In the case of EAE and EAJ, the route is being considered because now any impacts are shared across three/four routes however the viability of this route would require further investigation in Stage 3. Option EAE is the same option as EAL with the additional western route. It shares noise across three PBN arrival routes however the routes sit either side of the main baseline swathe of concentration whereas the four routes in EAJ are located across the main swathe. EAE increases population within the N60 (5) from 2798 to 4618 (+65%) whereas EAJ remains broadly similar to the baseline with a small decrease from 2798 to 2557 (-9%). For these reasons, EAJ has been taken through to Stage 3 however it's important to note that the routes of EAE have been taken through as part of EAL and EAJ. As noted throughout this document and the stakeholder engagement, Gatwick will look to the outcomes of the Fair and Equitable Distribution of noise (FED) study in Stage 3 to inform the options development and evolution ahead of the Full Options Appraisal and public consultation. This will be documented as part of Stage 3.

Easterly RMA

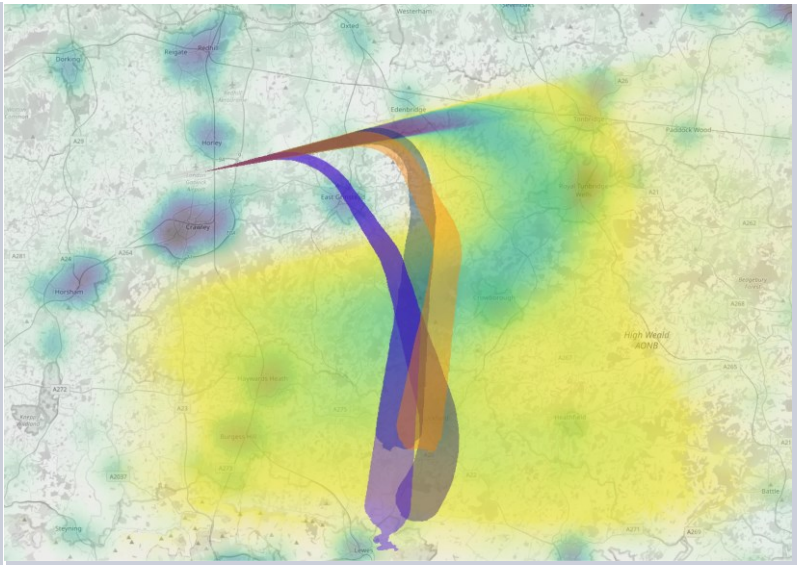
Option Name	Continued to Stage 3	Shortlisting Rationale
8-12nm	**Yes**	All joining bands have the same performance in terms of the indicative partial daytime and nighttime LOAEL (all are similar to the baseline). Beyond 14nm, the tracks are outside of the main swathe of concentration in the baseline, have the potential to increase track mileage compared to an average arrival today. There are also significant concerns from NATS with integrating these arrivals into the wider airspace network. For these reasons combined, proposing an easterly RMA which would, by design, require all aircraft to join final approach beyond 14nm from the runway has been discontinued at this stage. It is important to note that the shape and size of an RMA will be influenced by the PBN arrival options expected to be operated alongside the RMA and the integration of the Gatwick designs with the network above 7000ft. Also, by discontinuing development of an easterly RMA that targets a joining point beyond 14nm does not
9-13nm	**Yes**	
10-14nm	**Yes**	
11-15nm	**No**	
12-16nm	**No**	

		mean that in the future design, some arrivals will never establish onto final approach at this distance. ATC development simulations, undertaken as part of detailed design development in Stage 3, will be used to inform the development of the RMA.

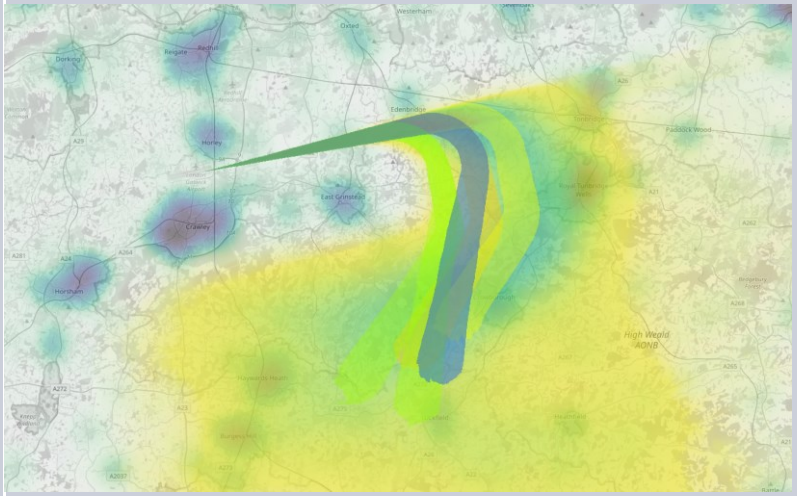
Westerly Arrivals

Single Route PBN Arrivals

Option Name	Continued to Stage 3	Shortlisting Rationale
WAA	**Yes**	These options have broadly the same performance in terms of the daytime indicative partial LOAEL (all are similar to the baseline) and all options improve population in the indicative partial nighttime LOAEL. Gatwick therefore looked to the other IOA assessment categories and the ANG altitude based priorities to understand any key differentiators between the options. WAC and WAO are outside of the main swathe of the 'do nothing' arrivals and are therefore significantly different from the existing airspace arrangements as shown in the figure below. They join the final approach at less than 8nm which does result in improved track mileage/fuel burn/CO2 performance however the join at less than 8nm means they cannot be a flown as PBN-ILS arrival transitions which impacts the frequency they can be used and therefore the amount of benefit the option can realise. Although all westerly single PBN arrival options increased overflight of AONBs to varying extents, options WAC and WAO suggested substantial increases compared to other options. For these reasons combined, WAC and WAO were discontinued. **WAC, WAO, WAP, WAQ:**
WAC	**No**	
WAF	**Yes**	
WAH	**Yes**	
WAK	**Yes**	
WAL	**Yes**	
WAO	**No**	



WAA, WAF, WAH, WAK, WAL:



The remaining options WAA, WAF, WAH, WAK, WAL are broadly within the existing airspace arrangements. The N65 (20) and N60 (5) are broadly similar to the baseline, with the exception of WAF where there is an increase in the population within the nighttime N60 (5). In this case of WAF, as it offers one of the smallest areas of AONB within the N65 (20) contour, there may be opportunities for this to be a daytime only route and therefore this would mitigate the increase in population within the N65 (5) contour; this will be explored at the detailed design phase and following the outcomes of the FED study.

All of these options have the potential to offer improved fuel burn / CO_2 performance. For General Aviation, the options are not expected to require additional CAS and may offer opportunities for CAS release, subject to further detailed design work in Stage 3.

For these reasons combined, options WAA, WAF, WAH, WAK, WAL were taken through to Stage 3.

WAP	**No**	This option is expected to increase population within the indicative partial daytime LOAEL from 7244 to 25822 (+256%). Population within the indicative partial nighttime LOAEL is within 10% of the baseline, and therefore categorised as similar to the baseline, with a small increase from 3635 to 3933 (+8%). Although it is important to note that due to the RNP-AR specification, this route could not be operated by all Gatwick arrivals and this impacts the amount of benefits/impacts the option can realise. When looking at the secondary N60/N65 noise metrics this option would result in significant increases. The daytime N65 (20) increases from 5955 to 21341 (+258%) and the nighttime N60 (5) increases from 11819 to 49176 (+316%). The option is outside of the existing airspace arrangements although it does offer a very direct route which has some track mileage / fuel burn / CO2 benefits. Although it has been developed following stakeholder feedback regarding ambient noise, there is currently no mechanism for assessing ambient noise, and the noise metrics required by CAP1616 and government policy suggest an increase in the number of people adversely affected by noise. The interdependency assessment raised significant concerns with integrating option WAP with the departure options and the network airspace above 7000ft. The route design is also on the limits of IFP design criteria. For these reasons, option WAP has been discontinued.
WAQ	**No**	This option is expected to increase population within the indicative partial daytime LOAEL from 7244 to 26326 (263%) and increase the indicative partial nighttime LOAEL from 3635 to 4028 (+11%). Although it is important to note that due to the RNP-AR specification, this route could not be operated by all Gatwick arrivals and this impacts the amount of benefits/impacts the option can realise. When looking at the secondary N60/N65 noise metrics this option would result in significant increases. The daytime N65 (20) increases from 5955 to 21170 (+255%) and the nighttime N60 (5) increases from 11819 to 33935 (+187%). The option is outside of the existing airspace arrangements although it does offer a very direct route which has some track mileage / fuel burn / CO2 benefits. Although it has been developed following stakeholder feedback regarding ambient noise, there is currently no mechanism for assessing ambient noise, and the noise metrics required by CAP1616 and government policy suggest an increase in the number of people adversely affected by noise. The interdependency assessment raised significant concerns with integrating option WAQ with the departure options and the network

		airspace above 7000ft. The route design is also on the limits of IFP design criteria. For these reasons, option WAQ has been discontinued.

Two Route PBN Arrivals

Option Name	Continued to Stage 3	Shortlisting Rationale
WAD	**Yes**	**WAD:**  **WAE:**  **WAM:**  WAD and WAE have broadly the same performance in terms of the indicative partial daytime LOAEL (both are similar to the baseline) whereas WAM offers potential improvements in population within the indicative partial daytime LOAEL. Within the indicative partial nighttime LOAEL, all three options reduce population within the contour.
WAE	**No**	
WAM	**No**	

		Although WAM offers improved partial daytime LOAEL performance, the western most route joins the ILS at less than 8nm – this means it cannot be operated as PBN to ILS transition which impacts the frequency it can be used and therefore the amount of benefit the option can realise. As not all aircraft could fly this approach, instead they would be vectored and this would most likely occur over the areas already overflown in other route in WAM thus reducing the potential to offer noise relief. The routes within WAE also join the ILS at less than 8nm and therefore similar to WAM the amount of benefit the option can realise is reduced. The joins onto final approach under 8nm result in a change to existing airspace arrangements, particularly at lower altitudes, although this does offer some track mileage / fuel burn / CO2 benefits. As per the assessment around noise, without a PBN to ILS transition this reduces the frequency of use and the amount of benefit the option can realise. The integration assessment also highlighted that WAE would require modification to integrate with the future airspace network. For these reasons combined, options WAE and WAM have been discontinued at this stage and option WAD was taken to Stage 3.

Three/four Route PBN Arrivals

Option Name	Continued to Stage 3	Shortlisting Rationale
WAI	**Yes**	WAI and WAJ have broadly the same performance in terms of the indicative partial daytime LOAEL (both are similar to the baseline) and the options improve population in the indicative partial nighttime LOAEL. We therefore looked to the other IOA assessment categories and the ANG altitude based priorities to understand any key differentiators between the options. **WAI:** 
WAJ	**No**	

WAJ:

The configuration of WAI offers greater potential for respite compared to WAJ where some routes converge. It was noted in the assessment that there may be opportunities for the initial sections of WAI to be separated as part of the evolution of the option as it is connected to the network.

When considering the existing airspace arrangements, WAI more closely routes where the main swathe of concentration occurs today and furthermore it offers broadly similar N65 (20) and N60 (5) performance compared to the baseline, whereas WAJ increases population within the N60 (5) contour from 11819 to 13162 (+11%).

Both options have the potential to offer improved fuel burn / CO2 performance. For General Aviation, the options are not expected to require additional CAS and may offer opportunities for CAS release, subject to further detailed design work in Stage 3.

For these reasons combined, WAJ has been discontinued and WAI was continued to Stage 3.

Westerly RMA

Option Name	Continued to Stage 3	Shortlisting Rationale
8-12nm	**Yes**	All joining bands have broadly the same performance in terms of the indicative partial daytime LOAEL (all are similar to the baseline) and the options improve population in the nighttime LOAEL.
9-13nm	**Yes**	
10-14nm	**Yes**	Beyond 14nm, the tracks are outside of the main swathe of concentration in the baseline, they overfly (0-7000ft) more people than the RMA options joining within 14nm, have the potential to increase track mileage compared to an average arrival today. Integration with the wider airspace network would also require further investigation. For these reasons combined, proposing an easterly RMA which would, by design, require all aircraft to join final approach beyond 14nm from the runway has been discontinued at this stage. It is important to note that the shape and size of an RMA will be influenced by the PBN arrival options expected to be operated alongside the RMA and the integration of the Gatwick designs with the network above 7000ft. Also, by discontinuing development of an easterly RMA that targets a joining point beyond 14nm does not mean that in the future design, some arrivals will never establish onto final approach at this distance.
11-15nm	**No**	
12-16nm	**No**	

6. Next Steps

Preferred option and information to collect as part of the Full Options Appraisal

Gatwick has outlined which options we plan to take forward to Stage 3 as part of the IOA Summary and conclusion section.

As part of this Initial Options Appraisal we have undertaken analysis on partial system options (i.e. we have looked at easterly / westerly / arrivals and departures separately). As part of the next steps of the process, the options taken to stage 3 will undergo detailed design development ahead of the Stage 3 Full Options Appraisal.

As part of this the options will be combined into full airport system options (i.e. options configured of easterly and westerly arrivals and departures) alongside work undertaken to integrate the options with neighbouring airports and the network airspace above 7000ft.

As noted throughout the IOA, some options share interdependencies with Heathrow, Biggin Hill, Farnborough and London City. Once all sponsors have full airport system options, compromises and trade-offs may be necessary between sponsors in order to integrate all airport's proposals into the airspace available. This process will be managed by the Airspace Change Organising Group (ACOG), the organisation tasked with coordinating the redesign of the UK's airspace. The process will be documented and shared as part of Stage 3.

During this detailed design process it is highly likely that the options will be evolved and adjusted and subsequently, as noted throughout Stage 2, all options developed are subject to change throughout the airspace change process as options are matured in detail and refined in accordance with safety requirements, Design Principles, appraisals and stakeholder engagement and consultation.

Within the scope of the ACOG Masterplan, there is also a mechanism for options discontinued at Stage 2 to be reintroduced at Stage 3 should this be required as part of detailed design development, and this would be documented and shared at Stage 3 if applicable.

Gatwick have also committed to further develop options, as part of the detailed design work, based on the principles informed through the FED Study (Fair and Equitable Distribution), which are expected late 2023.

Therefore at this stage it is not appropriate to select a preferred option. Following detailed development of the options, as part of the Stage 3 Full Options Appraisal Gatwick plans to:

- Generate a future forecast for year of implementation and year of implementation + 10 years including movement numbers and aircraft fleet.
- Develop a forecast for ACP year of implementation and year of implementation + 10 years scenario which includes the northern runway DCO operations if applicable (dependent on the outcomes of the DCO application).
- Quantitatively appraise full airport system L_{Aeq} contours, including population data, noise sensitive buildings and contour area. This will include consented local developments where applicable. Following a request from stakeholders as part of the final stage 2 engagement events, these will also show the 40dB and 45dB World Health Organisation (WHO) contours.

- Qualitatively or quantitatively appraise options against the outcomes of the Fair and Equitable Distribution of noise study (FED) where possible to do so.
- Quantitatively appraise full airport system fuel burn and equivalent CO2 emissions data taking into account the expected vertical profile of the routes.
- Undertake noise and carbon webTAG assessments.
- Undertake air quality impact assessments where applicable.
- Quantitatively appraise overflight contours based on full airport system options, which include frequency of cumulative overflight and contours showing 100% runway usage.
- Provide further information about interdependencies, conflicts and trade offs with neighbouring airports and the airspace above 7000ft.
- Include qualitative information and quantitative data about cumulative impacts with neighbouring airports.
- Provide quantified costs for ATC deployment and training.
- Provide quantified costs for ANSP/Airport infrastructure and operational costs.
- Provide further assessments around capacity / operational resilience
- Quantify the volume and designation of Controlled Airspace (CAS) required and articulate the benefits and impacts of this for General Aviation.
- Undertake further safety assessments.
- Where applicable, undertake a Habitats Regulations Assessment (HRA)

The Stage 3 **Full Options Appraisal (FOA)** is the second stage in a three-phase appraisal of airspace change options. It is required to provide more rigorous evidence, typically through quantitative evaluation, of the options compared against the 'do nothing' pre-implementation scenario. The outcomes of the Full options Appraisal are used to inform the public Consultation and at this stage a preferred option will be identified.

At Step 3A, alongside the FOA work detailed above, Gatwick will prepare a consultation strategy and consultation documents to submit to the CAA. As part of this, detailed maps of the options will be generated to enable consultees to see specific geographical locations clearly and easily, to understand the potential benefits or impacts of the proposals, and to enable consultees to give informed consultation responses.

As part of the Step 3B Gateway, the CAA then reviews the strategy and consultation material to ensure it is compressive, the materials are clear and appropriate, and the consultation questions are unbiased, before allowing Gatwick to proceed to public consultation.

Impacted Audiences

At the Stage 2 Develop and Assess gateway, the IOA must set out impacted audiences, as this information will be a key feature in developing the consultation strategy required during Step 3A and at the 'Consult' gateway.

Figure 11 below shows all of the options proceeding to Stage 3 overlaid on heatmaps which show Gatwick's existing areas of overflight.

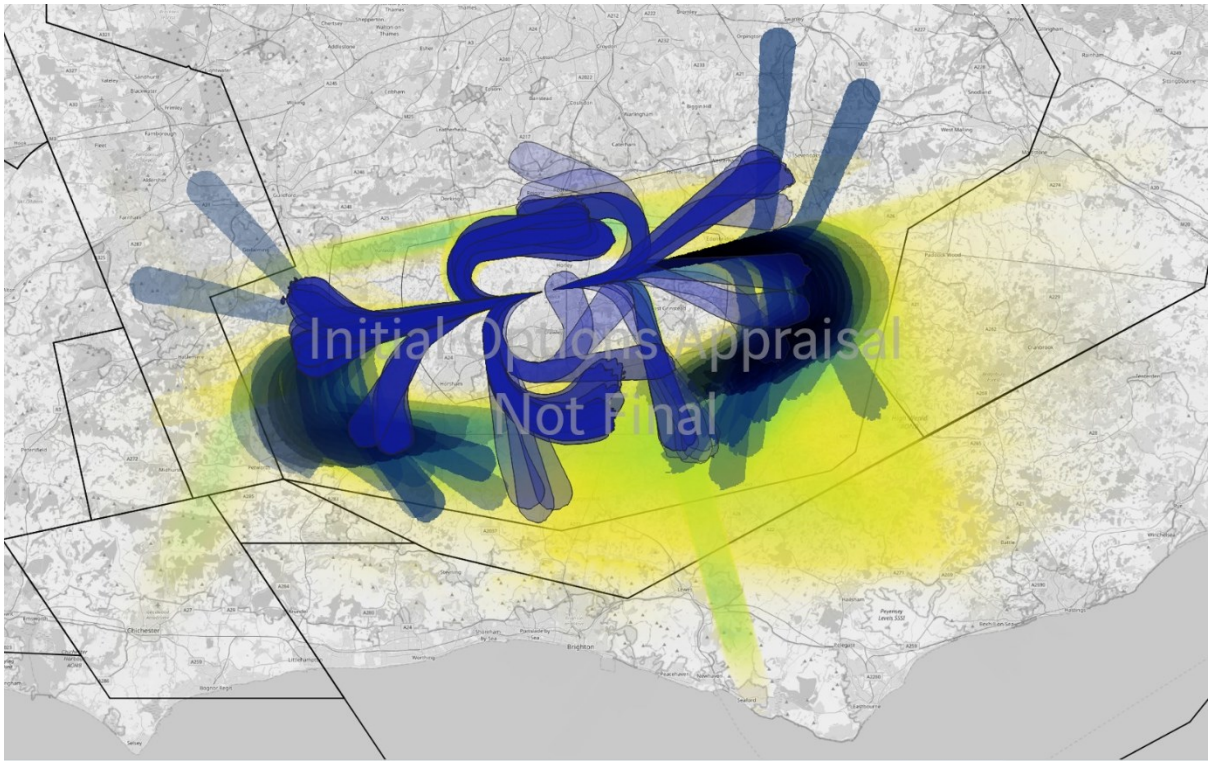


Figure 11 Impacted Audiences

We will use this mapping as a starting point to identify our impacted audiences. We're aware that other factors also need to be considered when identifying the audience such as other noise metrics, changes to controlled airspace etc and we will ensure these are also considered when developing the consultation strategy.

Appendix A: Local Development Information

Ref.	Local Authority	Location	Development Type	Development Size	Status (if known)	Further Info
1	Kent - Sevenoaks District	Sevenoaks Quarry Bat And Ball Road Sevenoaks Kent TN14 5SR	Dwelling - Residential	800 units	Awaiting decision	Link to planning application
2	Kent - Sevenoaks District	Former Foxes Garage Orpington Bypass Road Badgers Mount KENT TN14 7EJ	All Other Largescale Major Developments – Care Home	60 units	Granted	Link to planning application
3	Kent - Sevenoaks District	Wildernesse House Wildernesse Avenue Sevenoaks KENT TN15 0EA	Dwelling – Care Home	53 units	Granted	Link to planning application
4	Kent - Sevenoaks District	Land North Of Town Station Cottages Forge Croft Edenbridge KENT TN8 5LR	Dwelling - Residential	340 units	Awaiting decision	Link to planning application
5	Kent - Sevenoaks District	DSTL Fort Halstead Crow Drive Halstead Sevenoaks KENT TN14 7BU	Dwelling - Residential	635 units	Awaiting decision	Link to planning application
6	Kent - Sevenoaks District	Berkeley House 7 Oakhill Road Sevenoaks Kent TN13 1NQ	Dwelling - Residential	69 units	Awaiting decision	Link to planning
7	Kent - Sevenoaks District	Sevenoaks Gasholder Station Cramptons Road Sevenoaks KENT TN14 5ES	Dwelling - Residential	136 units	Awaiting decision	Link to planning
8	Kent - Sevenoaks District	136 High Street Sevenoaks KENT TN13 1XA	Dwelling - Residential	104 units	Granted	Link to planning
9	Kent – Tonbridge & Malling	Land North Of Lower Haysden Lane Tonbridge Kent	Outline Application: Residential development	125 units	Approved	Link to planning
10	Kent – Tonbridge & Malling	Land At Manor Farm Lower Haysden Lane Tonbridge Kent	Request for Scoping Opinion: Residential development	240 units	Awaiting decision	Link to planning
11	Kent – Tonbridge & Malling	The River Centre Medway Wharf Road Tonbridge Kent	Request for Screening Opinion: Residential development	183 units	Decided: EIA not required	Link to planning
12	Kent – Tonbridge & Malling	Oakhill House 130 Tonbridge Road Hildenborough Tonbridge Kent TN11 9DZ	Request for Screening Opinion: Residential development	175 units	Decided: EIA not required	Link to planning

13	Kent – Tunbridge Wells	Showfields Estate Showfields Road Royal Tunbridge Wells Kent	Major Dwelling	146 units	Awaiting decision	Link to planning
14	Kent – Tunbridge Wells	Broadwater Lane Royal Tunbridge Wells Kent TN2 5RD	Major Dwelling	94 units	Awaiting decision	Link to planning
15	Kent – Tunbridge Wells	Knights Way Royal Tunbridge Wells Kent TN2 3FJ	Major Dwelling	180 units	Application Permitted	Link to planning
16	Kent – Tunbridge Wells	Maidstone & Tunbridge Wells NHS Trust The Tunbridge Wells Hospital Tonbridge Road Pembury Tunbridge Wells Kent TN2 4QJ	Major other – Student Accommodation	145 units	Application Permitted	Link to planning
17	Kent – Tunbridge Wells	Former ABC Cinema Site Mount Pleasant Road Royal Tunbridge Wells Kent TN1 1PN	Major other – mixed use	108 units	Application Permitted	Link to planning
18	Kent – Tunbridge Wells	Owlsnest Wood Tonbridge Road Pembury Royal Tunbridge Wells TN2 4QN	Major other – health and wellbeing facility nursing care	76 units	Application Permitted	Link to planning
19	East Sussex - Lewes	Land West Of A275 South Common South Chailey East Sussex	Outline Planning Application – Largescale Major Dwelling	56 units	Awaiting decision	Link to planning
20	East Sussex - Lewes	Land To The South Of The Broyle Ringmer East Sussex	Planning Application – Largescale Major Dwelling	70 units	Awaiting decision	Link to planning
21	East Sussex - Lewes	Land Between The Broyle And Round House Road Ringmer East Sussex	Planning Application – Largescale Major Dwelling	53 units	Awaiting decision	Link to planning
22	East Sussex - Lewes	Former Bennett's Field Car Park American Express Community Stadium Car Park Village Way Falmer East Sussex	Planning Application – Largescale Major Dwelling – Student accomodation	555 units	Awaiting decision	Link to planning
23	East Sussex - Lewes	Land At Broyle Gate Farm Lewes Road Ringmer East Sussex	Outline Planning Application – Largescale Major Dwelling	100 units	Awaiting decision	Link to planning
24	East Sussex - Lewes	Land Opposite Bishops Close Ringmer East Sussex	Planning Application – Largescale Major Dwelling	68 units	Awaiting decision	Link to planning
25	East Sussex - Lewes	Land Adjacent To St Mary's Care Home St Georges Park Ditchling Road Ditchling Common Ditchling East Sussex	Planning Application – Largescale Other – care home and assisted living	136 units	Approved	Link to planning

26	East Sussex - Wealden	ORCHID RIDING CENTRE, WALSHES ROAD, CROWBOROUGH, TN6 3RE	Planning Application – Largescale Major Dwelling	150 units	Unknown	Link to planning
27	East Sussex - Wealden	LAND AT MOCKBEGGARS FARM, LONDON ROAD, UCKFIELD TN22 2EA	Planning Application – Largescale Major Dwelling	60 units	Unknown	Link to planning
28	East Sussex - Wealden	LAND AT STEEL CROSS, CROWBOROUGH, TN6 2XB	Planning Application – Largescale Major Dwelling	103 units	Unknown	Link to planning
29	East Sussex - Wealden	LAND ADJACENT TO WALSHES MANOR FARM, WALSHES ROAD, CROWBOROUGH, TN6 3RB	Planning Application – Largescale Major Dwelling	71 units	Unknown	Link to planning
30	East Sussex - Wealden	HESMONDS STUD, WALDRON ROAD, EAST HOATHLY, BN8 6QH	Planning Application – Largescale Major Dwelling	205 units	Unknown	Link to planning
31	East Sussex - Wealden	ORCHID RIDING CENTRE, WALSHES ROAD, CROWBOROUGH, TN6 3RE	Planning Application – Largescale Major Dwelling	100 units	Unknown	Link to planning
32	East Sussex - Wealden	LAND AT BIRD IN EYE FARM, SOUTH OF BIRD IN EYE HILL, FRAMFIELD, TN22 5HA	Outline Planning Application – Largescale Major Dwelling	290 units	Unknown	Link to planning
33	East Sussex - Wealden	LAND NORTH OF ERIDGE ROAD, CROWBOROUGH	Outline Planning Application – Largescale Major Dwelling	119 units	Approved	Link to planning
34	East Sussex - Wealden	LAND AT OLD NURSERY HOUSE, THE STREET, FRAMFIELD, TN22 5PN	Outline Planning Application – Largescale Major Dwelling	58 units	Refused – Appeal lodged	Link to planning
35	East Sussex - Wealden	BROOK VIEW, LAND NORTH OF WALSHES ROAD, CROWBOROUGH	Outline Planning Application – Largescale Major Dwelling	130 units	Approved	Link to planning
36	East Sussex - Wealden	LAND SOUTH OF FRAMFIELD ROAD, BLACKBOYS	Outline Planning Application – Largescale Major Dwelling	50 units	Approved	Link to planning
37	East Sussex - Wealden	LAND OFF EASTBOURNE ROAD, UCKFIELD	Outline Planning Application – Largescale Major Dwelling	90 units	Approved	Link to planning
38	East Sussex - Wealden	LAND SOUTH OF SOUTH STREET, EAST HOATHLY	Outline Planning Application –	55 units	Appeal Allowed	Link to planning

			Largescale Major Dwelling			
39	West Sussex - Chichester	Land South West Of Guildford Road Loxwood West Sussex	Planning Application – Largescale Major Development - Dwelling	50 units	Permit	Link to planning
40	West Sussex - Chichester	Land On The East Side Of Plaistow Road Plaistow Road Kirdford West Sussex	Planning Application – Largescale Major Development - Dwelling	54 units	Permit	Link to planning
41	West Sussex - Chichester	Land West Of Cornwood Townfield Kirdford West Sussex	Outline Planning Application – Largescale Major Development - Dwelling	70 units	Pending Consideration	Link to planning
42	West Sussex – South Downs National Park	Highfield Building, Former Syngenta Site Henley Old Road Fernhurst Haslemere West Sussex GU27 3JE	Prior Notification for Change to Residential	235 units	Prior Approval Granted	Link to planning
43	West Sussex - Crawley	STEERS LANE, PHASE 2, STEERS LANE, FORGEWOOD, CRAWLEY	Full Planning Application – Small scale Major Dwellings	60 units	Awaiting Decision	Link to planning
44	West Sussex - Crawley	TOWN HALL, THE BOULEVARD, NORTHGATE, CRAWLEY	Approval of Reserved Matters – Small scale Major Dwellings	182 units	Awaiting Decision	Link to planning
45	West Sussex - Crawley	LAND EAST OF TINSLEY LANE, THREE BRIDGES, CRAWLEY	Outline Application – Small scale Major Dwellings	138 units	Awaiting Decision	Link to planning
46	West Sussex - Crawley	BREEZEHURST PLAYING FIELDS, OFF BREEZEHURST DRIVE, BEWBUSH, CRAWLEY	Regulation 3 – Small scale Major Dwellings	85 units	Awaiting Decision	Link to planning
47	West Sussex - Crawley	LAND PARCEL RUSSELL WAY (FORMER TSB SITE), THREE BRIDGES, CRAWLEY	Full Planning Application – Small scale Major Dwellings	59 units	Awaiting Decision	Link to planning
48	West Sussex - Crawley	LONGLEY HOUSE, EAST PARK, SOUTHGATE, CRAWLEY	Full Planning Application – Small scale Major Dwellings	121 units	Awaiting Decision	Link to planning
49	West Sussex - Crawley	OVERLINE HOUSE, STATION WAY, NORTHGATE, CRAWLEY	Full Planning Application – Small scale Major Dwellings	83 units	Awaiting Decision	Link to planning

50	West Sussex - Crawley	MOKA, STATION WAY, NORTHGATE, CRAWLEY	Full Planning Application – Small scale Major Dwellings	152 units	Permit	Link to planning
51	West Sussex - Crawley	STEERS LANE, POUND HILL, CRAWLEY	Approval of Reserved Matters – Large scale Major Dwellings	185 units	Approve	Link to planning
52	West Sussex - Crawley	TEN SIXTYSIX, BALCOMBE ROAD, POUND HILL, CRAWLEY	Outline Application – Small scale other – Care home	64 unit	Awaiting Decision	Link to planning
53	West Sussex - Crawley	THE GABLES NURSING HOME , IFIELD GREEN, IFIELD, CRAWLEY	Full Planning Application – Small scale other – nursing home	Approx 60 units	Permit	Link to planning
54	West Sussex - Crawley	LAND WEST OF IFIELD, CRAWLEY	Environmental Impact Assessment Scoping	Minimum of 3,250 units	EIA Advice Given	Link to planning
55	West Sussex - Crawley	KILNWOOD VALE, PHASE 6B, CRAWLEY ROAD, FAYGATE	Other: Consultations	116 units	Awaiting Decision	Link to planning
56	West Sussex - Horsham	Berkeley Homes Development Site Worthing Road Southwater RH13 9BT	Full Planning Application - Residential	80 units	Awaiting Decision	Link to planning
57	West Sussex - Horsham	Abingworth Nurseries Storrington Road Thakeham West Sussex RH20 3EF	Full Planning Application - Residential	75 units	Application permitted	Link to planning
58	West Sussex - Horsham	Chanctonbury Nurseries Rectory Lane Ashington Pulborough West Sussex RH20 3AS	Full Planning Application - Residential	74 units	Registered	Link to planning
59	West Sussex - Horsham	Lower Broadbridge Farm Billingshurst Road Broadbridge Heath Horsham West Sussex RH12 3LR	Outline Application - Residential	147 units	Registered	Link to planning
60	West Sussex - Horsham	Lower Broadbridge Farm Billingshurst Road Broadbridge Heath Horsham West Sussex RH12 3LR	Outline Application - Residential	133 units	Registered	Link to planning
61	West Sussex - Horsham	Land North of The Rise Partridge Green West Sussex	Outline Application - Residential	55 units	Registered	Link to planning
62	West Sussex - Horsham	Land North of Shermanbury Road Partridge Green West Sussex	Outline Application - Residential	120 units	Awaiting Decision	Link to planning

63	West Sussex - Horsham	Greendene Stane Street Codmore Hill Pulborough West Sussex RH20 1BQ	Outline Application - Residential	70 units	Registered	Link to planning
64	West Sussex - Horsham	Land at New Place Farm Pulborough West Sussex	Outline Application - Residential	170 units	Awaiting Decision	Link to planning
65	West Sussex - Horsham	Land North of Glebe Farm and Kings Barn Lane Kings Barn Lane Steyning West Sussex	Outline Application - Residential	265 units	Registered	Link to planning
66	West Sussex - Horsham	Woodfords Shipley Road Southwater Horsham West Sussex RH13 9BQ	Outline Application - Residential	73 units	Registered	Link to planning
67	West Sussex - Horsham	Land at Duckmoor East of Billingshurst Billingshurst RH14 9DZ	Outline Application - Residential	83 units	Registered	Link to planning
68	West Sussex - Horsham	Land at 521036 117082 Parsonage Farm Deer Park Henfield West Sussex BN5 9QR	Outline Application - Residential	235 units	Registered	Link to planning
69	West Sussex - Horsham	Land North of Downsview Avenue Storrington RH20 4LU	Outline Application - Residential	62 units	Application permitted	Link to planning
70	West Sussex - Horsham	Crouchlands Farm Rickmans Lane Plaistow Billingshurst West Sussex RH14 0LE	Neighbouring Authority Consultation	600 units	Registered	Link to planning
71	West Sussex - Horsham	Land West of Southwater	Environment Impact Assessment Scoping / Screening	1,500 units	EIA Advice Given	Link to planning
72	West Sussex – Mid-Sussex	Land To West Of Goldcrest Drive Sayers Meadow Sayers Common West Sussex	Small Scale Major Dwelling – Care Home	66 units	Pending Consideration	Link to planning
73	West Sussex – Mid-Sussex	NCP Ltd Harlands Road Car Park Harlands Road Haywards Heath West Sussex	Small Scale Major Dwelling – Residential	64 units	Pending Consideration	Link to planning
74	West Sussex – Mid-Sussex	Land West Of Copthorne Copthorne Way Copthorne West Sussex	Small Scale Major Dwelling – Residential	303 units	Approved	Link to planning
75	West Sussex – Mid-Sussex	Land To The Rear Of Friars Oak London Road Hassocks West Sussex BN6 9NA	Small Scale Major Dwelling – Residential – Reserved Matters Application	130 units	Approved	Link to planning

76	West Sussex – Mid-Sussex	Land West Of Copthorne, North Of The A264, East Of M23 And West Of Shipley Bridge Lane. Copthorne West Sussex	Small Scale Major Dwelling – Residential – Reserved Matters Application	197 units	Approved	Link to planning
77	West Sussex – Mid-Sussex	Land Rear Of 88 Folders Lane Burgess Hill West Sussex RH15 0DX	Small Scale Major Dwelling – Residential	73 units	Approved	Link to planning
78	West Sussex – Mid-Sussex	Downlands Park Care Home Bolnore Farm Lane Haywards Heath West Sussex RH16 4BQ	Small Scale Major Dwelling – Care Home	85 units	Approved	Link to planning
79	West Sussex – Mid-Sussex	Rookery Farm Rocky Lane Haywards Heath West Sussex	Small Scale Major Dwelling – Residential	72 units	Approved	Link to planning
80	West Sussex – Mid-Sussex	Phase 3 - Land East Of Brighton Road Pease Pottage West Sussex	Large Scale Major Dwelling – Residential – Reserved Matters Application	186 units	Approved	Link to planning
81	West Sussex – Mid-Sussex	Kingsland Laines Reeds Lane Sayers Common Hassocks West Sussex BN6 9JG	Small Scale Major Dwelling – Residential	120 units	Approved	Link to planning
82	West Sussex – Mid-Sussex	Land At And Adjacent To The Former Sewage Treatment Works Fairbridge Way Burgess Hill West Sussex RH15 8BF	Outline Planning Permission - Small Scale Major Other – Residential	325 units	Approved	Link to planning
83	West Sussex – Mid-Sussex	Byanda Brighton Road Hassocks West Sussex BN6 9LX	Small Scale Major Other – Residential Care Home	60 unit	Awaiting Decision	Link to planning
84	West Sussex – Mid-Sussex	Kingsland Laines Reeds Lane Sayers Common Hassocks West Sussex BN6 9JG	Small Scale Major Other – Residential Care Home	70 unit	Approved	Link to planning
85	West Sussex – Mid-Sussex	3 - 25 Bolnore Road Haywards Heath West Sussex RH16 4AB	Small Scale Major Other – Residential Care Home	67 unit	Approved	Link to planning
86	West Sussex – Mid-Sussex	Land East Of Keymer Road Burgess Hill West Sussex	Screening Opinion - Residential	300 units	EIA Not Required	Link to planning
87	West Sussex – Mid-Sussex	Land South Of Crawley Down Road Felbridge East Grinstead West Sussex RH19 2PP	Screening Opinion - Residential	200 units	EIA Not Required	Link to planning

88	West Sussex – Mid-Sussex	Hurst Farm Hurstwood Lane Haywards Heath West Sussex RH17 7QX	Scoping Opinion – Residential	375 units	Scoping Opinion	Link to planning
89	West Sussex – Mid-Sussex	Land West Of Imberhorne Lane Imberhorne Lane East Grinstead West Sussex	Scoping Opinion – Residential	550 units	Scoping Opinion	Link to planning
90	West Sussex – Mid-Sussex	Block E Ground - Fourth Floor East Grinstead House Wood Street East Grinstead West Sussex RH19 1UZ	Prior Approval – Office to Residential	69 units	Approved	Link to planning
91	West Sussex – Mid-Sussex	Chester House Harlands Road Haywards Heath West Sussex RH16 1LR	Prior Approval – Office to Residential	76 units	Approved	Link to planning
92	West Sussex – Mid-Sussex	Block B East Grinstead House Wood Street East Grinstead West Sussex RH19 1UU	Prior Approval – Office to Residential	60 units	Approved	Link to planning
93	West Sussex – Mid-Sussex	Block F And G East Grinstead House Wood Street East Grinstead West Sussex	Prior Approval – Office to Residential	67 units	Approved	Link to planning
94	West Sussex – Mid-Sussex	Phase 4 & 5 - Land East Of Brighton Road Pease Pottage West Sussex	Large Scale Major - Dwellings	277 units	Approved	Link to planning
95	West Sussex – Mid-Sussex	Land To The West Of Freeks Lane Freeks Lane Burgess Hill West Sussex	Large Scale Major - Dwellings	460 units	Approved	Link to planning
96	West Sussex – Mid-Sussex	Land At Hill Place Farm Turners Hill Road East Grinstead West Sussex RH19 4LX	Large Scale Major - Dwellings	200 units	Approved	Link to planning
97	West Sussex – Mid-Sussex	Maxwelton House 41 - 43 Boltro Road Haywards Heath West Sussex	Large Scale Major - Dwellings	54 units	Approved	Link to planning
98	West Sussex – Mid-Sussex	Land To The South Of Scamps Hill Scaynes Hill Road Lindfield West Sussex	Large Scale Major - Dwellings	200 units	Approved	Link to planning
99	West Sussex – Mid-Sussex	Persimmon Homes Phase 4 Land East Of Kings Way Burgess Hill West Sussex	Large Scale Major - Dwellings	237 units	Approved	Link to planning
100	West Sussex – Mid-Sussex	Land North Of Clayton Mills Hassocks West Sussex	Large Scale Major - Dwellings	500 units	Approved	Link to planning

101	West Sussex – Mid-Sussex	Land To The South Of Kings Way Burgess Hill West Sussex RH15 0XP	Large Scale Major - Other	68 units	Awaiting decision	Link to planning
102	Brighton & Hove	Land To The East Of Coldean Lane, North Of Varley Halls, South Of The A27 BN1 9GD	Major Dwellings	242 units	Approved	Link to planning
103	Brighton & Hove	41 And 42 Park Wall Farm Cottages Station Approach Falmer Brighton BN1 9SD	Major Other – Student Accommodation	71 units	Approved	Link to planning
104	Brighton & Hove	University Of Sussex Lewes Road Falmer Brighton BN1 9RH	Major Other – Student Accommodation	4,022 units	Approved	Link to planning
105	Brighton & Hove	East Slope Refectory Road University Of Sussex Brighton BN1 9RP	Major Other – Student Accommodation	249 units	Approved	Link to planning
106	Brighton & Hove	West Slope University Of Sussex Lewes Road Falmer Brighton BN1 9RH	Major Other – Student Accommodation	1,899 units	Approved	Link to planning
107	Surrey - Elmbridge	Land To The North Of Old Woking Road And East Of Station Approach West Byfleet Surrey	Consultation from Adjoining Authority – Residential Care Home	255 units	No Objection	Link to planning
108	Surrey - Elmbridge	Land At Wisley Airfield Hatch Lane Ockham GU23 6NU	Consultation from Adjoining Authority – Request for Scoping - Residential Development	2,100 units	No Objection	Link to planning
109	Surrey - Elmbridge	Church Gate (Nos.9-11 Church Street West) Premier House (Nos.15-19 Church Street West) Nos.28-37 Vale Farm Road (Incl.) And Play Area Vale Farm Road Woking Surrey GU21 6DJ	Consultation from Adjoining Authority – Residential Development	243 units	No Objection	Link to planning
110	Surrey - Elmbridge	Land To The North And South Of Goldsworth Road Woking Surrey GU21 6JT	Consultation from Adjoining Authority – Residential Development	929 units	No Objection	Link to planning
111	Surrey - Elmbridge	81 Commercial Way Woking Surrey GU21 6HN	Consultation from Adjoining Authority – Residential Development	310 units	No Objection	Link to planning

112	Surrey - Elmbridge	Crown Place Chertsey Road Woking Surrey GU21 5AJ	Consultation from Adjoining Authority – Residential Development	366 units	No Objection	Link to planning
113	Surrey - Elmbridge	St Georges Business Park Brooklands Road Weybridge Surrey KT13 0TS	Environmental Impact Assessment – Scoping – Residential Development	270 units	Not Available	Link to planning
114	Surrey - Elmbridge	Homebase New Zealand Avenue Walton-On-Thames Surrey KT12 1XA	Full Application – Residential Development	222 units	Granted on Appeal	Link to planning
115	Surrey - Elmbridge	Hillview Nursery Seven Hills Road Walton-On-Thames Surrey KT12 4DD	Full Application – Residential Development	64 units	Granted	Link to planning
116	Surrey - Elmbridge	Land at Merrileas Leatherhead Road Oxshott Surrey KT22 0EZ	Full Application – Residential Development	67 units	Granted	Link to planning
117	Surrey - Elmbridge	Crow Gables 131 Fairmile Lane Cobham Surrey KT11 2BU	Full Application – Residential Care Development	74 units	Granted	Link to planning
118	Surrey - Elmbridge	Site Of Stompond Lane Sports Ground Stompond Lane Walton-On-Thames Surrey KT12 1HF	Full Application – Residential Development	104 units	Granted	Link to planning
119	Surrey - Elmbridge	Claygate House Littleworth Road Esher Surrey KT10 9PN	Full Application – Residential Development	51 units	Granted	Link to planning
120	Surrey - Elmbridge	Claygate House Littleworth Road Esher Surrey KT10 9PN	Full Application – Residential Development	62 units	Granted	Link to planning
121	Surrey - Elmbridge	8-14 Oatlands Drive Weybridge Surrey KT13 9JL	Full Application – Residential Development	51 units	Granted on Appeal	Link to planning
122	Surrey - Elmbridge	Abbey House Wellington Way Weybridge Surrey KT13 0TT	Full Application – Residential Development	105 units	Awaiting decision	Link to planning
123	Surrey – Epsom & Ewell	Former Police Station Church Street Epsom Surrey KT17 4PS	Full Application – Care Home	100 units	Awaiting decision	Link to planning
124	Surrey – Epsom & Ewell	Development Site At 65 London Road Ewell Surrey KT17 2BL	Full Application – Care Home	70 units	Awaiting decision	Link to planning
125	Surrey – Epsom & Ewell	Woodcote Grove Ashley Road Epsom Surrey KT18 5BW	Full Application – Major Dwelling	98 units	Application Permitted	Link to planning
126	Surrey – Epsom & Ewell	Presto Haulage The Old Mill Old Malden Lane Worcester Park Surrey KT4 7QS	Full Application – Major Dwelling	80 units	Application Permitted	Link to planning

127	Surrey – Guildford	Orchard Farm, Harpers Road, Ash, Guildford, GU12 6DE	Full Application – Major Dwelling	51 units	Registered	Link to planning
128	Surrey – Guildford	Manor Farm, East Lane, West Horsley, Leatherhead, KT24 6HQ	Variation of conditions – Major Dwelling	132 units	Registered	Link to planning
129	Surrey – Guildford	Land at Foreman Road, Ash	Full Application – Major Dwelling	82 units	Registered	Link to planning
130	Surrey – Guildford	Land rear of Chicane and Quintons, Ockham Road North, East Horsley, KT24	Full Application – Major Dwelling	110 units	Awaiting decision	Link to planning
131	Surrey – Guildford	Land South and East of The Cathedral Church Of The Holy Spirit, Stag Hill, The Chase, Guildford, GU2 7UP	Full Application – Major Dwelling	124 units	Registered	Link to planning
132	Surrey – Guildford	Debenhams, Millbrook, Guildford, GU1 3UU	Full Application – Major Dwelling	210 units	Registered	Link to planning
133	Surrey – Guildford	Land at Manor Farm, The Street, Tongham, GU10 1DG	Full Application – Major Dwelling	254 units	Registered	Link to planning
134	Surrey – Guildford	Land at Garlicks Arch, Send Marsh/Burnt Common, Portsmouth Road, Send	Full Application – Major Dwelling	220 units	Approved	Link to planning
135	Surrey – Guildford	Clockbarn Nursery, Tannery Lane, Send, Woking, GU23 7EF	Full Application – Major Dwelling	75 units	Approved	Link to planning
136	Surrey – Guildford	Robertson Nursing Home, Priorsfield Road, Hurtmore, Godalming, GU7 2RF	Full Application – Care Home	52 units	Registered	Link to planning
137	Surrey – Guildford	Builders Merchant, Walnut Tree Close, Guildford, GU1 4UB	Full Application – Student Accommodation	70 units	Registered	Link to planning
138	Surrey – Guildford	Guildford Plaza (former Burymead House), Portsmouth Road, Guildford, GU2 4DH	Full Application – Major Dwelling	301 units	Approved	Link to planning
139	Surrey – Guildford	Weyside Urban Village (Slyfield regeneration Programme), Slyfield Green, Guildford, GU1	Hybrid Application – Other Major Development	1550 units	Approved	Link to planning
140	Surrey – Mole Valley	Aviva, Pixham Lane, Dorking, Surrey, RH4 1QA	Prior Notification – Residential Development	60 units	Prior Approval Granted	Link to planning
141	Surrey – Mole Valley	South House, 21-37, South Street, Dorking, Surrey, RH4 2JZ	Detailed Major Application - Residential Development	63 units	Unknown	Link to planning

142	Surrey – Mole Valley	Pickering House and Harmsworth House, Ridgeway Road, Dorking, Surrey, RH4 3AY	Detailed Major Application – Care Home	73 unit	Approved	Link to planning
143	Surrey – Mole Valley	Land south of Coles Lane, Ockley, Surrey, RH5 5HW	Outline Major Residential Development	60 units	Application under appeal	Link to planning
144	Surrey – Mole Valley	QETC Leatherhead Court, Woodlands Road, Leatherhead, Surrey, KT22 0BN	Non-Material amendments of previous Major Residential Development	76 units	Approved	Link to planning
145	Surrey – Mole Valley	Headley Court, Headley Road, Headley, Epsom, Surrey, KT18 6JN	Environmental Impact Assessment - Residential Development	100 units	EIA Not Required	Link to planning
146	Surrey – Reigate and Banstead	Hockley Industrial Centre Hooley Lane Redhill Surrey RH1 6ET	Full Application – Residential Development	68 units	Approved with Conditions	Link to planning
147	Surrey – Reigate and Banstead	Shrewsbury Court Independent Hospital Shrewsbury Road Redhill Surrey RH1 6YY	Full Application – Residential Health Care Development	72 units	Approved with Conditions	Link to planning
148	Surrey – Reigate and Banstead	Legal And General Kingswood House St Monicas Road Kingswood Surrey KT20 6EU	Full Application – Retirement Community	130 units	Approved with Conditions	Link to planning
149	Surrey – Reigate and Banstead	Quarryside Business Park Trowers Way Redhill Surrey RH1 2JL	Full Application – Residential Development	83 units	Approved with Conditions	Link to planning
150	Surrey – Reigate and Banstead	Land At Sandcross Lane Reigate Surrey RH2 8HH	Outline Planning – Residential Development	300 units	Registered	Link to planning
151	Surrey – Reigate and Banstead	Brook Road Garage Brook Road Redhill Surrey RH1 6DL	Outline Planning – Residential Development	57 units	Approved with Conditions	Link to planning
152	Surrey – Reigate and Banstead	Land Parcel Known As Hillsbrow Nutfield Road Redhill Surrey	EIA Screening Opinion – Residential Development	170 units	EIA not required	Link to planning
153	Surrey – Tandridge	Sports Ground, Shelton Avenue, Warlingham	EIA Screening - Residential Development	150 units	Not EIA development	Ref: 2021/1772/EIA *(Planning Application Link not copyable - link to planning portal)*
154	Surrey – Tandridge	Land West Of Grasslands, Cooper	Discharge of Conditions -	51 units	Approval of conditions	Ref: 2014/1809/Cond 6

		Close, Smallfield, RH6 9NT	Residential Development			*(Planning Application Link not copyable - link to planning portal)*
155	Surrey – Tandridge	Former Oxted Gasholder Site & Johnsdale Carpark, Station Road East, Oxted,	Approval of Conditions - Residential Development	111 units	Approval of details	Ref: 2018/729/Cond4 *(Planning Application Link not copyable - link to planning portal)*
156	Surrey - Waverley	WESTBROOK MILLS, BOROUGH ROAD, GODALMING,SURREY, GU7 2AZ	Full Application Major – Residential Development	99 units	Full Permission	Link to planning
157	Surrey - Waverley	ALFOLD GARDEN CENTRE, HORSHAM ROAD, ALFOLD, CRANLEIGH,SURREY, GU6 8JE	Outline application - Major - Residential Development	78 units	Pending Decision	Link to planning
158	Surrey - Waverley	LAND COORDINATES 504360 134890, HORSHAM ROAD, ALFOLD,SURREY,	Request For Screening Opinion – Residential Development	80 units	EIA not required	Link to planning
159	Surrey - Waverley	SURREY HILLS BROOK ROAD GODALMING GU8 5UA	Full Application – Major – Care Home	60 units	Pending	Link to planning
160	Surrey - Waverley	ANDREWS OF HINDHEAD LTD ANDREWS PORTSMOUTH ROAD HINDHEAD GU26 6AL	Full Application – Major – Care Home	74 units	Granted	Link to planning
161	Surrey - Waverley	MOLE COUNTRY STORES, BRIGHTON ROAD, GODALMING,SURREY, GU7 1NS	Full Application – Major – Assisted Living	52 units	Granted	Link to planning
162	Surrey - Waverley	LAND AT WEST CRANLEIGH NURSERIES & NORTH OF KNOWLE PARK BETWEEN KNOWLE LANE & ALFOLD ROAD CRANLEIGH	Full Application – Major with EIA – Residential Development	110 units	Pending	Link to planning
163	Surrey - Waverley	LAND CENTRED COORDINATES 489803 131978 MIDHURST ROAD HASLEMERE	Outline Major With EIA – Residential Development	73 units	Pending	Link to planning
164	Surrey - Waverley	LAND OPPOSITE MILFORD GOLF CLUB, STATION	Reserved Matters Major Follows Outline	190 units	Reserved Matters Approved	Link to planning

		LANE, MILFORD,SURREY,	Approval – Residential Development			
165	Surrey - Waverley	LAND SOUTH OF HIGH STREET BETWEEN ALFOLD ROAD AND, KNOWLE LANE,SURREY,	Reserved Matters Major with EIA Outline Approval – Residential Development	197 units	Reserved Matters Approved	Link to planning
166	Surrey - Waverley	LAND AT HURST FARM CHAPEL LANE GODALMING GU8 5HU	Request for Screening Opinion – Residential Development	220 units	Pending	Link to planning
167	Surrey - Woking	Land South Of Brookwood Lye Road Adjacent To Five Acres Brookwood Lye Road Brookwood Woking Surrey	Largescale Major Dwellings	128 units	Pending	Link to planning
168	Surrey - Woking	12-16, 25-31 Portugal Road And Lok N Store Marlborough Road Woking Surrey GU21 5JE	Largescale Major Dwellings	72 units	Permitted subject to a legal agreement	Link to planning
169	Surrey - Woking	Britannia Wharf Monument Road Woking Surrey GU21 5FS	Largescale Major Dwellings	52 units	Permitted subject to a legal agreement	Link to planning
170	Surrey - Woking	Broadoaks Parvis Road West Byfleet Surrey KT14 7AA	Largescale Major Other	115 units	Permitted subject to a legal agreement	Link to planning
171	Surrey - Woking	Wells Court Albert Drive Sheerwater Woking Surrey (Blocks 1 & 2)	Prior Approval – Residential Development	64 units	Approved	Link to planning
172	Surrey - Woking	Wells Court Albert Drive Sheerwater Woking Surrey	Prior Approval – Residential Development	94 units	Approved	Link to planning
173	Surrey - Woking	Elizabeth House And The Cornerstone Duke Street Woking Surrey GU21 5AS	Prior Approval – Residential Development	94 units	Approved	Link to planning
174	Greater London – Kingston-upon-Thames	187 Ewell Road Surbiton KT6 6AP	Major Dwelling	59 units	Pending	Link to planning
175	Greater London – Kingston-upon-Thames	1-5 King Edward Drive Chessington KT9 1DW	Major Other – Residential Care Home	76 units	Pending	Link to planning
176	Greater London – Kingston-	Newent House 10 Browns Road Surbiton KT5 8SP	Major Other – Residential Nursing Home	80 units	Granted	Link to planning

	upon-Thames					
177	Greater London – Sutton	St Nicholas House St Nicholas Road Sutton SM1 1EH	Major Dwelling	281 units	Pending	Link to planning
178	Greater London – Sutton	Former Victoria House 388 Malden Road Cheam Sutton SM3 8HY	Major Dwelling	74 units	Pending	Link to planning
179	Greater London – Sutton	8-25 Beech Tree Place And 29-35 West Street Sutton	Major Dwelling	92 units	Granted	Link to planning
180	Greater London – Sutton	R/o Times Square Shopping Centre High Street Sutton SM1 1LF	Major Dwelling	113 units	Pending	Link to planning
181	Greater London – Sutton	Haredon House 810 London Road North Cheam Sutton SM3 9BJ	Major Dwelling	50 units	Pending	Link to planning
182	Greater London – Sutton	Sutton Park House 15 Carshalton Road Sutton SM1 4LD	Major Dwelling	149 units	Granted	Link to planning
183	Greater London – Sutton	Woodcote Grove House Woodcote Grove Coulsdon CR5 2XL	Major Other - Residential	80 units	Pending	Link to planning
184	Greater London – Sutton	B And Q Plc Sutton Court Road Sutton SM1 4RQ	EIA Scoping Request – Residential Development	1050 units	Response Issued	Link to planning
185	Greater London – Croydon	70B Stafford Road Croydon CR0 4NE	Largescale Dwellings - Outline Application	58 units	Awaiting Decision	Link to planning
186	Greater London – Croydon	443A Brighton Road South Croydon CR2 6EU	Largescale Dwellings – Variation to conditions	79 units	Awaiting Decision	Link to planning
187	Greater London – Croydon	Land Rear Of 13 To 73 Stafford Road Duppas Hill Road Croydon	Largescale Dwellings – Full Planning	140 units	Awaiting Decision	Link to planning
188	Greater London – Croydon	Wyvale Garden Centre 89 Waddon Way Croydon CR0 4HY	Largescale Dwellings – Full Planning	180 units	Awaiting Decision	Link to planning
189	Greater London – Croydon	121 Canterbury Road Croydon CR0 3HH	Largescale Dwellings – Full Planning	95 units	Granted	Link to planning
190	Greater London – Croydon	Land Adjacent To Croydon College College Road Croydon, CR0 1PF	Largescale Dwellings – Full Planning	937 units	Granted	Link to planning
191	Greater London – Croydon	11 - 21 Banstead Road Purley CR8 3EB	Largescale Dwellings – Full Planning	67 units	Granted	Link to planning
192	Greater London – Croydon	Development Site Former Site Of 17 - 21	Largescale Dwellings – Full Planning	199 units	Awaiting Decision	Link to planning

		Dingwall Road Croydon CR0 2NA				
193	Greater London – Croydon	Morris House 2 Bensham Lane Croydon CR0 2RQ	Largescale Dwellings – Full Planning	60 units	Granted	Link to planning
194	Greater London – Croydon	922 - 930 Purley Way Purley CR8 2JL	Largescale Dwellings – Full Planning	155 units	Granted	Link to planning
195	Greater London – Croydon	Former Site Of Taberner House Park Lane Croydon CR9 3JS	Largescale Dwellings – Variation	514 units	Approved	Link to planning
196	Greater London – Croydon	126-132 Pampisford Road Purley CR8 2NH	Largescale Dwellings – Full Planning	66 units	Granted	Link to planning
197	Greater London – Croydon	29-35 Russell Hill Road Purley CR8 2LF	Largescale Dwellings – Full Planning	106 units	Granted	Link to planning
198	Greater London – Bromley	The Walnuts Shopping Centre High Street Orpington	Outline Application – Residential Development	990 units	EIA Issued	Link to planning