Introduction of RNP AR Procedures at EGLC

Gateway Documentation:
Stage 2 Develop and Assess
ACP-2025-003

EGLC RNP AR ST2 Develop and Assess Issue 1.1

Table of Contents

Change History

Issue	Month/Year	Changes this issue (most recent first)
Issue 1.1	Aug/2025	Expansion of the evidence gaps list included in section 8.2 to include all Stage 3 requirements, including details on the methodology and metrics. A copy of the evidence gaps list is added to the IOA, see section 5.9. A reference for LCY Noise Action Plan 2024-2028 is added to footnotes 53 and 55. Modelling assumptions using the ACERT tool are added to section 16.2. Further clarification of traffic forecasting assumptions are added to Appendix E, sections 13.2.2 and 13.2.3.
Issue 1	Aug/2025	n/a

Referenced Documents

Ref No	Name and description	Links
1.	CAP1616 Edition 5	Link
2.	Statement of Need	Link
3.	Introduction of RNP AR Procedures at EGLC Airspace Change Portal Page	Link
4.	CAP1616i: Environmental Assessment Requirements and Guidance for Airspace Change Proposals, 2023	Link
5.	Assessment Meeting Minutes	Link
6.	Stage 1 Define	Link
7.	UK Aeronautical Information Publication, July 2025	Link
8.	CAA Publication: Steep Approach Approval Compliance Statement and Checklist	Link
9.	London Airspace Management Programme (LAMP) Deployment 2 airspace change portal page	Link
10.	LCY Stage 2 Engagement Workshops Slides	Link
11.	London City Airport Annual Performance Report 2024	Link
12.	London City Airport Annual Performance Report 2024, Annexes	Link
13.	CADP1 S73 Application Environmental Statement	Link
14.	UK Government Air Quality Statistics	Link
15.	CADP1 Air Quality Management Strategy	Link
16.	Above and Beyond: Our roadmap to a sustainable future	Link
17.	CAP1616f: Guidance on Airspace Change Process for Permanent Airspace Change Proposals, 2023	Link
18.	Stage 1 Timeline Agreement	Link
19.	CAP1498 Definition of Overflight, Edition 2	Link
20.	CAA Policy on Minimum Standards for Noise Modelling	Link
21.	ICAO Aircraft Engine Emissions Databank	Link
22.	Datasheets (06/2025)	Link
23.	Airspace Modernisation Strategy 2030-2040 Part 1: Strategic objectives and enablers, CAP1711, 2024	Link
24.	Airport Surface Access Strategy 2017-2025	Link
25.	Air Navigation Guidance 2017	Link

1. Introduction

1.1 Background

1.1.1 This document forms part of the documentation required under the CAA's (Civil Aviation Authority) CAP1616 Airspace Change Process [Ref 1], specifically Stage 2 Develop and Assess.

1.1.2 The purpose of this document is to describe London City Airport's (EGLC/ LCY) longlist of design options that address the Statement of Need [Ref 2] and align with the Design Principles.

1.1.3 It will also describe the engagement undertaken with stakeholders, summarising the feedback from the engagement activities, and describing how stakeholder feedback has been incorporated into the development work.

1.1.4 Additionally, it provides the Design Principle Evaluation (DPE); this is a qualitative assessment, of each design option against each of the Design Principles, which progresses those design options which fit best and (where appropriate) discounts those which fit least.

1.1.5 For the remaining viable design options, an Initial Options Appraisal compares the potential impacts of each design option against the baseline ('do nothing') scenario, resulting in a shortlist of options to progress to Stage 3 for further development.

1.2 Statement of Need

1.2.1 A Statement of Need (SoN) [Ref 2] is submitted to the CAA by a change sponsor to set out the reason for an airspace change, such as what airspace issue or opportunity it is seeking to address. LCY submitted a Statement of Need to the CAA in January 2025, which initiated this Airspace Change Proposal (ACP).

The objectives of this airspace change proposal raised in the SoN are summarised below. The full document is published on the CAA's Airspace Change Portal [Ref 3].

> The introduction of RNP AR (GNSS) based procedures to London City Airport (EGLC) Runway 27 and Runway 09, using existing tracks over the ground and non-standard approach angles to facilitate the operation of cleaner, quieter, new generation aircraft at the airport. This will be achieved while preserving the existing ground-based instrument approach procedures and approach angles used by the current fleet.
>
> The proposal seeks to address the opportunity of introducing cleaner, quieter, new generation aircraft at London City Airport (EGLC) by implementing RNP AR procedures with non-standard approach angles rather than through aircraft steep-approach certification. This would deliver complimentary benefits, in advance of changes under the wider FASI airspace change programme, by modernising approach procedures to address airspace demand and secure the most efficient use of airspace, whilst maintaining existing movement limits and complying with noise and operational restrictions in the surrounding urban area. New RNP AR procedures will improve access to a wider range of modern aircraft ensuring the expeditious flow of traffic in a safe and sustainable way, in line with the strategic objectives of the Airspace Modernisation Strategy. Similarly, the additional navigational accuracy, integrity, and functional capabilities offered by RNP AR are likely to offer significant operational

advantages in the constrained obstacle environment at EGLC whilst preserving or improving safety of operation. Environmentally, the proposal aims to limit and, where possible, reduce the number of people significantly affected by adverse impacts from aircraft noise by introducing quieter aircraft on existing tracks over the ground, The proposal also seeks to balance economic benefits with the need to maximise use of the airport's existing and future infrastructure while preserving ground-based approach procedures for the current fleet.

The current airspace design at London City Airport (EGLC) is characterised by steep approach and departure procedures due to its urban location and proximity to restricted airspace. Aircraft currently operate under a 5.5-degree glideslope, significantly steeper than the standard 3-degree approaches at most airports, due to the rich obstacle environment and tall buildings particularly to the west of the airport. Ground-based navigation aids, such as the Instrument Landing System (ILS), guide aircraft along predefined routes for arrivals and departures. The airport operates within Class D controlled airspace, with close coordination required between London City and surrounding airports to manage traffic flows and ensure separation. These procedures are tailored to accommodate the current fleet mix, the ground-based navigation aids and the specific operational constraints of EGLC.

The current air traffic at London City Airport (EGLC) consists of both commercial and private operators handling predominantly domestic and short-haul European flights. Our current baseline assumptions would see 49,000 ATMs in 2026 growing to 79,000ATMs by 2035. The split between arrival and departure traffic is broadly 50/50%. Introducing RNP AR procedures would enable EGLC to make the best use of its existing runway, enhancing the airport's throughput and operational efficiency by accommodating a new generation of quieter, more efficient aircraft, all while staying within the existing movement and passenger limits and complying with noise and operational restrictions in the surrounding urban area.

1.3 Airspace Change Proposal Categorisation Level

1.3.1 The CAA categorises ACPs by assigning them a 'level' which influences the process that is required to be followed. ACP levels are defined within the CAP1616 [Ref 1], and are primarily based on the altitude and area in which the changes occur.

1.3.2 It should be noted that the scaling level of an ACP is only confirmed at the end of Stage 2, however LCY are aware that this airspace change, which seeks to modernise arrival procedures by introducing RNP AR (Required Navigation Performance Authorisation Required) approaches, could have an impact on aircraft tracks below 7,000ft and understands that by the definitions in the CAP1616 this change is expected to be categorised as a Level 1 ACP.

1.3.3 During Stage 3, LCY intends to:

- Further develop the qualitative assessments provided in Stage 2, providing quantification where possible.
- Provide quantification of noise, air quality, CO_2e [1] and fuel burn
- Provide monetisation of the impacts, including a cost benefit analysis

[1] This is a standard unit for measuring the impacts of different greenhouse gases by converting them to the equivalent amount of carbon dioxide.

• Provide additional analysis and noise metrics that may aid stakeholders' understanding of the change in noise impacts.
• Proactively engage with impacted stakeholders on the identified impacts, including; local communities; London Boroughs; local businesses and property developers.
• Provide public consultation on this airspace change proposal.

1.4 Scope of this airspace change proposal, the Stage 2 option design and impact assessment work, and engagement activities

Potentially affected area

1.4.1 For our Stage 1 and Stage 2 engagement activities, LCY Subject Matter Experts (SMEs) have qualitatively assessed which areas are most likely to be impacted, as a result of this airspace change proposal, in order to determine our stakeholder list.

1.4.2 We consider that those stakeholders most likely to be impacted are those proximate to the new RNP AR arrival flight paths, described in section 1.4.8, and have defined the 'potentially affected area' for this airspace change, (published on the CAA's Airspace Change Portal), accordingly.

1.4.3 We currently do not expect adverse impacts relating to departures, and this is discussed further in sections 1.4.19 to 1.4.25 below.

1.4.4 LCY understands that noise issues are a primary concern for the local community.

1.4.5 Following refinement of the preferred design option/s in Stage 3 of the CAP1616 process, detailed noise modelling will take place in accordance with CAP1616i [Ref 4], which considers all aircraft movements below 7,000ft, and includes (amongst other metrics) measures for average sound levels, the frequency of significant noise events, and the size of the population exposed to aircraft flying overhead; this will provide a greater understanding of any positive or negative noise impacts resulting from this change.

1.4.6 Subsequently, in Stage 3, the overall change in impacts will be reviewed. Should any significant changes in impacts be identified, we will update our stakeholder list accordingly. Affected stakeholder groups will be contacted to ensure that they are aware of this airspace change proposal prior to public consultation and included in any discussions on proposed mitigation strategies as appropriate.

Arrival Flights

1.4.7 The design of new RNP AR approaches for this airspace change proposal is based on, and seeks to provide minimal lateral change from, the current LCY arrival profiles, (see section 2.2 Design Considerations, for a detailed discussion of the constraints and assumptions for the Stage 2 design work). All pre-existing arrival procedures at LCY will remain as today.

1.4.8 The difference in flight paths between aircraft flying the proposed new RNP AR approach procedure versus the existing approach procedure, takes place in the final stages of the approach, specifically:

1) The point at which aircraft begin their final descent (and consequently a shallower angle of approach) for landing. Depending on which runway is being used, this distance is approximately 3NM/6km (for Runway 09) and 5NM/9km (for Runway 27) from the end of the runway.
2) How aircraft commence the turns on the approach to position themselves and line up with the centreline of the runway. For Runway 27 the approach does not require aircraft to turn (the flight path is a straight line). However, arrivals to

Runway 09 turn twice, at approximately 10NM/ 18km and 7NM/13km from the end of the runway.

1.4.9 The work completed in Stage 2 has focussed on designing viable options for the new RNP AR approach procedures, engaging with our key stakeholders (as identified in Stage 1) which specifically includes those groups most likely to be impacted by arrivals following the new RNP AR approach procedures, and conducting a qualitative assessment of the impacts of introducing RNP AR procedures at LCY.

Fleet mix changes and noise

1.4.10 The introduction of new RNP AR approaches at LCY will increase accessibility for a wider range of modern, environmentally efficient aircraft, including larger aircraft (with greater passenger capacity) than those currently operating at the airport.

1.4.11 During our Stage 1 and Stage 2 engagement activities, community stakeholders expressed concern with the potential changes in noise impacts resulting from these fleet mix changes and, specifically, that having larger aircraft will result in adverse noise impacts. In addition, there has been challenge to the use of the term 'quieter' with respect to these larger aircraft types.

1.4.12 It recognised that heavier aircraft, which can carry more passengers, produce more noise than lighter aircraft types. However, use of this terminology reflects the airport's understanding (and that of the wider aviation industry) that the newest generation aircraft, through improvements in both engine and airframe technologies, have the ability to operate more efficiently and are quieter than their older counterparts.

1.4.13 International Civil Aviation Organisation (ICAO) noise standards [2] are designed to ensure that aircraft noise levels are reduced, particularly in those areas that surround airports, and modern aircraft such as the A320neo (see section 2.2.2) fall under stricter noise standards than the Embraer E190 (which is the most common current generation aircraft operating at LCY and which makes up an average 73.0% of all flights).

1.4.14 It is also worth noting that under current permissions, the introduction of new aircraft types at LCY requires approval under the Aircraft Noise Categorisation Scheme (ANCS), which ensures that only aircraft that meet strict noise thresholds are able to operate. The continued application of this scheme ensures that only permissible aircraft operate at LCY, and remains unchanged by this airspace change. The approval process for which aircraft may/ may not operate at LCY lies outside the CAP1616 airspace change process.

1.4.15 Any reduction in the approach angle at LCY would not be envisioned without the advancements in aircraft technologies and performance that have been progressed in the aviation industry over the past decade, including noise reduction. As such, we believe that any fleet mix changes resulting from this airspace change proposal could be introduced without significant adverse noise impacts.

Noise modelling

1.4.16 A preliminary noise study, see Appendix B, has been conducted to investigate the potential difference in noise levels for larger aircraft operating on a shallower

[2] ICAO Annex 16 Vol 1 noise standards are designed to ensure that aircraft noise levels are reduced, particularly in those areas that surround airports, and are organised into chapters, with each chapter representing a stricter noise level. [More information can be found here].

approach angle at LCY. The difference in noise levels for larger departure aircraft at LCY is also included.

1.4.17 It should be noted that this noise comparison data is provided for illustrative purposes only, and is used (at this early stage of the design work) to inform the qualitative assessment of noise impacts for this airspace change.

1.4.18 A more detailed quantitative assessment of aircraft noise levels will be provided at Stage 3 (Consult) of the CAP1616 process as we progress the preferred design options through more detailed modelling.

Departure Flights

1.4.19 All pre-existing departure procedures at LCY will remain as today.

1.4.20 However, new aircraft types may land using the proposed RNP AR approach procedures and would then follow the current (unchanging) procedures on departure.

1.4.21 During our Stage 2 engagement activities, stakeholders have asked what the impact of the fleet mix change will be, when considering LCY departures.

1.4.22 At this stage of our impact assessment work, we do not anticipate there will be an increase in the total adverse effects from aircraft noise due to the fleet mix changes associated with departure aircraft.

1.4.23 A preliminary noise study has been conducted, see Appendix B, which observes that the negative difference in departure noise, for the largest aircraft associated with this fleet mix change (the Airbus A320neo, see section 2.2.5) when compared to the aircraft that currently operate at LCY, is wholly below the threshold of perceptible change in noise (3dB [3, 4]).

1.4.24 LCY is anticipating an increase in air traffic over a 10-year period, (see section 3.2 for the baseline scenario traffic forecast). However, this airspace change proposal enables LCY to increase its passenger capacity with fewer air traffic movements; a potential 23.7% reduction in annual air traffic growth by 9 million passengers per annum (when compared to the baseline scenario) is predicted with this airspace change proposal (see section 3.3 for the traffic forecast associated with this airspace change). We anticipate this reduction in traffic growth compared with the baseline scenario could contribute positively towards a reduction in noise impacts associated with larger aircraft (from the fleet mix changes) flying the (extant) departure profiles.

Note on biodiversity impacts

1.4.25 The RNP AR flight paths within this airspace change proposal are consistent with where aircraft currently fly today and, as such, the sites for biodiversity that are currently overflown will remain the same. No new sites are overflown.

1.4.26 However, this airspace change proposal predicts a reduction in air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), which may provide benefit by reducing the number of aircraft over-flying these locations

1.4.27 Additionally, the area impacted by aircraft overflying a region reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). Therefore, although

[3] A 3dB change in noise level is just perceptible by an average human being in controlled conditions and 5dB corresponds to the perceptible variation in everyday background level (Bies and Hansen (2009), and Bell and Bell (1994), respectively). 3dB is commonly described as a 'Barely Perceptible Change' and 5dB as a 'Clearly Noticeable Change'.

[4] This noise data is used for illustrative purposes only, detailed noise modelling will be conducted at Stage 3.

the sites that are currently overflown will remain the same, the area overflown (by aircraft on the RNP AR procedure) may be reduced.

1.4.28 The fleet mix changes (due to aircraft types with greater passenger capacity) and altitude changes (from a shallower angle of approach) associated with this airspace change proposal are not anticipated to significantly impact biodiversity, as we anticipate this airspace change proposal could be introduced without significant adverse noise impacts.

1.4.29 No new airport infrastructure requirements are associated with this airspace change proposal; as such there are no biodiversity impacts from airport infrastructure development.

1.4.30 The flight paths and altitudes that are flown over European sites will remain unchanged from today, and we consider the reduction in air traffic growth, compared with the baseline scenario, would provide benefit by reducing the number of aircraft over-flying these sites, see the Habitats Regulations Assessment early screening form in section 7.

Note on property development impacts

1.4.31 During our Stage 1 engagement activities, the London Boroughs, local businesses and property development stakeholders expressed concern with impacts on the development potential of sites proximate to the proposed RNP AR flight paths.

1.4.32 LCY has numerous airspace 'protection' areas to ensure safe airport operations, some of which restrict property development close to the airport in order to ensure that aircraft have sufficient obstacle-free airspace.

1.4.33 Whilst some variation to these protection areas is anticipated, the design options and evaluations presented herein endeavour to ensure minimal impact on the development potential of any existing developments, known planned developments, and known land allocations.

1.4.34 It should be noted however, that at this stage of the design work, full procedure design is not complete; any protection areas associated with the proposed RNP AR procedures are understood at a high level only.

1.4.35 Following the detailed procedure design work at Stage 3, full assessment of the impacts on property/land development can be undertaken. Should any impacts be identified, then the relevant stakeholders will be contacted to ensure that they are aware of this airspace change proposal prior to public consultation and included in any discussions on proposed mitigation strategies as appropriate.

Contingency Procedures

1.4.36 This airspace change proposal will cover the corresponding contingency procedures including missed approaches and radio fail procedures for RNP aircraft (these are manoeuvres to be executed when the aircraft approach to landing cannot be safely continued).

1.4.37 The design package for these procedures requires detailed work, specifically around aircraft speeds and turn radii, and will be progressed in the later stages of the CAP1616 process, including (as required) any flyability assessments with airline operators or manufacturers, and safety assessment work (such as Hazard Identification for abnormal scenarios i.e. deviations from normal operating conditions).

1.4.38 The design of contingency procedures for RNP AR will be based on current procedures, and any variations are likely to be minor in nature and concern the flyability aspects of the procedure.

1.4.39 Approximately 0.3%[5] of flights undertake a missed approach at LCY annually. Current missed approach procedures associated with the arrivals on the ILS will continue as today; the new RNP contingency procedures will support arrivals on the proposed RNP AR approach only.

1.4.40 It should be noted that in missed approach scenarios, the full published procedure is not anticipated to be flown; ATC issue instructions including vectors (turning guidance) into a holding pattern or provide sequencing to the runway/alternative destination, depending on the individual circumstances of the missed approach.

1.4.41 Due to the low volume of traffic subject to these procedures, the specialised nature of the design, and the variability of actual flown profiles, contingency procedures have not been included in the Stage 2 development of design options and engagement. Contingency procedures will be provided in Stage 3 to integrate consistently with extant LCY procedures and will be impact assessed as part of the Stage 3 safety work. Should there be any impact, specifically with other aviation stakeholders, then the relevant stakeholders will be informed and engaged with at this stage.

1.5 Design Principles

1.5.1 Following CAA acceptance of the SoN and the subsequent assessment meeting [Ref 5], LCY engaged representative stakeholder groups on the creation of a set of Design Principles (DPs) and their priorities.

1.5.2 Detail on the engagement activities, feedback received and how this influenced the final set of DPs can be found in the Stage 1 Define document [Ref 6]. A summary of the final DPs is provided in Table 1 below.

1.5.3 For Stage 1, LCY submitted the final DPs alongside evidence of engagement to the CAA, which was approved in May 2025.

Table 1: Final Design Principles resulting from the Stage 1 engagement process.

Design Principles	Category	Description	Priority	Notes
M_DP01	Safety	The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.	High	The CAA have stated that this DP is required by all change sponsors.
M_DP02	Policy	The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.	High	The CAA have stated that this DP is required by all change sponsors. The CAA's published Airspace Modernisation Strategy (CAP1711) describes what airspace modernisation must deliver including: • the need to increase aviation capacity • growth to be sustainable • the need to maximise the utilisation of existing runway capacity.
M_DP03	Environment	The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the	High	The CAA have stated that this DP is required by all change sponsors. The Government's Air Navigation Guidance 2017 provides guidance on airspace and noise management including:

[5] May 2024 – April 2025, 12-month period of missed approach data from LCY Airport Operational Database, which provides a centralised information source for all flight-related data.

		Government's Air Navigation Guidance 2017.		• limiting and, where possible, reducing the number of people in the UK significantly affected by adverse impacts from aircraft noise • ensuring that the aviation sector makes a significant and cost-effective contribution towards reducing global emissions • minimising local air quality emissions and ensuring that the UK complies with its international obligations on air quality.
B_DP04	Local context and circumstances	The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.	High	The CADP permission (including its subsequent amendments) provides the airport with the consent to develop the physical infrastructure required to handle 9million passengers per annum and 111,000 air traffic movements. The permission is conditional upon a range of other operational and environment controls including, but not limited to, the number of aircraft stands, the number of aircraft movements per hours, the times in which aircraft can land and depart, noise management, air quality monitoring, and surface access, amongst others.
D_DP05	Performance based navigation	The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.	High	The intent of this design principle is the provision of a design that supports the introduction of RNP AR approaches, addressing the environmental challenges at London City Airport, whilst effectively managing standard arrival operations on precision ILS (instrument landing system) approaches.
D_DP06	Local context and circumstances	The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.	High	The intent of this design principle is to consider where local impacts may be greatest.
D_DP07	Noise	The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.	High	By seeking to introduce quieter aircraft and minimise changes to existing tracks over the ground. Modern aircraft are quieter and therefore can be lower with less noise impact.
B_DP08	Economics	The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.	Medium	

D_DP09	Noise	Where options for route design for the airspace change proposal 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.	Medium	By seeking to minimise changes to existing tracks over the ground
B_DP10	Environment	The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.	Medium	By removing the current steep approach certifications associated with operating on a 5.5° glideslope.
D_DP11	Other aviation stakeholders	The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.	Low	The intent of this design principle is to ensure that wider impacts on the aviation community are included for consideration; however, a change to airport procedures such as this, which is so close to the final approach, is not anticipated to have ramifications on other airport operators etc. and therefore is considered a low priority.

2. Design Option Development

2.1 Background

2.1.1 During Stage 2, a user-centred design process has been used to develop a longlist of design options based on the Statement of Need and Design Principles, as discussed above.

2.1.2 This process uses first-hand knowledge provided through SMEs, in this case ATC (air traffic controllers) and airspace procedure design experts, to develop options which are theoretically viable within the constraints and demands of the airspace and, additionally, safe and viable for aircraft operations.

2.1.3 We have not attempted to list every possible solution which could be proposed if starting without any assumptions or constraints (see sections 2.2 and 2.3); only those options which are considered viable are presented here.

2.2 Design Constraints

2.2.1 The following section provides the design constraints to demonstrate the complexity of design considerations used for the development of viable design options; this list is not considered exhaustive.

Concept

2.2.2 The runway length at LCY, along with the steep approach angle, restricts the type of aircraft that can currently operate at the airport.

2.2.3 At Stage 1, preliminary discussions for RNP AR procedures at LCY considered the use of the A320neo aircraft type.

2.2.4 The A320neo provides the environmental benefits of newer generation aircraft, in addition to the ability to support a higher passenger capacity, whilst still being

able to operate on the short LCY runway (which measures 1,508m/ 4,948ft for Runway 27 (RWY27) and 1494m/ 4,902ft for Runway 09 (RWY09)) [6].

2.2.5 The A320neo, however, is unable to fly the current 5.5° steep approach procedure. As such, LCY are proposing this airspace change to support the A320neo as the preliminary user of the new RNP AR approach procedure which would allow it to operate on a shallower approach angle. The existing ground-based instrument approach procedures and approach angles will be maintained for use by the current fleet.

2.2.6 The A320neo has a higher passenger capacity than any aircraft currently operating at LCY, which could lead to a reduction in the number of air traffic movements per year.

2.2.7 In addition, the larger passenger capacity and increased fuel efficiency of the A320neo means that airlines have the potential for greater yields and passenger volumes.

2.2.8 For passengers, there is potentially a greater choice of airlines and destinations, and the opportunity for lower seat prices.

2.2.9 For European airlines, there is currently a wide pool of A320neo aircraft in the system and large numbers on order [7]. As such, the RNP AR procedure would allow greater flexibility for existing LCY airlines and potentially provide the opportunity for new airlines to operate from the airport.

2.2.10 Stakeholder feedback from Stage 1 [Ref 6] requested for the new RNP AR approaches to be available for use by other aircraft types and, as such, the design options presented herein are not aircraft-type specific, see sections 2.2.25 and 2.2.28.

2.2.11 It should be noted however, any reduction of the LCY approach angle must achieve safe obstacle clearance in addition to ensuring the airport's noise level limits can still be adhered to. As such, both the enhanced RNP AR navigational capability as well as the ability to minimise impacts on the airport's noise footprint, is a pre-requisite for aircraft on the shallower approach.

2.2.12 For this airspace change proposal the aircraft performance capabilities of the A320neo will be used as a benchmark to develop LCY RNP AR procedures (e.g. bank angle - the angle at which an aircraft is tilted in the turn), and the A320neo is anticipated to be the preliminary user for this procedure.

2.2.13 Use of the RNP AR procedure by other aircraft types is subject to flight testing, assurance/validation, and compliance with regulatory and environmental requirements as appropriate; requests to fly the procedure will be assessed by the airport on a case-by-case basis.

2.2.14 LCY may undertake additional work in the future to investigate use of the procedure by other aircraft types, however this is outside the scope of this ACP.

2.2.15 It should be noted that the introduction of new aircraft types at LCY currently requires approval under the Aircraft Noise Categorisation Scheme (ANCS), which ensures that only aircraft that meet strict noise thresholds are able to operate. The continued application of this scheme ensures that only permissible aircraft operate at LCY, and remains unchanged by this airspace change proposal.

[6] This is the declared 'Landing Distance Available' (LDA), which is the length of the runway declared available and suitable for the ground run of an aircraft landing. The 'Take Off Run Available' (TORA) length is 1199m for both runway directions and is the maximum permitted under the airport's planning permission.

[7] Cirium Aviation Analytics, Fleet Forecast data, 2024.

Airspace

2.2.16 The lateral and vertical limits of this airspace change are contained within London Terminal Airspace and include several existing airspace structures which restrict the design options that can be considered. These airspace structures are detailed in the UK Aeronautical Publication (AIP) AD2.24 EGLC-4-1 airspace charts [Ref 7], and reproduced in the list below and in Figure 1.

- London/City Control Zone (CTR) (SFC-2,500ft, Class D)
- London/City Control Area (CTA) (1,500ft – 2,500ft, Class D)
- London/City Aerodrome Traffic Zone (ATZ) (SFC-2,000ft, Class D)
- London Control Zone (CTR) (SFC-2,500ft, Class D)
- London Terminal Manoeuvring Area (TMA) TMA 1 (2,500ft – FL195, Class A), London TMA 3 (3,500ft-FL195, Class A)
- Southend CTA 1 (1,500ft-3,500ft, Class D), Southend CTA 4 (2,500ft-3,500ft, Class D),
- London Heliport ATZ (SFC-2,000ft, Class D)
- Restricted Areas: EGR107 Belmarsh (SFC-2,000ft), EGR160 The Specified Area (SFC-FL999), EGR157 Hyde Park (SFC-1,400ft), EGR158 City of London (SFC-1,400ft), EGR159 Isle of Dogs (SFC-1,400ft)
- Runway Protection Zone (RPZ): London City RWY27 (SFC-2,000ft), London City RWY09 (SFC-2,000ft)
- Flight Restriction Zone (FRZ): EGRU151 HMP Belmarsh/Thameside/ISIS (SFC-500ft), EGRU168 HMP Pentonville (SFC-600ft), EGRU153 HMP Brixton (SFC-600ft), EGRU175 HMP Wandsworth (SFC-600ft), EGRU177 HMP Wormwood Scrubs (SFC-500ft). In addition EGRU135A London City (SFC-2,000ft) and EGRU134A London Heliport (SFC-2,000ft), which have not been illustrated in Figure 1, as these volumes of airspace are coincident (vertically and laterally) with the London/City ATZ and the London Heliport ATZ which they lie over.

2.2.17 All of the LCY design options are contained within existing controlled airspace to ensure that aircraft remain within existing designated airspace boundaries.

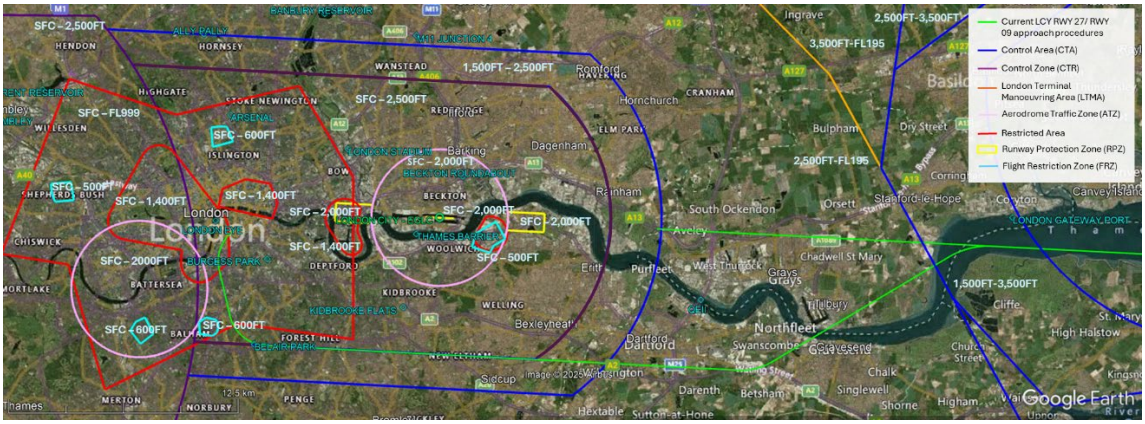


Figure 1: Existing airspace structures proximate to the LCY RWY09 and RWY27 approach paths. [Google Earth, 2025].

Route structure and traffic flows

2.2.18 LCY is within a complex region of UK airspace, the London Terminal Manoeuvring Area (LTMA). There are many interacting flight paths to and from all the London airports, and it is an area of high air traffic control complexity, with many interdependencies between inbound and outbound procedures to deconflict traffic.

2.2.19 The key conflicting traffic flows below 7,000ft are illustrated in Figure 2 and include:

- London City Airport departures

- London Heathrow arrivals to RWY27 Left (the southern runway) and RWY27 Right (the northern runway)
- London Gatwick departures to the northeast
- London Stansted departures to the southeast
- Biggin Hill airport arrivals

Figure 2: Existing routes/traffic flows proximate to the LCY RWY09 and RWY27 approach paths. [Google Earth, 2025].

2.2.20 All LCY design options provide the required separation minima (the minimum distances, both vertical and horizontal, that must be maintained between aircraft to prevent collisions and ensure safe air traffic operations) against existing procedures for the other London airports.

2.2.21 The Top of Descent (ToD - the calculated point at which aircraft begin their descent) for the final approach is, as today, at a vertical altitude of 2,000ft (for RWY09) and 3,000ft (for RWY27), to maintain safe separation from conflicting traffic (flying above) and to ensure adequate safety margins for aircraft, as they make their descent, against the surrounding buildings beneath the flight path.

2.2.22 Helicopter routes within the London and London City CTRs facilitate the safe navigation of helicopters through the busy London airspace. These routes are pre-determined, often following the River Thames and other landmarks, and require pilots to maintain specific altitudes and communicate with air traffic control. Helicopter Route 4 (H4) lies to the west of LCY; it is detailed in the UK Aeronautical Publication (AIP) [Ref 7] chart AD 2-EGLL-3-2 and reproduced in Figure 3. Some of the LCY design options may impact H4; these design options have been identified and are discussed further in section 3.3.

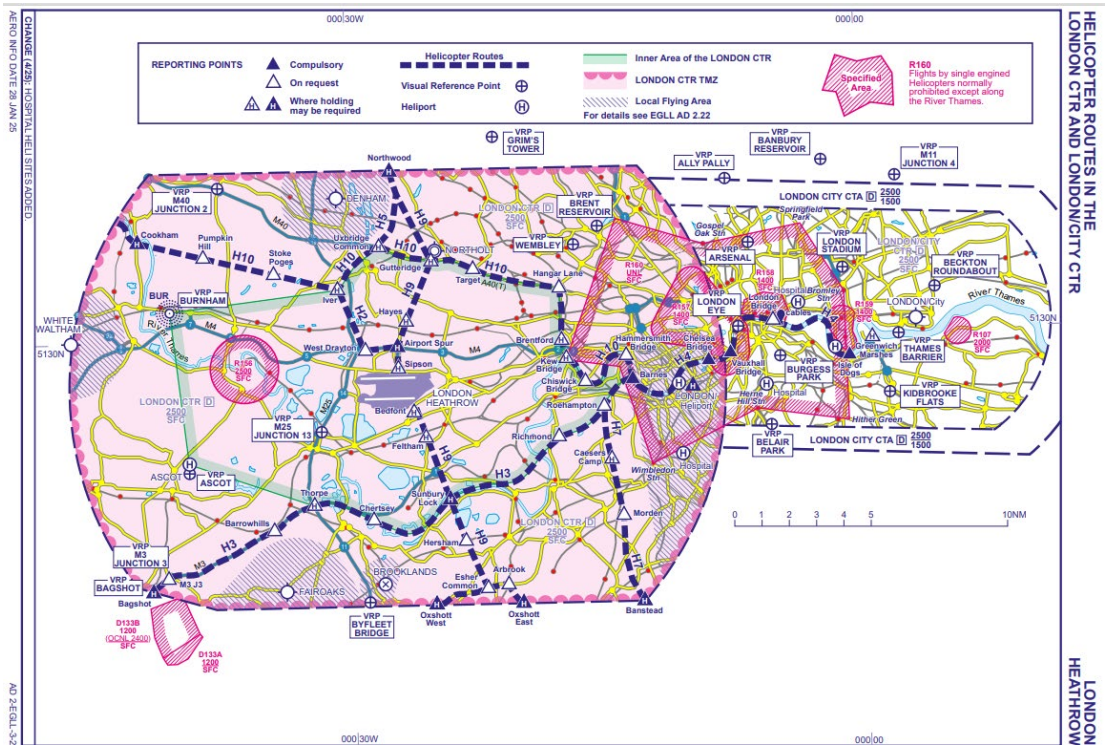


Figure 3: Helicopter routes in the London CTR & the London City CTR. [UK AIP, June 2025].

Aircraft capabilities and procedure design

2.2.23 Instrument Approach Procedures (IAPs - a series of pre-determined manoeuvres, using flight instruments, to guide an aircraft from the beginning of the approach to landing/a point where a visual landing can be completed) are classified into aircraft approach categories (CAT A, CAT B, CAT C, etc.) based on aircraft speed at the threshold of the runway (i.e. just before it lands). This then helps determine the minimum required visibility, approach angles, and obstacle clearance for safety.

2.2.24 Current LCY IAPs support three approach categories of aircraft - CAT A, B and C:

- Category A: Less than 91 knots (169 km/h)
- Category B: 91 knots (169 km/h) or more but less than 121 knots (224 km/h)
- Category C: 121 knots (224 km/h) or more but less than 141 knots (261 km/h)

2.2.25 The A320neo aircraft type is in approach category CAT C. Therefore, design options will be designed to support CAT C aircraft, providing consistency with the 'most demanding' of the current LCY approach speed categories and supporting the potential for A320neo operations at LCY. To support corresponding CAT A and CAT B operations on the RNP AR procedure, minima for the lowest altitude and visibility may be provided additionally, if required. This design constraint aligns with Stage 1 stakeholder feedback on including accessibility for other aircraft types on the new RNP AR approach procedures.

2.2.26 Flight simulator testing has demonstrated that the A320neo is unable to fly the current LCY 5.5° steep approach, see Appendix C; during testing activities 4.5° was identified as the highest viable approach angle. As such, design options with an approach angle greater than 4.5° are considered not flyable, and are not included here.

2.2.27 All design options will adhere to ICAO Doc 9905 Required Navigation Performance Authorization Required (RNP AR) Procedure Design Manual and ICAO Doc 8168 PANS-OPS (Procedure for Air Navigation Services, Aircraft Operations). These documents provide detailed requirements for the design of

RNP AR procedures. Various factors require consideration to ensure safe and efficient navigation. Specifically, these design constraints are required to ensure that aircraft stay within protected airspace to maintain a safe distance from obstacles and that aircraft can follow the published procedures with ease and safety. Some examples include: speeds during turns in the procedure, turn entry/exit points, and the distance to the runway).

2.2.28 The most common level of navigation accuracy used for RNP approaches is RNP 0.3, and all design options will utilise the RNP 0.3 navigation specification, supporting the baseline certification standard for the majority of aircraft with RNP AR capability. This design consideration is in alignment stakeholder feedback received during Stage 1.

Regulations and safety

2.2.29 The approach descent angle (also known as the glide slope) is a vertical path that directs arrival aircraft to the touchdown zone of the runway. LCY is located in a busy, built-up area within central London. The glideslope for LCY is part of the ILS (Instrument Landing System – a precision radio navigation system that provides pilots with vertical and horizontal guidance during the final approach and landing) and is set at 5.5° to ensure adequate safety margins for aircraft on the ILS approach against the surrounding buildings. (In aviation this is known as 'obstacle clearance').

2.2.30 The UK regulatory constraint for Steep Approach certifications is set at angles of approach that are 4.5° or greater [Ref 8]. As such, the current 5.5° ILS approach at LCY is defined as a Steep Approach and requires special aircraft requirements, flight crew certification and regulatory approval.

2.2.31 The approach angle cannot be reduced for the ILS approach at LCY without breaching the required obstacle clearance. However, for RNP AR aircraft, the lateral and vertical deviations are tightly controlled, (usually within ±0.3 nautical miles or less and can be as low as ±0.1 nautical miles). Due to this increased level of navigational accuracy, the obstacle assessment area is much smaller than the ILS protection area and has different obstacle assessment criteria. As such, for an RNP AR procedure the approach descent angle could be lowered, below the current 5.5°, whilst maintaining adequate obstacle clearance.

2.2.32 The scope of this airspace change is for the introduction of an RNP AR procedure that will not require steep approach certifications at LCY, improving access to a wider range of modern aircraft at the airport. As such, the regulatory requirements are a constraint on the maximum angle of approach that can be considered for this procedure and only designs with an approach angle less than 4.5° are included here. This accommodates the intended use of the procedure by the A320neo, which is unable to fly at approach angles greater than 4.5°, see Appendix C.

2.2.33 Preliminary design work looking at the RNP AR procedure has identified constraints on the minimum angle of approach that may be considered, for each runway direction, to provide a safe distance from obstacles in the descent, and flyable minima for the Decision Height (this is the lowest altitude at which the pilot must assesses whether they have sufficient visual reference with the runway environment (e.g. runway lights, markings) to continue the approach safely, or else decide to discontinue their attempt to approach the airport.

- RWY09 (easterly runway direction), the angle of approach must be no lower than 4.4°
- RWY27 (westerly runway direction), the angle of approach must be no lower than 3.5°

2.2.34 During Stage 1 and Stage 2, stakeholders identified concerns with potential increases in the size of LCY safeguarding zones (these are designated areas surrounding an airport where restrictions are placed on development to ensure the safe operation of aircraft). In consideration of these stakeholder concerns, all design options are designed to ensure minimal impact on LCY safeguarding zones.

Other airspace changes

2.2.35 The London Airspace Management Programme (LAMP) Deployment 2 airspace change proposal [Ref 9] is part of the FASI (Future Airspace Strategy Implementation) programme which, alongside the other London airports, is addressing the large scale optimisation of London airspace, and includes network changes (above 7,000ft) alongside airport changes (below 7,000ft). Information about FASI and the CAA's Masterplan can be found here.

2.2.36 This airspace change proposal is independent of, and seeks to not infringe on, the changes taking place within FASI. For all design options presented herein, flight path changes affect arrival flights in the final stages of the approach only and are based on existing LCY approach procedures. This airspace change is an enabler for more modern aircraft with greater passenger capacity (such as the A320neo) to operate at LCY, and proposes to implement before FASI.

2.3 Design Assumptions

2.3.1 The design constraints, alongside the SoN and the Design Principles have been used to derive a series of design assumptions, which have been applied in the development of a longlist of design options:

- LCY RNP AR procedures will remove the need for steep approach certifications for aircraft operating on this procedure.
- LCY RNP AR procedures will accommodate the operation of more modern aircraft, with larger passenger capacity (e.g. the A320 neo) into LCY.
- The aircraft performance capabilities of the A320neo will be used as a benchmark to develop LCY RNP AR procedures (e.g. bank angle - the angle at which an aircraft is tilted in the turn).
- LCY RNP AR procedures will utilise, as a minimum, the RNP 0.3 navigation specification. The procedures will be defined such that aircraft with a higher level of navigational accuracy, down to RNP 0.1, will also be able to fly the procedures.
- LCY RNP AR procedures will be predominantly contained within current Instrument Flight Procedure 'protection areas' i.e. minimal expansion is required to those volumes of airspace that are currently defined to ensure obstacle clearance and safe navigation for aircraft on the RNP approach flight path.
- Design options will have minimal impact on LCY safeguarding zones.
- LCY RNP AR procedures will support the seamless integration of RNP AR arrival traffic, and arrival traffic on extant LCY approach procedures.
- LCY RNP AR procedures will, as closely as possible, follow the current LCY approach procedures, laterally and vertically.
- To ensure this airspace change is independent of the coincident programme of work being undertaken within FASI (Future Airspace Strategy Implementation), there will be no changes to the classification or volumes of controlled airspace, and no changes to existing arrival and departure procedures to/from LCY resulting from this proposal.

2.3.2 Due to the described physical constraints of London Terminal airspace, the existing routes/traffic flows proximate to the LCY approach paths, limitations associated with aircraft flight characteristics, procedure design requirements and obstacle clearance restrictions, there is limited scope for multiple design options for this airspace change proposal. Seven realistic RNP AR design options have been identified and, alongside the baseline ('do nothing') option, these form the longlist of design options presented in section 3.

2.4 Engagement Activities

2.4.1 The longlist of viable design options presented in this document were developed and tested through two-way engagement with the same stakeholders who were involved in Stage 1 [8]. The full list of stakeholders is provided in Appendix A.

2.4.2 Stakeholders were contacted by email (or by post where no email was available) and invited to participate in the Stage 2 engagement activities for this proposal. A series of stakeholder engagement workshops were scheduled throughout July 2025. These were a combination of in-person and online Microsoft Teams sessions, depending on stakeholder location and preference (for example, the aviation stakeholders session was online, whereas the local authorities stakeholder session was face-to-face). For stakeholders who were unable to attend a specific session, alternative workshop dates were made available.

2.4.3 In total, there were five stakeholder engagement workshops, and stakeholders were grouped according to their representative areas/interests, and also their availability. Where possible, workshop group numbers were kept small (<10 stakeholders per group), in order to optimise the discussions and create a more collaborative working environment. It is noted that this was not always possible due to some stakeholders having limited availability.

2.4.4 The engagement workshops were scheduled as 3-hour sessions to provide sufficient time for in-depth discussions. Material was presented describing the baseline scenarios, design constraints and assumptions, and the design options [Ref 10]. The slides presented in the engagement workshops were published on the LCY airspace change webpage, and can also be found in the CAA's public Airspace Change portal (link to the page for this proposal). The notes taken during the workshops capturing the discussions have been provided as evidence directly to the CAA.

2.4.5 As described in section 2.3.2, there are limited design options associated with this airspace change, (the proposed RNP AR procedures are based closely on the flight paths that exist today; the design options are based on minor differences associated with the modelling for RNP turns and the starting position to enable a shallower descent). The more significant difference associated with this proposal (other than the flight path change itself) is the change in aircraft types (fleet mix) operating at LCY. As such, to better understand the impacts of the proposed change, a 'draft' Design Principle Evaluation based on the baseline and the design options was shared at an early stage with the stakeholders in these workshops. This initial impact assessment work was included in order to better understand the nature of the change being made, the pros and the cons for each design, and the differences from today. It was considered that providing preliminary impact assessment information against the Design Principles in the engagement workshops would provide a more natural and organic way to

[8] No stakeholders have been removed from the Stage 1 stakeholder list, however 10 new organisations have been added and these are detailed in Appendix A.

discuss the design options, leading to deeper engagement, and a better exploration of ideas and perspectives.

2.4.6 Each workshop was structured identically, and provided the same presentation material. For stakeholders that requested a copy of the presentation, this was provided in advance. After each workshop, stakeholders were thanked for their support, sent a copy of the presentation material and encouraged to provide any additional feedback by email.

2.4.7 During the workshops, notes were taken to capture the main topics of discussion, questions/answers and any other feedback. These notes, in addition to any post-workshop feedback received, were collated and subsequently used to update the baseline scenarios and the design options and have been discussed in section 3. Where stakeholder feedback has been used to inform SME evaluation of the Design Principles, including any decisions on design options, this is clearly stated.

2.4.8 A copy of this Stage 2 Develop and Assess document, which includes all the design options, stakeholder feedback, the Design Principle Evaluation, and a glossary of the technical terms used, has been shared with all participating stakeholders.

3. Baseline Scenarios and Design Options

Overview

3.1.1 The following section summarises the longlist of viable design options considered for this airspace change proposal.

3.1.2 As discussed, there was limited scope for multiple design options; seven realistic RNP AR design options have been identified and assessed alongside the baseline ('do nothing') option.

3.1.3 All seven RNP AR design options satisfy the design assumptions (described in section 2.3) which were derived from the SoN, the design principles and the design constraints.

3.1.4 Basic procedure design work has been carried out to provide reasonable confidence regarding the flyability of all the designs considered. However, full design procedure assurance (to ensure the safety, reliability, and flyability of the procedures) will not take place until the later stages of the airspace change process; this will confirm that the procedures are accurate, complete, and meet established safety standards.

3.1.5 To avoid the risk of progressing a design at Stage 2 that subsequently fails procedure assurance later in the process, the designs are presented as a 'range' of values (e.g. angles, distances) to ensure sufficient flexibility exists within each design option to make the necessary design adjustments for procedure assurance at a later stage.

3.1.6 The design options are divided into two categories according to the stage of the approach that they are associated with: 'Initial/Intermediate Approach' and 'Final Approach'. An overview of these categories is provided below. Illustrations and descriptions for all design options are provided in the following sections.

Initial/Intermediate Approach design options

3.1.7 The initial approach is the first segment of an approach procedure. Here the aircraft transitions from the enroute phase of flight to the approach phase, descending to a safe approach altitude and gradually reducing speed.

3.1.8 The intermediate approach follows on from this; the aircraft will adjust its speed, configuration and position to prepare for the final approach to the runway.

3.1.9 RNP AR approaches can utilize specific turn types to navigate complex airspace; a key feature of RNP AR allows for precise curved paths defined by a radius and a fix/waypoint. The aircraft FMS (Flight Management System) calculates the flight path for these turns, ensuring accuracy and repeatability.

3.1.10 For RWY27 the transition between initial, intermediate and final approach does not require any turn modelling (the transitions are in a straight line).

3.1.11 However, the transitions for RWY09 involve two turns to turn the aircraft 180° from the initial approach segment, through the intermediate approach segment and onto the final approach segment. Therefore, depending on how the RNP AR turn is modelled, the RWY09 approach path could track slightly differently from today. As such, for RWY09 three different options for Initial/Intermediate approach have been identified which satisfy the design assumptions.

Final Approach design options

3.1.12 The final approach is the last segment of an aircraft's approach path.

3.1.13 At this stage of flight, the aircraft is positioned into its final alignment with the runway centre line. It descends at a controlled rate, following a specific vertical path towards the runway threshold.

3.1.14 It is a crucial phase of flight, requiring precision in maintaining the correct flight path, speed, and descent angle.

3.1.15 The position at which the aircraft begins the descent (Top of Descent, ToD) for final approach is dependent on the angle of the approach path.

3.1.16 A shallower angle of approach requires an earlier ToD; the descent must start early for the aircraft to achieve the vertical descent distance (2,000ft for RWY09/ 3,000ft for RWY27) by the time it reaches the runway threshold.

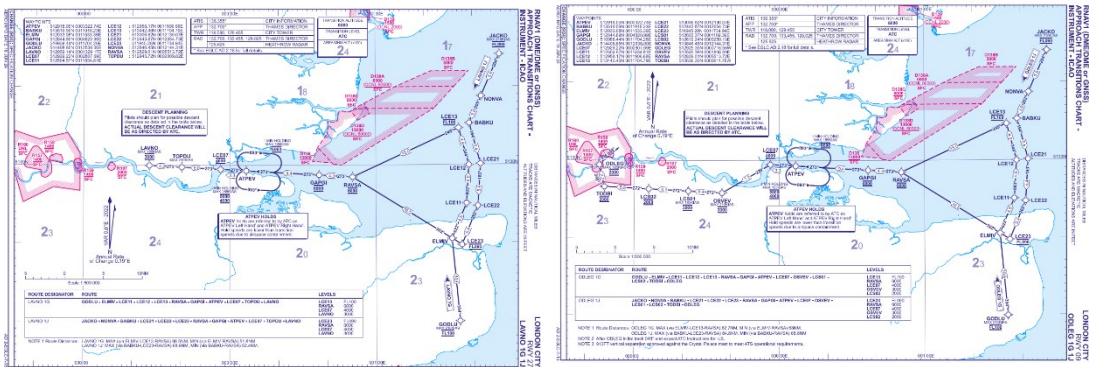
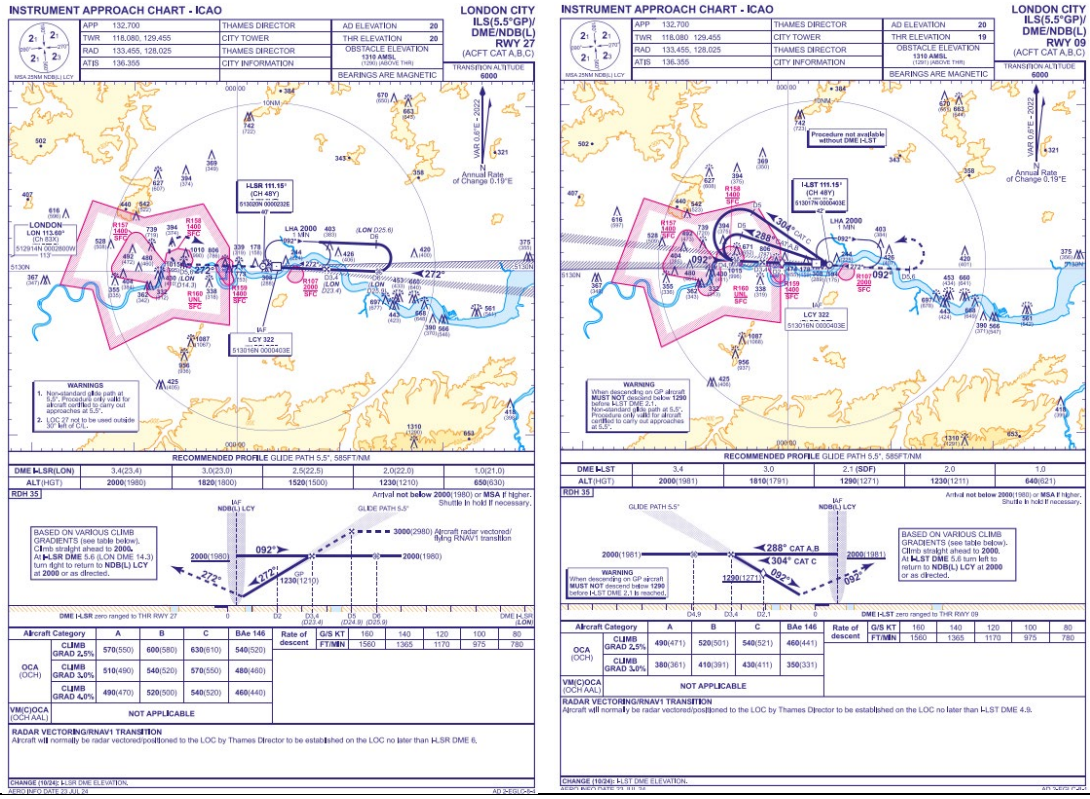
3.1.17 For RWY09 a single option for final approach has been identified which satisfies the design assumptions.

3.1.18 For RWY27, three different options for final approach have been identified which satisfy the design assumptions.

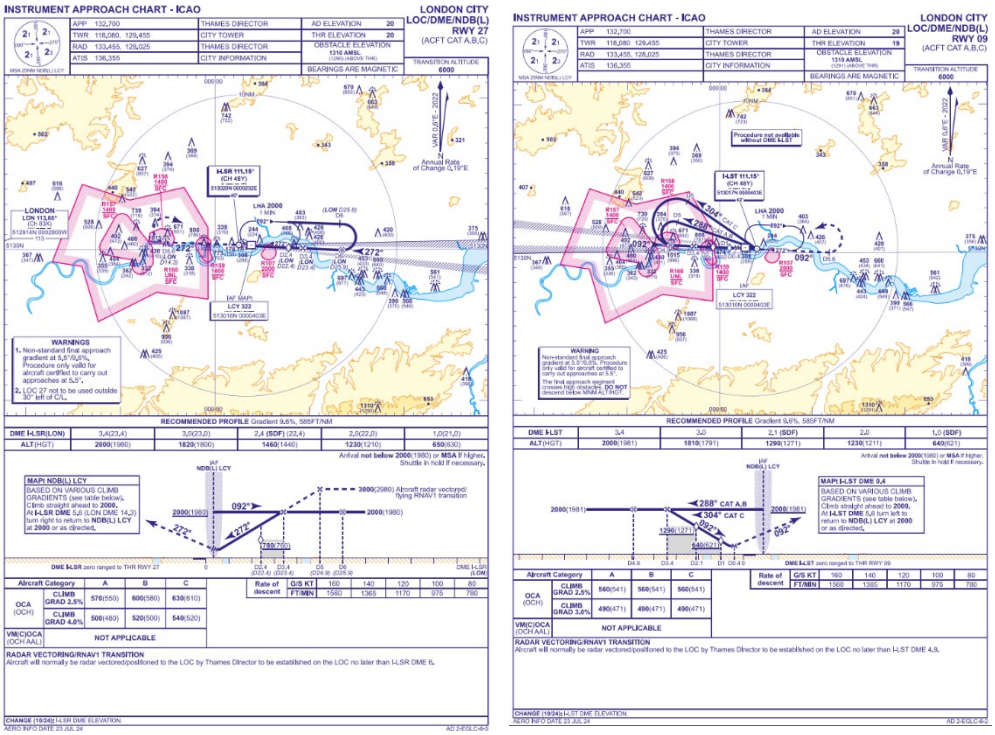
3.2 Baseline Scenario ('Do Nothing')

3.2.1 The typical flight operation at LCY, the forecast traffic growth, and changes to fleet-mix from 2027 (the proposed implementation date, i.e. Year 1) to 2036 (10 years from the proposed implementation date, i.e. Year 10) are described in detail in Section 4 (Current Day Scenario) and Section 5 (Current constraints, inefficiencies and opportunities) of the Stage 1 Define document [Ref 6]. This is considered the baseline ('do nothing') option if no airspace change was to take place; a summary is provided in Table 2.

Table 2: Summary of the baseline ('do nothing') option for the year of implementation (2027 – Year 1) to 10-years after implementation (2036 – Year 10).

Baseline ('Do Nothing')	
Airspace Diagrams	**Instrument flight Procedures: inbound aircraft to LCY** RNAV1 (DME/DME or GNSS) Approach Transition Charts for Runway 27 and Runway 09 respectively. [UK AIP, July 2025]:  Instrument Approach Charts (Instrument Landing System (ILS) 5.5° Glide Path) for Runway 27 and Runway 09 respectively. [UK AIP, July 2025]: 

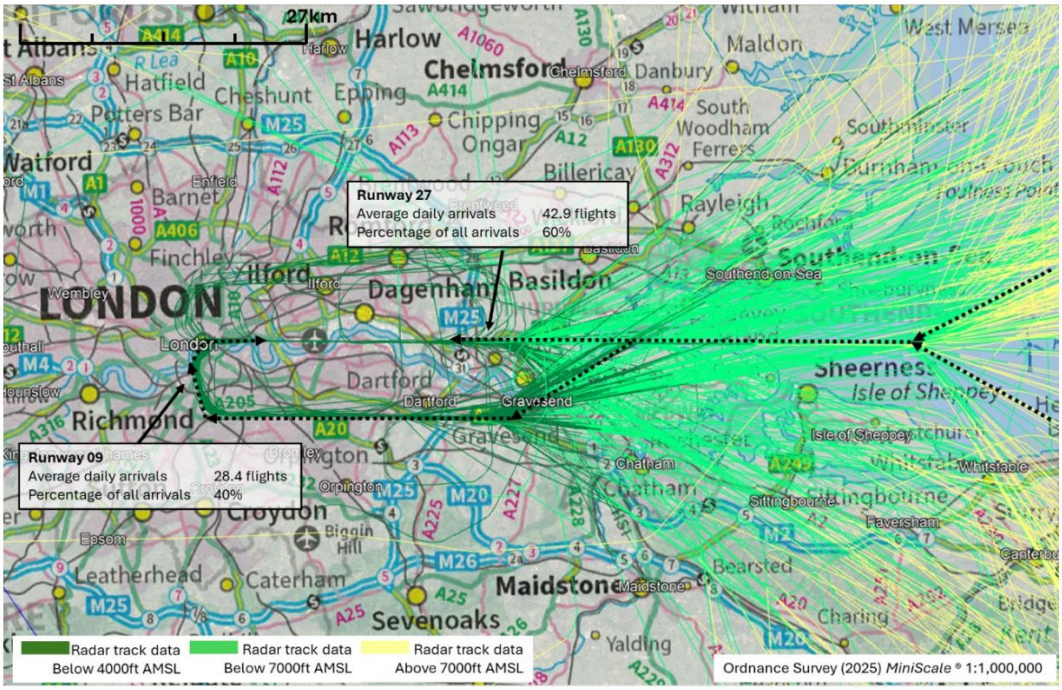
Instrument Approach Charts (Localiser/ Distance Measuring Equipment/ Non Directional Beacon (LOC/DME/NDB) for Runway 27 and Runway 09 respectively. [UK AIP, July 2025]:



Note: for aircraft not landing using the LCY ILS, non-precision approaches (an instrument approach procedure that provides lateral guidance but does not provide a continuous vertical glide path to guide aircraft down to the runway) are supported by LOC/DME/NDB. These approaches are carried out at 5.5°.

Overflight and operational diagrams

Radar track data. Runway 27 and Runway 09 flight density, arrival flights below 7,000ft. 7 days in Sept 2024, (02nd - 08th Sept, 500 flights), [Ordnance Survey (2025) Miniscale® 1:1,000,000]:



Note: The wind direction determines which runway is used. In the southern UK, the prevailing wind is from the west, meaning that Runway 27 is used more often than Runway 09. Averaged over the last 6 years, the westerly Runway 27 is used 2/3 of the time, twice as

frequently as easterly Runway 09 [Runway analysis for 1 Jan 2019 to 31 Dec 2024: LCY Airport Operational Database data. Easterly 33.5% westerly 66.4%].

Runway 27 and Runway 09 illustration of overflight region based on the published RNAV1/ILS approach procedures. Includes visual reporting points (geographical features) close to the approach path. [Google Maps, 2025]:

Traffic forecast

Forecast growth of traffic at LCY, (without the airspace change proposal), including changes to fleet mix: 2027 (implementation year – Year 1) to 2036 (10 years post implementation) [9, 10]. The methodology used to carry out the modelling is provided in Appendix E.
The forecast has been extended to additionally include Year 11 and Year 12, allowing a comparison of air traffic movements (against the airspace change scenario) at the 9 million passengers per annum cap.

	Year	Year 1 2027	Year 2 2028	Year 3 2029	Year 4 2030	Year 5 2031	Year 6 2032	Year 7 2033	Year 8 2034	Year 9 2035	Year 10 2036	Year 11 2037	Year 12 2038
Without airspace change scenario	**Commercial Flights**												
	Airbus A220-100	7,000	7,600	8,200	8,700	9,500	10,300	11,200	12,100	13,100	15,300	17,900	20,100
	ATR 72	2,400	2,500	2,500	2,600	2,700	2,800	2,900	3,000	3,000	3,000	3,100	3,100
	DHvilld-Bombardier DHC8 Dsh 8-400/8Q	3,800	4,100	4,400	0	0	0	0	0	0	0	0	0
	Embraer 190	36,600	36,500	36,500	36,100	36,600	30,000	25,800	20,500	14,900	10,700	7,900	3,900
	Embraer 190 E2	1,400	1,500	1,600	1,700	1,800	2,000	2,200	2,300	2,500	2,900	3,400	3,900
	Embraer E195-E2	1,600	2,600	3,700	7,300	8,800	16,100	21,500	27,900	34,600	45,300	56,200	67,000
	Private Operator Flights												
	Jet Centre	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514
	Air Traffic Movements												
	Total number of air traffic movements (commercial + private operator flights)	56,314	58,314	60,414	59,914	62,914	64,714	67,114	69,314	71,614	80,714	92,014	101,514
	Passenger numbers (millions)												
	Total number of passengers	4.1	4.2	4.4	4.6	4.8	5.1	5.4	5.7	6.0	6.9	8.0	9.0

The forecast growth data predicts an increase in air traffic movements of approximately 43.3% between Year 1 and Year 10. In this scenario (without the airspace change) LCY would achieve 9 million passengers per annum in Year 12 with 101,514 air traffic movements per year.

Current constraints/ issues to be addressed

Operational efficiency. LCY operates with a single runway that can be used by aircraft to take-off or land in either direction; Runway 09 (heading east) and Runway 27 (heading west). Successive arrival aircraft are spaced to create a sufficient gap for a departure to enter the runway and prepare for take-off before the second arrival.
Runway approach angle. The glide slope for the ILS is set at 5.5° to ensure adequate safety margins for aircraft on the ILS approach against the surrounding buildings and involves

[9] Private operator flights are maintained at 2024 levels in the 10-year forecast, as these flights represent a small percentage of LCY traffic (<5%) and any variation across the forecast period is not anticipated to be notable. There is no passenger allocation to these flights as there is no basis for knowing how many people will be on an aircraft.

[10] Commercial flight numbers are approximated to the nearest 100 flights.

special aircraft requirements and flight crew certification. It is also included in LCY's 'Quiet Operating Procedures', reducing the current noise impact on local communities.

Densely populated areas. LCY is situated in central London. Flight paths, especially at the lowest altitudes close to the airport, traverse densely populated commercial and residential areas.

Potential safety risks.

LCY has numerous airspace 'protection' areas to ensure safe airport operations. Some of these protection areas are focused on protecting the overall airspace around the airport from obstacles or activities that could interfere with aircraft during take-off, landing or manoeuvring on the ground. Some of these protection areas are concerned with safeguarding the predetermined flight paths (Instrument Flight Paths, IFPs) used by aircraft during instrument approaches and departures. For the purposes of providing simplification in this document (and to make the technical content easier to understand), the term 'aerodrome/procedure protection area' will be applied generically when referring to these various airspace volumes. The detailed definition of these protection areas and any changes to their parameters will be provided alongside the detailed designs at Stage 3, however for the purposes of the Stage 2 work, the following definitions for several protection areas are provided, specifically to inform the baseline scenario following stakeholder feedback:

Public Safety Zone (PSZ): These are areas around the runway where development is restricted to minimize the number of people potentially at risk from an aircraft accident. The volume of these areas is determined by the type and volume of aircraft operating.

Obstacle Limitation Surface (OLS): These areas are defined by specific surfaces that rise and extend outwards from the runway, specifying height restrictions which developments and obstacles are not permitted to infringe upon (without authorisation and publication of any infringements), therefore ensuring that aircraft have sufficient obstacle-free airspace. Development of ICAO (International Civil Aviation Organization) criteria may result in changes to Obstacle Limitation Surfaces for ILS approaches in the next few years [see Amendment to UK Regulation (EU)139/2014]; however, any changes to the OLS criteria are anticipated to implement after this airspace change proposal and, as such, this airspace change proposal considers impacts on the current dimensions of the LCY OLS only.

Stakeholder feedback: In current day operations, aerodrome/procedure protection areas are considered by stakeholders to be restrictive, in particular for property development close to the airport. Notably, cranes often have the potential to infringe these areas due to their height and moving parts.

Stakeholder feedback: Stakeholder feedback has raised concerns with nuisance TCAS (Traffic Alert and Collision Avoidance System) alerts, associated with the H4 helicopter route, which currently exist for pilots on a final approach to RWY09. Whilst this is noted, these nuisance alerts are not considered to pose serious safety concerns to the operation, and undesired alerts frequently occur during altitude changes, and particularly aircraft descents.

Noise

2024 (current day)	The London City Airport Annual Performance Report 2024 Annexes [Ref 12] includes the published Annual Noise contours in Appendix 5 and Table 2. In 2024, the 57dB LAeq 16h contour area was 5.5km^2. This is in compliance with the 9.1km^2 57dB contour area limit contained within the airport's planning permissions.
2027 (Year 1)	LCY is planning to reduce the area enclosed by the 57dB noise contour, through gradual aircraft refleeting and environmental planning controls, aiming to decrease it from 9.1km² to 7.2km² by 2031, This reduction is expected to remove approximately 30,000 people from within the contour [Ref 13].
2036 (Year 10)	

Stakeholder feedback: Residents have raised concerns about the current impact of aircraft noise on their daily lives. The airport monitors noise levels and is working towards reducing the impact of aircraft noise through various measures outlined in its Noise Action Plan. It is considered that the noise mitigation schemes in place for LCY operations, and their ongoing monitoring and review, will ensure that changes to traffic volumes over this 10-year

assessment period, and the corresponding noise impacts continue to be appropriately managed.

Local Air Quality

The London City Airport Annual Performance Report 2024 Annexes [Ref 12] includes the Annual Air Quality Monitoring Report (Annex 5). Air concentrations for LCY are consistently below the UK air quality objectives [Ref 14] for all air pollutants.

<table>
<tr><th colspan="2">Pollutant</th><th>2024
(current day)</th><th>2027
(Year 1)</th><th>2036
(Year 10)</th></tr>
<tr><td rowspan="2">Nitrogen Dioxide (NO_2)</td><td>King George House</td><td>15.6µg/m^3</td><td rowspan="4" colspan="2">LCY seeks to minimize the negative impacts on air quality [Ref 15] through various measures:
•monitoring air quality;
•reducing emissions from airport operations, and;
•supporting airlines in adopting cleaner technologies.

It is not anticipated that LCY will cause an exceedance of the UK air quality objectives by 9 million passengers per annum [Ref 13].</td></tr>
<tr><td>Newham Dockside</td><td>14.8µg/m^3</td></tr>
<tr><td colspan="2">Fine Particulate Matter (PM10)</td><td>11.9µg/m^3</td></tr>
<tr><td colspan="2">Very Fine Particulate Matter (PM2.5)</td><td>7.6µg/m^3</td></tr>
</table>

Greenhouse gas emissions

<table>
<tr><th colspan="3">Aircraft in the landing and take-off cycle (LTO) CO_2e (tonnes) [11]</th></tr>
<tr><th>2024 (current day)</th><th>2027 (Year 1)</th><th>2036 (Year 10)</th></tr>
<tr><td>30,448 [12]</td><td colspan="2">LCY strategic objective is to achieve net zero carbon by 2030 [Ref 16] by:
•reducing CO_2 emissions through carbon management and reduction initiatives, and;
•offsetting any residual emissions through neutralisation projects.

Refleeting to aircraft with lower carbon emissions per seat over this period is anticipated to result in a reduction in greenhouse gas emissions per passenger [Ref 13].</td></tr>
</table>

Tranquillity

Kent Downs AONB (Area of Outstanding Natural Beauty), Surrey Hills AONB and Chilterns AONB are proximate to current LCY flight paths below 7,000ft.
2027 (Year 1) – 2036 (Year 10): In the baseline ('do-nothing') scenario there are no changes to extant flight paths, and no change to aircraft altitudes. However, traffic growth by

[11] CO_2e, or Carbon Dioxide Equivalent, is a standard unit for measuring the warming effect of different greenhouse gases (GHGs) by converting them to the equivalent amount of carbon dioxide.

[12] The LCY annual Sustainability Report 2024 will be published later this year. At the time of writing, provisional LTO CO_2e data is available only. It should be noted that the CO_2e value may be subject to minor adjustment following data verification before the official report is published. Any change in value will be marginal and is not considered to alter the impact assessment work for this airspace change proposal.

	approximately 43.3% over the 10-year period is anticipated. As such, the tranquil regions that are currently overflown will remain the same, however the number of over-flying aircraft is likely to increase in line with traffic growth. Any fleet mix changes over this period are not anticipated to significantly impact tranquillity.
	Biodiversity
	The Lee Valley (which is a Special Protection Area (SPA) and a Ramsar site) and Epping Forest (which is a Special Area of Conservation (SAC)) are European sites which are proximate to current LCY departure flight paths below 7,000ft. Stakeholder feedback: The artificial fish habitat in King George V Dock is a compensatory habitat for the London Royal Docks, which is designated as a SINC (Site of Importance for Nature Conservation), and was identified during the Stage 1 stakeholder engagement activities. Stakeholder feedback: Stakeholders have additionally requested consideration of impacts to Wapping (located in Tower Hamlets, London, this area has a number of initiatives to enhance biodiversity in its waterways and green spaces) and the Rainham Marshes (a Site of Special Scientific Interest (SSSI) with diverse wildlife). 2027 (Year 1) – 2036 (Year 10): In the baseline ('do-nothing') scenario there are no changes to extant flight paths, and no change to aircraft altitudes. However, traffic growth by approximately 43.3% over the 10-year period is anticipated. As such, the sites for biodiversity that are currently overflown will remain the same, however the number of over-flying aircraft is likely to increase in line with traffic growth. Any fleet mix changes over this period are not anticipated to significantly impact biodiversity.
Other factors	LCY expects to continue airport expansion (with associated infrastructure changes) over the 10-year period, under its current planning permissions. LCY planning permissions allow for an increase in the permitted number of passengers to 9 million passengers per annum (the "S73 Permission"). As part of the S73 application an environmental impact assessment was included addressing (amongst other topics) air quality, carbon emissions, and noise, considering the increase in flight movements and passengers (up to the approved 111,000 actual air traffic movements and 9 million passengers per annum cap). These infrastructure changes, traffic volumes and passenger growth form part of LCY's current permissions (see the Stage 1 Define document [Ref 6], Appendix A), which are already approved, and are not associated with this airspace change proposal. Known or anticipated factors that may affect the baseline from the year of implementation (year 1) to10-years after implementation (year 10) are as follows: •There is a significant amount of planned development and regeneration in the vicinity of the airport. Known planned developments and land allocations, considered relevant to this airspace change [13], cover the London Borough of Newham, the London Borough of Tower Hamlets, London Borough of Lambeth, London Borough of Southwark, London Borough of Bexley, and the London Borough of Greenwich. A detailed list of these future property/land developments is provided in Appendix D. •The increase in population, considered relevant to this airspace change [14], is as follows:

[13] The identification of known planned developments and known land allocation relevant to this airspace change proposal is determined by the areas affected by the proposed new RNP AR approach procedures.

[14] The identification of population change relevant to this airspace change proposal is determined by the areas affected by the proposed new RNP AR approach procedures. Population data has been taken from London's Population Projections (London's 2022 based housing-led population projections, produced by Greater London Authority demography], for the affected wards within each borough. This data has been agreed with the London Borough of Newham. All other boroughs have been provided with the data and asked for endorsement of the figures. This information may be subsequently updated for Stage 3.

Borough/Council	Population Year 1	Population Year 10	Population Change
Newham	77,050	98,826	+22%
Tower Hamlets	115,503	129,428	+11%
Southwark	31,357	34,836	+10%
Lambeth	159,016	160,811	+1%
Greenwich	60,844	81,803	+26%
Bexley	34,024	35,216	+3%
Thurrock	10,300	10,773	+4%

The areas considered for population assessment are based on local wards directly overflown by the proposed new RNP AR approach procedures.

3.2.2 The following illustration, see Figure 4 (top), shows the radar tracks (in yellow) for current LCY arrivals to RWY09 (November 2024, 2,083 flights). These arrivals are following the current RNAV1/ILS approach procedure (shown in green) and can be seen to have a lateral dispersion of approximately 500m of the route centreline(shown in blue), with the widest deviations taking place around the turn areas.

3.2.3 Similarly, Figure 4 (bottom) shows the radar tracks (in yellow) for current LCY arrivals to RWY27 (November 2024, 2,083 flights).

3.2.4 These figures illustrate, for those portions of the approach procedure that are a straight line, aircraft are currently able to fly these portions with good precision. The greatest lateral dispersion (today) is associated with the turn areas.

Figure 4: (Top)Runway 09 arrival flights (shown in yellow) following the current RNAV1/ILS approach procedure (shown in green). A lateral dispersion of 500m either side of the route centreline is shown in blue. (Bottom) Runway 27 arrival flights (shown in yellow) following the current RNAV1/ILS approach procedure (shown in green). Aircraft navigate the straight line portions of the procedure with good precision; the greatest lateral dispersion is associated with the turn areas. Radar track data, November 2024 (2,083 flights), [Google Earth, 2025].

3.2.5 Stakeholder feedback relevant to the baseline ('do nothing') option is provided in Table 3 below.

Table 3: Baseline ('Do Nothing')option stakeholder feedback

Stakeholder	Feedback	Impact
BA CityFlyer	Feedback was provided on the existence of TCAS Radar Advisory alerts associated with RWY09 arrivals due to helicopters flying on routes which are proximate to the final approach path. There is concern about the potential increase in these nuisance alerts for RWY09 design options associated with a shallower approach path.	As a result of stakeholder feedback, we have added current nuisance TCAS alerts to the Baseline Scenario description, and included consideration of TCAS nuisance alerts in the Design Principle Evaluation. Further assessment of the impact of the designs on helicopter operations will be included in the Stage 3 safety work.
KL Grant Consulting	Feedback was provided on the restrictive nature of LCY aerodrome/procedure protection areas, in particular for property development close to the airport.	As a result of stakeholder feedback, we have added property development restrictions associated with aerodrome/procedure protection areas to the Baseline Scenario description, and included consideration of the restrictive nature of aerodrome/procedure protection areas in the Design Principle Evaluation. It should be noted that this airspace change proposal will not change the existing aerodrome/procedure protection areas for extant LCY arrival and departure procedures.
Tate & Lyle KL Grant Consulting	Concerns due to the uncertainty of changes to the current size of the OLS [due to changes in existing OLS/safeguarding criteria – not related to this airspace change]. Clarify whether changes to ICAO Obstacle Limitation Surfaces for ILS approaches are relevant for this change.	This airspace change proposal intends to implement before the new ICAO approach surfaces are expected to be in force [see Amendment to UK Regulation (EU)139/2014 – the ICAO applicability date for OLS changes is Nov 2030]. As a result of stakeholder feedback, we have added potential changes to existing OLS/Safeguarding criteria to the Baseline Scenario description and included consideration of changes to OLS/Safeguarding criteria in the Design Principle Evaluation. It should be noted that this airspace change proposal will not change the existing aerodrome/procedure protection areas for extant LCY arrival and departure procedures.
KL Grant Consulting	Feedback was provided that the 'do-nothing' scenario has a benefit of avoiding further uncertainty to developers.	As a result of stakeholder feedback, we have included consideration of reduced uncertainty for developers in the Design Principle Evaluation. It should be noted that existing developments, known planned developments, and known land allocations are included for consideration in the CAP1616 process.
HACAN East	Concerns with the current levels of aircraft noise.	As a result of stakeholder feedback, we have added current aircraft noise concerns to the Baseline Scenario description and included concerns with current noise levels in the Design Principle Evaluation. Quantitative metrics for noise will provided at Stage 3.

Forest Hill Society	Clarify whether Wapping and the Rainham Marshes is included in the impact assessment.	As a result of stakeholder feedback, we have included Wapping and the Rainham Marshes to the Baseline Scenario description and included consideration of impacts to these areas in the Design Principle Evaluation.
HACAN East	Clarify that the baseline ('do nothing') scenario does not include the Airbus A320neo.	The A320neo is unable to fly the current 5.5° steep approach at LCY; as such it is not included in the fleet mix for the baseline ('do nothing') scenario. No impact.
HACAN East	Clarify why there is no change to private operator numbers in the baseline ('do nothing') scenario.	Private operator flights are maintained at 2024 levels in the 10-year forecast, as these flights represent a small percentage of LCY traffic (<5%) and any variation across the forecast period is not anticipated to be notable. No impact.

Conclusion

The baseline ('do nothing') option partially meets the following Design Principles:

M_DP2 Policy 'High' – PARTIAL

M_DP3 Environment 'High' – PARTIAL

D_DP5 Performance Based Navigation 'High' – PARTIAL

D_DP6 Local context and circumstances 'High' – PARTIAL

B_DP8 Economics 'Medium' – PARTIAL

The baseline ('do nothing') option is **REJECTED** since it would bring limited benefit and did not meet the progression requirements set for the Design Principle Evaluation.

For the full detailed Design Principle Evaluation see Appendix G Design Principle Evaluation Proforma.

3.3 RNP AR Design Options

Overview

3.3.1 The following overview considers the introduction of RNP AR arrival procedures at LCY, and is not specific to any particular design option. A detailed description for each design option, alongside relevant stakeholder feedback [15] (including details of where feedback has influenced the development of the design option and evaluation, or resulted in 'no impact' to the design option/evaluation), and a summary of the design principle evaluation is provided later in this section [16].

3.3.2 Table 4 provides the forecast growth of traffic at LCY with the airspace change proposal, including changes to the fleet mix from 2027 (implementation year – Year 1) to 2036 (10 years post implementation) [17, 18]. The methodology used to carry out the modelling is provided in Appendix E.

3.3.3 The forecast has been extended to additionally include Year 11 and Year 12, allowing a comparison of air traffic movements (against the baseline scenario) at the 9 million passengers per annum cap.

Table 4: With the airspace change, forecast growth of traffic at LCY including changes to fleet mix: 2027 (implementation year) to 2036 (10 years post implementation).

	Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
		2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
With airspace change scenario	**Commercial Flights**												
	Airbus A220-100	7,000	7,600	8,200	8,700	9,500	10,300	11,200	12,100	13,100	13,900	13,900	13,900
	Airbus A320 NEO	1,700	3,000	11,200	17,800	23,200	25,600	28,000	30,300	34,200	37,400	37,400	37,400
	ATR 72	2,400	2,500	2,500	2,600	2,700	2,800	2,900	3,000	3,000	3,000	3,000	3,000
	DHvilld-Bombardier DHC8 Dsh 8-400/8Q	3,800	4,100	4,400	0	0	0	0	0	0	0	0	0
	Embraer 190	31,000	31,000	22,500	14,400	7,300	2,800	1,900	1,000	0	0	0	0
	Embraer 190 E2	1,400	1,500	1,600	1,700	1,800	2,000	2,200	2,300	2,500	2,700	2,700	2,700
	Embraer E195-E2	1,600	2,600	3,700	7,300	8,800	10,400	12,100	14,000	16,000	16,900	16,900	16,900
	Private Operator Flights												
	Jet Centre	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514
	Air Traffic Movements												
	Total number of air traffic movements (commercial + private operator flights)	52,414	55,814	57,614	56,014	56,814	57,414	61,814	66,214	72,314	77,414	77,414	77,414
	Passenger numbers (millions)												
	Total number of passengers	4.1	4.4	5.1	5.6	6.2	6.6	7.1	7.7	8.4	9.0	9.0	9.0

3.3.4 The forecast growth data predicts that implementation of the airspace change would enable LCY to achieve 9 million passengers per annum in Year 10 with 77,414 air traffic movement per year. For the baseline scenario (see the traffic forecast in Table 2), the prediction is that LCY would achieve 9 million passengers in Year 12 with 101,514 air traffic movement per year.

3.3.5 As such, the airspace change has the potential to reduce traffic growth by 23.7% by the 9 million passengers per annum cap compared to the baseline scenario.

	Annual ATM movements		
	Year 1	Year 10	Year 12
Without airspace change	56,314	80,714	101,514
With airspace change	52,414 (-7.0%)	77,414 (-4.1%)	77,414 (-23.7%)

[15] Where possible, stakeholder identification is provided alongside the feedback to allow stakeholders to see how their feedback on the design options has been considered by LCY. For simplicity, similarly themed questions/ questions with common answers, have been grouped together. It should be noted that the engagement workshops were open-discussion with many topics under consideration. Certain feedback items were part of prolonged discussions and are included here for transparency; however, due to the interactive and free-flow nature of these exchanges (with multiple workshop members contributing to an on-going dialogue), it is not possible to designate a specific stakeholder source for all feedback items. In these cases, the workshop in which the discussion was held is included in place of the stakeholder identifier.

[16] For the full detailed Design Principle Evaluation see Appendix G Design Principle Evaluation Proforma.

[17] Private operator flights are maintained at 2024 levels in the 10-year forecast, as these flights represent a small percentage of LCY traffic (<5%) and any variation across the forecast period is not anticipated to be notable. There is no passenger allocation to these flights as there is no basis for knowing how many people will be on an aircraft.

[18] Commercial flight numbers are approximated to the nearest 100 flights.

3.3.6 It should be noted that the introduction of RNP AR arrival procedures at LCY will not change any of the extant LCY arrival and departure procedures. All existing aerodrome/ procedure protection areas associated with the current procedures will remain.

3.3.7 From the Year 10 A320neo fleet mix numbers (37,400 per annum ~50% [19] of which would be arrivals), this equates to ~50% of LCY arrival traffic in Year 10 flying on the new RNP AR procedure.

3.3.8 A qualitative impact assessment is provided and considers all aircraft movements below 7,000ft, evaluating, for each design option, any change in flight paths, altitudes, traffic volumes and fleet mix.

3.3.9 Subject matter experts have assessed there to be no change to the behaviour in daily or seasonal movements, and no change to the distribution of departure route traffic as a result of this airspace change proposal. A description of current-day airspace usage is provided in the Stage 1 Define document [Ref 6], section 4.4.

3.3.10 Preliminary aircraft noise comparison data for the largest aircraft associated with this fleet mix change (the A320neo), was used to inform the qualitative impact assessments for each design option. The noise data compares, for both arrivals and departures, the performance of the A320neo against other aircraft types that currently operate at LCY and demonstrates that the negative difference in noise is predominantly below the threshold of perceptible change in noise (3dB) [20, 21]. A detailed description of this noise comparison data is provided in Appendix B.

3.3.11 This airspace change proposal does not introduce any new physical infrastructure or alter the design and layout of the airport grounds and buildings, approved under the current airport planning permissions. Additionally, it does not change the currently approved limits of air traffic movements or passenger numbers. The conditions and legal obligations contained within the CADP planning permission and the associated section 106 agreement will continue to apply.

[19] The split in arrival and departure movements at LCY is 50/50, see Stage 1 Define [Ref 6], section 4.4.2.

[20] A 3dB change in noise level is just perceptible by an average human being in controlled conditions and 5dB corresponds to the perceptible variation in everyday background level (Bies and Hansen (2009), and Bell and Bell (1994), respectively). 3dB is commonly described as a 'Barely Perceptible Change' and 5dB as a 'Clearly Noticeable Change'.

[21] This noise data is used for illustrative purposes only, detailed noise modelling will be conducted at Stage 3.

(1) Initial/ Intermediate Approach RWY09 Option 1 [IA09_Option 1]

3.3.12 For the first RWY09 initial/intermediate approach option, the modelling of RNP AR turns on the transitions for initial and intermediate approach will closely follow the same lateral track as today, see Figure 5.

3.3.13 Within this option, up to 50m lateral variation (shown in blue) either side of the centreline of the current flight path (shown in green) is permitted for procedure design purposes.

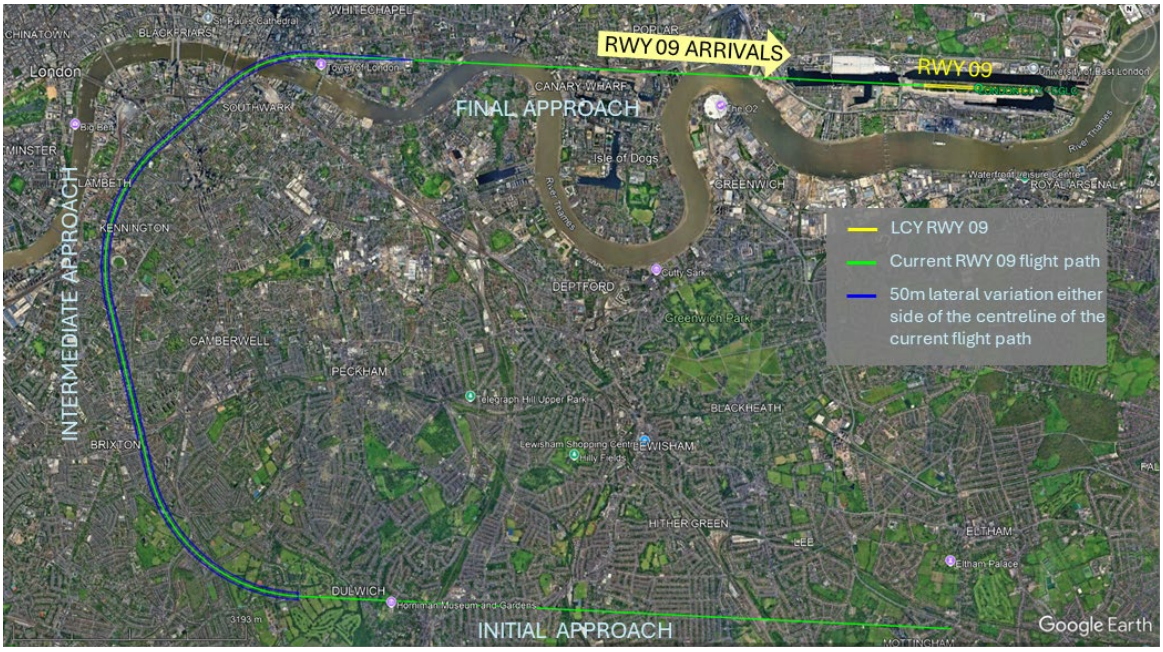


Figure 5: Initial/Intermediate Approach RWY09 Option 1 [IA09_Option 1] permits up to 50m lateral variation (shown in blue) from the centre line of the current flight path (shown in green). [Google Earth, 2025].

3.3.14 This option is considered to be consistent with existing published airspace arrangements, closely following the same lateral track as today, with minor changes to the flight path that are not anticipated to significantly change the impact on communities close to the airport.

3.3.15 The sites that are currently overflown will remain the same; there are no new National Parks, AONBs, or noise sensitive buildings overflown. No new populations are overflown. There is no change to the number of people potentially affected by total adverse noise effects.

3.3.16 RNP AR procedures are anticipated to reduce air traffic growth at LCY compared with the baseline scenario (by supporting aircraft with greater passenger capacity) which could benefit the local community by reducing the number of aircraft over-flying those proximate to LCY arrival and departure flight paths. Note: there is no change to departure flight paths within this airspace change proposal, however new aircraft types (with greater passenger capacity) may land using the proposed RNP AR approach procedures and would then follow the current (unchanging) procedures on departure. As such, it is anticipated that the required passenger capacity would be achieved with fewer departure flights.

3.3.17 No extension to the current aerodrome/procedure protection areas is required with this design option.

3.3.18 Stakeholder feedback has requested consideration of impacts to Wapping (within the London Borough of Tower Hamlets); this design option is considered to be consistent with existing published airspace arrangements, closely following the same lateral track as today. As such, the sites for biodiversity that are currently

overflown (including Wapping) will remain the same. However, this airspace change proposal predicts a reduction in air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), which may reduce the number of aircraft over-flying these locations.

3.3.19 RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038.

3.3.20 Some changes in noise impacts may result from having larger aircraft (from the fleet mix changes) operating to/from LCY, in addition to differences in lateral dispersion, however these impacts are not anticipated to be significant, and are discussed in further detail below.

3.3.21 Aircraft are anticipated to fly an RNP approach procedure more precisely than the extant RNAV1/ILS procedure. This enhanced navigational accuracy is unlikely to impact those portions of the approach procedure that are a straight line (for RNAV1 navigation standards, aircraft already fly these portions with good precision), but will likely increase the concentration of aircraft tracks around the turn regions of the approach, most noticeably as aircraft transition from the initial approach onto intermediate approach, and then from intermediate approach onto final approach. As such, the RNP approach procedure may result in some change to noise impacts at these locations.

3.3.22 Preliminary aircraft noise comparison data observes that the negative difference in arrival/departure noise, for the largest aircraft associated with this fleet mix change (the A320neo), when compared to the current fleet mix, is predominantly below the threshold of perceptible change in noise (3dB [22, 23]).

3.3.23 Additionally, RNP AR procedures are anticipated to reduce the number of aircraft over-flying (by supporting aircraft with greater passenger capacity, reducing traffic volume).

3.3.24 We anticipate the marginal difference between aircraft noise levels, alongside a reduction number of aircraft over-flying, would potentially mitigate any noise disbenefit associated with larger aircraft operating to/from LCY, and also any changes to noise impacts resulting from the concentration of aircraft tracks around RNP turn regions. It should also be noted that lateral dispersion around the turn regions will still take place for aircraft on the extant RWY09 RNAV1/ILS approach procedures, and that any concentration of tracks in these areas is associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic in Year 10, see section 3.3.7.

3.3.25 Stakeholder feedback relevant to IA09_Option 1 is provided in Table 5 below.

Table 5: Initial/Intermediate Approach RWY 09 Option 1 [IA09_Option 1] stakeholder feedback

Stakeholder	Feedback	Impact
KL Grant Consulting	Concern raised that there may be significant impacts to developments that are offset from the route centreline, in particular	This design option is wholly contained within the current aerodrome/procedure protection areas; no extension to the

[22] A 3dB change in noise level is just perceptible by an average human being in controlled conditions and 5dB corresponds to the perceptible variation in everyday background level (Bies and Hansen (2009), and Bell and Bell (1994), respectively). 3dB is commonly described as a 'Barely Perceptible Change' and 5dB as a 'Clearly Noticeable Change'.

[23] This noise data is used for illustrative purposes only, detailed noise modelling will be conducted at Stage 3.

	with respect to the heights of cranes operating in these areas. Feedback that the impact assessment does not capture the disbenefits associated with land development.	protection areas is anticipated to support this option. Constraints on developments offset from the route centreline will remain as today. It is worth noting that the 50m lateral variation allowed within this design option, is consistent with where aircraft fly today, see Figure 4. No impact.
Forest Hill Society	Clarify changes in impacts to noise and the frequency of overflight.	Qualitative assessments for noise and overflight are included in the Design Principle Evaluation for this option. Quantitative metrics for noise will provided at Stage 3. No impact.
Forest Hill Society London Borough of Newham	Clarify the proposed reduction in 'adverse noise impacts'. Concern that this option is not in alignment with the Air Navigation Guidance to; 'limit and, where possible, reduce the number of people in the UK significantly affected by adverse impacts from aircraft noise'	RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038. No impact.
Forest Hill Society	Clarify whether Wapping is included in the impact assessment.	As a result of stakeholder feedback, we have included consideration of impacts to Wapping in the Design Principle Evaluation.
Natural England	Design option feedback: "Unless the change in height would significantly affect the noise of the aircraft approaching, to the extent that it impacted the features of a designated site then it is unlikely that Natural England would need to provide detailed comments on these proposals".	It is worth noting that the 50m lateral variation allowed within this design option, is consistent with where aircraft fly today, see Figure 4. Therefore the sites that are currently overflown will remain the same. Additionally, there is no change to aircraft altitude. As such, a significant change to noise impacts with respect to designated sites is not anticipated with this design option. No impact.
Greater London Authority	Clarify the impacts of the different tracks on the Royal Docks.	It is worth noting that the 50m lateral variation allowed within this design option, is consistent with where aircraft fly today, see Figure 4. Therefore the sites that are currently overflown will remain the same. Additionally, there is no change to aircraft altitude. As such, a significant change in impacts on the Royal Docks is not anticipated with this design option. No impact.

London Borough of Newham	Feedback that this option in not favoured by Newham as it has the potential to concentrate noise over a narrow area.	LCY thank you for your feedback. It should be noted however, that the concentration of aircraft tracks, in particular on the turn regions of the approach, applies equally to all RWY09 initial/intermediate approach options, i.e. it is no better (or worse) for IA09_Option 1, IA09_Option 2 or IA09_Option 3. The enhanced navigational accuracy may result in some change to noise impacts at these turn locations, however we do not anticipate this to be significant, see section 3.3.24. No impact.

Conclusion

IA09_Option 1 supports the introduction of RNP AR operations, improving access to a wider range of modern, environmentally efficient aircraft at LCY, enhancing the navigation standard for the approach phase of flight, and creating more capacity whilst remaining compliant with the CADP planning permission and the associated section 106 agreement. This option maintains close alignment with the current RWY09 approach path; no new populations or sites are overflown. Overall, RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts; the marginal difference between aircraft noise levels, alongside a reduction in the number of aircraft over-flying, would potentially mitigate any noise disbenefit associated with larger aircraft (from the fleet mix changes) operating to/from LCY, and also any changes to noise impacts resulting from the concentration of aircraft tracks around RNP turn regions. No extension is anticipated to the current aerodrome/procedure protection areas.

Benefits

- Advanced navigation standard helps to manage residual operational risk
- Contributes towards the AMS (Airspace Modernisation Strategy) strategic objectives and Section 70 of the Transport Act 2000
- Consistent with existing published airspace arrangements
- No new sites overflown (National Parks, AONBs or noise sensitive buildings)
- No new populations overflown
- Reduces air traffic growth (through fleet mix changes supporting greater passenger capacity)
- Reduces the number of aircraft over-flying
- Requires no changes to meet the conditional and legal obligations contained within the CADP planning permission and the associated section 106 agreement.
- Enhances the navigation standard for the approach phase of flight
- Does not require an extension to the current aerodrome/procedure protection areas
- Overall improvement to noise impacts
- Increases accessibility for a wider range of modern, environmentally efficient, aircraft at LCY

- Enables more cost-effective operations for airline operators at LCY
- Results in no change to other aviation stakeholders

Issues

- More precise flying of the RNP AR approach procedure may result in some change to noise impacts in certain areas, most noticeably around the turn regions
- Larger aircraft arriving and departing LCY (due to the fleet mix changes)

The Design Principle Evaluation, see Appendix G, concluded that:

- 11 design principles were MET
- 0 design principle were PARTIAL
- 0 design principles were NOT MET

IA09_Option 1 is considered a promising candidate and has been **PROGRESSED** to the next stage.

For the full detailed Design Principle Evaluation see Appendix G Design Principle Evaluation Proforma.

(2) Initial/ Intermediate Approach RWY 09 Option 2 [IA09_Option 2]

3.3.26 For the second RWY09 initial/intermediate approach option, the modelling of RNP AR turns on the transitions for initial and intermediate approach will allow minor lateral variation from today, see Figure 6.

3.3.27 Within this option, up to 250m lateral variation (shown in blue) either side of the centreline (shown in green) of the current flight path is permitted for procedure design purposes.

Figure 6: Initial/Intermediate Approach RWY09 Option 2 [IA09_Option 2] permits up to 250m lateral variation (shown in blue) from the centre line of the current flight path (shown in green). [Google Earth, 2025].

3.3.28 The lateral variation within this option (up to 250m of the centreline) provides additional flexibility for the procedure design, which may enable optimisation of the turn regions, improving flyability/manoeuvrability for aircraft on the RNP AR procedure.

3.3.29 The lateral variation within this option is maintained within the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure, and as such is not anticipated to significantly change the impact on communities close to the airport.

3.3.30 The sites that are currently overflown will remain the same; there are no new National Parks, AONBs, or noise sensitive buildings overflown. No new populations are overflown. There is no change to the number of people potentially affected by total adverse noise effects.

3.3.31 RNP AR procedures are anticipated to reduce air traffic growth at LCY compared with the baseline scenario (by supporting aircraft with greater passenger capacity) which could benefit the local community by reducing the number of aircraft over-flying those members of the community proximate to LCY arrival and departure flight paths. Note: there is no change to departure flight paths within this airspace change proposal, however new aircraft types (with greater passenger capacity) may land using the proposed RNP AR approach procedures and would then follow the current (unchanging) procedures on departure. As such, it is anticipated that the required passenger capacity would be achieved with fewer departure flights.

3.3.32 No extension to the current aerodrome/procedure protection areas is required with this design option.

3.3.33 Stakeholder feedback has requested consideration of impacts to Wapping; this design option is maintained within the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure. As such, the sites for biodiversity that are currently overflown (including Wapping) will remain the same. However, this airspace change proposal predicts a reduction in air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), which may reduce the number of aircraft over-flying these locations.

3.3.34 RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038.

3.3.35 Some changes in noise impacts may result from having larger aircraft (from the fleet mix changes) operating to/from LCY, in addition to differences in lateral dispersion, however these impacts are not anticipated to be significant, and are discussed in further detail below.

3.3.36 Aircraft are anticipated to fly an RNP approach procedure more precisely than the extant RNAV1/ILS procedure. This enhanced navigational accuracy is unlikely to impact those portions of the approach procedure that are a straight line (for RNAV1 navigation standards, aircraft already fly these portions with good precision), but will likely increase the concentration of aircraft tracks around the turn regions of the approach, most noticeably as aircraft transition from the initial approach onto intermediate approach, and then from intermediate approach onto final approach. As such, the RNP approach procedure may result in some change to noise impacts at these locations.

3.3.37 Preliminary aircraft noise comparison data observes that the negative difference in arrival/departure noise, for the largest aircraft associated with this fleet mix change (the A320neo), when compared to the current fleet mix, is predominantly below the threshold of perceptible change in noise (3dB [24, 25]).

3.3.38 Additionally, RNP AR procedures are anticipated to reduce the numbers of over-flying aircraft (by supporting aircraft with greater passenger capacity, reducing traffic volume).

3.3.39 We anticipate the marginal difference between aircraft noise levels, alongside a reduction in the number of over-flying aircraft, would potentially mitigate any noise disbenefit associated with larger aircraft operating to/from LCY, and also any changes to noise impacts resulting from the concentration of aircraft tracks around RNP turn regions. It should also be noted that lateral dispersion around the turn regions will still take place for aircraft on the extant RWY09 RNAV1/ILS approach procedures, and that any concentration of tracks in these areas is associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic in Year 10, see section 3.3.7.

[24] A 3dB change in noise level is just perceptible by an average human being in controlled conditions and 5dB corresponds to the perceptible variation in everyday background level (Bies and Hansen (2009), and Bell and Bell (1994), respectively). 3dB is commonly described as a 'Barely Perceptible Change' and 5dB as a 'Clearly Noticeable Change'.

[25] This noise data is used for illustrative purposes only, detailed noise modelling will be conducted at Stage 3.

3.3.40 Stakeholder feedback relevant to IA09_Option 2 is provided in Table 6 below.

Table 6: Initial/Intermediate Approach RWY09 Option 2 [IA09_Option 2] stakeholder feedback

Stakeholder	Feedback	Impact
KL Grant Consulting	Concern raised that there may be significant impacts to developments that are offset from the route centreline, in particular with respect to the heights of cranes operating in these areas. Feedback that the impact assessment does not capture the disbenefits associated with land development.	This design option is wholly contained within the current aerodrome/procedure protection areas; no extension to the protection areas is anticipated to support this option. Constraints on developments offset from the route centreline will remain as today. It is worth noting that the 250m lateral variation allowed within this design option, is consistent with where aircraft fly today, see Figure 4. No impact.
Forest Hill Society	Clarify changes in impacts to noise and the frequency of overflight.	Qualitative assessments for noise and overflight are included in the Design Principle Evaluation for this option. Quantitative metrics for noise will provided at Stage 3. No impact.
Forest Hill Society	Clarify the proposed reduction in 'adverse noise impacts'.	RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038. No impact.
Forest Hill Society	Clarify whether Wapping is included in the impact assessment.	As a result of stakeholder feedback, we have included consideration of impacts to Wapping in the Design Principle Evaluation.
Natural England	Design option feedback: "Unless the change in height would significantly affect the noise of the aircraft approaching, to the extent that it impacted the features of a designated site then it is unlikely that Natural England would need to provide detailed comments on these proposals".	It is worth noting that the 250m lateral variation allowed within this design option, is consistent with where aircraft fly today, see Figure 4. Therefore the sites that are currently overflown will remain the same. Additionally, there is no change to aircraft altitude. As such, a significant change to noise impacts with respect to designated sites is not anticipated with this design option. No impact.
Greater London Authority	Clarify the impacts of the different tracks on the Royal Docks.	It is worth noting that the 250m lateral variation allowed within this design option, is consistent with where aircraft fly today, see Figure 4. Therefore the sites that are currently overflown will remain the same. Additionally, there is no change to aircraft altitude. As such, a significant change in impacts on the Royal Docks is not anticipated with this design option. No impact.

London Borough of Newham	Feedback that this option is preferred over IA09_Option 1 as it would allow for some limited respite/dispersion to be included.	LCY thank you for your feedback, however it is not considered that any meaningful respite could be included within the narrow design envelope of this design option. No impact.

Conclusion

IA09_Option 2 supports the introduction of RNP AR operations, improving access to a wider range of modern, environmentally efficient aircraft at LCY, enhancing the navigation standard for the approach phase of flight, and creating more capacity whilst remaining compliant with the CADP planning permission and the associated section 106 agreement. This option provides minor lateral variation (up to 250m of the centreline) of the current RWY09 approach path; however this design envelope is consistent with the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure, and no new populations or sites are overflown. Overall, RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts; the marginal difference between aircraft noise levels, alongside a reduction in the number of over-flying aircraft, would potentially mitigate any noise disbenefit associated with larger aircraft (from the fleet mix changes) operating to/from LCY, and also any changes to noise impacts resulting from the concentration of aircraft tracks around RNP turn regions. No extension is anticipated to the current aerodrome/procedure protection areas.

Benefits

- Advanced navigation standard helps to manage residual operational risk
- Contributes towards the AMS strategic objectives and Section 70 of the Transport Act 2000
- Provides flexibility for the design of the procedure
- Maintains aircraft with the range of lateral dispersion for the current RWY09 RNAV1/ILS approach procedure
- No new sites overflown (National Parks, AONBs or noise sensitive buildings)
- No new populations overflown
- Reduces air traffic growth (through fleet mix changes supporting greater passenger capacity)
- Reduces the number of over-flying aircraft
- Requires no changes to meet the conditional and legal obligations contained within the CADP planning permission and the associated section 106 agreement.
- Enhances the navigation standard for the approach phase of flight
- Does not require an extension to the current aerodrome/procedure protection areas
- Overall improvement to noise impacts
- Increases accessibility for a wider range of modern, environmentally efficient, aircraft at LCY
- Enables more cost-effective operations for airline operators at LCY
- Results in no change to other aviation stakeholders

Issues

- More precise flying of the RNP AR approach procedure may result in some change to noise impacts in certain areas, most noticeably around the turn regions
- Larger aircraft arriving and departing LCY (due to the fleet mix changes)

The Design Principle Evaluation, see Appendix G, concluded that:

- 10 design principles were MET
- 1 design principles was PARTIAL (1 High)
- 0 design principles were NOT MET

IA09_Option 2 is considered a promising candidate and has been **PROGRESSED** to the next stage.

For the full detailed Design Principle Evaluation see Appendix G Design Principle Evaluation Proforma.

(3) Initial/ Intermediate Approach RWY 09 Option 3 [IA09_Option 3]

3.3.41 For the third RWY09 initial/intermediate approach option, the modelling of RNP AR turns on the transitions for initial and intermediate approach will allow moderate lateral variation from today, see Figure 7.

3.3.42 Within this option, up to 500m lateral variation (shown in blue) either side of the centreline of the current flight path (shown in green) is permitted for design purposes.

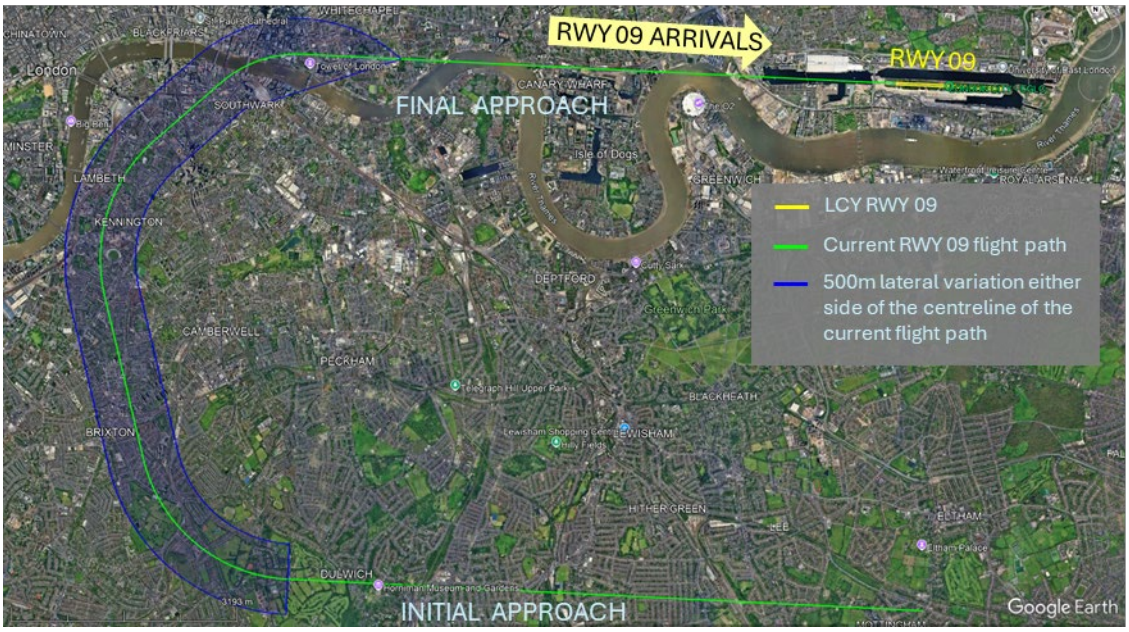


Figure 7: Initial/Intermediate Approach RWY 09 Option 3 [IA09_Option 3] permits up to 500m lateral variation (shown in blue) from the centre line of the current flight path (shown in green). [Google Earth, 2025].

3.3.43 The lateral variation within this option (up to 500m of the centreline) provides additional flexibility for the procedure design, which may enable optimisation of the turn regions, improving flyability/manoeuvrability for aircraft on the RNP AR procedure.

3.3.44 The lateral variation within this option is maintained within the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure, and as such is not anticipated to significantly change the impact on communities close to the airport.

3.3.45 The sites that are currently overflown will remain the same; there are no new National Parks, AONBs, or noise sensitive buildings overflown. No new populations are overflown. There is no change to the number of people potentially affected by total adverse noise effects.

3.3.46 RNP AR procedures are anticipated to reduce air traffic growth at LCY compared with the baseline scenario (by supporting aircraft with greater passenger capacity) which could benefit the local community by reducing the number of aircraft over-flying those proximate to LCY arrival and departure flight paths. Note: there is no change to departure flight paths within this airspace change proposal, however new aircraft types (with greater passenger capacity) may land using the proposed RNP AR approach procedures and would then follow the current (unchanging) procedures on departure. As such, it is anticipated that the required passenger capacity would be achieved with fewer departure flights.

3.3.47 No extension to the current aerodrome/procedure protection areas is required with this design option.

3.3.48 Stakeholder feedback has requested consideration of impacts to Wapping; this design option is maintained within the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure. As such, the sites for biodiversity that are currently overflown (including Wapping) will remain the same. However, this airspace change proposal predicts a reduction in air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), which may reduce the number of aircraft over-flying these locations.

3.3.49 RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038.

3.3.50 Some changes in noise impacts may result from having larger aircraft (from the fleet mix changes) operating to/from LCY, in addition to differences in lateral dispersion, however these impacts are not anticipated to be significant, and are discussed in further detail below.

3.3.51 Aircraft are anticipated to fly an RNP approach procedure more precisely than the extant RNAV1/ILS procedure. This enhanced navigational accuracy is unlikely to impact those portions of the approach procedure that are a straight line (for RNAV1 navigation standards, aircraft already fly these portions with good precision), but will likely increase the concentration of aircraft tracks around the turn regions of the approach, most noticeably as aircraft transition from the initial approach onto intermediate approach, and then from intermediate approach onto final approach. As such, the RNP approach procedure may result in some change to noise impacts at these locations.

3.3.52 Preliminary aircraft noise comparison data observes that the negative difference in arrival/departure noise, for the largest aircraft associated with this fleet mix change (the A320neo), when compared to the current fleet mix, is predominantly below the threshold of perceptible change in noise (3dB [26, 27]).

3.3.53 Additionally, RNP AR procedures are anticipated to reduce the number of over-flying aircraft (by supporting aircraft with greater passenger capacity, reducing traffic volume).

3.3.54 We anticipate the marginal difference between aircraft noise levels, alongside a reduction in the number of over-flying aircraft, would potentially mitigate any noise disbenefit associated with larger aircraft operating to/from LCY, and also any changes to noise impacts resulting from the concentration of aircraft tracks around RNP turn regions. It should also be noted that lateral dispersion around the turn regions will still take place for aircraft on the extant RWY09 RNAV1/ILS approach procedures, and that any concentration of tracks in these areas is associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic in Year 10, see section 3.3.8.

3.3.55 For this option, there may be a requirement to provide mitigation (such as increased controller spacing requirements [28]) for successive arrivals on the

[26] A 3dB change in noise level is just perceptible by an average human being in controlled conditions and 5dB corresponds to the perceptible variation in everyday background level (Bies and Hansen (2009), and Bell and Bell (1994), respectively). 3dB is commonly described as a 'Barely Perceptible Change' and 5dB as a 'Clearly Noticeable Change'.

[27] This noise data is used for illustrative purposes only, detailed noise modelling will be conducted at Stage 3.

[28] the minimum distances that controllers must maintain to ensure that aircraft are kept a certain distance apart horizontally.

different types of arrival procedure i.e. where one aircraft is on an ILS approach and the other is RNP AR, due to the lateral variation in tracks affecting the separation distance between aircraft in the sequence.

3.3.56 Additionally, the lateral variation within this option could benefit the local community by enabling the development of respite options; this is where different flight paths are used alternately to mitigate the impact of aircraft noise by strategically shifting air traffic over different areas at different times. Stakeholders have expressed a preference for this option, as it provides the potential for respite.

3.3.57 Stakeholder feedback relevant to IA09_Option 3 is provided in Table 7 below.

Table 7: Initial/Intermediate Approach RWY09 Option 3 [IA09_Option 3] stakeholder feedback

Stakeholder	Feedback	Impact
KL Grant Consulting	Concern raised that there may be significant impacts to developments that are offset from the route centreline, in particular with respect to the heights of cranes operating in these areas. Feedback that the impact assessment does not capture the disbenefits associated with land development.	This design option is wholly contained within the current aerodrome/procedure protection areas; no extension to the protection areas is anticipated to support this option. Constraints on developments offset from the route centreline will remain as today. It is worth noting that the 500m lateral variation allowed within this design option, is consistent with where aircraft fly today, see Figure 4. No impact.
Royal Docks Management Authority	Clarify whether the width of IA09_03 is associated with the size of aircraft.	The lateral variation permitted within this design option is to accommodate the modelling of RNP AR turns on the transitions for initial and intermediate approach, and does not relate to aircraft size. Depending on how the RNP AR turn is modelled, the RWY 09 approach path could track slightly differently from today. It is worth noting that the 500m lateral variation allowed within this design option is consistent with where aircraft fly today, see Figure 4. No impact.
Forest Hill Society	Clarify changes in impacts to noise and the frequency of overflight.	Qualitative assessments for noise and overflight are included in the Design Principle Evaluation for this option. Quantitative metrics for noise will provided at Stage 3. No impact.
Forest Hill Society	Clarify the proposed reduction in 'adverse noise impacts'.	RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall

		traffic volumes are achieved by 2038. No impact.
HACAN East Forest Hill Society London Borough of Newham	Clarify whether the proposal is for a single route or multiple routes to replicate the natural dispersion today. Feedback that this option is preferred over IA09_Option 2 as it would allow for respite/dispersion to be included.	The remit for this design option (500m lateral variation either side of the route centreline) provides the potential, in the Stage 3 design work, to investigate the viability of multiple routes within the 1km-wide design envelope; this could benefit those communities affected by the RWY09 RNP AR flight path by providing options for respite. As a result of stakeholder feedback, the beneficial potential for respite routes has been included in the Design Principle Evaluation.
Forest Hill Society	Clarify whether Wapping is included in the impact assessment.	As a result of stakeholder feedback, we have included consideration of impacts to Wapping in the Design Principle Evaluation.
Natural England	Design option feedback: "Unless the change in height would significantly affect the noise of the aircraft approaching, to the extent that it impacted the features of a designated site then it is unlikely that Natural England would need to provide detailed comments on these proposals".	It is worth noting that the 500m lateral variation allowed within this design option, is consistent with where aircraft fly today, see Figure 4. Therefore the sites that are currently overflown will remain the same. Additionally, there is no change to aircraft altitude. As such, a significant change to noise impacts with respect to designated sites is not anticipated with this design option. No impact.
Transport for London London Borough of Newham	Include consideration of multiple route options to disperse noise impacts.	Some consideration of respite routes is included in this design option. However, it is worth noting that LCY is involved in the FASI (Future Airspace Strategy Implementation) programme which, alongside the other London airports, is addressing optimisation of London airspace on a larger scale and includes the organisation of both arrival and departure design options into systems for respite, or systems that disperse traffic in another way. This airspace change proposal is independent of the changes taking place within FASI; this is a relatively small change to LCY current arrival procedures, affecting the final stages of approach, ~2,000/3,000ft, based on existing tracks only, and proposes to implement before FASI. Thus, minimal change to existing tracks is a constraint on the design options that have been evaluated during this stage of the design process. No impact.
Greater London Authority	Clarify the impacts of the different tracks on the Royal Docks.	It is worth noting that the 500m lateral variation allowed within this design option, is consistent with

		where aircraft fly today, see Figure 4. Therefore the sites that are currently overflown will remain the same. Additionally, there is no change to aircraft altitude. As such, a significant change in impacts on the Royal Docks is not anticipated with this design option. No impact

Conclusion

IA09_Option 3 supports the introduction of RNP AR operations, improving access to a wider range of modern, environmentally efficient aircraft at LCY, enhancing the navigation standard for the approach phase of flight, and creating more capacity whilst remaining compliant with the CADP planning permission and the associated section 106 agreement. This option provides moderate lateral variation (up to 500m of the centreline) of the current RWY09 approach path; however this design envelope is consistent with the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure, and no new populations or sites are overflown. Overall, RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts; the marginal difference between aircraft noise levels, alongside a reduction in the number of over-flying aircraft, would potentially mitigate any noise disbenefit associated with larger aircraft (from the fleet mix changes) operating to/from LCY, and also any changes to noise impacts resulting from the concentration of aircraft tracks around RNP turn regions. Additionally, the lateral variation within this option could benefit the local community by enabling the development of respite options; this is where different flight paths are used alternately to mitigate the impact of aircraft noise by strategically shifting air traffic over different areas at different times. No extension is anticipated to the current aerodrome/procedure protection areas.

Benefits

- Advanced navigation standard helps to manage residual operational risk
- Contributes towards the AMS strategic objectives and Section 70 of the Transport Act 2000
- Provides flexibility for the design of the procedure
- Maintains aircraft with the range of lateral dispersion for the current RWY09 RNAV1/ILS approach procedure
- No new sites overflown (National Parks, AONBs or noise sensitive buildings)
- No new populations overflown
- Reduces air traffic growth (through fleet mix changes supporting greater passenger capacity)
- Reduces the number of over-flying aircraft
- Requires no changes to meet the conditional and legal obligations contained within the CADP planning permission and the associated section 106 agreement.
- Enables the development of respite route options.
- Enhances the navigation standard for the approach phase of flight
- Does not require an extension to the current aerodrome/procedure protection areas

• Overall improvement to noise impacts

•Increases accessibility for a wider range of modern, environmentally efficient, aircraft at LCY

•Enables more cost-effective operations for airline operators at LCY

•Results in no change to other aviation stakeholders

Issues

•Safety consideration of the spacing requirements for successive arrivals on the different types of arrival procedure.

•More precise flying of the RNP AR approach procedure may result in some change to noise impacts in certain areas, most noticeably around the turn regions

•Larger aircraft arriving and departing LCY (due to the fleet mix changes)

The Design Principle Evaluation, see Appendix G, concluded that:

•9 design principles were MET

•2 design principles were PARTIAL (1 High, 1 Medium)

•0 design principles were NOT MET

IA09_Option 3 is considered a promising candidate and has been **PROGRESSED** to the next stage.

For the full detailed Design Principle Evaluation see Appendix G Design Principle Evaluation Proforma.

(4) Final Approach RWY09 Option 1 [FA09_Option 1]

3.3.58 Due to stringent obstacle clearance requirements for RWY09, only a single option for final approach has been identified which satisfies the design assumptions.

3.3.59 For this RWY09 final approach option, the track over the ground will remain as today (unchanged), and the approach angle is reduced from 5.5° (current operations) to between 4.49° - 4.40° which will mean the ToD will move approximately 0.7NM to 0.9NM west of its current position, see Figure 8.

3.3.60 Therefore, instead of aircraft being at 2,000ft for this portion of the flight path, they will descend to be approximately 340ft-375ft lower at the current ToD, see Figure 8 (top figure). This would be the maximum vertical difference between the current descent path and this design option.

3.3.61 Also shown in Figure 8 (bottom figure) is the approximate altitude (vertical distance) at positions 1NM, 2NM and 3NM from the runway threshold as follows:

1NM: current vertical distance 640ft, proposed vertical distance 537ft-547ft

2NM: current vertical distance 1,225ft, proposed vertical distance 1,005ft-1,024ft

3NM: current vertical distance 1,810ft, proposed vertical distance 1,472ft-1,501ft

3.3.62 The difference in vertical distance, between the current flight path and this design option is summarised in Table 8.

3.3.63 A more detailed plan view of the proposed ToD area is provided in Figure 9.

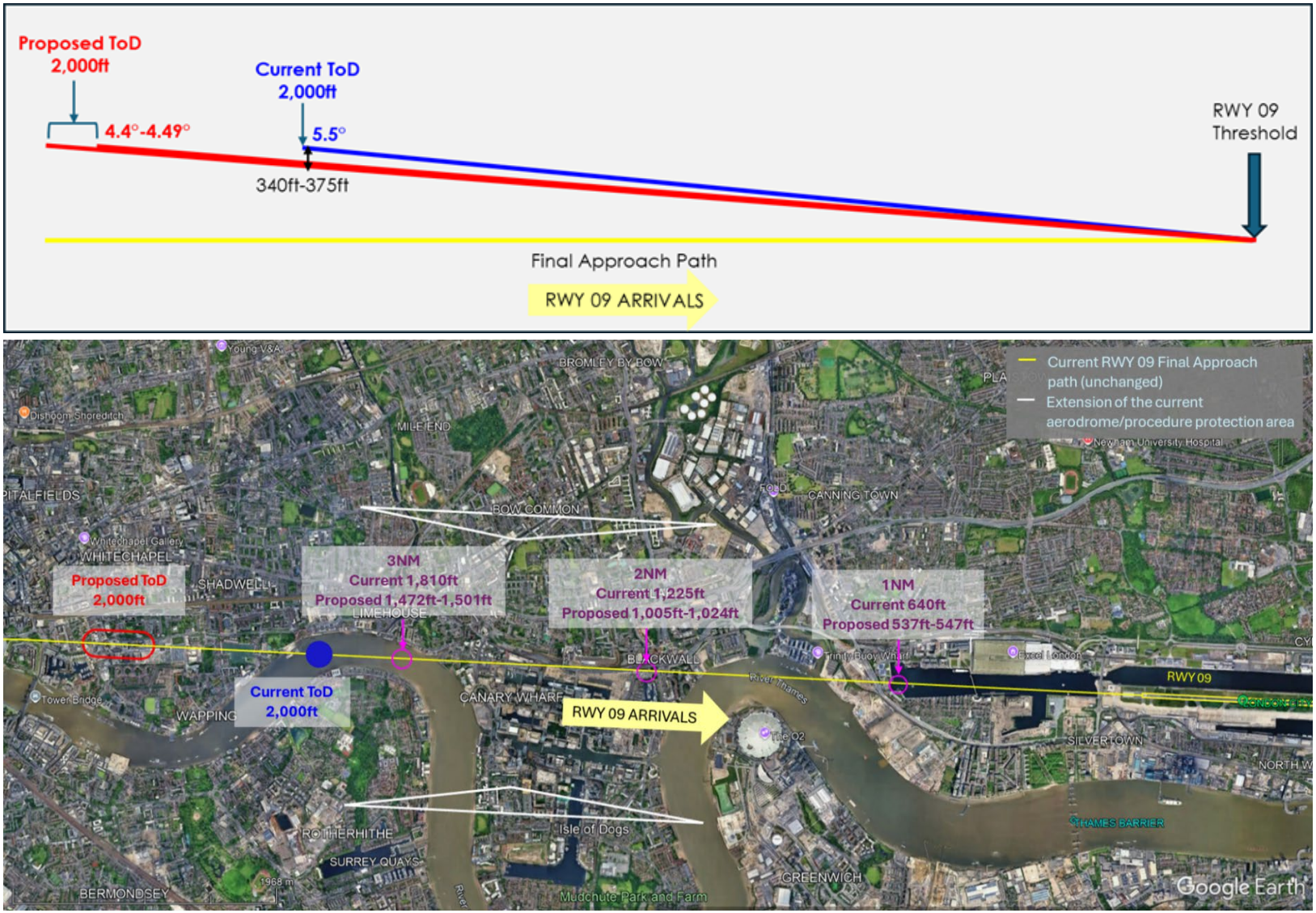


Figure 8: Final Approach RWY09 Option 1 [FA09_Option 1]. (Bottom) Plan view - showing the final approach from the proposed ToD to the runway threshold. Current ToD is shown in blue, proposed ToD is shown in red. The approximate altitudes at positions 1NM, 2NM and 3NM from the runway threshold are shown in purple and the current altitude at these positions is provided for comparison with this design option. A lateral extension of the current aerodrome/procedure protection area is shown in white. Note: altitude is measured from 35ft (current procedures) and 50ft (RNP AR procedures) which is the minimum altitude at which a landing aircraft is required to cross the runway threshold above the threshold elevation (approx. 19ft). (Top) Elevation view – the maximum vertical distance between the current descent path (shown in blue) and the proposed descent path (shown in red) is 340ft-375ft. [Google Earth, 2025].

Position from runway threshold	Difference in vertical distance (ft)	Difference in vertical distance (m)
1NM	93ft-103ft	28m-31m
2NM	201ft-220ft	61m-67m
3NM	309ft-338ft	94m-103m
Current ToD	340ft-375ft	104m-114m

Table 8: Final Approach RWY09 Option 1 [FA09_Option 1]. Summary of the difference in vertical distance, between the current flight path and this design option. Note: altitude is measured from 35ft (current procedures) and 50ft (RNP AR procedures) which is the minimum altitude at which a landing aircraft is required to cross the runway threshold above the threshold elevation (approx. 19ft).

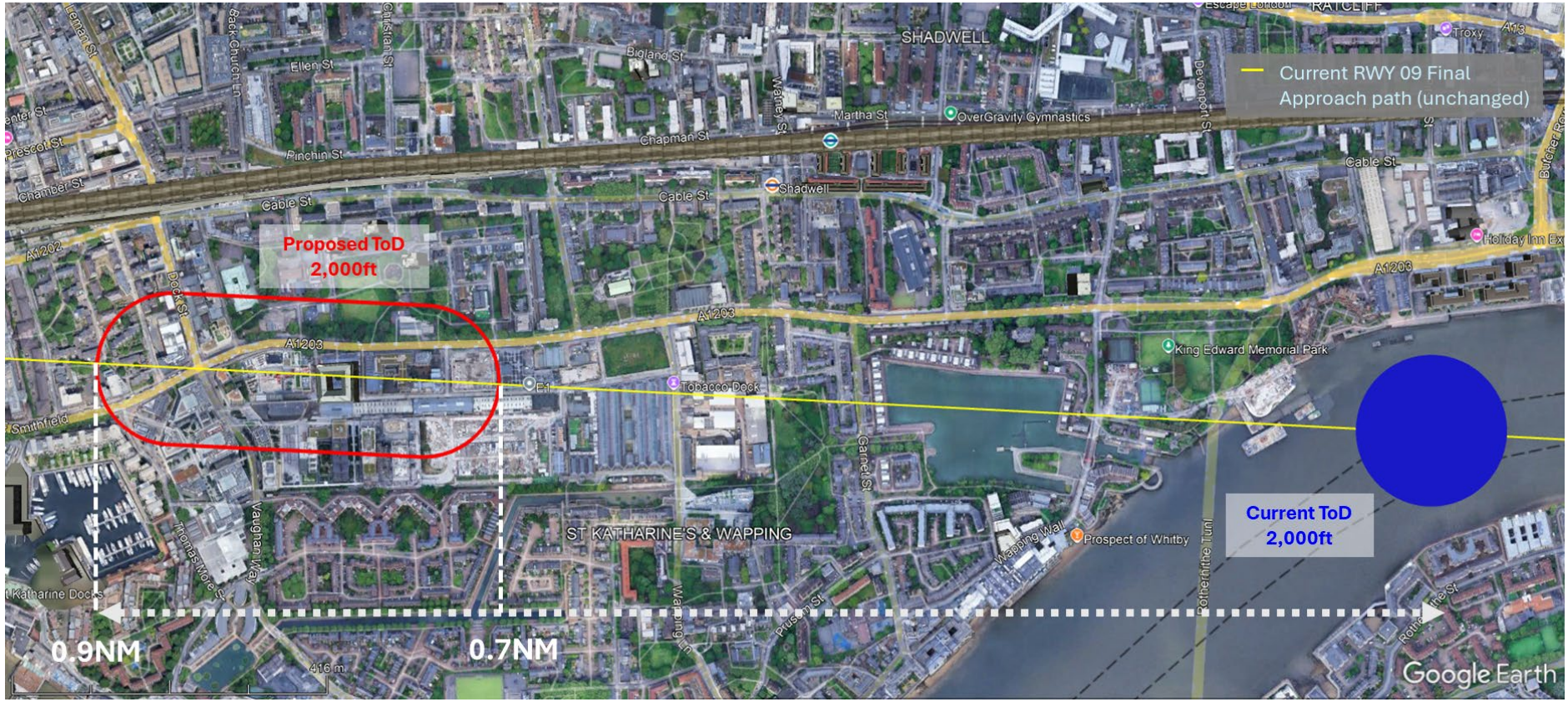


Figure 9: Final Approach RWY09 Option 1 [FA09_Option 1]. Detailed plan view - current ToD is shown in blue, proposed ToD is shown in red. [Google Earth, 2025].

3.3.64 For this option, there may be a requirement to provide mitigation (such as increased controller spacing requirements [29]) for successive arrivals on the different types of arrival procedure i.e. where one aircraft is on an ILS approach and the other is RNP AR, due to aircraft on the shallower approach reducing their speed earlier in the procedure to facilitate their descent.

3.3.65 Additionally, there may be a potential minor change in impact (not safety critical) for helicopter procedures following the H4 helicopter route (from the Isle of dogs to Vauxhall Bridge along the Thames); a change in the ToD for final approach could require the current procedures regarding Helicopter transits to be reviewed.

3.3.66 Stakeholder feedback has raised concerns for a potential increase in TCAS nuisance alerts associated with a shallower approach path for RWY09 which will need to be assessed in the Stage 3 safety work.

3.3.67 It is not anticipated that the heights and movements of vessels in the Thames will be impacted for this design option, however further assessment of the impact of the design on shipping operations will be included in the Stage 3 safety work.

3.3.68 In this option, the portion of the approach path between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile. As such, the sites that are currently overflown will remain the same; there are no new National Parks, AONBs, or noise sensitive buildings overflown. It is noted that the area impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). As such, the sites that are currently overflown will remain the same, however the area overflown (by aircraft on the RNP AR procedure) may be reduced.

3.3.69 This option is consistent with the conditions and obligations attached to the CADP planning permissions, however the Noise Action Plan pursuant to the permission may require updating to ensure consistency with the updated Quiet Operating Procedures [30].

3.3.70 No new populations are overflown, however, in the 2027-2036 timeframe, property development and population growth proximate to the RWY09 final approach path (adding approximately 35,000 people to the region) is anticipated.

3.3.71 RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038.

3.3.72 Some changes in noise impacts may result from having larger aircraft (from the fleet mix changes) operating to/from LCY, in addition to differences in vertical distance (up to 375ft (114m) at the maximum point), however these impacts are not anticipated to be significant, and are discussed in further detail below.

3.3.73 Preliminary aircraft noise comparison data observes that the negative difference in arrival/departure noise, for the largest aircraft associated with this fleet mix change (the A320neo), when compared to the current fleet mix, is predominantly below the threshold of perceptible change in noise (3dB [31, 32]).

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[29] the minimum distances that controllers must maintain to ensure that aircraft are kept a certain distance apart horizontally.

[30] For details of LCY CADP, Noise Action Plan, and Quiet Operating Procedures, see the Stage 1 Define document [Ref 6].

[31] A 3dB change in noise level is just perceptible by an average human being in controlled conditions and 5dB corresponds to the perceptible variation in everyday background level (Bies and Hansen (2009), and Bell and Bell (1994), respectively). 3dB is commonly described as a 'Barely Perceptible Change' and 5dB as a 'Clearly Noticeable Change'.

[32] This noise data is used for illustrative purposes only, detailed noise modelling will be conducted at Stage 3.

3.3.74 Additionally, RNP AR procedures are anticipated to reduce the number of over-flying aircraft (by supporting aircraft with greater passenger capacity, reducing traffic volume).

3.3.75 It noted that aircraft on a shallower approach angle generally require a lower thrust than a steeper approach; this is due to the relationship between lift, drag, and thrust, where a shallower angle allows for a more efficient use of lift and drag to control descent rate, minimizing the need for continuous engine thrust to maintain the glide path.

3.3.76 It is also noted that the population size impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). (Population size impacted by aircraft on the extant RWY09 RNAV1/ILS approach procedures remains unchanged, any reduction in population overflown is associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic in Year 10).

3.3.77 Aircraft are anticipated to fly an RNP approach procedure more precisely than the extant RNAV1/ILS procedure. The enhanced navigational accuracy is unlikely to affect noise impacts for this design option, as this portion of the approach procedure is a straight line (for RNAV1 navigation standards, aircraft already fly these portions with good precision).

3.3.78 It is therefore considered that lower, and potentially quieter, thrust settings, in addition to a reduction in the number of over-flying aircraft and population overflown, and the marginal difference between aircraft noise levels, would potentially mitigate any noise disbenefit associated with larger aircraft operating to/from LCY, and also any changes to noise impacts associated with the shallower approach profile.

3.3.79 Whilst the parameters for the new RNP AR procedures are not yet established, impacts to the aerodrome/procedure protection area are provided as an approximation only; we anticipate minor impact to the current aerodrome/procedure protection areas with this design option. A small lateral volume (extending the current protection area by approximately 185m at the widest part, and then tapering to zero) may be required approximately 2.5NM from the RWY09 threshold, see Figure 8. Any vertical differences to the aerodrome/procedure protection areas are anticipated to be contained (approximately) between the proposed ToD and the runway threshold.

3.3.80 Stakeholder feedback has requested consideration of impacts to Wapping; for this design option the proposed ToD point will reposition where aircraft commence their final descent to a location overhead St. Katharine's & Wapping. The difference in vertical distance over this location is likely to be minimal (less than 60ft) as it is the start of the descent profile and therefore environmental impacts are considered to be broadly unchanged.

3.3.81 Stakeholder feedback has requested consideration of the impacts on Vertiports, drone and UAV operations. To prevent interference with aircraft operations and ensure the safety of passengers and personnel, UAV and drone operations near to the airport will continue to require permission, and the airspace will remain restricted (as today) to these activities. Vertiport operations are not considered part of LCY operations at this time.

3.3.82 Stakeholder feedback relevant to FA09_Option 1 is provided in Table 9 below.

Table 9: Final Approach RWY 09 Option 1 [FA09_Option 1] stakeholder feedback

Stakeholder	Feedback	Impact
KL Grant Consulting	Concern about the restrictive nature of LCY protection areas, in	Consideration of impacts to the aerodrome/procedure

	particular for property development close to the airport. Feedback that the impact assessment does not capture the disbenefits associated with land development.	protection areas is covered in the Design Principle Evaluation. For this design option we anticipate minor impact to the current aerodrome/procedure protection areas. A small lateral volume (extending the current protection area by approximately 185m at the widest part, and then tapering to zero) may be required approximately 2.5NM from the RWY09 threshold. Any vertical differences to the aerodrome/procedure protection areas are anticipated to be contained (approximately) between the proposed ToD and the runway threshold. Following the detailed procedure design work at Stage 3, full assessment of the impacts on property/land development can be undertaken. Should any impacts be identified, then the relevant stakeholders will be informed and engaged with. No impact.
BA CityFlyer	Feedback was provided on the existence of TCAS Radar Advisory alerts associated with RWY09 arrivals due to helicopters flying on routes which are proximate to the final approach path. There is concern about the potential increase in these nuisance alerts for RWY09 design options associated with a shallower approach path.	As a result of stakeholder feedback, we have added current nuisance TCAS alerts to the Baseline Scenario description, and included consideration of TCAS nuisance alerts in the Design Principle Evaluation. Further assessment of the impact of the designs and helicopter operations will be included in the Stage 3 safety work.
Royal Docks Management Authority	Include consideration of the impacts to the heights and movements of vessels in the Thames.	As a result of stakeholder feedback, we have included consideration of impacts to the heights and movements of vessels in the Thames in the Design Principle Evaluation. Further assessment of the impact of the designs on shipping operations will be included in the Stage 3 safety work.
Swanson Aviation Consultancy Tate & Lyle	Consider the impact of Vertiports including drone and UAV (Unmanned Aerial Vehicle) operations.	As a result of this stakeholder feedback, we have included consideration of drone, UAV and Vertiport operations in the Design Principle Evaluation.
Royal Docks Management Authority	Clarify whether the extent of the change affects only the angle of approach.	The RNP AR procedure will mainly affect the angle of approach; it may also require slight modification from today for how aircraft conduct the turn (laterally) in the final stages of approach to RWY09. See design options IA09_01, IA09_02 and IA09_03. No impact.
Transport for London	Clarify the impact of operating on mixed approach procedures (i.e. where successive arrival aircraft are operating on either the RNAV1	There may be a requirement to provide mitigation (such as increased controller spacing requirements) for successive arrivals on the different types of

	ILS approach procedure or the RNP AR approach procedure).	arrival procedure i.e. where one aircraft is on an ILS approach and the other is RNP AR, due to aircraft on the shallower approach reducing their speed earlier in the procedure to facilitate their descent. Further assessment of the impact of the design options on current RNAV1 ILS operations will be included in the Stage 3 safety work. No impact.
Forest Hill Society	Clarify changes in impacts to noise and the frequency of overflight.	Qualitative assessments for noise and overflight are included in the Design Principle Evaluation for this option. Quantitative metrics for noise will provided at Stage 3. No impact.
HACAN East	Clarify why the design options do not include a 4.5° approach angle.	The UK regulatory constraint for Steep Approach certifications is set at angles of approach that are 4.5° or greater. The scope of this airspace change is for the introduction of an RNP AR procedure that will not require steep approach certifications at LCY, improving access to a wider range of modern aircraft at the airport. Therefore, the regulatory requirements are a constraint on the maximum angle of approach that can be considered for this procedure and only designs with an approach angle less than 4.5° are included here. No impact.
HACAN East	Clarify the difference in heights against the baseline scenario.	The difference in vertical distance is provided in Table 8. No impact.
Forest Hill Society	Clarify whether Wapping is included in the impact assessment.	As a result of stakeholder feedback, we have included consideration of impacts to Wapping in the Design Principle Evaluation.
Natural England	Design option feedback: "Unless the change in height would significantly affect the noise of the aircraft approaching, to the extent that it impacted the features of a designated site then it is unlikely that Natural England would need to provide detailed comments on these proposals".	In this option, the portion of the approach path between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile. As such, the sites that are currently overflown will remain the same. A significant change to noise impacts is not anticipated with the change to vertical distance in this design option. No impact.
Greater London Authority	Clarify the impact of the shallower approach and the earlier descent on vegetation proximate to the approach path.	The sites for biodiversity that are currently overflown will remain the same. However, it is noted that the area impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). As such, the sites that are currently overflown will remain the same, however the area overflown (by aircraft on

		the RNP AR procedure) may be reduced. Additionally, this airspace change proposal predicts a reduction in air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity). This is expected to reduce the number of aircraft over-flying these sites. No impact.
Greater London Authority	Clarify why there is only a single final approach option for RWY09.	Due to stringent obstacle clearance requirements for RWY09, only a single option for final approach has been identified which satisfies the design assumptions. No impact.
Greater London Authority	Clarify that aircraft will be lower as they approach the Royal Docks, as the descent starts further away.	The difference in vertical distance between the current flight path and this design option reduces as aircraft approach the runway threshold, see Figure 8. It is not anticipated that, in the vicinity of the Royal Docks, any difference in vertical distance will be perceptible. No impact.
Swanson Aviation Consultancy London Borough of Newham	Clarify potential impacts on helicopter operations and which stakeholders are being engaged with for this.	Helicopter Route 4 (H4) lies to the west of LCY; the LCY design option FA09_01 may impact H4 and this impact is included in the Design Principle Evaluation for FA09_01. Further assessment of the impact of the designs on helicopter operations will be included in the Stage 3 safety work. The British Helicopter Association are key Stakeholders for this airspace change and have been included in Stage 1 and Stage 2 of this airspace change process. We will continue to engage with impacted stakeholders during Stage 3 (Consult). No impact
London Borough of Newham	Concern about the impacts of a shallower glide slope on noise and local air quality impacts.	RNP AR procedures could increase the operation of more modern, 'quieter', 'cleaner' aircraft at LCY which could improve environmental impacts compared to older aircraft models, due to advancements in airframe design and more fuel-efficient engines which reduce fuel consumption, lower overall emissions of pollutants during flights and reduce noise. The airspace change has the potential to reduce air traffic growth compared with the baseline scenario (through fleet mix changes which support aircraft with greater passenger capacity) which is also anticipated to reduce environmental impacts. For the detailed assessments of noise and air quality see

		Appendix G Design Principle Evaluation Proforma and section 5 Initial Options Appraisal. No impact.
London Borough of Newham	Concern about the potential impact of bird strikes.	It should be noted that the approach angle for this design option (4.49° - 4.40°) remains higher than the majority of UK approaches which are flown at angles of 3° - 3.5°. Expert evaluations of the risks caused by hazardous birds within the vicinity of LCY are conducted through off-airfield surveys and the airport works with bird strike management specialists to ensure the application of appropriate and effective bird control measures. The bird strike rate at LCY is consistent with industry data, and there is no anticipation that the approach angle for this design option would lead to an increased rate of bird strike. No impact.
London Borough of Newham Barratt London Greater London Authority	Concern about the impact of the shallower glide slope on development sites in the Royal Docks, Canning Town and Tower Hamlets. Concern about potential impacts to the development at Crown Wharf (near to Canning Town station). Clarify the impact of the shallower approach and the earlier descent on the vertical heights of buildings proximate to the approach path.	It should be noted that at this stage of the design work, full procedure design is not complete; any protection areas associated with the proposed RNP AR procedures are understood at a high level only. For this design option we anticipate minor impact to the current aerodrome/procedure protection areas. A small lateral volume (extending the current protection area by approximately 185m at the widest part, and then tapering to zero) may be required approximately 2.5NM from the RWY09 threshold. Any vertical differences to the aerodrome/procedure protection areas are anticipated to be contained (approximately) between the proposed ToD and the runway threshold. Following the detailed procedure design work at Stage 3, full assessment of the impacts on property/land development can be undertaken. Should any impacts be identified, then the relevant stakeholders will be informed and engaged with. No impact.

Conclusion

FA09_Option 1 supports the introduction of RNP AR operations, improving access to a wider range of modern, environmentally efficient aircraft at LCY, enhancing the navigation standard for the approach phase of flight, and creating more capacity. This option is consistent with the conditions and obligations attached to the CADP planning permissions, however the Noise

Action Plan pursuant to the permission may require updating to ensure consistency with the updated Quiet Operating Procedures. This option represents a shallower RWY09 4.49° - 4.40° final approach path which may result in some change to noise impacts for communities close to the final descent area. Overall, RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts; lower, and potentially quieter, thrust settings, in addition to a reduction in traffic volume and population overflown, and the marginal difference between aircraft noise levels, would potentially mitigate any noise disbenefit associated with larger aircraft (from the fleet mix changes) operating to/from LCY, and also any changes to noise impacts associated with the shallower approach profile. We anticipate minor impact to the current aerodrome/procedure protection areas with this design option.

Benefits

- Advanced navigation standard helps to manage residual operational risk
- Contributes towards the AMS strategic objectives and Section 70 of the Transport Act 2000
- Follows the same lateral track as today
- No new sites overflown (National Parks, AONBs or noise sensitive buildings)
- No new populations overflown
- Reduces air traffic growth (through fleet mix changes supporting greater passenger capacity)
- Reduces the number of over-flying aircraft
- Reduces the area of overflight
- Reduces the size of the population impacted by overflight
- Enhances the navigation standard for the approach phase of flight
- Lower, potentially quieter thrust settings for aircraft on the final approach
- Overall improvement to noise impacts
- Increases accessibility for a wider range of modern, environmentally efficient, aircraft at LCY
- Enables more cost-effective operations for airline operators at LCY

Issues

- Safety consideration of the spacing requirements for successive arrivals on the different types of arrival procedure.
- Safety consideration of the impact on H4 helicopter transits
- Safety consideration of the impact on TCAS nuisance alerts
- Safety consideration of the impact on Thames shipping operations.
- Requires minor extension to the existing aerodrome/procedure protection area
- May result in some change to noise impacts for communities close to the final descent area
- Larger aircraft arriving and departing LCY (due to the fleet mix changes)
- May require a non-material change to the CADP planning permission.

The Design Principle Evaluation, see Appendix G, concluded that:

- 7 design principles were MET

- 4 design principles were PARTIAL (3 High, 1 Low)
- 0 design principles were NOT MET

FA09_Option 1 is considered a promising candidate and has been **PROGRESSED** to the next stage.

For the full detailed Design Principle Evaluation see Appendix G Design Principle Evaluation Proforma.

(5) Final Approach RWY 27 Option 1 [FA27_Option 1]

3.3.83 The obstacle clearance requirements for RWY27 are less stringent than RWY09, and as such three different options for final approach have been identified which satisfy the design assumptions.

3.3.84 For the first RWY27 final approach option, the track over the ground will remain as today (unchanged), and the approach angle is reduced from 5.5° (current operations) to between 4.49° - 4.05° which will mean the ToD will move approximately 1.1NM to 1.7NM east of its current position, see Figure 10.

3.3.85 Therefore, instead of aircraft being at 3,000ft for this portion of the flight path, they will descend to be between approximately 530ft-740ft lower at the current ToD, see Figure 10 (top figure). This would be the maximum vertical difference between the current descent path and this design option.

3.3.86 Also shown in Figure 10 (bottom figure) is the approximate altitude (vertical distance) at positions 1NM, 2NM, 3NM and 4NM from the runway threshold as follows:

1NM: current vertical distance 640ft, proposed vertical distance 500ft-547ft

2NM: current vertical distance 1,225ft, proposed vertical distance 930ft-1,024ft

3NM: current vertical distance 1,810ft, proposed vertical distance 1,361ft-1,501ft

4NM: current vertical distance 2,395ft, proposed vertical distance 1,791ft-1,979ft

3.3.87 The difference in vertical distance, between the current flight path and this design option is summarised in Table 10.

3.3.88 A more detailed plan view of the proposed ToD area is provided in Figure 11.

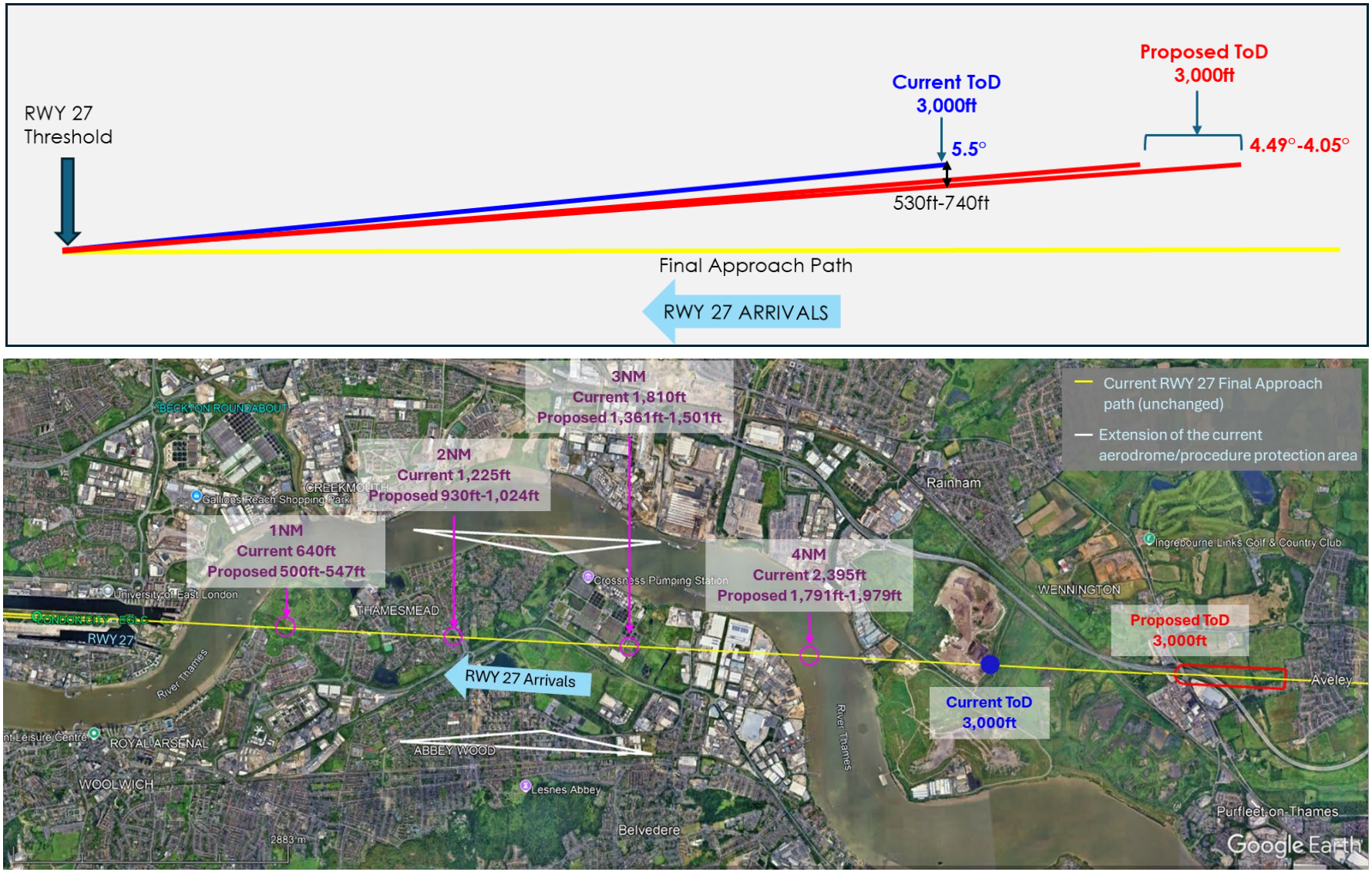

Figure 10: Final Approach RWY27 Option 1 [FA27_Option 1]. (Bottom) Plan view - showing the final approach from the proposed ToD to the runway threshold. Current ToD is shown in blue, proposed ToD is shown in red. The approximate altitudes at positions 1NM, 2NM, 3NM and 4NM from the runway threshold are shown in purple and the current altitude at these positions is provided for comparison with this design option. A lateral extension of the current aerodrome/procedure protection area is shown in white. Note: altitude is measured from 35ft (current procedures) and 50ft (RNP AR procedures) which is the minimum altitude at which a landing aircraft is required to cross the runway threshold) above the threshold elevation (approx. 20ft). (Top) Elevation view – the maximum vertical distance between the current descent path (shown in blue) and the proposed descent path (shown in red) is 530ft-740ft. [Google Earth, 2025].

Position from runway threshold	Difference in vertical distance (ft)	Difference in vertical distance (m)
1NM	93ft-140ft	28m-43m
2NM	201ft-295ft	61m-90m
3NM	309ft-449ft	94m-137m
4NM	416ft-604ft	127m-184m
Current ToD	530ft-740ft	162m-226m

Table 10: Final Approach RWY27 Option 1 [FA27_Option 1]. Summary of the difference in vertical distance, between the current flight path and this design option. Note: altitude is measured from 35ft (current procedures) and 50ft (RNP AR procedures) which is the minimum altitude at which a landing aircraft is required to cross the runway threshold)above the threshold elevation (approx. 20ft).

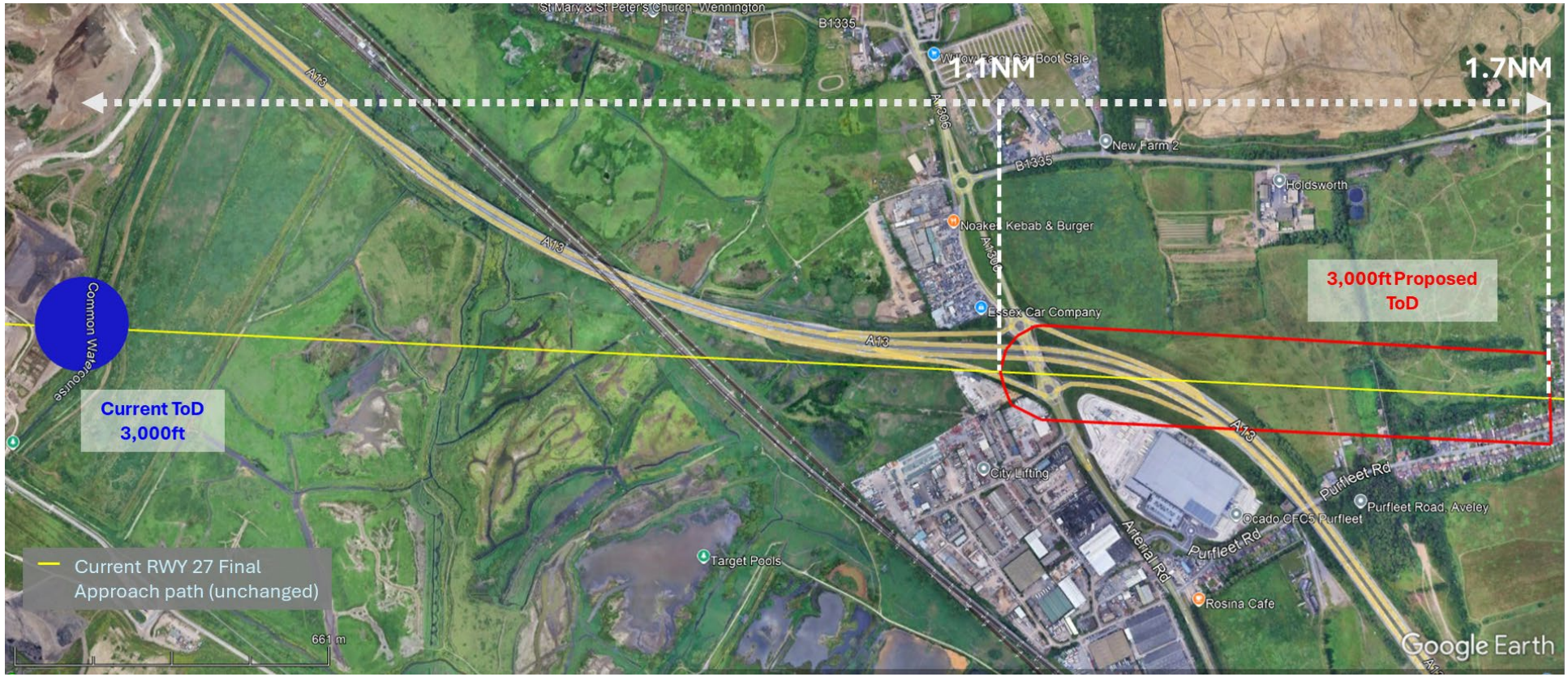

Figure 11: Final Approach RWY27 Option 1 [FA27_Option 1]. Detailed plan view - current ToD is shown in blue, proposed ToD is shown in red. [Google Earth, 2025].

3.3.89 For this option, there may be a requirement to provide mitigation (such as increased controller spacing requirements [33]) for successive arrivals on the different types of arrival procedure i.e. where one aircraft is on an ILS approach and the other is RNP AR, due to aircraft on the shallower approach reducing their speed earlier in the procedure to facilitate their descent.

3.3.90 It is not anticipated that the heights and movements of vessels in the Thames will be impacted for this design option, however further assessment of the impact of the design on shipping operations will be included in the Stage 3 safety work.

3.3.91 In this option, the portion of the approach path between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile. As such, the sites that are currently overflown will remain the same; there are no new National Parks, AONBs, or noise sensitive buildings overflown. It is noted that the area impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). As such, the sites that are currently overflown will remain the same, however the area overflown (by aircraft on the RNP AR procedure) may be reduced.

3.3.92 This option is consistent with the conditions and obligations attached to the CADP planning permissions, however the Noise Action Plan pursuant to the permission may require updating to ensure consistency with the updated Quiet Operating Procedures [34].

3.3.93 No new populations are overflown, however, in the 2027-2036 timeframe, property development and population growth proximate to the RWY27 final approach path (adding approximately 44,000 people to the region) is anticipated.

3.3.94 RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038.

3.3.95 Some changes in noise impacts may result from having larger aircraft (from the fleet mix changes) operating to/from LCY, in addition to differences in vertical distance (up to 740ft (226m) at the maximum point), however these impacts are not anticipated to be significant, and are discussed in further detail below.

3.3.96 Preliminary aircraft noise comparison data observes that the negative difference in arrival/departure noise, for the largest aircraft associated with this fleet mix change (the A320neo), when compared to the current fleet mix, is predominantly below the threshold of perceptible change in noise (3dB [35, 36]).

3.3.97 Additionally, RNP AR procedures are anticipated to reduce the number of over-flying aircraft (by supporting aircraft with greater passenger capacity, reducing traffic volume).

3.3.98 It is noted that aircraft on a shallower approach angle generally require a lower thrust than a steeper approach; this is due to the relationship between lift, drag, and thrust, where a shallower angle allows for a more efficient use of lift and drag

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[33] the minimum distances that controllers must maintain to ensure that aircraft are kept a certain distance apart horizontally.

[34] For details of LCY CADP, Noise Action Plan, and Quiet Operating Procedures, see the Stage 1 Define document [Ref 6].

[35] A 3dB change in noise level is just perceptible by an average human being in controlled conditions and 5dB corresponds to the perceptible variation in everyday background level (Bies and Hansen (2009), and Bell and Bell (1994), respectively). 3dB is commonly described as a 'Barely Perceptible Change' and 5dB as a 'Clearly Noticeable Change'.

[36] This noise data is used for illustrative purposes only, detailed noise modelling will be conducted at Stage 3.

to control descent rate, minimizing the need for continuous engine thrust to maintain the glide path.

3.3.99 It is also noted that the population size impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). (Population size impacted by aircraft on the extant RWY09 RNAV1/ILS approach procedures remains unchanged, any reduction in population overflown is associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic in Year 10).

3.3.100 Aircraft are anticipated to fly an RNP approach procedure more precisely than the extant RNAV1/ILS procedure. The enhanced navigational accuracy is unlikely to affect noise impacts for this design option, as this portion of the approach procedure is a straight line (for RNAV1 navigation standards, aircraft already fly these portions with good precision).

3.3.101 It is therefore considered that lower, and potentially quieter, thrust settings, in addition to a reduction in the number of over-flying aircraft and population overflown, and the marginal difference between aircraft noise levels, would potentially mitigate any noise disbenefit associated with larger aircraft operating to/from LCY, and also any changes to noise impacts associated with the shallower approach profile.

3.3.102 Whilst the parameters for the new RNP AR procedures are not yet established, impacts to the aerodrome/procedure protection area are provided as an approximation only; we anticipate minor impact to the current aerodrome/procedure protection areas with this design option. A small lateral volume (extending the current protection area by approximately 185m at the widest part, and then tapering to zero) may be required approximately 2.5NM from the RWY27 threshold, see Figure 10. Any vertical differences to the aerodrome/procedure protection areas are anticipated to be contained (approximately) between the proposed ToD and the runway threshold.

3.3.103 Stakeholder feedback has expressed a preference for this RWY27 design option, as it supports the RNP concept whilst maintaining arrivals as high as possible for as long as possible.

3.3.104 Stakeholder feedback has requested consideration of impacts to the Rainham Marshes; for this design option the proposed ToD point will reposition where aircraft commence their final descent to a location approximately 1.1NM to 1.7NM east of its current position. The difference in vertical distance as aircraft fly abeam the Rainham Marshes is likely to be a maximum of 250ft (for this design option). For RWY27 aircraft commence the descent from 3,000ft, and therefore the difference in vertical distance (at this height) is considered unlikely to result in any changes to environmental impacts. Aircraft will be above the altitude that would be considered a risk for bird strikes (which is generally below 2000ft).

3.3.105 Stakeholder feedback has requested consideration of the impacts on Vertiports, drone and UAV operations. To prevent interference with aircraft operations and ensure the safety of passengers and personnel, UAV and drone operations near to the airport will continue to require permission, and the airspace will remain restricted (as today) to these activities. Vertiport operations are not considered part of LCY operations at this time.

3.3.106 Stakeholder feedback relevant to FA27_Option 1 is provided in Table 11 below.

Table 11: Final Approach RWY27 Option 1 [FA27_Option 1] stakeholder feedback

Stakeholder	Feedback	Impact
KL Grant Consulting	Concern about the restrictive nature of LCY protection areas, in	Consideration of impacts to the aerodrome/procedure protection

	particular for property development close to the airport. Feedback that the impact assessment does not capture the disbenefits associated with land development.	areas is covered in the Design Principle Evaluation. For this design option we anticipate minor impact to the current aerodrome/procedure protection areas. A small lateral volume (extending the current protection area by approximately 185m at the widest part, and then tapering to zero) may be required approximately 2.5NM from the RWY09 threshold. Any vertical differences to the aerodrome/procedure protection areas are anticipated to be contained (approximately) between the proposed ToD and the runway threshold. Following the detailed procedure design work at Stage 3, full assessment of the impacts on property/land development can be undertaken. Should any impacts be identified, then the relevant stakeholders will be informed and engaged with. No impact.
Royal Docks Management Authority	Include consideration of the impacts to the heights and movements of vessels in the Thames.	As a result of stakeholder feedback, we have included consideration of impacts to the heights and movements of vessels in the Thames in the Design Principle Evaluation. Further assessment of the impact of the designs on shipping operations will be included in the Stage 3 safety work.
Swanson Aviation Consultancy Tate & Lyle	Consider the impact of Vertiports including drone and UAV (Unmanned Aerial Vehicle) operations.	As a result of this stakeholder feedback, we have included consideration of drone, UAV and Vertiport operations in the Design Principle Evaluation.
Transport for London	Clarify the impact of operating on mixed approach procedures (i.e. where successive arrival aircraft are operating on either the RNAV1 ILS approach procedure or the RNP AR approach procedure).	There may be a requirement to provide mitigation (such as increased controller spacing requirements) for successive arrivals on the different types of arrival procedure i.e. where one aircraft is on an ILS approach and the other is RNP AR, due to aircraft on the shallower approach reducing their speed earlier in the procedure to facilitate their descent. Further assessment of the impact of the design options on current RNAV1 ILS operations will be included in the Stage 3 safety work. No impact.
Forest Hill Society	Clarify changes in impacts to noise and the frequency of overflight.	Qualitative assessments for noise and overflight are included in the Design Principle Evaluation for this option. Quantitative metrics for noise will provided at Stage 3. No impact.
Forest Hill Society HACAN East	Preference to keep the procedure as high as possible to limit the	As a result of stakeholder feedback, we have included consideration of keeping the

London Borough of Newham KL Grant Consulting	impact on noise and property development.	approach procedure as high as possible in the Design Principle Evaluation.
HACAN East	Clarify why the design options do not include a 4.5° approach angle.	The UK regulatory constraint for Steep Approach certifications is set at angles of approach that are 4.5° or greater. The scope of this airspace change is for the introduction of an RNP AR procedure that will not require steep approach certifications at LCY, improving access to a wider range of modern aircraft at the airport. Therefore, the regulatory requirements are a constraint on the maximum angle of approach that can be considered for this procedure and only designs with an approach angle less than 4.5° are included here. No impact.
HACAN East	Clarify the difference in heights against the baseline scenario.	The difference in vertical distance is provided, see Table 10 No impact.
Forest Hill Society	Clarify whether the Rainham Marshes is included in the impact assessment.	As a result of stakeholder feedback, we have included consideration of impacts to the Rainham Marshes in the Design Principle Evaluation.
Natural England	Design option feedback: "Unless the change in height would significantly affect the noise of the aircraft approaching, to the extent that it impacted the features of a designated site then it is unlikely that Natural England would need to provide detailed comments on these proposals".	In this option, the portion of the approach path between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile. As such, the sites that are currently overflown will remain the same. A significant change to noise impacts is not anticipated with the change to vertical distance in this design option. No impact.
Greater London Authority	Clarify the impact of the shallower approach and the earlier descent on vegetation proximate to the approach path.	The sites for biodiversity that are currently overflown will remain the same. However, it is noted that the area impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). As such, the sites that are currently overflown will remain the same, however the area overflown (by aircraft on the RNP AR procedure) may be reduced. Additionally, this airspace change proposal predicts a reduction in air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity). This is expected to reduce the number of aircraft over-flying these sites. No impact.
Greater London Authority	Clarify that aircraft will be lower as they approach the Royal Docks, as the descent starts further away.	The difference in vertical distance between the current flight path and this design option reduces as aircraft approach the runway threshold, see Figure 10. It is not anticipated that, in the vicinity of the Royal Docks, the difference in

		vertical distance will be perceptible. No impact.
Greater London Authority	Clarify why the obstacle clearance requirements for RWY27 are less stringent than RWY09.	Obstacle clearance ensures there are adequate safety margins for aircraft on the approach path against surrounding buildings and structures; it is defined by specific regulations and criteria to account for aircraft performance, terrain, weather conditions, and obstacle types. Specifically, the approach to RWY09 has taller buildings and structures in the vicinity of the approach path compared to RWY27, which restricts the flyable approach angles for aircraft approaching from the west. No impact.
Greater London Authority Transport for London Berkely Group	Clarify whether the development of Albert Island has been factored in. Clarify whether the development of Beckton Riverside, North Woolwich, University of East London has been factored in. Clarify whether the major development areas of Thamesmead and Belvedere have been factored in.	We confirm that all these developments have been included for consideration. At this stage, Beckton Riverside is considered outside of the scope of these changes, however Barking and Dagenham council have participated in our Stage 2 engagement. At this stage of the design work, full procedure design is not complete; any protection areas associated with the proposed RNP AR procedures are understood at a high level only. Following the detailed procedure design work at Stage 3, full assessment of the impacts on property/land development can be undertaken. Should any impacts be identified, then the relevant stakeholders will be informed and engaged with. No impact.
Lendlease	Feedback that engagement slide 20 is incorrect as it does not consider development in the Thamesmead area; it states, 'Significant population growth near to the RWY 27 final approach path is not anticipated (no major property development proposals are identified within this area)."	LCY thank you for highlighting this development. The development of the Thamesmead area is included in our consideration of housing allocations. Please note that population projections remain unchanged as they are taken from GLA data.
London Borough of Newham Lendlease	Concern about the impacts of a shallower glide slope on local air quality impacts. Concern about the impacts of a shallower glide slope on noise.	RNP AR procedures could increase the operation of more modern, 'quieter', 'cleaner' aircraft at LCY which could improve environmental impacts compared to older aircraft models, due to advancements in airframe design and more fuel-efficient engines which reduce fuel consumption, lower overall emissions of pollutants during flights and reduce noise. The airspace change has the potential to reduce air traffic growth compared with the baseline scenario (through fleet

		mix changes which support aircraft with greater passenger capacity) which is also anticipated to reduce environmental impacts. For the detailed assessments of noise and air quality see Appendix G Design Principle Evaluation Proforma and section 5 Initial Options Appraisal. No impact.
London Borough of Newham	Concern about the potential impact of bird strikes.	It should be noted that the approach angle for this design option (4.49° - 4.05°) remains higher than the majority of UK approaches which are flown at angles of 3° - 3.5°. Expert evaluations of the risks caused by hazardous birds within the vicinity of LCY are conducted through off-airfield surveys and the airport works with bird strike management specialists to ensure the application of appropriate and effective bird control measures. The bird strike rate at LCY is consistent with industry data, and there is no anticipation that the approach angle for this design option would lead to an increased rate of bird strike. No impact.
Royal Docks Management Authority Greater London Authority Lendlease London Borough of Newham Barking and Dagenham Council	Clarify any impacts on crane heights in King George V Lock on the north lock edge. Clarify the impact of the shallower approach and the earlier descent on the vertical heights of buildings proximate to the approach path. Concern that a reduction in the height of aircraft over the Thamesmead Waterfront site could negatively impact the development in this area. Concern about the impact of the shallower glide slope on development sites in the Royal Docks, Greenwich, Bexley and Havering. Concern about how this proposal will impact the development of Erith. Clarify whether Barking and Dagenham will be impacted.	It should be noted that at this stage of the design work, full procedure design is not complete; any protection areas associated with the proposed RNP AR procedures are understood at a high level only. For this design option we anticipate minor impact to the current aerodrome/procedure protection areas. A small lateral volume (extending the current protection area by approximately 185m at the widest part, and then tapering to zero) may be required approximately 2.5NM from the RWY09 threshold. Any vertical differences to the aerodrome/procedure protection areas are anticipated to be contained (approximately) between the proposed ToD and the runway threshold. Following the detailed procedure design work at Stage 3, full assessment of the impacts on property/land development can be undertaken. Should any impacts be identified, then the relevant stakeholders will be informed and engaged with. No impact.

Conclusion

FA27_Option 1 supports the introduction of RNP AR operations, improving access to a wider range of modern, environmentally efficient aircraft at LCY, enhancing the navigation standard for the approach phase of flight, and creating more capacity. This option is consistent with the conditions and obligations attached to the CADP planning permissions, however the Noise Action Plan pursuant to the permission may require updating to ensure consistency with the updated Quiet Operating Procedures. This option represents a shallower RWY27 4.49° - 4.05° final approach path which may result in some change to noise impacts for communities close to the final descent area. Overall, RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts; lower, and potentially quieter, thrust settings, in addition to a reduction in traffic volume and population overflown, and the marginal difference between aircraft noise levels, would potentially mitigate any noise disbenefit associated with larger aircraft (from the fleet mix changes) operating to/from LCY, and also any changes to noise impacts associated with the shallower approach profile. We anticipate minor impact to the current aerodrome/procedure protection areas with this design option.

Benefits

- Advanced navigation standard helps to manage residual operational risk
- Contributes towards the AMS strategic objectives and Section 70 of the Transport Act 2000
- Follows the same lateral track as today
- No new sites overflown (National Parks, AONBs or noise sensitive buildings)
- No new populations overflown
- Reduces air traffic growth (through fleet mix changes supporting greater passenger capacity)
- Reduces the number of over-flying aircraft
- Reduces the area of overflight
- Reduces the size of the population impacted by overflight
- Enhances the navigation standard for the approach phase of flight
- Lower, potentially quieter thrust settings for aircraft on the final approach
- Overall improvement to noise impacts
- Increases accessibility for a wider range of modern, environmentally efficient, aircraft at LCY
- Enables more cost-effective operations for airline operators at LCY
- Results in no change to other aviation stakeholders

Issues

- Safety consideration of the spacing requirements for successive arrivals on the different types of arrival procedure.
- Safety consideration of the impact on Thames shipping operations.
- Requires minor extension to the existing aerodrome/procedure protection area
- May result in some change to noise impacts for communities close to the final descent area
- Larger aircraft arriving and departing LCY (due to the fleet mix changes)

- May require a non-material change to the CADP planning permission.

The Design Principle Evaluation, see Appendix G, concluded that:

- 8 design principles were MET
- 3 design principles were PARTIAL (3 High)
- 0 design principles were NOT MET

FA27_Option 1 is considered a promising candidate and has been **PROGRESSED** to the next stage.

For the full detailed Design Principle Evaluation see Appendix G Design Principle Evaluation Proforma.

(6) Final Approach RWY 27 Option 2 [FA27_Option 2]

3.3.107 For the second RWY27 final approach option, the track over the ground will remain as today (unchanged), and the approach angle is reduced from 5.5° (current operations) to between 4.05° - 3.75° which will mean the ToD will move approximately 1.7NM to 2.3NM east of its current position, see Figure 12.

3.3.108 Therefore, instead of aircraft being at 3,000ft for this portion of the flight path, they will descend to be approximately 740ft-925ft lower at the current ToD, see Figure 12 (top figure). This would be the maximum vertical difference between the current descent path and this option.

3.3.109 Also shown in Figure 12 (bottom figure) is the approximate altitude (vertical distance) at positions 1NM, 2NM, 3NM and 4NM from the runway threshold as follows:

1NM: current vertical distance 640ft, proposed vertical distance 468ft-500ft

2NM: current vertical distance 1,225ft, proposed vertical distance 867ft-930ft

3NM: current vertical distance 1,810ft, proposed vertical distance 1,265ft-1,361ft

4NM: current vertical distance 2,395ft, proposed vertical distance 1,663ft-1,791ft

3.3.110 The difference in vertical distance, between the current flight path and this design option is summarised in Table 12.

3.3.111 A more detailed view of the proposed ToD area is provided in Figure 13.

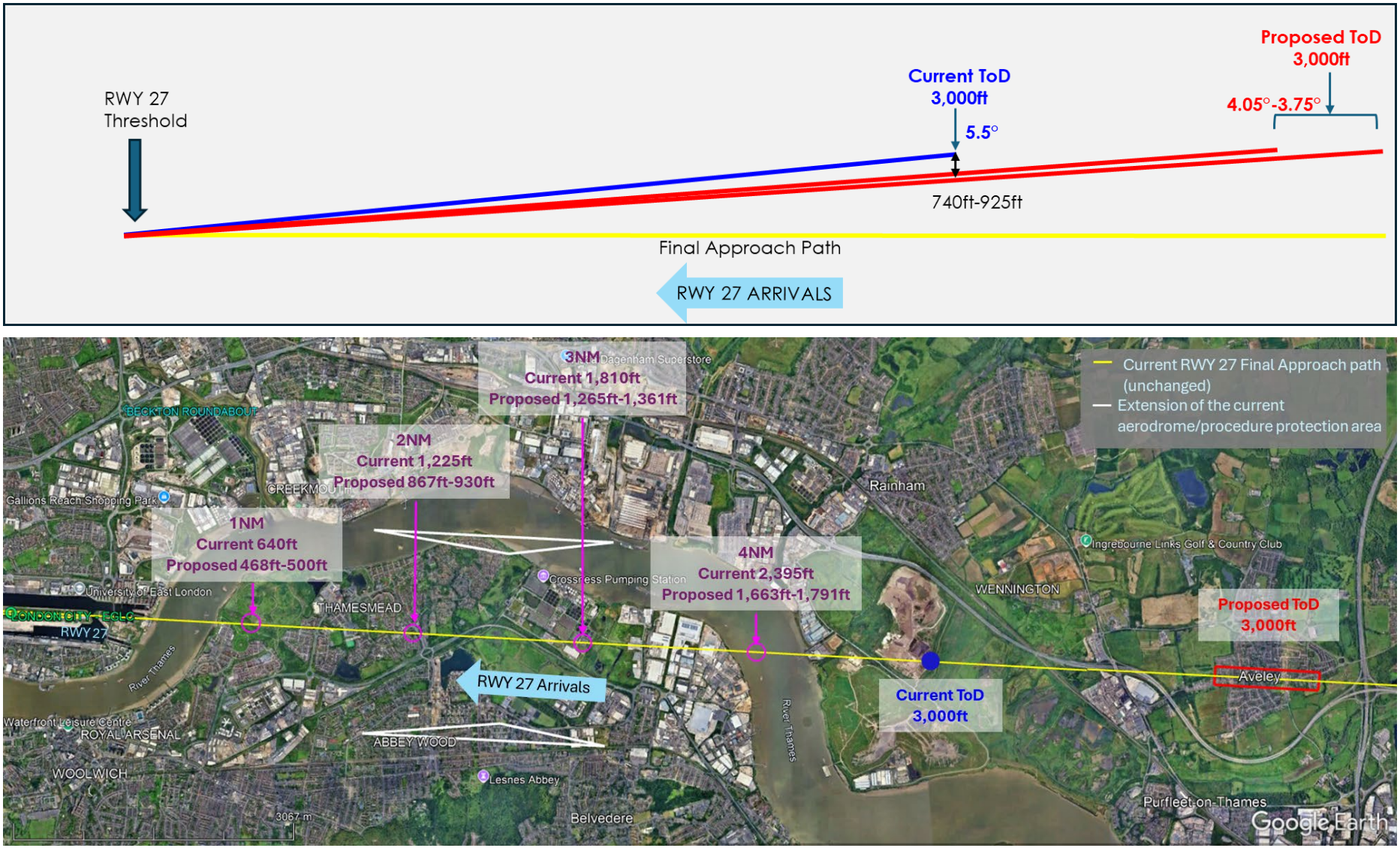


Figure 12: Final Approach RWY27 Option 2 [FA27_Option 2]. (Bottom) Plan view - showing the final approach from the proposed ToD to the runway threshold. Current ToD is shown in blue, proposed ToD is shown in red. The approximate altitudes at positions 1NM, 2NM, 3NM and 4NM from the runway threshold are shown in purple and the current altitude at these positions is provided for comparison with this design option. A lateral extension of the current aerodrome/procedure protection area is shown in white. Note: altitude is measured from 35ft (current procedures) and 50ft (RNP AR procedures) which is the minimum altitude at which a landing aircraft is required to cross the runway threshold above the threshold elevation (approx. 20ft). (Top) Elevation view – the maximum vertical distance between the current descent path (shown in blue) and the proposed descent path (shown in red) is 740ft-925ft. [Google Earth, 2025].

Position from runway threshold	Difference in vertical distance (ft)	Difference in vertical distance (m)
1NM	140ft-172ft	43m-52m
2NM	295ft-358ft	90m-109m
3NM	449ft-545ft	137m-166m
4NM	604ft-732ft	184m-223m
Current ToD	740ft-925ft	226m-282m

Table 12: Final Approach RWY27 Option 2 [FA27_Option 2]. Summary of the difference in vertical distance, between the current flight path and this design option. Note: altitude is measured from 35ft (current procedures) and 50ft (RNP AR procedures)which is the minimum altitude at which a landing aircraft is required to cross the runway threshold) above the threshold elevation (approx. 20ft).

Figure 13: Final Approach RWY27 Option 2 [FA27_Option 2]. Detailed plan view - current ToD is shown in blue, proposed ToD is shown in red. [Google Earth, 2025].

3.3.112 In this option, the portion of approach between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile and therefore no new populations or sites are overflown. However, the vertical distance is reduced (at the maximum point) up to 925ft (282m), and the proposed ToD point will reposition where aircraft commence their final descent to a location over the village of Averley (population approximately 10,000 people). The vertical profile difference for this option is sizeable, and therefore the likelihood of experiencing adverse noise effects could be increased such that consideration would need to be given to mitigating and minimising those effects.

3.3.113 The Obstacle Limitation Surface (OLS) protection area remaining unchanged is a key concern for local authorities and property developers; changes to the approach path down to 4° are considered to support the existing OLS. As such, this option, which reduces the approach angle below 4°, may require a consequential change to the OLS (as the OLS would no longer include the area of protection for the new RNP AR procedure) which could impact property development in this area.

3.3.114 As a result of the potential impacts on the existing OLS protection area, and also the total adverse effects from aircraft noise, this design option did not meet the progression requirements set for the Design Principle Evaluation. Hence this option was **REJECTED** and will not be progressed. The benefits for this option are comparable with FA27_Option 1 and are not repeated here (as this option is rejected); for the full detailed Design Principle Evaluation see Appendix G Design Principle Evaluation Proforma.

3.3.115 Stakeholder feedback relevant to FA27_Option 2 is provided in Table 13 below.

Table 13: Final Approach RWY27 Option 2 [FA27_Option 2] stakeholder feedback

Stakeholder	Feedback	Impact
KL Grant Consulting	Concern about the restrictive nature of LCY protection areas, in particular for property development close to the airport. Feedback that the impact assessment does not capture the disbenefits associated with land development.	This option, which reduces the approach angle below 4°, may require a consequential change to the OLS (as the OLS would no longer include the area of protection for the new RNP AR procedure) which could impact property development in this area. Note: this design option did not meet the progression requirements set for the Design Principle Evaluation; it was REJECTED and will not be progressed. No impact.
Royal Docks Management Authority	Include consideration of the impacts to the heights and movements of vessels in the Thames.	As a result of stakeholder feedback, we have included consideration of impacts to the heights and movements of vessels in the Thames in the Design Principle Evaluation. Further assessment of the impact of the designs on shipping operations will be included in the Stage 3 safety work.
Swanson Aviation Consultancy Tate & Lyle	Consider the impact of Vertiports including drone and UAV (Unmanned Aerial Vehicle) operations.	As a result of this stakeholder feedback, we have included consideration of drone, UAV and Vertiport operations in the Design Principle Evaluation.

KL Grant Consulting Forest Hill Society	Clarify why a large range of lower approach angles is being considered for RWY27.	The Stage 2 design work considers all viable options in the development of a longlist of design options, which are subsequently assessed against the Design Principles. Each design option satisfies the design assumptions which have been derived from the design constraints, the SoN and the Design Principles. No impact.
Transport for London	Clarify the impact of operating on mixed approach procedures (i.e. where successive arrival aircraft are operating on either the RNAV1 ILS approach procedure or the RNP AR approach procedure).	There may be a requirement to provide mitigation (such as increased controller spacing requirements) for successive arrivals on the different types of arrival procedure i.e. where one aircraft is on an ILS approach and the other is RNP AR, due to aircraft on the shallower approach reducing their speed earlier in the procedure to facilitate their descent. Further assessment of the impact of the design options on current RNAV1 ILS operations will be included in the Stage 3 safety work. No impact.
Forest Hill Society	Clarify changes in impacts to noise and the frequency of overflight.	Qualitative assessments for noise and overflight are included in the Design Principle Evaluation for this option. Quantitative metrics for noise will provided at Stage 3. No impact.
HACAN East	Clarify the difference in heights against the baseline scenario.	The difference in vertical distance is provided, see Table 12. No impact.
Forest Hill Society	Clarify whether the Rainham Marshes is included in the impact assessment.	The vertical profile difference for this option is sizeable, and therefore the likelihood of experiencing adverse noise effects could be increased such that consideration would need to be given to mitigating and minimising those effects. Note: this design option did not meet the progression requirements set for the Design Principle Evaluation; it was REJECTED and will not be progressed. No impact.
Natural England	Design option feedback: "Unless the change in height would significantly affect the noise of the aircraft approaching, to the extent that it impacted the features of a designated site then it is unlikely that Natural England would need to provide detailed comments on these proposals".	The vertical profile difference for this option is sizeable, and therefore the likelihood of experiencing adverse noise effects could be increased such that consideration would need to be given to mitigating and minimising those effects. Note: this design option did not meet the progression requirements set for the Design Principle Evaluation; it was REJECTED and will not be progressed. No impact.

Greater London Authority	Clarify the impact of the shallower approach and the earlier descent on vegetation proximate to the approach path.	The vertical profile difference for this option is sizeable, and therefore the likelihood of experiencing adverse noise effects could be increased such that consideration would need to be given to mitigating and minimising those effects. Note: this design option did not meet the progression requirements set for the Design Principle Evaluation; it was REJECTED and will not be progressed. No impact.
Greater London Authority	Clarify that aircraft will be lower as they approach the Royal Docks, as the descent starts further away.	The difference in vertical distance between the current flight path and this design option reduces as aircraft approach the runway threshold, see Figure 12. It is not anticipated that, in the vicinity of the Royal Docks, any difference in vertical distance will be perceptible. No impact.
Greater London Authority	Clarify why the obstacle clearance requirements for RWY27 are less stringent than RWY09.	Obstacle clearance ensures there are adequate safety margins for aircraft on the approach path against surrounding buildings and structures; it is defined by specific regulations and criteria to account for aircraft performance, terrain, weather conditions, and obstacle types. Specifically, the approach to RWY09 has taller buildings and structures in the vicinity of the approach path compared to RWY27, which restricts the flyable approach angles for aircraft approaching from the west. No impact.
Greater London Authority Transport for London Berkely Group	Clarify whether the development of Albert Island has been factored in. Clarify whether the development of Beckton Riverside, North Woolwich, University of East London has been factored in. Clarify whether the major development areas of Thamesmead and Belvedere have been factored in.	We confirm that all these developments have been included for consideration. At this stage, Beckton Riverside is considered outside of the scope of these changes, however Barking and Dagenham council have participated in our Stage 2 engagement. At this stage of the design work, full procedure design is not complete; any protection areas associated with the proposed RNP AR procedures are understood at a high level only. Following the detailed procedure design work at Stage 3, full assessment of the impacts on property/land development can be undertaken. Should any impacts be identified, then the relevant stakeholders will be informed and engaged with. No impact.
Lendlease	Feedback that engagement slide 20 is incorrect as it does not consider development in the Thamesmead area; it states,	LCY thank you for highlighting this development. The development of the Thamesmead area is included in our consideration of

	'Significant population growth near to the RWY 27 final approach path is not anticipated (no major property development proposals are identified within this area)."	housing allocations. Please note that the population projections remain unchanged as these have been taken from GLA data.
London Borough of Newham Lendlease	Concern about the impacts of a shallower glide slope on local air quality impacts. Concern about the impacts of a shallower glide slope on noise.	The vertical profile difference for this option is sizeable, and therefore the likelihood of experiencing adverse noise effects could be increased such that consideration would need to be given to mitigating and minimising those effects. Note: this design option did not meet the progression requirements set for the Design Principle Evaluation; it was REJECTED and will not be progressed. No impact.
London Borough of Newham	Concern about the potential impact of bird strikes.	It should be noted that the approach angle for this design option (4.05° - 3.75°) remains higher than the majority of UK approaches which are flown at angles of 3° - 3.5°. Expert evaluations of the risks caused by hazardous birds within the vicinity of LCY are conducted through off-airfield surveys and the airport works with bird strike management specialists to ensure the application of appropriate and effective bird control measures. The bird strike rate at LCY is consistent with industry data, and there is no anticipation that the approach angle for this design option would lead to an increased rate of bird strike. No impact.
Royal Docks Management Authority Greater London Authority Lendlease London Borough of Newham Barking and Dagenham Council	Clarify any impacts on crane heights in King George V Lock on the north lock edge. Clarify the impact of the shallower approach and the earlier descent on the vertical heights of buildings proximate to the approach path. Concern that a reduction in the height of aircraft over the Thamesmead Waterfront site could negatively impact the development in this area. Concern about the impact of the shallower glide slope on development sites in the Royal Docks, Greenwich, Bexley and Havering. Concern about how this proposal will impact the development of Erith. Clarify whether Barking and Dagenham will be impacted.	This option, which reduces the approach angle below 4°, may require a consequential change to the OLS (as the OLS would no longer include the area of protection for the new RNP AR procedure) which could impact property development in this area. Note: this design option did not meet the progression requirements set for the Design Principle Evaluation; it was REJECTED and will not be progressed. No impact.

Conclusion

FA27_Option 2 represents a shallower RWY27 4.05° - 3.75° final approach path which may require some changes to the existing OLS protection area, and also may lead to an increase in the total adverse effects from aircraft noise.

The Design Principle Evaluation, see Appendix G, concluded that:

- 7 design principles were MET
- 2 design principles were PARTIAL (2 High)
- 2 design principles were NOT MET (2 High)

FA27_Option 2 did not meet the progression requirements set for the Design Principle Evaluation, hence this option was **REJECTED** and will not be progressed.

For the full detailed Design Principle Evaluation see Appendix G Design Principle Evaluation Proforma.

(7) Final Approach RWY 27 Option 3 [FA27_Option 3]

3.3.116 For the third RWY27 final approach option, the track over the ground will remain as today (unchanged), and the approach angle is reduced from 5.5° (current operations) to between 3.75° - 3.50° which will mean the ToD will move approximately 2.3NM to 2.9NM east of its current position, see Figure 14.

3.3.117 Therefore, instead of aircraft being at 3,000ft for this portion of the flight path, they will descend to be approximately 925ft-1060ft lower at the current ToD, see Figure 14 (top figure). This would be the maximum vertical difference between the current descent path and this option.

3.3.118 Also shown in Figure 14 (bottom figure) is the approximate altitude (vertical distance) at positions 1NM, 2NM, 3NM and 4NM from the runway threshold as follows:

1NM: current vertical distance 640ft, proposed vertical distance 442ft-468ft

2NM: current vertical distance 1,225ft, proposed vertical distance 813ft-867ft

3NM: current vertical distance 1,810ft, proposed vertical distance 1,185ft-1,265ft

4NM: current vertical distance 2,395ft, proposed vertical distance 1,557ft-1,663ft

3.3.119 The difference in vertical distance, between the current flight path and this design option is summarised in Table 14.

3.3.120 A more detailed plan view of the proposed ToD area is provided in Figure 15.

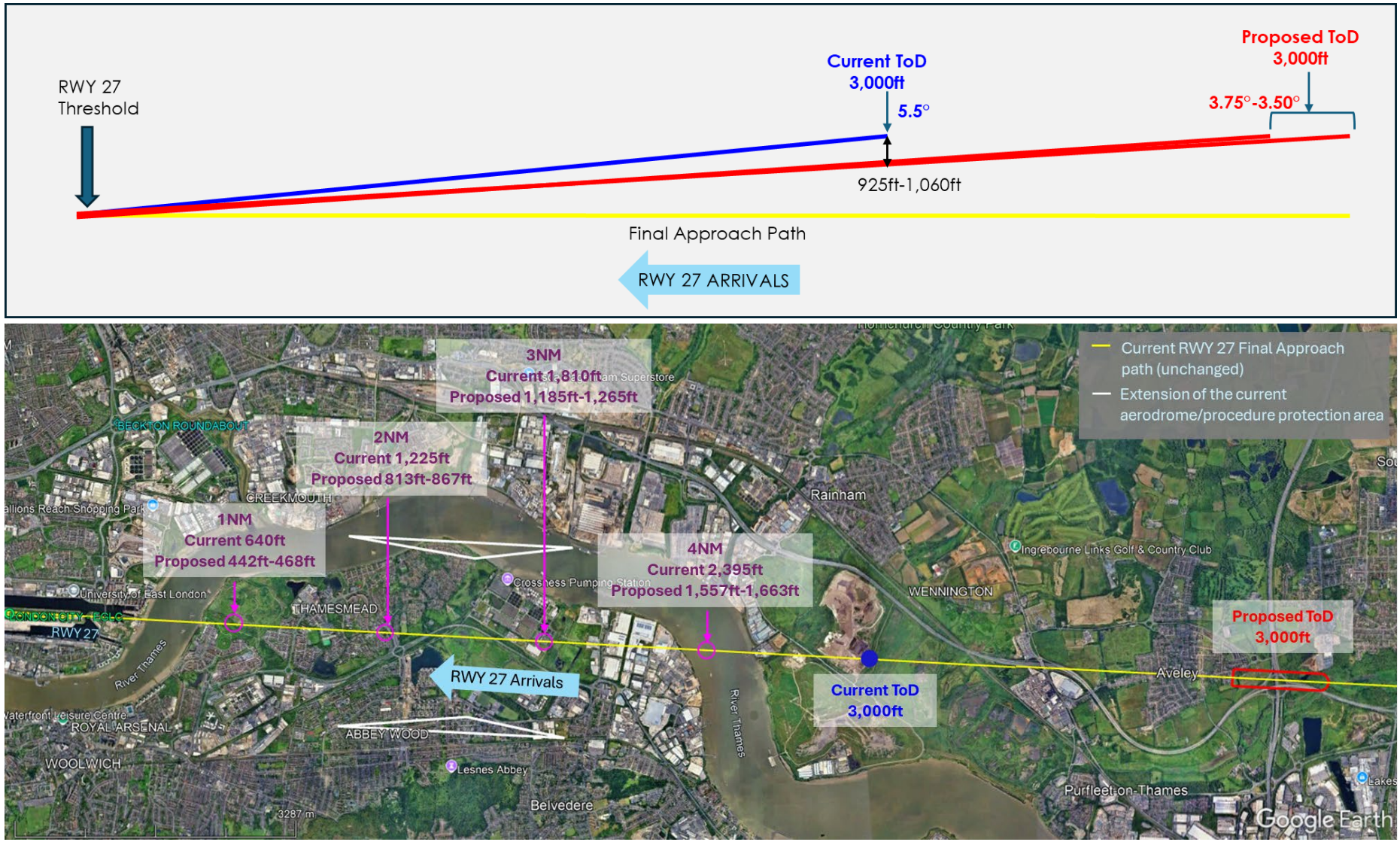


Figure 14: Final Approach RWY27 Option 3 [FA27_Option 3]. (Bottom) Plan view - showing the final approach from the proposed ToD to the runway threshold. Current ToD is shown in blue, proposed ToD is shown in red. The approximate altitudes at positions 1NM, 2NM, 3NM and 4NM from the runway threshold are shown in purple and the current altitude at these positions is provided for comparison with this design option. A lateral extension of the current aerodrome/procedure protection area is shown in white. Note: altitude is measured from 35ft (current procedures) and 50ft (RNP AR procedures) which is the minimum altitude at which a landing aircraft is required to cross the runway threshold above the threshold elevation (approx. 20ft). (Top) Elevation view – the maximum vertical distance between the current descent path (shown in blue) and the proposed descent path (shown in red) is 925ft-1,060ft. [Google Earth, 2025].

Position from runway threshold	Difference in vertical distance (ft)	Difference in vertical distance (m)
1NM	172ft-198ft	52m-60m
2NM	358ft-412ft	109m-126m
3NM	545ft-625ft	166m-191m
4NM	732ft-838ft	223m-255m
Current ToD	925ft-1060ft	282m-323m

Table 14: Final Approach RWY27 Option 3 [FA27_Option 3]. Summary of the difference in vertical distance, between the current flight path and this design option. Note: altitude is measured from 35ft (current procedures) and 50ft (RNP AR procedures) which is the minimum altitude at which a landing aircraft is required to cross the runway threshold above the threshold elevation (approx. 20ft).

Figure 15: Final Approach RWY27 Option 3 [FA27_Option 3]. Detailed plan view - current ToD is shown in blue, proposed ToD is shown in red. [Google Earth, 2025].

3.3.121 In this option, the portion of approach between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile and therefore no new populations or sites are overflown. However, the vertical distance is reduced (at the maximum point) up to 1,060ft (323m), and the proposed ToD point will reposition where aircraft commence their final descent to a location just before the village of Averley (population approximately 10,000 people). The vertical profile difference for this option is sizeable, and therefore the likelihood of experiencing adverse noise effects could be increased such that consideration would need to be given to mitigating and minimising those effects.

3.3.122 The Obstacle Limitation Surface (OLS) protection area remaining unchanged is a key concern for local authorities and property developers; changes to the approach path down to 4° are considered to support the existing OLS. As such, this option, which reduces the approach angle below 4°, may require a consequential change to the OLS (as the OLS would no longer include the area of protection for the new RNP AR procedure) which could impact property development in this area.

3.3.123 As a result of the potential impacts on the existing OLS protection area, and also the total adverse effects from aircraft noise, this design option did not meet the progression requirements set for the Design Principle Evaluation. Hence this option was **REJECTED** and will not be progressed. The benefits for this option are comparable with FA27_Option1 and are not repeated here (as this option is rejected); for the full detailed Design Principle Evaluation see Appendix G Design Principle Evaluation Proforma.

3.3.124 Stakeholder feedback relevant to FA27_Option 3 is provided in Table 15 below.

Table 15: Final Approach RWY27 Option 3 [FA27_Option 3] stakeholder feedback

Stakeholder	Feedback	Impact
KL Grant Consulting	Concern about the restrictive nature of LCY protection areas, in particular for property development close to the airport. Feedback that the impact assessment does not capture the disbenefits associated with land development.	This option, which reduces the approach angle below 4°, may require a consequential change to the OLS (as the OLS would no longer include the area of protection for the new RNP AR procedure) which could impact property development in this area. Note: this design option did not meet the progression requirements set for the Design Principle Evaluation; it was REJECTED and will not be progressed. No impact.
Royal Docks Management Authority	Include consideration of the impacts to the heights and movements of vessels in the Thames.	As a result of stakeholder feedback, we have included consideration of impacts to the heights and movements of vessels in the Thames in the Design Principle Evaluation. Further assessment of the impact of the designs on shipping operations will be included in the Stage 3 safety work.
Swanson Aviation Consultancy Tate & Lyle	Consider the impact of Vertiports including drone and UAV (Unmanned Aerial Vehicle) operations.	As a result of this stakeholder feedback, we have included consideration of drone, UAV and Vertiport operations in the Design Principle Evaluation.
KL Grant Consulting Forest Hill Society	Clarify why a large range of lower approach angles is being considered for RWY27.	The Stage 2 design work considers all viable options in the development of a longlist of design options, which are

		subsequently assessed against the Design Principles. Each design option satisfies the design assumptions which have been derived from the design constraints, the SoN and the Design Principles. No impact.
Transport for London	Clarify the impact of operating on mixed approach procedures (i.e. where successive arrival aircraft are operating on either the RNAV1 ILS approach procedure or the RNP AR approach procedure).	There may be a requirement to provide mitigation (such as increased controller spacing requirements) for successive arrivals on the different types of arrival procedure i.e. where one aircraft is on an ILS approach and the other is RNP AR, due to aircraft on the shallower approach reducing their speed earlier in the procedure to facilitate their descent. Further assessment of the impact of the design options on current RNAV1 ILS operations will be included in the Stage 3 safety work. No impact.
Forest Hill Society	Clarify changes in impacts to noise and the frequency of overflight.	Qualitative assessments for noise and overflight are included in the Design Principle Evaluation for this option. Quantitative metrics for noise will provided at Stage 3. No impact.
HACAN East	Clarify the difference in heights against the baseline scenario.	The difference in vertical distance is provided, see Table 14. No impact.
Forest Hill Society	Clarify whether the Rainham Marshes is included in the impact assessment.	The vertical profile difference for this option is sizeable, and therefore the likelihood of experiencing adverse noise effects could be increased such that consideration would need to be given to mitigating and minimising those effects. Note: this design option did not meet the progression requirements set for the Design Principle Evaluation; it was REJECTED and will not be progressed. No impact.
Natural England	Design option feedback: "Unless the change in height would significantly affect the noise of the aircraft approaching, to the extent that it impacted the features of a designated site then it is unlikely that Natural England would need to provide detailed comments on these proposals".	The vertical profile difference for this option is sizeable, and therefore the likelihood of experiencing adverse noise effects could be increased such that consideration would need to be given to mitigating and minimising those effects. Note: this design option did not meet the progression requirements set for the Design Principle Evaluation; it was REJECTED and will not be progressed. No impact.
Greater London Authority	Clarify the impact of the shallower approach and the earlier descent on vegetation proximate to the approach path.	The vertical profile difference for this option is sizeable, and therefore the likelihood of experiencing adverse noise effects could be increased such that consideration would need to

		be given to mitigating and minimising those effects. Note: this design option did not meet the progression requirements set for the Design Principle Evaluation; it was REJECTED and will not be progressed. No impact.
Greater London Authority	Clarify that aircraft will be lower as they approach the Royal Docks, as the descent starts further away.	The difference in vertical distance between the current flight path and this design option reduces as aircraft approach the runway threshold, see Figure 14. It is not anticipated that, in the vicinity of the Royal Docks, any difference in vertical distance will be perceptible. No impact.
Greater London Authority	Clarify why the obstacle clearance requirements for RWY27 are less stringent than RWY09.	Obstacle clearance ensures there are adequate safety margins for aircraft on the approach path against surrounding buildings and structures; it is defined by specific regulations and criteria to account for aircraft performance, terrain, weather conditions, and obstacle types. Specifically, the approach to RWY09 has taller buildings and structures in the vicinity of the approach path compared to RWY27, which restricts the flyable approach angles for aircraft approaching from the west. No impact.
Greater London Authority Transport for London Berkely Group	Clarify whether the development of Albert Island has been factored in. Clarify whether the development of Beckton Riverside, North Woolwich, University of East London has been factored in. Clarify whether the major development areas of Thamesmead and Belvedere have been factored in.	We confirm that all these developments have been included for consideration. At this stage, Beckton Riverside is considered outside of the scope of these changes, however Barking and Dagenham council have participated in our Stage 2 engagement. At this stage of the design work, full procedure design is not complete; any protection areas associated with the proposed RNP AR procedures are understood at a high level only. Following the detailed procedure design work at Stage 3, full assessment of the impacts on property/land development can be undertaken. Should any impacts be identified, then the relevant stakeholders will be informed and engaged with. No impact.
Lendlease	Feedback that engagement slide 20 is incorrect as it does not consider development in the Thamesmead area; it states, 'Significant population growth near to the RWY 27 final approach path is not anticipated (no major property development proposals are identified within this area)."	LCY thank you for highlighting this development. The development of the Thamesmead area is included in our consideration of housing allocations. Please note that the population projections remain unchanged as these have been taken from GLA data.

London Borough of Newham Lendlease	Concern about the impacts of a shallower glide slope on local air quality impacts. Concern about the impacts of a shallower glide slope on noise.	The vertical profile difference for this option is sizeable, and therefore the likelihood of experiencing adverse noise effects could be increased such that consideration would need to be given to mitigating and minimising those effects. Note: this design option did not meet the progression requirements set for the Design Principle Evaluation; it was REJECTED and will not be progressed. No impact.
London Borough of Newham	Concern about the potential impact of bird strikes.	It should be noted that the approach angle for this design option (3.75° - 3.50°) remains higher than the majority of UK approaches which are flown at angles of 3° - 3.5°. Expert evaluations of the risks caused by hazardous birds within the vicinity of LCY are conducted through off-airfield surveys and the airport works with bird strike management specialists to ensure the application of appropriate and effective bird control measures. The bird strike rate at LCY is consistent with industry data, and there is no anticipation that the approach angle for this design option would lead to an increased rate of bird strike. No impact.
London Borough of Newham	Feedback that this option is favoured least compared to FA27_Option 2 and FA27_Option 1 (favoured most).	LCY thank you for you feedback. Your preference for this RWY27 final approach design option has been accounted for in the design principle evaluation. No impact.
Royal Docks Management Authority Greater London Authority Lendlease London Borough of Newham Barking and Dagenham Council	Clarify any impacts on crane heights in King George V Lock on the north lock edge. Clarify the impact of the shallower approach and the earlier descent on the vertical heights of buildings proximate to the approach path. Concern that a reduction in the height of aircraft over the Thamesmead Waterfront site could negatively impact the development in this area. Concern about the impact of the shallower glide slope on development sites in the Royal Docks, Greenwich, Bexley and Havering. Concern about how this proposal will impact the development of Erith. Clarify whether Barking and Dagenham will be impacted.	This option, which reduces the approach angle below 4°, may require a consequential change to the OLS (as the OLS would no longer include the area of protection for the new RNP AR procedure) which could impact property development in this area. Note: this design option did not meet the progression requirements set for the Design Principle Evaluation; it was REJECTED and will not be progressed. No impact.

Conclusion

FA27_Option 3 represents a shallower RWY27 3.75° - 3.50° final approach path which may require some changes to the existing OLS protection area, and also may lead to an increase in the total adverse effects from aircraft noise.

The Design Principle Evaluation, see Appendix G, concluded that:

- 7 design principles were MET
- 2 design principles were PARTIAL (2 High)
- 2 design principles were NOT MET (2 High)

FA27_Option 3 did not meet the progression requirements set for the Design Principle Evaluation, hence this option was **REJECTED** and will not be progressed.

For the full detailed Design Principle Evaluation see Appendix G Design Principle Evaluation Proforma.

Other stakeholder feedback

3.3.125 Other stakeholder feedback, not specific to a particular design option, is included in Table 16.

Table 16: Other stakeholder feedback

Stakeholder	**Feedback/Discussions** **"They said"**	**Responses/Impact** **"We did"**
NetJets Gulfstream Aerospace AE Pathways HACAN East	Consider use of the RNP AR procedure by aircraft other than the A320neo.	LCY RNP AR procedures will be designed to support CAT A, CAT B and CAT C aircraft approach speed categories. An enhanced navigational capability as well as the ability to minimise impacts on the airport's noise footprint, will be a pre-requisite for aircraft operating on the shallower approach. The scope of flight testing, and assurance/validation activities within this ACP is in support of the A320neo aircraft type which is anticipated to be the preliminary user for this procedure. We are preserving the existing ground-based instrument approach procedures and approach angles for use by the current fleet. The airport may undertake additional work in the future to investigate use of the procedure by other aircraft types, however this is outside the scope of this ACP. No impact.
British Helicopter Association	Consider lowering the current ILS glidepath. Consider introducing RNP rather than RNP AR.	The obstacle clearance requirements for an ILS approach restrict the ability to lower the current ILS glidepath. RNP AR provides for a smaller obstacle assessment area compared to an ILS protection area; this navigational capability supports the proposal for a shallower approach angle. No impact.
NetJets	Consider the use of curved approaches to avoid populated areas.	Curved approaches have not been considered; for this airspace change proposal, LCY RNP AR procedures will, as closely as possible, follow the current LCY approach procedures (this is a design constraint) in order to minimise the extent of the change. For RWY 09 population overflight is unavoidable. No impact.
British Helicopter Association Forest Hill Society	Explain whether this change is linked to FASI	This airspace change proposal is independent of the changes taking place within FASI; for all design options presented herein, flight path changes affect the final stages of approach only and are based on existing LCY approach procedures. This airspace change proposes to implement before FASI. No impact.
Air Dolomiti	Explain whether the decision height minima will be reduced if RNP-AR is introduced	At this early stage of the design work, the decision height minima is yet to be determined. We would expect a slight reduction in the minima, but this is anticipated to be minor, and is restricted by the obstacles which limit the minima today. No impact.

Excel London Royal Docks Management Authority KL Grant Consulting	Clarify the impact of changes to height parameters on: current developments, proposed developments, developments on the water, the PSZ.	No significant impacts are anticipated to any existing developments or proposed developments at this stage of the design work. Following the detailed procedure design work in Stage 3, should any impacts be identified, then the relevant stakeholders will be informed and engaged with. This airspace change proposal is not anticipated to directly impact the size of LCY's PSZs; however the ability to support more modern aircraft, with increased aircraft safety, could reduce future growth of the PSZ boundary size with predicted increases in future traffic. No impact.
Tate & Lyle	Clarification on where aerodrome safeguarding heights are provided.	This information is not in the public domain; as per today, please continue to liaise with LCY for information. No impact.
Tate & Lyle	Clarify whether there will be impact on solar panels on new/pre-existing buildings	Planning and mitigation strategies currently minimize the impacts of solar panels (such as glare, interference with communications, navigation and surveillance systems). No impacts are currently anticipated for solar panels on pre-existing buildings. As per current operations, the implementation of solar panels on new building is reviewed by the airport on a case by case basis. No impact.
Lendlease Tate & Lyle	Clarify that planned developments, including consented or at the pre-application stage are being considered, in addition to the Local Plan.	The assessment work supporting this ACP includes any existing developments, known planned developments (consented or at the pre-application stage), and known land allocations. We are working closely with the local boroughs; at present no significant impacts have been identified. No impact.
Berkely Group	Clarify how the airspace change process will manage a detrimental increase to the size of the OLS, should it be identified at a later stage in the process.	The CAP1616 airspace change process ensures that, at each stage of the process, stakeholders that are impacted are contacted and engaged with and that design proposals are refined in response to stakeholder feedback. No impact.
KL Grant Consulting	Clarification of the impact of missed approach procedures.	Contingency procedures, including missed approaches and radio fail procedures for RNP aircraft will be designed in Stage 3 to integrate consistently with extant LCY procedures and will be impact assessed as part of the Stage 3 safety work. No impact.
KL Grant Consulting	Clarification of the impact on the minimal obstacle clearance parameters.	The minimum obstacle clearance parameters have not yet been defined at this early stage of the design work. The new RNP AR procedures will be restricted to the current environment, and can accommodate smaller protection areas (due to the enhanced navigation capability of aircraft flying these procedures). As such, we do not anticipate there will be significant change from today.

		No impact
Swanson Aviation Consultancy Tate & Lyle	Clarify whether VTOL (Vertical Take Off and Landing – where aircraft take off and land vertically without needing a runway) is included within the scope of this ACP.	LCY is open to exploring the future potential of eVTOLs, which are electric-powered VTOL aircraft, as part of our strategy for sustainable growth. However, VTOL aircraft are currently not permitted under the planning consent at LCY, and as such are considered outside of the scope of this ACP. No impact.
KL Grant Consulting Swanson Aviation Consultancy	Concern raised that the IFP protection areas impact the development potential of new/ pre-existing sites close to the airport.	The RNP AR protection area is likely to be predominantly contained within the current RNAV1/ILS protection area, and it is anticipated that only a small volume will be situated outside. As such, some obstacles that are currently situated inside the ILS protection area will not need to be considered for the RNP AR protection area. Equally some obstacles that lie outside of the ILS protection area may need to be included to support the RNP AR protection area. Following the detailed procedure design work in Stage 3, should any impacts be identified, then the relevant stakeholders will be informed and engaged with. No impact.
Royal Docks Management Authority	Clarify when data will be available to understand the impacts of the proposed change.	The detailed procedure design and assurance work will take place in Stage 3 (Consult) of the CAP1616 process. We will continue to engage with stakeholders on impacts during this stage. No impact.
Tate & Lyle	Clarify the impact on the IHS (Inner Horizontal Surface – aerodrome safeguarding)	No changes to these areas are currently proposed. No impact.
KL Grant Consulting	Clarification on how many design options will be progressed.	The Stage 2 design work considers all viable options in the development of a longlist of design options, which are subsequently assessed against the Design Principles (the 'Design Principle Evaluation'). The Design Principle Evaluation is used to determine which design options are suitable for progression to the Initial Options Appraisal for further impact assessment, which will continue to narrow down the viable options to a selected shortlist. Shortlisted options will then progress to Stage 3 (Consult) for more detailed modelling and impact assessment prior to public consultation. No impact.
Swanson Aviation Consultancy	Clarify at what stage of the process the IFP assessment work takes place.	Full IFP assurance is provided for the finalised design prior to submission of the ACP in Stage 4 (Update and Submit) of the CAP1616 process. However a large portion of the assurance work will be conducted prior to this, to provide sufficient information to support the public consultation at Stage 3 (Consult). No impact.
Royal Docks Management Authority	Clarify whether this airspace change will result in an increase in flights.	The limit on the City Airport Development Programme (CADP) permission of 111,000 air traffic movement per annum will not change as a result of this airspace change

		proposal; the new RNP AR procedures will support aircraft with greater passenger capacity and we anticipate this will reduce the annual flight numbers needed to serve the passenger limit (9 million passengers per annum). No impact.
Barking and Dagenham Council	Clarify whether there will be an impact to the size of the OLS.	This airspace change is designed to ensure no/minimal impact on the existing OLS. No impact.
Royal Docks Management Authority	Clarify whether there is an opportunity to have a conversation on specific developments.	The assessment work supporting this ACP includes any existing developments, known planned developments (consented or at the pre-application stage), and known land allocations; at present no significant impacts have been identified. We are working closely with our stakeholders to understand the impacts of this change and welcome any information you can provide at an early stage so that it may be factored into the design and impact assessment work. No impact.
Barking and Dagenham Council	Clarify whether there is requirement to submit a formal response at this stage.	We are working closely with our stakeholders to understand the impacts of this change and welcome any information you can provide at an early stage so that it may be factored into the design and impact assessment work. We will continue to engage with impacted stakeholders during Stage 3 (Consult), as we progress the preferred options through more detailed modelling and impact assessment. Following this, a full public consultation will be undertaken and a mature set of route design options will be presented. This will be widely publicised and is currently anticipated to commence in 2026. There is however no requirement for stakeholders to submit a formal response at Stage 2 of the CAP1616 process. No impact.
London Borough of Southwark	Clarify whether (without the change) new generation aircraft will replace the current fleet.	In the baseline ('do nothing') scenario current generation aircraft are gradually phased out and replaced with newer aircraft. The proposed airspace change seeks to accelerate this change by accommodating additional carriers, with more modern aircraft, at LCY and by incentivising existing airline operators at LCY to accelerate their refleeting to take advantage of more modern aircraft with greater capacity. No impact.
London Borough of Southwark	Clarify whether new generation aircraft are able to use the steeper glide path at LCY.	Some new generation aircraft are able to use the LCY steep approach however, the A320neo is unable to fly the current 5.5° steep approach procedure. This change enables LCY to achieve the permitted 9 million passengers per annum whilst remaining within the permitted 111,000 actual air traffic movements each year. No impact.

<table>
<tr><td>London Borough of Tower Hamlets</td><td>Clarify when LCY decided to support A320neo operations.</td><td>The decision to pursue A320neo operations was determined recently, but the possibility of A320neo (and A220-300) operations has been publicly stated in the LCY Masterplan since 2020. The A320neo has a higher passenger capacity than any aircraft currently operating at LCY, which could lead to a reduction in the number of air traffic movements per year. However, the A320neo is unable to fly the current 5.5° steep approach procedure, and we are proposing this airspace change to support the A320neo as the preliminary user of the new procedure.
No impact.</td></tr>
<tr><td>London Borough of Tower Hamlets
Greater London Authority</td><td>Provide clarification of the fleet mix changes and changes to air traffic movements.</td><td>For the forecast traffic and fleet mix changes please see Table 2 for the baseline (‘do nothing’) scenario and Table 4 for the airspace change scenario.
No impact.</td></tr>
<tr><td>London Borough of Southwark
HACAN East</td><td>Clarify how the benefit of ‘more destinations’ can be achieved whilst reducing the number of flights.</td><td>RNP AR procedures would increase accessibility for a wider range of modern aircraft, enabling new operators to fly from LCY to a greater range of destinations than previously. The A320neo is far more common than the regional jets that currently operate from LCY. Therefore, accessibility to a larger pool of aircraft will lead to a greater range of destinations.
No impact.</td></tr>
<tr><td>London Borough of Tower Hamlets</td><td>Clarify the current number of air traffic movements at LCY.</td><td>In 2024 LCY handled approximately 3.6million passengers and 51,000 air traffic movements [Ref 11].
No impact.</td></tr>
<tr><td>London Borough of Southwark
HACAN East</td><td>Clarify that LCY is not close to the permitted annual limit for passenger numbers or air traffic movements.</td><td>LCY is currently operating within the permitted annual limit for passenger numbers and air traffic movements. However the forecast growth over the next 10 years achieves our upper limit for air traffic movements. This airspace change proposal will help LCY to manage the growth in air traffic movements over this period and mitigate the impacts of this growth.
No impact.</td></tr>
<tr><td>London Borough of Southwark</td><td>Clarify the passenger capacity for each plane.</td><td>Passenger capacity numbers vary according to the seating configuration for each aircraft type, however an indicative value of the maximum passenger capacity is provided as follows:
<table>
<tr><th>Aircraft Type</th><th>Max. passenger capacity</th></tr>
<tr><td>Airbus A320neo</td><td>194</td></tr>
<tr><td>Airbus A220-100</td><td>135</td></tr>
<tr><td>Embraer E195-E2</td><td>146</td></tr>
<tr><td>Embraer E190</td><td>114</td></tr>
<tr><td>Embraer E190-E2</td><td>114</td></tr>
<tr><td>ATR72</td><td>78</td></tr>
</table>
It is worth noting that runway length is a critical factor in determining the size and type of aircraft that can operate at the airport; aircraft are limited by take-off weight rather than seating capacity.</td></tr>
</table>

		No impact.
Transport for London	Clarify what opportunities are afforded by the reduction in glide slope.	RNP AR procedures would increase accessibility for a wider range of modern aircraft, enabling new operators to fly from LCY to a greater range of destinations than previously, and incentivise existing airline operators at LCY to accelerate their refleeting to take advantage of more modern aircraft with greater capacity, lower seat costs and increased yields than would otherwise be available at LCY. This will enable the airport to accommodate new demand and provides benefit to airspace users, improving choice and value for money for consumers. No impact.
Transport for London	Clarify whether the current refleeting that is taking place (without this airspace change) is being considered.	In line with the CAP1616 process the evaluation of design options provides comparisons for the year of implementation with the proposed airspace change versus the same year without the proposed airspace change (year 1), and 10-years after implementation with the proposed airspace change versus the same year without the proposed airspace change (year 10). As such, the current refleeting that is taking place (without this airspace change) is included in the impact assessment work. No impact.
Forest Hill Society	Clarify whether the baseline reflects the current capacity. Clarify the current fleet-mix at LCY.	The 'baseline' is the term used to refer to the future scenarios without the airspace change and are developed for: the year of implementation without the airspace change proposal (year 1); and 10-years after implementation without the airspace change proposal (year 10). The forecast traffic and fleet mix changes are provided in Table 2 for the baseline ('do nothing') scenario and Table 4 for the airspace change scenario No impact.
London Borough of Southwark	Clarify at what distance from LCY aircraft start their descent.	This is dependent on the runway in use: for RWY27 (aircraft arriving from the east) the Top of Descent (ToD) is approx. 5.4NM (10km) from the airfield and; for RWY09 (aircraft arriving from the west) the ToD is approx. 3.8NM (7km) from the airfield. No impact
London Borough of Southwark	Clarify what determines the size of the PSZ.	There are two factors that affect PSZ size: 1) the risk of incident associated with aircraft: as aircraft become safer, the size of a PSZ reduces as the risk of incidents decreases and; 2) the volume of aircraft: the size of a PSZ increases with increased traffic levels as the likelihood of an incident increases. No impact.
Public Authorities workshop	Clarify what the width is of the (current) obstacle assessment area.	The area of protection for the current RNAV 1/ILS arrival procedure contains multiple segments; some of these are uniform, and some converge/diverge.

		This protection area will remain the same as today. The RNP AR protection area is likely to be predominantly contained within the current RNAV1/ILS protection area, and it is anticipated that only a small volume will be situated outside. As such, some obstacles that are currently situated inside the ILS protection area will not need to be considered for the RNP AR protection area. Equally some obstacles that lie outside of the ILS protection area may need to be included to support the RNP AR protection area. No impact.
AE Pathways Forest Hill Society HACAN East Transport for London	Clarify whether this procedure is dependent on the aircraft type. Clarify whether all aircraft will be able to fly the new procedure. Clarify whether this procedure is for the Airbus A320neo only. Clarify whether the Airbus A220-300 may use the procedure. Clarify the restrictions that will apply to aircraft operators that are not flying the A320neo. Clarify whether a request to fly the new procedure could be rejected by the airport.	Any reduction of the approach angle must achieve safe obstacle clearance in addition to ensuring the airport's noise level limits can still be adhered to. As such, both the enhanced RNP AR navigational capability as well as the ability to minimise impacts on the airport's noise footprint, is a pre-requisite for aircraft on the shallower approach. Use of the procedure by other aircraft types would be subject to flight testing, assurance/validation, and compliance with regulatory and environmental requirements; requests to fly the procedure will be assessed by the airport on a case-by-case basis. No impact.
Public Authorities workshop	Clarify whether maintaining the (current) noise footprint is a constraint on the design.	This airspace change proposal seeks to modernise LCY approach procedures to address airspace demand and secure the most efficient use of airspace, whilst maintaining existing movement limits and complying with noise and operational restrictions in the surrounding urban area. The airport's noise footprint is a key consideration for this change. No impact.
Public Authorities workshop	Clarify what determines the runway in use.	The wind direction determines which runway is used. In the southern UK, the prevailing wind is from the west, meaning that Runway 27 is used more often than Runway 09. Averaged over the last 6 years, the westerly Runway 27 is used 2/3 of the time, twice as frequently as easterly Runway 09. No impact.
Public Authorities workshop	Clarify whether the change will increase the concentration of aircraft in the airspace. Clarify whether the proposal will reduce overflight for some people but make it worse for others.	With PBN, the overall level of aircraft track-keeping is greatly improved for aircraft tracks, meaning aircraft will be more concentrated around their published route. Whilst this does mean that noise impacts are concentrated on a smaller area, it also exposes fewer people to noise than occurs with equivalent conventional procedures, as well as offering increased options for the establishment of noise respite/relief routes in the event that an increased concentration of traffic is causing

		significant impacts on those living directly underneath the flight path. No impact.
Transport for London	Clarify who is designing the new procedures	NATS/NSL is the procedure designer for this airspace change. No impact.
Transport for London	Clarify what determines the final glide slope angle	The angle of approach is primarily determined by obstacle clearance and aircraft performance requirements. No impact.
Transport for London	Clarify whether different priorities are allocated to the design principles.	Each design principle is assigned a relative priority (High, Medium, or Low), determined through the engagement work with stakeholders in Stage 1 (Define) of the airspace change process. These priorities are taken into consideration when they are used to evaluate/ rank design options as part of the Design Principle Evaluation in Stage 2 (Develop & Assess) of the process. No impact.
London Borough of Southwark	Clarify which design principles assess the impact on air quality. Clarify why it has not been given its own Design Principle.	The following design principles assesses the impact on air quality: M_DP03 (Environment – Priority High) "The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017" and; D_DP06 (Local context and circumstances – Priority High) "The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development". The impact on air quality is also assessed in the Initial Options Appraisal, which is a second round of assessment that takes place following completion of the Design Principle Evaluation, see section 5. It is worth noting that the CAA's mandatory design principle M_DP03 requires all design options to be assessed for compliance with the Government's Air Navigation Order 2017, which includes minimising local air quality emissions and ensuring that the UK complies with its international obligations on air quality. This design principle has a 'High' prioritisation level and will ensure that any environmental impacts are a key consideration for the design. Creating a separate design principle for air quality creates duplication which serves only to complicate the evaluation process and does not affect the result. Please see the feedback provided in Stage 1 (Define) of the CAP1616 process [Ref 6]. No impact.

Public Authorities workshop	Clarify the meaning of "not positively contribute to the AMS" for the Baseline ("do-nothing") option.	The CAA's Airspace Modernisation Strategy (AMS, [Ref 23]) seeks to modernise the design, technology and operation of UK airspace. The key objectives of the strategy includes: 1) Maintaining and, where possible, improving the UK's high levels of aviation safety 2) The integration of diverse users – including needs of defence and security 3) Simplification – reducing complexity and improving efficiency 4) Environmental sustainability In the baseline ('do nothing') scenario, LCY will continue to deliver environmental sustainability improvements through mitigation strategies and with gradual changes to fleet mix as existing LCY airline operators refleet over the period 2027 - 2036. However there would be no proactive contribution towards the AMS strategic objectives of "Integration" or "Simplification" or the efficient and expeditious flow of air traffic as defined in Section 70 of the Transport Act 2000. No impact.
London Borough of Southwark	Clarify how the different design options affect the traffic volume.	The different design options do not impact the number of forecast air traffic movements, see Table 4 for the airspace change scenario forecast. No impact.
London Borough of Southwark	Clarify whether the proposal will impact road traffic. Clarify whether transportation to/from the airport is being considered.	Consideration of the impact on road traffic is outside the scope of this airspace change proposal. It is worth noting that the ability for LCY to meet its conditions and legal obligations as contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement, is a key constraint on this design proposal. These permissions allow for 111,000 actual air traffic movements per year, and an increase in the permitted number of passengers to 9 million passengers per year (the "S73 Permission"). The scheduled movements are limited to 45 movements per hour. This airspace change proposal is maintained within these operating limits. Transportation to/from the airport is part of the operating permissions, and LCY currently has a number of schemes in place to manage and mitigate the impact of transportation to/from the airport including: • The Air Transport Forum (ATF) which enables a longer-term approach to transport planning, with key stakeholders meeting twice per year in accordance with the requirements of the Section 106 agreement. •The Airport Surface Access Strategy 2017-2025 (ASAS) [Ref 24]. No impact.

Public Authorities workshop	Clarify what proportion of the fleet will be the Airbus A320neo aircraft type by 2036. Clarify when you expect to reach 9 million passengers.	For the forecast traffic and fleet mix changes please see Table 2 for the baseline ('do nothing') scenario and Table 4 for the airspace change scenario. The proportion of A320neo aircraft by 2036 is expected to be ~50%. For this airspace change proposal we are anticipating a growth of 9 million passengers per year by 2036 (Year 10). No impact.
HACAN East	Clarify whether the assumption can be made against aircraft types, other than the Embraer E190.	In line with the CAP1616 process the evaluation of design options provides comparisons for the year of implementation with the proposed airspace change versus the same year without the proposed airspace change (year 1), and 10-years after implementation with the proposed airspace change versus the same year without the proposed airspace change (year 10). As such, the complete fleet mix, with and without this airspace change, is included in the impact assessment work. No impact.
Transport for London	Clarify whether aircraft operators will refleet to cleaner aircraft without a change being made to the approach angle.	In the Baseline ("do nothing") scenario there will be gradual changes to fleet mix as existing LCY airline operators refleet over the period 2027 - 2036. The proposed airspace change seeks to facilitate additional carriers with more modern aircraft at LCY that otherwise could not be accommodated, and to incentivise existing airline operators at LCY to accelerate their refleeting to take advantage of more modern aircraft with greater capacity. No impact.
London Borough of Tower Hamlets	Clarify whether LCY will offer reduced landing fees for the new procedure.	Preferential aviation charges in support of environmental initiatives are an on-going discussion within the wider aviation industry and part of the industry's long-term climate goals. However, consideration of a reduction in landing fees is outside the scope of this airspace change proposal. No impact.
Public Authorities workshop	Clarify when a more detailed noise assessment will be made available.	At Stage 2 (Develop and Assess) the impact assessments for the design options are qualitative and based on combining input from experienced subject matter experts alongside feedback from stakeholders. We will be quantitatively evaluating aircraft noise levels during Stage 3 (Consult) of the CAP1616 process as we progress the preferred design options through more detailed modelling. No impact.
Public Authorities workshop	Clarify whether there is a change to departure procedures.	This airspace change proposal seeks to introduce a new RNP AR approach procedure at LCY; no changes to LCY extant arrival procedures (RWY09/ RWY27 RNAV 1 ILS approaches), or to LCY extant departure procedures are proposed.

		No impact.
Transport for London	Clarify if the noise impact of departures will be considered due to the fleet changes.	Any changes in traffic patterns, traffic volumes or fleet mix below 7,000 feet (for all aircraft movements) are incorporated into the noise modelling. At Stage 2 (Develop and Assess) the impact assessments for the design options are qualitative and based on combining input from experienced subject matter experts alongside feedback from stakeholders. We will be quantitatively evaluating aircraft noise levels during Stage 3 (Consult) of the CAP1616 process as we progress the preferred design options through more detailed modelling. No impact.
London Borough of Southwark	Clarify whether there is a plan to change the capacity limit for passengers per year.	LCY permissions allow for 111,000 actual air traffic movements per year, and an increase in the permitted number of passengers to 9 million passengers per year (the "S73 Permission"). This airspace change proposal is maintained within these operating limits; no changes to the permitted number of passengers is proposed. No impact.
Public Authorities workshop	Clarify what is the furthest destination (currently) for LCY aircraft operators.	The furthest destination for LCY aircraft operators is currently Greece. No impact.
Public Authorities workshop	Clarify whether bigger aircraft are heavier, and consequently the impact of this.	The size and, specifically, the weight of an aircraft directly contributes to the amount of fuel it will fuel burn which impacts CO_2 emissions and other pollutants. The lighter an aircraft is, the less fuel is will burn. However, technology on new aircraft can either improve fuel burn through aerodynamic efficiency (mainly the airframe), or reduce actual combustion use (mainly engine-related). Combined, these elements can result in reduced environmental impact. Longer range heavy aircraft climb more slowly than smaller aircraft and therefore can be heard at higher noise levels for longer. Improvements in both engine and airframe technologies allow for newer generation aircraft being more efficient and quieter. No impact.
London Borough of Newham HACAN East	Clarify whether test flights will be undertaken. Clarify whether flight trials will be undertaken on fully laden aircraft.	As the airspace change proposal progresses through the later stages of the CAP1616 airspace change process, operational validation will be carried out to ensure fitness-for-purpose. The types of activity carried out are specific to the nature of the change, and are determined according to the assurance requirements for the change; typically these activities include simulations (a close emulation of the operational environment) and live flight trials (to trial a new procedure or technology), as appropriate. No impact.

HACAN East	Clarify when the presentation will be shared.	The presentation is available on the airspace change portal here. No impact.
HACAN East	Clarify the scale of the change.	This is a relatively small change to LCY current arrival procedures, affecting the final stages of approach, ~2,000ft/3,000ft, based on existing tracks only. We do not anticipate significant change of impacts from this airspace change proposal. No impact
HACAN East	Clarify where RNP AR procedures are currently flown.	Madeira Internation Airport utilises RNP AR procedures; it is characterised by a complex approach, with mountains on one side and the Atlantic Ocean on the other. Innsbruck Airport also utilises RNP AR to support safe and reliable operations in an environment with challenging terrain and weather patterns. No impact.
London Borough of Tower Hamlets	Clarify if the runway will be extended.	There is no proposal to extend LCY runway. No impact.
HACAN East	Clarify the current requirement for steep approaches at LCY. Clarify whether noise is a factor for the steep approach.	Aircraft currently operate under a 5.5° glideslope for the ILS approach, significantly steeper than the standard 3° approaches at most airports, due to the rich obstacle environment and tall buildings particularly to the west of the airport. RNP AR aircraft can fly precisely defined paths (curved or straight) and make turns at low altitudes, even in areas with challenging terrain or airspace restrictions. The lateral and vertical deviations are tightly controlled, usually within ±0.3 nautical miles or less and can be as low as ±0.1 nautical miles. Due to this level of accuracy, the obstacle assessment area is much smaller when compared to an ILS protection area The 5.5° approach angle is included in LCY's 'Quiet Operating Procedures', with the steep approach angle keeping aircraft higher for longer, thereby reducing the current noise impact on local communities. Proposed new approach procedures will need to ensure, not only obstacle clearance, but also that the airport's noise level limits can still be adhered to. No impact.
Forest Hill Society	Clarify the A320neo data that has been used to provide the impact assessments.	The A320neo preliminary aircraft noise comparison data used for the Stage 2 qualitative impact assessments are provided in Appendix B. No impact.
HACAN East	Clarify whether there will be an increase in morning flights.	Condition 88 of the CADP 73 permission provides for aircraft movements in excess of 6 and up to 9 movements between 0630 and 0659 (Mondays to Saturdays) to be restricted to new generation aircraft. Irrespective of this airspace change proposal, as aircraft operators refleet over the next few years, and the older generation aircraft

		are replaced with more modern 'quieter' aircraft, more aircraft will become eligible for the available morning slots LCY. No changes to the flights in this period are being sought. No impact.
Forest Hill Society HACAN East	Concern that there will be an increase in movements leading to an increase in noise and frequency of flights.	We are anticipating a reduction in air traffic growth compared with the baseline scenario as a result of this airspace change proposal. For the forecast traffic and fleet mix changes please see Table 2 for the baseline ('do nothing') scenario and Table 4 for the airspace change scenario. No impact.
HACAN East	Clarify whether British Airways are a likely Airbus A320neo operator.	Approximately 19% of British Airways' current short-haul fleet is comprised of A320neo aircraft. No impact.
Forest Hill Society	Clarify the equipment needs of the A320neo to enable it to fly the RNP AR approach procedure.	We do not have information on the specific equipment needs; however to conduct RNP AR approaches, both the aircraft and the operator need specific certifications and approvals. The aircraft must be certified for RNP AR operations, including its avionics and navigation database. The operator also requires specific authorization for RNP AR operations, which includes comprehensive training programs for flight crews and personnel. No impact.
HACAN East Forest Hill Society	Clarify whether real-world observations for aircraft noise will be used to quantify noise impacts. Clarify how noise measurements will be made. Clarify whether noise data will be made available before consultation. Clarify how the Airbus A320neo performs on departure. Clarify how changing where aircraft start their descent will impact noise.	For Stage 3, noise modelling will be conducted in accordance with the CAA's noise requirements which are defined in the CAP2091[CAA Policy on Minimum Standards for Noise Modelling, Ref 20]. LCY will ensure that the noise modelling approach is discussed and agreed with the CAA prior to consultation. We currently do not expect significant change relating to noise, however, following the detailed noise modelling in Stage 3, the overall change in noise impacts will be reviewed. Should any significant changes in impacts be identified, affected stakeholder groups will be contacted to ensure that they are aware of this airspace change proposal prior to public consultation and included in any discussions on proposed mitigation strategies No impact.
Forest Hill Society	Clarify whether the impact assessment extends to Dartford.	Impact assessments are not limited to a specific volume of airspace or to specific areas; any changes in traffic patterns, traffic volumes or fleet mix below 7,000 feet (for all aircraft movements) are included in the assessment. No impact.
HACAN East Forest Hill Society	Clarify the scope of the impact assessment work.	In line with the CAP1616 process the evaluation of design options provides comparisons for the year of implementation with the proposed airspace change versus the same year without the proposed airspace change (year 1), and 10-years after

		implementation with the proposed airspace change versus the same year without the proposed airspace change (year 10). Any changes in traffic patterns, traffic volumes or fleet mix below 7,000 feet (for all aircraft movements) are included in the assessment. No impact.
HACAN East	Clarify if the dispersion of air pollutants increases with aircraft altitude.	The contribution of aircraft emissions to local air pollution is mostly below 1000ft, particularly during take-off and landing. No impact.
HACAN East	Clarify the current hourly rate for air traffic movements.	The peak hourly rate of air traffic movements was 38 movements per hour (pre-pandemic). No impact.
HACAN East	Clarify whether there is a requirement to notify the airport for cranes on development sites.	The CAA is required to be notified of any temporary structure over 100m in height and within 6km of an airport; subsequently they will notify the airport. No impact.
Forest Hill Society	Clarify whether passenger numbers include Jet Centre traffic.	Private operator flights are maintained at 2024 levels in the 10-year forecast, as these flights represent a small percentage of LCY traffic (<5%) and any variation across the forecast period is not anticipated to be notable. There is no passenger allocation to these flights as there is no basis for knowing how many people will be on an aircraft. No impact.
HACAN East	Clarify why Greenwich and Bexley have not been included in the diagram of Public Safety Zones.	Public Safety Zones are areas around each end of the runway where development is restricted to minimize the number of people potentially at risk from an aircraft accident. Aerodrome safeguarding zones are much larger volumes of airspace around the airport which require the airport to be consulted on planning applications and any other activities in these areas which may affect the safe operation of aircraft. It is worth noting that this airspace change will result in small changes to arrival flight paths which are positioned to the south of the airport; as such the diagram illustrating LCY safeguarding is positioned accordingly in this region. No impact.
Forest Hill Society	Clarify whether RNP aircraft are able to descend in the turn.	RNP AR aircraft can fly precisely defined paths (curved or straight) and make turns at low altitudes, and in the descent, even in areas with challenging terrain or airspace restrictions. This proposal does not include a change in altitude on the turn segments of the approach. Descent will only occur during the straight final approach. No impact.
HACAN East	Clarify whether the wind determines the altitude that aircraft fly at.	Wind direction determines the runway in use; aircraft prefer to land and take off into the wind, as this provides more lift and reduces the required ground speed, making landing and take-off safer and more efficient. No impact.
HACAN East	Clarify how many people are newly overflown, and where the impacts are better or worse.	Once we have refined the preferred design option/s in Stage 3 of the CAP1616 process, detailed noise modelling will take place in accordance with CAP1616i [Ref 4]

		(which includes, amongst other metrics, measures for average sound levels, the frequency of significant noise events, and the size of the population exposed to aircraft flying overhead) and this will provide a greater understanding of any positive or negative impacts resulting from this change. No impact.
HACAN East	Clarify why aircraft altitudes on 'Flight Radar' (a flight tracking app) differ from the flight procedures.	It is important to be aware of the potential for discrepancies and errors in altitude information displayed in tracking apps such as Flight Radar. Factors like tracking errors, data logging, and the type of altimeter used can all influence the accuracy of the displayed altitude. No impact.
HACAN East	Concern raised that there is no ability for residents to challenge the noise impacts from aircraft at LCY.	A number of schemes are in place to manage and monitor aircraft noise at LCY and, in particular, the airport subsidises the cost of noise insulation for dwellings and public buildings in the most affected areas ("the Sound Insulation Scheme"). It is worth noting that the LCY Noise Contour Strategy seeks a continued reduction in the size of the noise contour area by 2030 and beyond; noise contours are used for determining eligibility under the Sound Insulation Scheme and will be reviewed as appropriate for operational changes that impact noise. No impact.
Forest Hill Society HACAN East	Clarify if an update is required to LCY planning permissions due to increased noise impacts.	The LCY planning permission includes restriction and obligations to mitigate the airport's impact on the local environment, including noise, air quality and surface access. Although the 5.5° approach angle is not a specific condition or obligation of the permission, the LCY Noise Action Plan (NAP) is approved as a condition of the permission. The NAP mentions 5.5° as a noise mitigation. The NAP is there to establish whether the current noise management measures are sufficient to protect the local community adequately, particularly those worst affected. The NAP is subject to review at least every 5 years, or revised as necessary, and any changes affecting the NAP are subject to a formal public consultation exercise, where the extent and nature of the consultation is proportionate to the extent of the noise impact of the airport operations and the actions being proposed, and lies outside of the CAP1616 process. No impact.
HACAN East	Clarify the level of confidence that LCY has in its traffic forecasts. Clarify whether there will be more confidence in the data at consultation.	Throughout the CAP1616 process, the traffic forecasts are updated to reflect the most up-to-date and credible data that is available. For any forecasting activity, forecasts are generally more reliable for shorter-term predictions (as they are based on recent trends and historical data), and become less accurate for longer-term predictions due to an increase in the

		uncertainty of various influencing factors. The impact assessment period for the CAP1616 process requires the forecasting to extend to 10-years after implementation (year 10), and as such the best data and information that we have is used to provide the forecasting for this period. No impact.
Forest Hill Society	Clarify if there will be a reduction in the annual passenger capacity limit as a result of this change.	The LCY operating permissions allow for 111,000 actual air traffic movements per year, and an increase in the permitted number of passengers to 9 million passengers per year (the "S73 Permission"). This airspace change proposal is maintained within these operating limits. Any changes to these limits lie outside of the CAP1616 airspace change process. No impact.
Forest Hill Society	Concerns associated with data gaps in the evidence provided at this stage.	CAP1616 is an iterative process and at Stage 2 we are required to provide a qualitative assessment due to the early maturity of the designs. The reasoning, assumptions and data sources are provided for any assessments we make at this stage. Once we have refined the preferred design option/s in Stage 3 of the CAP1616 process, detailed noise modelling will take place in accordance with CAP1616i [Ref 4] (which includes, amongst other metrics, measures for average sound levels, the frequency of significant noise events, and the size of the population exposed to aircraft flying overhead) and this will provide a greater understanding of any positive or negative impacts resulting from this change. No impact.
German Airways	Clarify whether the intent is to discontinue the current steep approach procedures.	There is no intent to discontinue the current steep approach procedures at LCY; we are preserving the existing ground-based instrument approach procedures and approach angles for use by the current fleet. No impact.
Transport for London	Include 'worst case scenario' modelling with Category C aircraft with a worse emissions profile.	The environmental impacts for this airspace change proposal are assessed with respect to the anticipated changes to fleet mix over the 2027 (Year 1) to 2036 (Year 10) assessment period. For more information on the modelling methodology, see Appendix E Traffic Forecast. It would not be appropriate to include all Category C aircraft in the forecast as not all would be capable of using LCY's short runway or would meet the airport's environmental controls. It is worth noting that under current permissions, the introduction of new aircraft types at LCY requires approval under the Aircraft Noise Categorisation Scheme (ANCS) (which ensures that only aircraft that meet strict noise thresholds are able to operate). The continued application of this scheme ensures that only permissible aircraft operate at LCY, and remains

		unchanged by this airspace change. The approval process for which aircraft may/ may not operate at LCY lies outside the CAP1616 airspace change process. No impact.
Transport for London	Requirement for any comparative assessment to use a baseline focused on the next-generation regional jets.	The environmental impacts for this airspace change proposal are assessed with respect to the anticipated changes to fleet mix over the 2027 (Year 1) to 2036 (Year 10) assessment period. For more information on the modelling methodology, see Appendix E Traffic Forecast. This considers a baseline fleet mix forecast without the change compared to the fleet mix forecast with the change. No impact.
Transport for London	Requirement for the environmental assessment to include ultrafine particles (UFP).	The Air Navigation Guidance 2017 states that oxides of nitrogen (NOx) and particulate matter (PM) are the two most important emissions affecting the local air quality around airports. This airspace change proposal will comply, as a minimum, with the requirements of the CAP1616i [Ref 3] in the assessment of air quality and provide a quantitative assessment for NOx, PM2.5 and PM10 emissions at Stage 3. It should be noted that LCY already reviews the potential for UFP monitoring through its Air Quality Strategies. No impact.
Gulfstream	Expression of support for the potential addition of RNP AR approaches at LCY and interest in the future use of these procedures for General Aviation.	LCY thank you for your feedback and we look forward to continued stakeholder engagement as we progress through the airspace change process. No impact.
Greater London Authority	Clarify the proposed reduction in environmental impacts, with the predicted increase in air traffic.	The environmental impacts for this airspace change proposal are assessed with respect to the anticipated changes to fleet mix over the 2027 (Year 1) to 2036 (Year 10) assessment period. This assessment is conducted for the 'with' airspace change and 'without' airspace change scenarios. In both scenarios, annual air traffic movements are anticipated to increase over the 10 year assessment period. However, for the 'with' airspace change scenario, the air traffic growth is reduced (by supporting aircraft with greater passenger capacity). This reduction in traffic growth, compared with the baseline scenario, alongside the increase in more modern, environmentally efficient, aircraft operating at LCY, is anticipated to support a reduction in environmental impacts. No impact.
Greater London Authority	Clarify the safety implications, associated with removing the UK regulatory constraint for Steep Approach certifications, for	RNP AR aircraft can fly precisely defined paths (curved or straight) and make turns at low altitudes, even in areas with challenging terrain or airspace restrictions. The lateral and vertical deviations are tightly controlled, usually within ±0.3 nautical miles or less and can be as low as ±0.1

	properties proximate to the approach path.	nautical miles. Due to this level of accuracy, the obstacle assessment area (which is used to identify potential hazards to aircraft, including buildings or other structures that might penetrated protected airspace) is much smaller when compared to the protection area for current LCY arrival procedures and, as such, this airspace change proposal is not anticipated to significantly impact properties proximate to the approach path. No impact.
Greater London Authority	Clarify what the mitigations are for the anticipated growth in traffic.	The S73 permissions provide the additional operational and environmental controls relevant to the predicted increase in passenger numbers and traffic volume with this airspace change proposal. No impact.
Greater London Authority	Clarify whether there has been environmental impact assessment of the change.	Environmental impact assessments have been conducted within the Design Principle Evaluation (see Appendix G Design Principle Evaluation Proforma), the Initial Options Appraisal (see section 5) and the Habitats and Regulations Assessment Screening (see section 7). No impact.
KL Grant Consulting Lendlease	Clarify whether future development potential will be considered.	The evaluations encompass existing developments, known planned developments, and known land allocations only. Any new planning applications under the flight path, including future activities which may affect the safe operation of aircraft, require consultation with LCY and lie outside of the CAP1616 process. No impact.
KL Grant Consulting Lendlease	Provide a comparison of the maximum possible obstacle heights for the baseline and the preferred option.	This information will be provided at Stage 3 following the detailed procedure design work, and is not available at this stage. No impact.
KL Grant Consulting Lendlease	Clarify whether the minimum headroom (e.g. 15m) above maximum building heights to accommodate construction cranes is included in consideration of impacts.	Following the detailed procedure design work at Stage 3, full assessment of the impacts on building heights, including construction cranes, can be undertaken. This information is not available at this stage. No impact.
KL Grant Consulting	Feedback that it is misleading to focus on the OLS and safeguarding maps as an indicator of potential impacts on land development.	It should be noted that at this stage of the design work, full procedure design is not complete; any protection areas associated with the proposed RNP AR procedures are understood at a high level only. The current LCY aerodrome/procedure protection areas are considered an appropriate benchmark for the purposes of broadly assessing benefits/disbenefits of different design options against the baseline and for developing a shortlist of viable options. Following the detailed procedure design work at Stage 3, full assessment of the impacts on property/land development can be undertaken. Should any impacts be identified, then

		the relevant stakeholders will be informed and engaged with. No impact.
KL Grant Consulting	Concerns that the RNP value has significant impact on the uncertainty for developers.	LCY understands the concerns regarding development uncertainty. The CAP1616 process is an iterative process of design and impact assessment and, until the detailed procedure design work is completed in Stage 3, parameters for the new RNP AR procedures are understood and assessed at a high level only. Following the detailed procedure design work at Stage 3, full assessment of the impacts on property/land development can be undertaken. Should any impacts be identified, then the relevant stakeholders will be informed and engaged with. No impact.
KL Grant Consulting	Provide assurance that Minimum Obstacle Clearance Altitudes (MOCAs) on charts are for information only and will not be used as criteria for limiting development.	MOCAs are published on the charts for information only. From a procedure design perspective, these can be increased if they do not impact the procedure (subject to IFP Safeguarding Assessment and CAA approval). At this early of the design work, the definition and constraints associated with MOCAs are not known. Full design procedure assurance (to ensure the safety, reliability, and flyability of the procedures) will not take place until the later stages of the airspace change process and will identify any constraints associated with the use of MOCAs. No impact.
KL Grant Consulting	Clarify LCY PSZ policy.	LCY PSZ maps are located here and provide the boundaries of the PSZ and any associated restrictions. PSZ boundaries are determined based on the airport's traffic scenarios and support traffic growth to 111,000 annual air traffic movements per year. No impact.
Greater London Authority	Clarity that consented development schemes are unaffected, that proposed developments currently in the planning process can be developed, and that site allocations in the local plan are achievable.	Following the detailed procedure design work at Stage 3, full assessment of the impacts on property/land development can be undertaken. Should any impacts be identified, then the relevant stakeholders will be informed and engaged with. No impact.
Greater London Assembly	Clarify that there are no changes to LCY night-time or weekend operating restrictions.	There are no changes to LCY night-time or weekend operating restrictions. No impact.
Lendlease	Feedback on the wording of D_DP06: "We urge LCY to revise DP6 to explicitly protect both consented and potential future development, including masterplans and housing targets identified by local authorities."	D_DP06 ensures that all design options at Stage 2 are evaluated with respect to local context and circumstances which includes any impact of changes to aerodrome/ procedure protection areas on the local community, businesses and land development. It has a 'High' prioritisation level to ensure that any local impacts are a key consideration for the design.

		The evaluations encompass existing developments, known planned developments, and known land allocations only. Any new planning applications under the flight path, including future activities which may affect the safe operation of aircraft, require consultation with LCY and lie outside of the CAP1616 process. No impact.
Forest Hill Society	Feedback that there is insufficient representation of stakeholder groups representing overflown residents.	During Stage 1, key stakeholders were identified for this airspace change across a broad spectrum of aviation and non-aviation (including local community) stakeholder groups. For more details on stakeholder identification, see the Stage 1 Define document [Ref 6], section 10.1. Specifically, we have targeted community stakeholders proximate to the approach path that may be impacted including local businesses, property developers and noise sensitive buildings (such as nurseries, schools hospitals etc.). Through continued work to map potential impacts against affected stakeholder groups, for Stage 2 additional stakeholders were added to the stakeholder list, see section 9.3. These stakeholders are identified as key stakeholders for this airspace change proposal, and received invites for the Stage 2 engagement process. LCY will continue to welcome feedback from all stakeholders throughout the process should they wish to provide it. A full public consultation will be undertaken at a later stage when a mature set of route design options will be presented. This will be widely publicised and is currently anticipated to commence in 2026. No impact.
Forest Hill Society	Concern on impacts to overflown residents. Concern on the range and volume of aircraft using the new arrival flight paths.	Any reduction of the approach angle must achieve safe obstacle clearance in addition to ensuring the airport's noise level limits can still be adhered to. As such, both the enhanced RNP AR navigational capability as well as the ability to minimise impacts on the airport's noise footprint, is a pre-requisite for aircraft on the shallower approach. Use of the procedure by other aircraft types would be subject to flight testing, assurance/validation, and compliance with regulatory and environmental requirements; requests to fly the procedure will be assessed by the airport on a case-by-case basis. This airspace change seeks to secure the most efficient use of airspace, whilst maintaining existing movement limits and ensuring compliance with noise and operational restrictions in the surrounding urban area. No impact.
Forest Hill Society	Concern on approach angle flyability for the A320neo.	Preliminary flyability assessment has been conducted on the A320neo, for more details see Appendix C A320neo flyability testing. More detailed procedure design work will be progressed in the later stages of the CAP1616 process, including (as

		required) any flyability assessments with airline operators or manufacturers. This work will consider weather limitations in the design and operation of LCY RNP AR procedures. No impact.
Forest Hill Society	Feedback that this airspace change proposal should not be considered until the wider FASI flight path changes are implemented.	UKADS (UK Airspace Design Service) will take responsibility for future airspace design, delivering the modernisation of UK airspace and initially prioritising the London cluster of the airspace change masterplan (which includes the London FASI airspace changes and the proposed third runway by 2035 at Heathrow). Alongside the other London airports, that programme of work is addressing optimisation of London airspace on a larger scale and includes the organisation of both arrival and departure design options into systems for respite, or systems that disperse traffic in another way. This airspace change proposal is independent of the changes taking place within FASI; this is a relatively small change to LCY current arrival procedures, affecting the final stages of approach, ~2,000ft/3,000ft, based on existing tracks only, and proposes to implement before FASI. No impact.
Forest Hill Society	Concerns on the accelerated growth of passengers and air traffic movements.	It should be noted that the LCY S73 permission provides the additional operational and environmental controls relevant to the predicted increase in passenger numbers and traffic volume associated with this airspace change proposal. Additionally, this airspace change proposal predicts a reduction in air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). No impact.
Forest Hill Society	Concern on the removal of 5.5° as a key noise mitigation measure.	The Noise Action Plan (NAP) references a 5.5° approach as a quiet operating procedure; however, a 5.5° approach is not a legal requirement under the CADP. Revision of the NAP can take place during the implementation for this airspace change proposal if required. Note: the 5.5° approach is retained for all aircraft operating on current the ILS approach. No impact.
Forest Hill Society	Feedback that LCY needs to provide evidence of the comparisons made of new and old generation aircraft noise impacts.	For details of the noise analysis conducted, see Appendix B Preliminary aircraft noise comparison data. No impact.
Forest Hill Society	Feedback that "the airport has produced a detailed explanation of its plans, and we note that it has taken over 65 pages and a three hour meeting to put over its point of view and answer questions. This	In alignment with the CAP1616, at Stage 3 a consultation strategy will be provided and will set out how LCY intends to facilitate an effective consultation, taking account of the guidance in the CAP1616f. The Stage 2 engagement activities have provided the opportunity for

	is of concern when it comes to a public consultation.""	stakeholders to build an understanding of the proposed airspace change, and to contribute to the discussions in a more collaborative working environment. The half-day engagement sessions, which included face-to-face workshops where possible, have provided details of the baseline scenarios, the design constraints and assumptions, and the design options, and enabled stakeholders to chat through their concerns and questions, without restrictions on the amount of time available. No impact.
Forest Hill Society	Concern that the real world consequential impacts of the new arrival flight paths could provide effects far beyond the area close to the airport after final descent begins.	At Stage 2 (Develop and Assess) the impact assessments for the design options are qualitative and based on combining input from experienced subject matter experts alongside feedback from stakeholders. We will be quantitatively evaluating the impacts of the change during Stage 3 (Consult) of the CAP1616 process as we progress the preferred design options through more detailed modelling. No impact.
Forest Hill Society	Feedback on the requirement, for consultation, to provide noise metrics that are understandable to an observer on the ground.	During Stage 3, LCY intends to provide additional analysis and noise metrics that may aid stakeholders' understanding of the change in noise impacts. No impact.
Forest Hill Society	Request for traffic forecasts to provide changes to summer/winter air traffic movements in the public consultation, in order to understand whether there is a concentration of summer traffic resulting from the changes in fleet mix destinations.	At Stage 3, the quantitative analysis for noise provides noise exposure contours, which are calculated over the period from 16 June to 15 September inclusive (for both the airspace change and the no-change scenario). The contours are based on the traffic forecasts for that period, and will provide an understanding of any concentration in summer movements resulting from the change. No impact.
Forest Hill Society	Request for additional noise data to demonstrate how overflown communities will be affected by this change at key times of the day (i.e. early mornings, summer evenings, weekends).	For Stage 3, LCY intends to provide additional analysis and noise metrics that may aid stakeholders' understanding of the change in noise impacts. No impact.
Forest Hill Society HACAN East	Feedback that real-world noise measurements, gathered via field measurement data is required, and not solely noise model projections. Feedback that it may be necessary to delay the consultation until these results are available.	For Stage 3, noise modelling will be conducted in accordance with the CAA's noise requirements which are defined in the CAP2091[CAA Policy on Minimum Standards for Noise Modelling, Ref 20]. LCY will ensure that the noise modelling approach is discussed and agreed with the CAA prior to consultation. No impact.
Forest Hill Society	Feedback that the long term traffic forecasts lack explanation or credibility.	The anticipated changes to fleet mix and traffic volumes over the 2027 (Year 1) to 2036 (Year 10) assessment period are provided in Table 2 (for the baseline ('no change' scenario) and Table 4 (for

		the change scenario. For more information on the modelling methodology, see Appendix E Traffic Forecast. No impact.
Forest Hill Society	Concerns that the definition of the 'potentially affected area' does not represent the scope of the impacts of the airspace change.	See section 1.4 for a description of the scope and impacts of this airspace change proposal. No impact.
Forest Hill Society	Concerns that A320neo noise comparison data is not provided.	See Appendix B for the preliminary noise evaluation work which has been conducted. No impact.
Forest Hill Society	Confirm compliance with ANG2017 3.11 concerning overflight metrics.	See Appendix F Overflight calculations, for a calculation of overflight (population count and number of households). No impact.
HACAN East	Ensure clarity on the following points: 1) the difference between this consultation to bring larger planes to LCY and the later consultation on flight path changes for the London airports; 2) That the change will not affect the aircraft which currently use the airport but will allow planes of similar size to the A320neo (the Class C aircraft) to potentially use the airport and; 3) that the flight path change is only for arrivals.	Clarity on these points is provided in section 2.2.35 and 2.2.36. No impact.
Aircraft Owners & Pilots Association	Concern that any new controlled airspace may limit or complicate VFR (Visual Flight Rules) access near LCY. Concern about impacts on General Aviation (GA).	This airspace change proposal does not change any extant LCY procedures or airspace structures. General Aviation, (and particularly business aviation) would continue to be supported as today and access impacts would not change. No impact.
Aircraft Owners & Pilots Association	Concern that nearby aerodromes (e.g. Stapleford, North Weald, Elstree, and Damyns Hall) could experience airspace constraints or circuit interference.	This airspace change proposal affects arrival flight paths in the final stages of the approach only and is based on existing LCY approach procedures. There are no changes to the classification or volumes of controlled airspace and no changes to existing procedures providing separation against traffic from other London airports. No impact.
Aircraft Owners & Pilots Association	Concern that if conventional procedures are removed aircraft without PBN capability may lose access.	All pre-existing arrival and departure procedures at LCY will remain as today. There will be no changes to access. No impact.
Aircraft Owners & Pilots Association	Concerns regarding increased complexity and new noise footprints.	The proposed RNP AR approaches are based on, and designed to integrate seamlessly with, existing LCY approach procedures. The ability to minimise impacts on the airport's noise footprint, is a pre-requisite

		for aircraft on the shallower approach and it is envisaged that this change could be introduced without significant adverse noise impacts. No impact.

4. Design Principle Evaluation

4.1 Design Principles Assessment Criteria

4.1.1 Table 17 below summarises the assessment criteria used to determine whether each Design Option meets/ partially meets/ does not meet each Design Principle. This assessment shows how each Design Option aligns with the Design Principles developed at Stage 1. The evidence is qualitative and based on combining input from experienced subject matter experts with feedback from stakeholders (see section 3) and the evolving design work.

Table 17: Assessment criteria used to evaluate Design Options against Design Principles

Design Principle	Description	Priority	Qualitative Criteria for Met, Partial, Not Met
M_DP01	The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.	High	MET: Enhanced - Improvement over today's level of safety. Maintained - safety risk could be maintained within acceptable levels of today's operation. PARTIAL: Reduced - Issue(s) identified which could result in an elevated (but manageable) level of safety risk when compared to today's operation. NOT MET: Unacceptable level of safety risk.
M_DP02	The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.	High	MET: Consistent with relevant legislation, the CAA's airspace modernisation strategy and Secretary of State and CAA's policy and guidance. PARTIAL: Minor and justifiable inconsistencies - Incomplete conformance with relevant legislation, the CAA's airspace modernisation strategy and Secretary of State and CAA's policy and guidance. NOT MET: Major or unjustifiable inconsistencies - Incompatible with relevant legislation, the CAA's airspace modernisation strategy and Secretary of State and CAA's policy and guidance.
M_DP03	The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.	High	MET: Consistent with the Government's Air Navigation Guidance 2017. PARTIAL: Minor and justifiable inconsistencies - Incomplete conformance with the Government's Air Navigation Guidance 2017. NOT MET: Major or unjustifiable inconsistencies - Incompatible with the Government's Air Navigation Guidance 2017.
B_DP04	The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.	High	MET: No changes required for the airport to meet the conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement. PARTIAL: No significant environmental impact - Minor change(s) required for the airport to meet the conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement. NOT MET: Adverse environmental impact, or major changes - Option is incompatible for the airport to meet the conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.

D_DP05	The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.	High	MET: Increased PBN standard compared to today's operation. PARTIAL: PBN standard as per today's operation. NOT MET: Reduced PBN standard compared to today's operation.
D_DP06	The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.	High	MET: No impact or positive impact. PARTIAL: Manageable impact and not safety critical. NOT MET: Insupportable or safety critical impact.
D_DP07	The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.	High	MET: Enhanced - Reduction in the total adverse effects from aircraft noise. PARTIAL: No significant change to the total adverse effects from aircraft noise. NOT MET: Significant change to the total adverse effects from aircraft noise.
B_DP08	The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.	Medium	MET: Increased cost-effectiveness compared to today's operation. PARTIAL: No change, or cost-effectiveness is broadly similar compared to today's operation. NOT MET: Reduced cost-effectiveness compared to today's operation
D_DP09	Where options for route design for the airspace change proposal 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.	Medium	MET: Consistent with existing published airspace arrangements. PARTIAL: Minor and justifiable inconsistencies - Incomplete conformance with existing published airspace arrangements. NOT MET: Major or unjustifiable inconsistencies - Incompatible with existing published airspace arrangements.
B_DP10	The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.	Medium	MET: Operation of environmentally efficient aircraft is improved compared to today's operation. PARTIAL: Operation of environmentally efficient aircraft is unchanged compared to today's operation. NOT MET: Operation of environmentally efficient aircraft is reduced compared to today's operation.
D_DP11	The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.	Low	MET: No change in impact or a positive impact. PARTIAL: Minor change in impact, but not safety critical. NOT MET: Major change in impact, or safety critical impact.

4.1.2 M_DP01 Safety: This is a qualitative evaluation by experienced SMEs to consider any safety concerns related to each design option. It will assess the design option with regard to how it will interface with the other components of the overall aerodrome and air traffic service system of which it is a part. For the design principle evaluation, it should be noted that the assessment of the potential

impacts each design option could have on maintaining a high standard of safety, is a broad assessment only. There will be several phases of safety assessment across the lifecycle of the airspace change proposal, providing more detailed assessments on the impact of safety in Stage 3 (Consult) and Stage 4 (Update & Submit) of the CAP1616 process as we progress the preferred options through more detailed modelling, validation and assurance.

4.1.3 M_DP02 Policy: This will be a qualitative evaluation by experienced SMEs to consider the degree of alignment for each design option with: the AMS strategic objectives (safety, integration of diverse airspace users, simplification of the airspace system and environmental sustainability), and; the Transport Act 2000 section 70 (including the efficient and expeditious flow of air traffic, the requirements of operators, third-party impacts and environmental impacts).

4.1.4 M_DP03 Environment: This will be a qualitative evaluation by experienced SMEs to consider the degree of alignment for each design option with the Government's Air Navigation Guidance 2017 (including noise, greenhouse gas emissions, local air quality, National Parks and AONBs, and noise sensitive buildings).

4.1.5 B_DP04 Local context and circumstances: This will be a qualitative evaluation by experienced SMEs to consider, for each design option, the ability of the airport to continue to meet the measures that are in place to manage the social, economic, and environmental impact of LCY operations. Specifically the evaluation will assess the conditions and legal obligations contained within the CADP planning permission and the associated section 106 agreement, however consideration will also be given to key plans and strategies in place to control noise: for example, the Noise Action Plan, Ground Running Strategy, and Noise Contour Strategy. Design options that require no change, will be assessed as MET. Design options which have no significant environmental impact and only require minor changes to current agreements, will be assessed as PARTIAL. Design options which require major changes to current agreements, or present adverse environmental impact, will be assessed as NOT MET.

4.1.6 D_DP05 Performance based navigation: This is a qualitative evaluation by experienced SMEs to consider the Performance Based Navigation (PBN) navigation standards associated with each design option. Design options which increase the PBN standard will be assessed as MET. Design options where the PBN standard remains unchanged, will be assessed as PARTIAL. Design options that reduce the PBN standard will be assessed as NOT MET.

4.1.7 D_DP06 Local context and circumstances: This will be a qualitative evaluation by experienced SMEs to consider the impacts for each design option on the local community (including noise, environment, local businesses, property developers, noise sensitive buildings and residents). Design options with no change, or where the change is an improvement from today, will be assessed as MET. Design options which require minor changes to current local arrangements, will be assessed as PARTIAL. Design options which require major changes to current local arrangements, or present an unacceptable level of safety risk, will be assessed as NOT MET.

4.1.8 D_DP07 Noise (total adverse effects): This will be a qualitative evaluation by experienced SMEs to consider, for each design option, noise exposure under the arrival and departure paths, aircraft related ground noise and reverse thrust usage. Consideration will be given to how the proposed option is likely to result in a change in traffic patterns, traffic volumes and fleet mix below 7,000 feet. Design options that reduce the total adverse effects from aircraft noise will be assessed as MET. Design options where there is no significant change to the total adverse effects from aircraft noise will be assessed as PARTIAL. Design options that result in

a significant change in the total adverse effects from aircraft noise will be assessed as NOT MET.

4.1.9 B_DP08 Economics: This will be a qualitative evaluation by experienced SMEs to consider the economic impacts for airline operators. The evaluation for each design option will consider the impacts on operational costs including aircraft passenger capacity, seat costs and yields. For the Design Principle Evaluation, the assessment does not include deployment costs (such as adopting new equipment, staff training, upgrades to meet the specifications etc) as the deployment costs for RNP AR approaches are not considered to differ between the various design options; the assessment for deployment costs are included in the Initial Options Appraisal for comparison against the baseline ('do-nothing') scenario. Design options that increase operational cost-effectiveness will be assessed as MET. Design options where operational cost-effectiveness has little/no change will be assessed as PARTIAL. Design options that reduce operational cost-effectiveness will be assessed as NOT MET.

4.1.10 D_DP09 Noise (population affected): This will be a qualitative evaluation by experienced SMEs to consider, for each design option, the flight path and the population overflown Design options where the same areas are overflown will be assessed as MET. Design options where new areas are overflown, but the population densities are either broadly similar or reduced, will be assessed as PARTIAL. Design options where new areas are overflown, with greater population densities, will be assessed as NOT MET.

4.1.11 B_DP10 Environment: This will be a qualitative evaluation by experienced SMEs to consider the impact on fleet mix for each design option. Design options which increase the numbers of environmentally efficient aircraft will be assessed as MET. Design options where the numbers of environmentally efficient aircraft remain unchanged, will be assessed as PARTIAL. Design options that reduce the numbers of environmentally efficient aircraft will be assessed as NOT MET.

4.1.12 D_DP11 Other aviation stakeholders: This will be a qualitative evaluation by experienced SMEs to consider, for each design option, the extent of changes to operations with other aviation stakeholders including other ANSPs, airports, helicopter operations and General Aviation. Design options with no change, or where the change is an improvement from today, will be assessed as MET. Design options which require minor changes to current procedures, will be assessed as PARTIAL. Design options which require major changes to current procedures, or present an unacceptable level of safety risk, will be assessed as NOT MET.

How will we decide which options to progress to the next stage?

4.1.13 In order to not be overly restrictive, and to enable all suitable options to progress to the next stage, the following logic will be applied to assess the design options to determine which will be discounted and which will be progressed to the next stage.

4.1.14 The Design Principles are split into 'High', 'Medium' and 'Low' priorities, which will be used to support the assessment.

4.1.15 M_DP01 is about Safety. Safety is the primary consideration. Any Design Option which has NOT MET M_DP01 contains unacceptable safety concerns and will be discounted at this stage.

4.1.16 Any Design Options having 2 or more 'High' or 'Medium' Design Principles which are NOT MET, will be discounted at this stage.

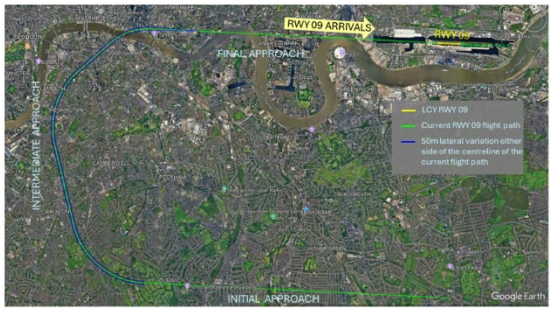
4.1.17 Any Design Options having 5 or more Design Principles which are PARTIAL will be discounted at this stage.

4.2 (0) Baseline ('Do Nothing') - REJECTED

4.2.1 This option represents the existing airspace design i.e. the 'do nothing' option. It maintains the extant LCY RNAV1/ ILS arrival procedures for RWY09 and RWY27.

Design Principle	Description	Priority	Qualitative Criteria for Met, Partial, Not Met
M_DP01	The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.	High	MET: Maintained – maintains safety as per today.
M_DP02	The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.	High	PARTIAL: No proactive contribution towards AMS strategic objectives.
M_DP03	The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.	High	PARTIAL: Environmental benefits limited by anticipated increase in traffic volumes.
B_DP04	The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.	High	MET: No changes required for the airport to meet its obligations.
D_DP05	The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.	High	PARTIAL: No change to PBN standard.
D_DP06	The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.	High	PARTIAL: Manageable impact (not safety critical) as per today.
D_DP07	The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.	High	MET: Reduction in total adverse effects from aircraft noise. Potentially limited by increase in traffic volume.
B_DP08	The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.	Medium	PARTIAL: No change in cost-effectiveness.
D_DP09	Where options for route design for the airspace change proposal 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.	Medium	MET: No change to existing published airspace arrangements.
B_DP10	The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.	Medium	MET: Gradual refleeting of existing LCY airline operators.
D_DP11	The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.	Low	MET: No change in impact to other aviation stakeholders.

4.3 (1) Initial/ Intermediate Approach RWY09 Option 1, [IA09_Option 1] - PROGRESSED



This option represents RWY09 initial and intermediate approach transitions which will closely follow the same lateral track as today.

Design Principle	Description	Priority	Qualitative Criteria for Met, Partial, Not Met
M_DP01	The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.	High	MET: Enhanced - RNP AR approaches contribute positively to safety.
M_DP02	The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.	High	MET: Good alignment with the AMS and Section 70 of the Transport Act 2000.
M_DP03	The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.	High	MET: Accelerates the operation of more modern 'cleaner' aircraft, projected reduction in annual traffic growth compared with the baseline scenario.
B_DP04	The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.	High	MET: No changes required for the airport to meet its obligations.
D_DP05	The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.	High	MET: Enhances the PBN standard.
D_DP06	The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.	High	MET: Reduces the number of over-flying aircraft, no significant impacts.
D_DP07	The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.	High	MET: Reduction in total adverse effects from aircraft noise.
B_DP08	The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.	Medium	MET: Increased cost-effectiveness.
D_DP09	Where options for route design for the airspace change proposal 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.	Medium	MET: Consistent with existing published airspace arrangements.
B_DP10	The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.	Medium	MET: Accelerated refleeting.
D_DP11	The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.	Low	MET: No change in impact to other aviation stakeholders.

4.4 (2) Initial/ Intermediate Approach RWY09 Option 2, [IA09_Option 2] - PROGRESSED

This option represents RWY09 initial and intermediate approach transitions which will allow minor lateral variation from today.

Design Principle	Description	Priority	Qualitative Criteria for Met, Partial, Not Met
M_DP01	The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.	High	MET: Enhanced - RNP AR approaches contribute positively to safety.
M_DP02	The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.	High	MET: Good alignment with the AMS and Section 70 of the Transport Act 2000.
M_DP03	The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.	High	MET: Accelerates the operation of more modern 'cleaner' aircraft, projected reduction in annual traffic growth compared with the baseline scenario.
B_DP04	The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.	High	MET: No changes required for the airport to meet its obligations.
D_DP05	The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.	High	MET: Enhances the PBN standard, flyability/ manoeuvrability.
D_DP06	The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.	High	MET: Reduces the number of over-flying aircraft, no significant impacts.
D_DP07	The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.	High	MET: Reduction in total adverse effects from aircraft noise.
B_DP08	The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.	Medium	MET: Increased cost-effectiveness.
D_DP09	Where options for route design for the airspace change proposal 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.	Medium	PARTIAL: Minor lateral variation, but within existing range of track dispersion.
B_DP10	The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.	Medium	MET: Accelerated refleeting.
D_DP11	The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.	Low	MET: No change in impact to other aviation stakeholders.

4.5 (3) Initial/ Intermediate Approach RWY09 Option 3, [IA09_Option 3] - PROGRESSED

This option represents RWY09 initial and intermediate approach transitions which will allow moderate lateral variation from today.

Design Principle	Description	Priority	Qualitative Criteria for Met, Partial, Not Met
M_DP01	The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.	High	PARTIAL: Potential for increased controller spacing requirements.
M_DP02	The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.	High	MET: Good alignment with the AMS and Section 70 of the Transport Act 2000.
M_DP03	The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.	High	MET: Accelerates the operation of more modern 'cleaner' aircraft, projected reduction in annual traffic growth compared with the baseline scenario.
B_DP04	The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.	High	MET: No changes required for the airport to meet its obligations.
D_DP05	The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.	High	MET: Enhances the PBN standard, flyability/ manoeuvrability.
D_DP06	The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.	High	MET: Reduces the number of over-flying aircraft, no significant impacts.
D_DP07	The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.	High	MET: Reduction in total adverse effects from aircraft noise. Potential for respite.
B_DP08	The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.	Medium	MET: Increased cost-effectiveness.
D_DP09	Where options for route design for the airspace change proposal 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.	Medium	PARTIAL: Moderate lateral variation, but within existing range of track dispersion.
B_DP10	The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.	Medium	MET: Accelerated refleeting.
D_DP11	The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.	Low	MET: No change in impact to other aviation stakeholders.

4.6 (4) Final Approach RWY09 Option 1, [FA09_Option 1] - PROGRESSED

This option represents RWY09 4.49° - 4.40° final approach path.

Design Principle	Description	Priority	Qualitative Criteria for Met, Partial, Not Met
M_DP01	The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.	High	PARTIAL: Potential for increased controller spacing requirements. Review helicopter transit procedures, TCAS nuisance alerts, shipping operations.
M_DP02	The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.	High	MET: Good alignment with the AMS and Section 70 of the Transport Act 2000.
M_DP03	The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.	High	MET: Accelerates the operation of more modern 'cleaner' aircraft, projected reduction in annual traffic growth compared with the baseline scenario.
B_DP04	The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.	High	PARTIAL: NAP may require updating.
D_DP05	The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.	High	MET: Enhances the PBN standard.
D_DP06	The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.	High	PARTIAL: Minor extension to aerodrome/ procedure protection areas.
D_DP07	The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.	High	MET: Reduction in total adverse effects from aircraft noise.
B_DP08	The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.	Medium	MET: Increased cost-effectiveness.
D_DP09	Where options for route design for the airspace change proposal 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.	Medium	MET: Consistent with existing published airspace arrangements.
B_DP10	The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.	Medium	MET: Accelerated refleeting.
D_DP11	The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.	Low	PARTIAL: Potential minor impact on helicopter transit procedures.

4.7 (5) Final Approach RWY27 Option 1, [FA27_Option 1] - PROGRESSED

This option represents RWY27 4.49° - 4.05° final approach.

Design Principle	Description	Priority	Qualitative Criteria for Met, Partial, Not Met
M_DP01	The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.	High	PARTIAL: Potential for increased controller spacing requirements. Review shipping operations.
M_DP02	The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.	High	MET: Good alignment with the AMS and Section 70 of the Transport Act 2000.
M_DP03	The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.	High	MET: Accelerates the operation of more modern 'cleaner' aircraft, projected reduction in annual traffic growth compared with the baseline scenario.
B_DP04	The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.	High	PARTIAL: NAP may require updating.
D_DP05	The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.	High	MET: Enhances the PBN standard.
D_DP06	The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.	High	PARTIAL: Minor extension to aerodrome/ procedure protection areas.
D_DP07	The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.	High	MET: Reduction in total adverse effects from aircraft noise.
B_DP08	The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.	Medium	MET: Increased cost-effectiveness.
D_DP09	Where options for route design for the airspace change proposal 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.	Medium	MET: Consistent with existing published airspace arrangements.
B_DP10	The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.	Medium	MET: Accelerated refleeting.
D_DP11	The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.	Low	MET: No change in impact to other aviation stakeholders.

4.8 (6) Final Approach RWY27 Option 2, [FA27_Option 2] - REJECTED

This option represents RWY27 4.05° - 3.75° final approach path.

Design Principle	Description	Priority	Qualitative Criteria for Met, Partial, Not Met
M_DP01	The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.	High	PARTIAL: Potential for increased controller spacing requirements. Review shipping operations.
M_DP02	The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.	High	MET: Good alignment with the AMS and Section 70 of the Transport Act 2000.
M_DP03	The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.	High	MET: Accelerates the operation of more modern 'cleaner' aircraft, projected reduction in annual traffic growth compared with the baseline scenario.
B_DP04	The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.	High	PARTIAL: NAP may require updating.
D_DP05	The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.	High	MET: Enhances the PBN standard.
D_DP06	The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.	High	NOT MET: May require change to the Obstacle Limitation Surface – impact to property development. Potential increase in adverse noise effects.
D_DP07	The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.	High	NOT MET: Potential increase in adverse noise effects.
B_DP08	The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.	Medium	MET: Increased cost-effectiveness.
D_DP09	Where options for route design for the airspace change proposal 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.	Medium	MET: Consistent with existing published airspace arrangements.
B_DP10	The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.	Medium	MET: Accelerated refleeting.
D_DP11	The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.	Low	MET: No change in impact to other aviation stakeholders.

4.9 (7) Final Approach RWY27 Option 3, [FA27_Option 3] - REJECTED

This option represents RWY27 3.75° - 3.50° final approach path

Design Principle	Description	Priority	Qualitative Criteria for Met, Partial, Not Met
M_DP01	The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.	High	PARTIAL: Potential for increased controller spacing requirements. Review shipping operations.
M_DP02	The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.	High	MET: Good alignment with the AMS and Section 70 of the Transport Act 2000.
M_DP03	The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.	High	MET: Accelerates the operation of more modern 'cleaner' aircraft, projected reduction in annual traffic growth compared with the baseline scenario.
B_DP04	The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.	High	PARTIAL: NAP may require updating.
D_DP05	The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.	High	MET: Enhances the PBN standard.
D_DP06	The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.	High	NOT MET: May require change to the Obstacle Limitation Surface – impact to property development. Potential increase in adverse noise effects.
D_DP07	The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.	High	NOT MET: Potential increase in adverse noise effects.
B_DP08	The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.	Medium	MET: Increased cost-effectiveness.
D_DP09	Where options for route design for the airspace change proposal 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.	Medium	MET: Consistent with existing published airspace arrangements.
B_DP10	The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.	Medium	MET: Accelerated refleeting.
D_DP11	The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.	Low	MET: No change in impact to other aviation stakeholders.

5. Initial Options Appraisal

5.1 Methodology

5.1.1 The objective of the Initial Options Appraisal is to qualitatively appraise those airspace design options which have progressed successfully though the Design Principle Evaluation.

5.1.2 Each design option is assessed against key factors, as described in CAP1616F section 3.38-3.42 [Ref 17], in order to understand the impacts of the airspace change proposal.

5.1.3 The assessment comparisons are:

- the year of implementation with the proposed airspace change versus the same year without the proposed airspace change (year 1)
- 10-years after implementation with the proposed airspace change versus the same year without the proposed airspace change (year 10).

5.1.4 An assessment of the baseline ('do nothing') option is included in the Initial Options Appraisal for comparison purposes only, as this option was discounted in the Design Principle Evaluation.

5.1.5 The evidence supplied is qualitative and high level; the assessment criteria (see section 5.2) is based on the opinions of SMEs (which comprises operational experts, sustainability and environment experts, safety specialists and LCY's Airport Planning team), and feedback derived from stakeholder engagement. The assessments focus on eliminating bias by establishing clear assessment objectives and criteria upfront (see Table 18) and ensuring the use of diverse perspectives in the evaluation process. The initial options appraisal is used to narrow down options to a selected shortlist; the criteria is set to not be overly restrictive to ensure potentially suitable design options are not removed too early in the process.

5.1.6 The qualitative assessments include consideration of the traffic forecasts for the 10-year assessment period, see Table 2 for the baseline ('do nothing') scenario and Table 4 for the airspace change scenario. LCY continually update their traffic forecasts to reflect the latest intelligence they have from their customers. This ensures the most credible and up-to-date data is presented within their submission. Considering the relatively short time period planned between Stage 2 (mid-2025) and Stage 3 (early-2026) of this airspace change proposal [Ref 18], a qualitative assessment is provided at this time. At Stage 3, an updated forecast will be used to provide a quantitative analysis using the most credible and up-to-date data available.

5.1.7 The Initial Options Appraisal also provides a brief, plain English, safety statement, see section 6. The safety statement is an initial indication of the safety implications for this airspace change proposal and includes qualitative statements on the potential impacts the design options could have on maintaining a high standard of safety.

5.2 Assessment criteria summary

5.2.1 Table 18 below is based on CAP1616F section 3.38-3.42 [Ref 17]; it summarises the impact assessment criteria for the key factors in the Initial Options Appraisal.

Table 18: Initial Options Appraisal assessment criteria summary

Group	Impact	Level of Analysis	Evidence
Communities	Noise	Qualitative	A qualitative assessment of changes to noise impacts compared with the 'do nothing' baseline.

Communities	Local Air quality	Qualitative	A qualitative assessment of changes to local air quality compared with the 'do nothing' baseline.
Wider society	Greenhouse gas emissions	Qualitative	A qualitative assessment of changes to greenhouse gas emissions compared with the 'do nothing' baseline.
Wider society	Tranquillity	Qualitative	A qualitative assessment of changes to tranquillity impacts, notably for the Kent Downs AONB, Surrey Hills AONB and Chilterns AONB, compared with the 'do nothing' baseline.
Wider society	Biodiversity	Qualitative	A qualitative assessment of changes to biodiversity impacts, notably for The Lee Valley and Epping Forest (European sites), the artificial fish habitat in King George V Dock (a compensatory habitat for the London Royal Docks, which is designated as a SINC), Wapping and the Rainham Marshes, compared with the 'do nothing' baseline.
Wider society	Capacity/ resilience	Qualitative	A qualitative assessment of changes to airspace capacity and resilience compared with the 'do nothing' baseline.
General Aviation	Access	Qualitative	A qualitative assessment of changes to General Aviation access to controlled airspace compared with the 'do nothing' baseline.
General Aviation/ commercial airlines	Economic impact from increased effective capacity	Qualitative	A qualitative assessment of changes to General Aviation and commercial airline economic impacts from increased effective capacity compared with the 'do nothing' baseline.
General Aviation/ commercial airlines	Fuel burn	Qualitative	A qualitative assessment of changes to General Aviation and commercial airline fuel burn compared with the 'do nothing' baseline.
Commercial airlines	Training costs	Qualitative	A qualitative assessment of changes to commercial airline training costs compared with the 'do nothing' baseline.
Commercial airlines	Other costs	Qualitative	A qualitative assessment of changes to other relevant commercial airline costs compared with the 'do nothing' baseline.
Airport/ ANSP	Infrastructure costs	Qualitative	A qualitative assessment of changes to Airport infrastructure costs compared with the 'do nothing' baseline.
Airport/ ANSP	Operational costs	Qualitative	A qualitative assessment of changes to Airport operational costs compared with the 'do nothing' baseline.
Airport/ ANSP	Deployment costs	Qualitative	A qualitative assessment of Airport deployment costs compared with the 'do nothing' baseline.
Airport/ ANSP	Other costs	Qualitative	A qualitative assessment of other costs compared with the 'do nothing' baseline.

5.2.2 In the following sections, an Initial Options Appraisal assessment table is provided for each design option which has been progressed from the Design Principle Evaluation. The baseline ('do nothing') option is provided additionally for comparison purposes only (as it has already been discounted in the Design Principle Evaluation).

5.3 (0) Baseline ('Do Nothing')

5.3.1 This option represents the existing airspace design i.e. the baseline ('do nothing') option. It maintains the extant LCY RNAV1/ ILS arrival procedures for RWY09 and RWY27, with no additional RNP AR procedures introduced.

5.3.2 This option is provided for comparison purposes only; the baseline ('do nothing') option was discounted in the Design Principle Evaluation.

Table 19: Baseline ('do nothing'), Initial Options Appraisal

<table>
<tr><th>Group</th><th>Impact</th><th>Level of Analysis</th><th>Evidence</th></tr>
<tr><td>Communities</td><td>Noise</td><td>Qualitative</td><td>Reduction in noise impacts.
In the baseline ('do nothing') option, gradual changes are anticipated to the fleet mix as existing LCY airline operators refleet (onto more modern, environmentally efficient aircraft) over the period 2027 - 2036, which is anticipated to contribute positively towards a reduction in noise impacts per flight. However, the potential impact of this benefit could be limited by the anticipated increase in traffic volume (by ~43%) over the corresponding period.</td></tr>
<tr><td>Communities</td><td>Local Air quality</td><td>Qualitative</td><td>Local air quality is maintained within UK air quality objectives [Ref 13].
In the baseline ('do nothing') option, (5.5° final approach path) the distance from the runway that arrival aircraft on the extant ILS approach procedure are below 1,000ft (measured from threshold elevation – approx. 19ft) [37] is as follows:
<table>
<tr><td>Approach angle</td><td>5.5° (9.6% gradient) [38]</td></tr>
<tr><td>Distance from runway</td><td>1.75NM/ 3.24km</td></tr>
</table>
For this design option, gradual changes are anticipated to the fleet mix as existing LCY airline operators refleet (onto more modern, environmentally efficient aircraft) over the period 2027 - 2036, which is anticipated to contribute positively towards a reduction in local air quality impacts per flight. However, the potential impact of this benefit could be limited by the anticipated increase in traffic volume (by ~43%) over the corresponding period.

Note: The LCY S73 permission provides the additional operational and environmental controls relevant to the predicted increase in passenger numbers and traffic volume with this option. As such, the impact on air quality resulting from e.g. local transport infrastructures feeding the airport, is not included for consideration here.</td></tr>
<tr><td>Wider society</td><td>Greenhouse gas emissions</td><td>Qualitative</td><td>Increase in greenhouse gas emissions.
Greenhouse gas emissions data for the Landing and Take-off (LTO) cycle demonstrates increased CO_2 emissions, in line with the increased traffic levels, for the baseline ('do nothing') option, see Appendix H Environmental impact assessment, for more details.
<table>
<tr><td rowspan="2"></td><td colspan="2">Without airspace change</td></tr>
<tr><td>Year 1</td><td>Year 10</td></tr>
</table></td></tr>
</table>

[37] In accordance with the CAP1616i, due to the effects of mixing and dispersion, emissions from aircraft above 1,000ft are considered unlikely to have a significant impact on local air quality.

[38] The descent gradient determines the rate of descent the aircraft needs to maintain, and is calculated as Tan(approach angle) x 100. For a 9.6% gradient, this means that for every 1,000ft of horizontal distance travelled, the aircraft descends 96ft.

			<table><tr><td>LTO cycle CO_2 (tonnes)</td><td>42,491</td><td>61,551</td></tr><tr><td>Annual air traffic movements</td><td>56,314</td><td>80,714</td></tr></table>
Wider society	Tranquillity	Qualitative	In the baseline ('do nothing') option there are no changes to extant flight paths, however traffic growth (by ~43%) over the 10-year period is anticipated. As such, the sites for tranquillity that are currently overflown will remain the same, however the number of over-flying aircraft is likely to increase in line with traffic growth.
Wider society	Biodiversity	Qualitative	In the baseline ('do-nothing') option there are no changes to extant flight paths, however traffic growth (by ~43%) over the 10-year period is anticipated. As such, the sites for biodiversity that are currently overflown will remain the same, however the number of over-flying aircraft is likely to increase in line with traffic growth. The LCY CADP permission (including its subsequent amendments) provides the airport with the consent to develop the physical infrastructure required to handle 9 million passengers per annum and 111,000 air traffic movements. These infrastructure changes are unrelated to this airspace change proposal and, as such, any biodiversity impacts associated with these infrastructure changes are not considered here.
Wider society	Capacity/ resilience	Qualitative	In the baseline 'do nothing' option there in no change to existing published airspace arrangements and aircraft will continue to be managed as per today. As traffic numbers continue to grow (by ~43%) in line with the forecast, effective airspace capacity and runway capacity will become increasingly constrained, due to the volume of flights and increasing controller workload. This could, in turn, lead to a reduction in resilience.
General Aviation	Access	Qualitative	In the baseline 'do nothing' option there in no change to existing procedures or airspace structures. General Aviation, (and particularly business aviation) would continue to be supported as per today, and access impacts would not change.
General Aviation/ commercial airlines	Economic impact from increased effective capacity	Qualitative	In the baseline 'do nothing' option there in no opportunity to improve airspace or runway capacity. There would be no change in economic impact for either General Aviation or commercial operators.
General Aviation/ commercial airlines	Fuel burn	Qualitative	Increase in fuel burn. As traffic levels increase across the 10-year period, fuel burn is anticipated to increase, consistent with the greenhouse gas emissions data for the Landing and Take-off (LTO) cycle (see greenhouse gas emissions). <table><tr><td></td><td colspan="2">Without airspace change</td></tr><tr><td></td><td>Year 1</td><td>Year 10</td></tr><tr><td>LTO cycle CO_2 (tonnes)</td><td>42,491</td><td>61,551</td></tr><tr><td>Annual air traffic movements</td><td>56,314</td><td>80,714</td></tr></table>

Commercial airlines	Training costs	Qualitative	In the baseline ('do nothing') option, no additional training is required as there are no changes to the extant airspace or procedures.
Commercial airlines	Other costs	Qualitative	In the baseline ('do nothing') option, no other costs are required as there are no changes to the extant airspace or procedures.
Airport/ ANSP	Infrastructure costs	Qualitative	Airport infrastructure changes supporting traffic growth over the 2027-2036 time period are agreed within current permissions and include the terminal building and associated infrastructure. These infrastructure changes are unrelated to this airspace change proposal and, as such, any infrastructure costs associated with these changes are not considered here.
Airport/ ANSP	Operational costs	Qualitative	In the baseline ('do nothing') option, there would be no additional operational costs as there are no changes to the extant airspace or procedures.
Airport/ ANSP	Deployment costs	Qualitative	In the baseline ('do nothing') option, there would be no additional deployment costs as there are no changes to the extant airspace or procedures.
Airport/ ANSP	Other costs	Qualitative	We are not aware of 'other costs' that are appropriate for inclusion in this appraisal.

Conclusion

The baseline ('do nothing') option partially meets the following Design Principles:

M_DP2 Policy 'High' – PARTIAL

M_DP3 Environment 'High' – PARTIAL

D_DP5 Performance Based Navigation 'High' – PARTIAL

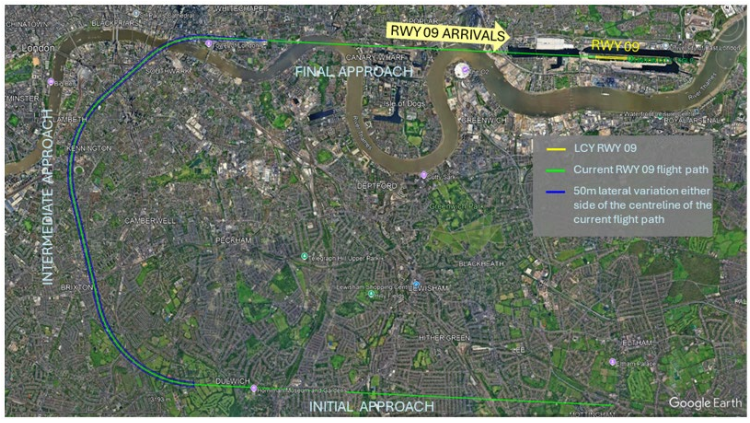
D_DP6 Local context and circumstances 'High' – PARTIAL

B_DP8 Economics 'Medium' – PARTIAL

For further information please see Appendix G Design Principle Evaluation Proforma.

This option did not meet the progression requirements set for the Design Principle Evaluation and as such was **REJECTED**. It is included here for comparison purposes only.

5.4 (1) Initial/ Intermediate Approach RWY09 Option 1 [IA09_Option 1]



Note: No changes to extant flight paths are proposed through this ACP; all existing arrival and departure procedures for RWY09 are maintained. This option supports the introduction of an additional RWY09 arrival procedure (RNP AR) at LCY.

Table 20: Initial/ Intermediate Approach RWY09 Option 1 [IA09_Option 1], Initial Options Appraisal

Group	Impact	Level of Analysis	Evidence
Communities	Noise	Qualitative	RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038. Some changes in noise impacts may result from having larger aircraft (from the fleet mix changes) operating to/from LCY, in addition to differences in lateral dispersion, however these impacts are not anticipated to be significant, and are discussed in further detail below. Aircraft are anticipated to fly an RNP approach procedure more precisely than the extant RNAV1/ILS procedure. This enhanced navigational accuracy is unlikely to impact those portions of the approach procedure that are a straight line (for RNAV1 navigation standards, aircraft already fly these portions with good precision), but could increase the concentration of aircraft tracks around the turn regions of the approach, most noticeably as aircraft transition from the initial approach onto intermediate approach, and then from intermediate approach onto final approach. As such, the RNP approach procedure may result in some change to noise impacts at these locations (associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic in Year 10). Preliminary aircraft noise comparison data observes that the negative difference in arrival/departure noise, for the largest aircraft associated with this fleet mix change (the A320neo),

<table>
<tr><td></td><td></td><td></td><td>when compared to the current fleet mix, is predominantly below the threshold of perceptible change in noise (3dB [39, 40]). Additionally, RNP AR procedures are anticipated to reduce the number of over-flying aircraft (by supporting aircraft with greater passenger capacity, reducing traffic volume). The reduction in air traffic growth (compared to the baseline ('do nothing') option is as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12
(-23.7%).
We anticipate the marginal difference between aircraft noise levels, alongside a reduction in the number of over-flying aircraft, would potentially mitigate any noise disbenefit associated with larger aircraft operating to/from LCY, and also any changes to noise impacts resulting from the concentration of aircraft tracks around RNP turn regions. It should also be noted that lateral dispersion around the turn regions will still take place for aircraft on the extant RWY09 RNAV1/ILS approach procedures, and that any concentration of tracks in these areas is associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic in Year 10.
This option does not allow for alternative respite routes to be considered due to the narrow design envelope.</td></tr>
<tr><td>Communities</td><td>Local Air quality</td><td>Qualitative</td><td>Local air quality may be improved compared to the baseline ('do nothing') option.
Aircraft engine emissions data for the Landing and Take-off (LTO) cycle demonstrates the potential for environmental benefits through lower A320neo NO_X emission levels compared to other new generation aircraft currently operating at the airport, see Appendix H Environmental impact assessment, for more details.
<table>
<tr><td>Aircraft type</td><td>A320neo</td><td>E190 E2/ E195 E2</td><td>A220</td></tr>
<tr><td>LTO cycle NO_x (g/kg)</td><td>3096</td><td>3199</td><td>3903</td></tr>
</table>
This airspace change proposal predicts a reduction in air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This reduction is traffic volume is anticipated, additionally, to reduce the environmental impacts associated with this change.
Note: The LCY S73 permission provides the additional operational and environmental controls relevant to the predicted increase in passenger numbers and traffic volume with this option. As such, the impact on air quality resulting from e.g. local transport infrastructures feeding the airport, is not included for consideration here.</td></tr>
<tr><td>Wider society</td><td>Greenhouse gas emissions</td><td>Qualitative</td><td>Greenhouse gas emissions may be improved compared to the baseline ('do nothing') option.
Greenhouse gas emissions data for the Landing and Take-off (LTO) cycle demonstrates the potential for environmental benefits through lower CO_2 emissions for this airspace change,</td></tr>
</table>

[39] A 3dB change in noise level is just perceptible by an average human being in controlled conditions and 5dB corresponds to the perceptible variation in everyday background level (Bies and Hansen (2009), and Bell and Bell (1994), respectively). 3dB is commonly described as a 'Barely Perceptible Change' and 5dB as a 'Clearly Noticeable Change'.

[40] This noise data is used for illustrative purposes only, detailed noise modelling will be conducted at Stage 3.

<table>
<tr><td></td><td></td><td></td><td>see Appendix H Environmental impact assessment, for more details.
<table>
<tr><td></td><td colspan="2">Without airspace change</td><td colspan="2">With airspace change</td></tr>
<tr><td></td><td>Year 1</td><td>Year 10</td><td>Year 1</td><td>Year 10</td></tr>
<tr><td>LTO cycle CO_2 (tonnes)</td><td>42,491</td><td>61,551</td><td>39,131</td><td>60,716</td></tr>
</table>
This airspace change proposal predicts a reduction in air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This reduction is traffic volume is anticipated, additionally, to contribute to reducing the environmental impacts associated with this change.</td></tr>
<tr><td>Wider society</td><td>Tranquillity</td><td>Qualitative</td><td>Tranquillity impacts may be improved compared to the baseline (‘do nothing’) option.
This option is considered to be consistent with existing published airspace arrangements, closely following the same lateral track as today. As such, the sites for tranquillity that are currently overflown will remain the same. However, this airspace change proposal predicts a reduction in air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This reduction in traffic volume is expected to reduce the number of over-flying aircraft when compared to the baseline (‘do nothing’) option.</td></tr>
<tr><td>Wider society</td><td>Biodiversity</td><td>Qualitative</td><td>Biodiversity impacts may be improved compared to the baseline (‘do nothing’) option.
This option is considered to be consistent with existing published airspace arrangements, closely following the same lateral track as today. As such, the sites for biodiversity that are currently overflown will remain the same. However, this airspace change proposal predicts a reduction in air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This reduction in traffic volume is expected to reduce the number of over-flying aircraft when compared to the baseline (‘do nothing’) option.
No new airport infrastructure requirements are associated with this design option; as such there are no biodiversity impacts from airport infrastructure development.</td></tr>
<tr><td>Wider society</td><td>Capacity/ resilience</td><td>Qualitative</td><td>Capacity/ resilience impacts may be improved compared to the baseline (‘do nothing’) option.
By enabling a faster transition to aircraft types with increased passenger capacity, and by systemising the RNP AR approach procedure, this option is considered to increase capacity/ resilience for LCY (airport and runway) in addition to the lower airspace network (London Terminal Airspace) through a reduction in: air traffic volumes; air traffic density, complexity and delay; controller intervention and; controller workload.</td></tr>
<tr><td>General Aviation</td><td>Access</td><td>Qualitative</td><td>This option does not change any extant LCY procedures or airspace structures. General Aviation, (and particularly business aviation) would continue to be supported as per the baseline (‘do nothing’) option, and access impacts would not change.</td></tr>
</table>

General Aviation/ commercial airlines	Economic impact from increased effective capacity	Qualitative	Economic impacts may be improved compared to the baseline ('do nothing') option. This option could enable airline operators to deploy aircraft with greater capacity, lower seat costs and increased yields than would otherwise be available.
General Aviation/ commercial airlines	Fuel burn	Qualitative	Fuel burn may be improved compared to the baseline ('do nothing') option. RNP AR procedures could accelerate the operation of more modern, 'cleaner' aircraft at LCY which could improve fuel burn compared to older aircraft models, due to advancements in airframe design and more fuel-efficient engines which can reduce fuel consumption and lower overall emissions of pollutants during flights. A reduction in air traffic growth compared with the baseline scenario (through fleet mix changes which support aircraft with greater passenger capacity) is also anticipated to reduce total annual fuel burn compared to the baseline ('do nothing') option.
Commercial airlines	Training costs	Qualitative	This option may result in additional training cost impacts for airlines compared to the baseline ('do nothing') option. Specialised training will be required for airline personnel to safely and effectively operate aircraft using RNP AR procedures at LCY.
Commercial airlines	Other costs	Qualitative	RNP AR equipment and operational approvals may involve costs for airlines including initial investment in aircraft and avionics, ongoing costs for navigation database subscriptions and potential procedure-specific approvals.
Airport/ ANSP	Infrastructure costs	Qualitative	Airport infrastructure costs remain unchanged compared to the baseline ('do nothing') option. Airport infrastructure changes supporting traffic growth over the 2027-2036 time period are agreed within current permissions and include the terminal building and associated infrastructure. No new airport infrastructure requirements are associated with this design option.
Airport/ ANSP	Operational costs	Qualitative	This option is not expected to change airport operational costs compared to the baseline ('do nothing') option.
Airport/ ANSP	Deployment costs	Qualitative	The airspace change proposal is expected to require air traffic controller (London City Airport, and London Terminal Control Centre) familiarisation training in addition to support staff training and briefings. Some use of NATS simulator facilities may be required. Support staff are required to run the simulator (e.g. activity planning, data preparation, simulator testing, pseudo-pilots, Safety/Validation/ Human Factors, data analysts etc). Additional costs associated with the development, assurance and implementation of the designed procedures.
Airport/ ANSP	Other costs	Qualitative	No other airport/ ANSP costs are foreseen.

Conclusion

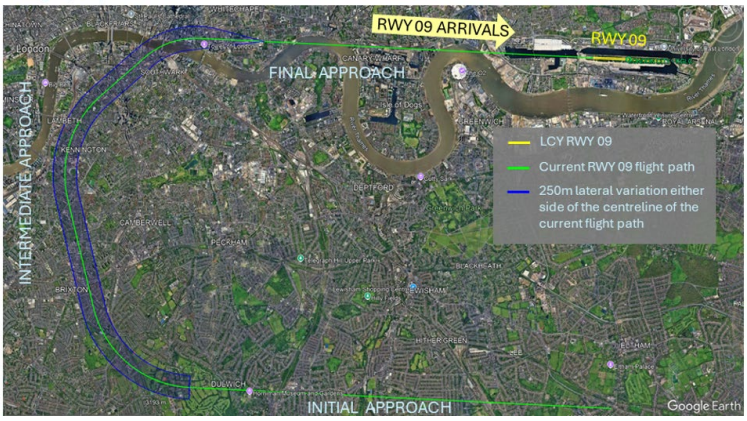
IA09_Option 1 supports the introduction of RNP AR operations, accelerating the operation of more modern, environmentally efficient, aircraft at LCY which could improve impacts on local air quality, fuel burn and CO_2 emissions compared to the baseline ('do nothing') option. An increased passenger capacity could enable a reduction in air traffic growth compared with the baseline scenario, further improving environmental impacts, and benefiting local communities by reducing the number of over-flying aircraft, as well as

increasing airport capacity and network resilience, and improving operating costs for airline operators.

IA09_Option 1 offers comparable benefits to IA09_Option 3 in terms of environmental impacts and capacity/resilience. However, by closely following the same lateral track as today (only 50m lateral variation of the centreline is permitted for design purposes) this option does not provide the design flexibility to consider respite options afforded by IA09_Option 3.

For these reasons IA09_Option 1 is **REJECTED** in preference to IA09_Option 3 at this stage.

5.5 (2) Initial/ Intermediate Approach RWY09 Option 2 [IA09_Option 2]



Note: No changes to extant flight paths are proposed through this ACP; all existing arrival and departure procedures for RWY09 are maintained. This option supports the introduction of an additional RWY09 arrival procedure (RNP AR) at LCY.

Table 21: Initial/ Intermediate Approach RWY09 Option 2 [IA09_Option 2], Initial Options Appraisal

Group	Impact	Level of Analysis	Evidence
Communities	Noise	Qualitative	RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038. Some changes in noise impacts may result from having larger aircraft (from the fleet mix changes) operating to/from LCY, in addition to differences in lateral dispersion, however these impacts are not anticipated to be significant, and are discussed in further detail below. Aircraft are anticipated to fly an RNP approach procedure more precisely than the extant RNAV1/ILS procedure. This enhanced navigational accuracy is unlikely to impact those portions of the approach procedure that are a straight line (for RNAV1 navigation standards, aircraft already fly these portions with good precision), but could increase the concentration of aircraft tracks around the turn regions of the approach, most noticeably as aircraft transition from the initial approach onto intermediate approach, and then from intermediate approach onto final approach. As such, the RNP approach procedure may result in some change to noise impacts at these locations (associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic in Year 10). Preliminary aircraft noise comparison data observes that the negative difference in arrival/departure noise, for the largest aircraft associated with this fleet mix change (the A320neo),

<table>
<tr><td></td><td></td><td></td><td>when compared to the current fleet mix, is predominantly below the threshold of perceptible change in noise (3dB [41, 42]). Additionally, RNP AR procedures are anticipated to reduce the number of over-flying aircraft (by supporting aircraft with greater passenger capacity, reducing traffic volume). The reduction in air traffic growth (compared to the baseline ('do nothing') option is as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12
(-23.7%).
We anticipate the marginal difference between aircraft noise levels, alongside a reduction in the number of over-flying aircraft, would potentially mitigate any noise disbenefit associated with larger aircraft operating to/from LCY, and also any changes to noise impacts resulting from the concentration of aircraft tracks around RNP turn regions. It should also be noted that lateral dispersion around the turn regions will still take place for aircraft on the extant RWY09 RNAV1/ILS approach procedures, and that any concentration of tracks in these areas is associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic in Year 10.
This option does not allow for meaningful respite routes to be considered due to the narrow design envelope.</td></tr>
<tr><td>Communities</td><td>Local Air quality</td><td>Qualitative</td><td>Local air quality may be improved compared to the baseline ('do nothing') option.
Aircraft engine emissions data for the Landing and Take-off (LTO) cycle demonstrates the potential for environmental benefits through lower A320neo NO_X emission levels compared to other new generation aircraft currently operating at the airport, see Appendix H Environmental impact assessment, for more details.
<table>
<tr><td>Aircraft type</td><td>A320neo</td><td>E190 E2/ E195 E2</td><td>A220</td></tr>
<tr><td>LTO cycle NO_x (g/kg)</td><td>3096</td><td>3199</td><td>3903</td></tr>
</table>
This airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is anticipated, additionally, to reduce the environmental impacts associated with this change.
Note: The LCY S73 permission provides the additional operational and environmental controls relevant to the predicted increase in passenger numbers and traffic volume with this option. As such, the impact on air quality resulting from e.g. local transport infrastructures feeding the airport, is not included for consideration here.</td></tr>
<tr><td>Wider society</td><td>Greenhouse gas emissions</td><td>Qualitative</td><td>Greenhouse gas emissions may be improved compared to the baseline ('do nothing') option.
Greenhouse gas emissions data for the Landing and Take-off (LTO) cycle demonstrates the potential for environmental benefits through lower CO_2 emissions for this airspace change,</td></tr>
</table>

[41] A 3dB change in noise level is just perceptible by an average human being in controlled conditions and 5dB corresponds to the perceptible variation in everyday background level (Bies and Hansen (2009), and Bell and Bell (1994), respectively). 3dB is commonly described as a 'Barely Perceptible Change' and 5dB as a 'Clearly Noticeable Change'.

[42] This noise data is used for illustrative purposes only, detailed noise modelling will be conducted at Stage 3.

<table>
<tr><td></td><td></td><td></td><td>see Appendix H Environmental impact assessment, for more details.
<table>
<tr><td></td><td colspan="2">Without airspace change</td><td colspan="2">With airspace change</td></tr>
<tr><td></td><td>Year 1</td><td>Year 10</td><td>Year 1</td><td>Year 10</td></tr>
<tr><td>LTO cycle CO_2 (tonnes)</td><td>42,491</td><td>61,551</td><td>39,131</td><td>60,716</td></tr>
</table>
This airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is anticipated to contribute to reducing the environmental impacts associated with this change.</td></tr>
<tr><td>Wider society</td><td>Tranquillity</td><td>Qualitative</td><td>Tranquillity impacts may be improved compared to the baseline (‘do nothing’) option.
The lateral variation within this option (up to 250m of the centreline) is maintained within the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure. As such, the sites for tranquillity that are currently overflown will remain the same. However, this airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is expected to reduce the number of over-flying aircraft when compared to the baseline (‘do nothing’) option.</td></tr>
<tr><td>Wider society</td><td>Biodiversity</td><td>Qualitative</td><td>The lateral variation within this option (up to 250m of the centreline) is maintained within the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure. As such, the sites for biodiversity that are currently overflown will remain the same. However, this airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is expected to reduce the number of over-flying aircraft when compared to the baseline (‘do nothing’) option.
No new airport infrastructure requirements are associated with this design option; as such there are no biodiversity impacts from airport infrastructure development.</td></tr>
<tr><td>Wider society</td><td>Capacity/ resilience</td><td>Qualitative</td><td>Capacity/ resilience impacts may be improved compared to the baseline (‘do nothing’) option.
By enabling a faster transition to aircraft types with increased passenger capacity, and by systemising the RNP AR approach procedure, this option is considered to increase capacity/ resilience for LCY (airport and runway) in addition to the lower airspace network (London Terminal Airspace) through a reduction in: air traffic volumes; air traffic density, complexity and delay; controller intervention and; controller workload.</td></tr>
<tr><td>General Aviation</td><td>Access</td><td>Qualitative</td><td>This option does not change any extant LCY procedures or airspace structures. General Aviation, (and particularly business aviation) would continue to be supported as per the baseline (‘do nothing’) option, and access impacts would not change.</td></tr>
<tr><td>General Aviation/ commercial airlines</td><td>Economic impact from increased</td><td>Qualitative</td><td>Economic impacts may be improved compared to the baseline (‘do nothing’) option.</td></tr>
</table>

	effective capacity		This option could enable airline operators to deploy aircraft with greater capacity, lower seat costs and increased yields than would otherwise be available.
General Aviation/ commercial airlines	Fuel burn	Qualitative	Fuel burn may be improved compared to the baseline ('do nothing') option. RNP AR procedures could accelerate the operation of more modern, 'cleaner' aircraft at LCY which could improve fuel burn compared to older aircraft models, due to advancements in airframe design and more fuel-efficient engines which can reduce fuel consumption and lower overall emissions of pollutants during flights. A reduction in traffic volume (through fleet mix changes which support aircraft with greater passenger capacity) is also anticipated to reduce total annual fuel burn.
Commercial airlines	Training costs	Qualitative	This option may result in additional training cost impacts for airlines compared to the baseline ('do nothing') option. Specialized training will be required for airline personnel to safely and effectively operate aircraft using RNP AR procedures at LCY.
Commercial airlines	Other costs	Qualitative	RNP AR equipment and operational approvals may involve costs for airlines including initial investment in aircraft and avionics, ongoing costs for navigation database subscriptions and potential procedure-specific approvals.
Airport/ ANSP	Infrastructure costs	Qualitative	Airport infrastructure costs remain unchanged compared to the baseline ('do nothing') option. Airport infrastructure changes supporting traffic growth over the 2027-2036 time period are agreed within current permissions and include the terminal building and associated infrastructure. No new airport infrastructure requirements are associated with this design option.
Airport/ ANSP	Operational costs	Qualitative	This option is not expected to change airport operational costs compared to the baseline ('do nothing') option.
Airport/ ANSP	Deployment costs	Qualitative	The airspace change proposal is expected to require air traffic controller (London City Airport, and London Terminal Control Centre) familiarisation training in addition to support staff training and briefings. Some use of NATS simulator facilities may be required. Support staff are required to run the simulator (e.g. activity planning, data preparation, simulator testing, pseudo-pilots, Safety/Validation/ Human Factors, data analysts etc). Additional costs associated with the development, assurance and implementation of the designed procedures.
Airport/ ANSP	Other costs	Qualitative	No other airport/ ANSP costs are foreseen.

Conclusion

IA09_Option 2 supports the introduction of RNP AR operations, accelerating the operation of more modern, environmentally efficient, aircraft at LCY which could improve impacts on local air quality, fuel burn and CO_2 emissions compared to the baseline ('do nothing') option. An increased passenger capacity could enable a reduction in air traffic growth compared with the baseline scenario, further improving environmental impacts, and benefiting local communities by reducing the number of over-flying aircraft, as well as increasing airport capacity and network resilience, and improving operating costs for airline operators.

IA09_Option 2 offers comparable benefits to IA09_Option 3 in terms of environmental impacts and capacity/resilience. However, the minor lateral variation within this option (up to 250m of the centreline is permitted for design purposes) does not provide the design flexibility to consider respite options afforded by IA09_Option 3.

For these reasons IA09_Option 2 is **REJECTED** in preference to IA09_Option 3 at this stage.

5.6 (3) Initial/ Intermediate Approach RWY09 Option 3 [IA09_Option 3]

Note: No changes to extant flight paths are proposed through this ACP; all existing arrival and departure procedures for RWY09 are maintained. This option supports the introduction of an additional RWY09 arrival procedure (RNP AR) at LCY.

Table 22: Initial/ Intermediate Approach RWY09 Option 3 [IA09_Option 3], Initial Options Appraisal

Group	Impact	Level of Analysis	Evidence
Communities	Noise	Qualitative	RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038. Some changes in noise impacts may result from having larger aircraft (from the fleet mix changes) operating to/from LCY, in addition to differences in lateral dispersion, however these impacts are not anticipated to be significant, and are discussed in further detail below. Aircraft are anticipated to fly an RNP approach procedure more precisely than the extant RNAV1/ILS procedure. This enhanced navigational accuracy is unlikely to impact those portions of the approach procedure that are a straight line (for RNAV1 navigation standards, aircraft already fly these portions with good precision), but could increase the concentration of aircraft tracks around the turn regions of the approach, most noticeably as aircraft transition from the initial approach onto intermediate approach, and then from intermediate approach onto final approach. As such, the RNP approach procedure may result in some change to noise impacts at these locations (associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic in Year 10). Preliminary aircraft noise comparison data observes that the negative difference in arrival/departure noise, for the largest aircraft associated with this fleet mix change (the A320neo),

<table>
<tr><td></td><td></td><td></td><td>when compared to the current fleet mix, is predominantly below the threshold of perceptible change in noise (3dB [43, 44]). Additionally, RNP AR procedures are anticipated to reduce the number of over-flying aircraft (by supporting aircraft with greater passenger capacity, reducing traffic volume). The reduction in air traffic growth (compared to the baseline ('do nothing') option is as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12
(-23.7%).
We anticipate the marginal difference between aircraft noise levels, alongside a reduction in the number of over-flying aircraft, would potentially mitigate any noise disbenefit associated with larger aircraft operating to/from LCY, and also any changes to noise impacts resulting from the concentration of aircraft tracks around RNP turn regions. It should also be noted that lateral dispersion around the turn regions will still take place for aircraft on the extant RWY09 RNAV1/ILS approach procedures, and that any concentration of tracks in these areas is associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic in Year 10.
The lateral variation within this option could benefit the local community by enabling the development of respite options; this is where different flight paths are used alternately to mitigate the impact of aircraft noise by strategically shifting air traffic over different areas at different times.</td></tr>
<tr><td>Communities</td><td>Local Air quality</td><td>Qualitative</td><td>Local air quality may be improved compared to the baseline ('do nothing') option.
Aircraft engine emissions data for the Landing and Take-off (LTO) cycle demonstrates the potential for environmental benefits through lower A320neo NO_X emission levels compared to other new generation aircraft currently operating at the airport, see Appendix H Environmental impact assessment, for more details.
<table>
<tr><td>Aircraft type</td><td>A320neo</td><td>E190 E2/ E195 E2</td><td>A220</td></tr>
<tr><td>LTO cycle NO_x (g/kg)</td><td>3096</td><td>3199</td><td>3903</td></tr>
</table>
This airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is anticipated, additionally, to reduce the environmental impacts associated with this change.
Note: The LCY S73 permission provides the additional operational and environmental controls relevant to the predicted increase in passenger numbers and traffic volume with this option. As such, the impact on air quality resulting from e.g. local transport infrastructures feeding the airport, is not included for consideration here.</td></tr>
<tr><td>Wider society</td><td>Greenhouse gas emissions</td><td>Qualitative</td><td>Greenhouse gas emissions may be improved compared to the baseline ('do nothing') option.</td></tr>
</table>

[43] A 3dB change in noise level is just perceptible by an average human being in controlled conditions and 5dB corresponds to the perceptible variation in everyday background level (Bies and Hansen (2009), and Bell and Bell (1994), respectively). 3dB is commonly described as a 'Barely Perceptible Change' and 5dB as a 'Clearly Noticeable Change'.

[44] This noise data is used for illustrative purposes only, detailed noise modelling will be conducted at Stage 3.

<table>
<tr><td></td><td></td><td></td><td>Greenhouse gas emissions data for the Landing and Take-off (LTO) cycle demonstrates the potential for environmental benefits through lower CO_2 emissions for this airspace change, see Appendix H Environmental impact assessment, for more details.
<table>
<tr><td></td><td colspan="2">Without airspace change</td><td colspan="2">With airspace change</td></tr>
<tr><td></td><td>Year 1</td><td>Year 10</td><td>Year 1</td><td>Year 10</td></tr>
<tr><td>LTO cycle CO_2 (tonnes)</td><td>42,491</td><td>61,551</td><td>39,131</td><td>60,716</td></tr>
</table>
This airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is anticipated to contribute to reducing the environmental impacts associated with this change.</td></tr>
<tr><td>Wider society</td><td>Tranquillity</td><td>Qualitative</td><td>Tranquillity impacts may be improved compared to the baseline (‘do nothing’) option.
The lateral variation within this option (up to 500m of the centreline) is maintained within the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure. As such, the sites for tranquillity that are currently overflown will remain the same. However, this airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is expected to reduce the number of over-flying aircraft when compared to the baseline (‘do nothing’) option.</td></tr>
<tr><td>Wider society</td><td>Biodiversity</td><td>Qualitative</td><td>Biodiversity impacts may be improved compared to the baseline (‘do nothing’) option.
The lateral variation within this option (up to 500m of the centreline) is maintained within the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure. As such, the sites for biodiversity that are currently overflown will remain the same. However, this airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is expected to reduce the number of over-flying aircraft when compared to the baseline (‘do nothing’) option.
No new airport infrastructure requirements are associated with this design option; as such there are no biodiversity impacts from airport infrastructure development.</td></tr>
<tr><td>Wider society</td><td>Capacity/ resilience</td><td>Qualitative</td><td>Capacity/ resilience impacts may be improved compared to the baseline (‘do nothing’) option.
By enabling a faster transition to aircraft types with increased passenger capacity, and by systemising the RNP AR approach procedure, this option is considered to increase capacity/ resilience for LCY (airport and runway) in addition to the lower airspace network (London Terminal Airspace) through a reduction in: air traffic volumes; air traffic density, complexity and delay; controller intervention and; controller workload.</td></tr>
<tr><td>General Aviation</td><td>Access</td><td>Qualitative</td><td>This option does not change any extant LCY procedures or airspace structures. General Aviation, (and particularly business aviation) would continue to be supported as per the baseline (‘do nothing’) option, and access impacts would not change.</td></tr>
</table>

General Aviation/ commercial airlines	Economic impact from increased effective capacity	Qualitative	Economic impacts may be improved compared to the baseline ('do nothing') option. This option could enable airline operators to deploy aircraft with greater capacity, lower seat costs and increased yields than would otherwise be available.
General Aviation/ commercial airlines	Fuel burn	Qualitative	Fuel burn may be improved compared to the baseline ('do nothing') option. RNP AR procedures could accelerate the operation of more modern, 'cleaner' aircraft at LCY which could improve fuel burn compared to older aircraft models, due to advancements in airframe design and more fuel-efficient engines which can reduce fuel consumption and lower overall emissions of pollutants during flights. A reduction in traffic volume (through fleet mix changes which support aircraft with greater passenger capacity) is also anticipated to reduce total annual fuel burn.
Commercial airlines	Training costs	Qualitative	This option may result in additional training cost impacts for airlines compared to the baseline ('do nothing') option. Specialized training will be required for airline personnel to safely and effectively operate aircraft using RNP AR procedures at LCY.
Commercial airlines	Other costs	Qualitative	RNP AR equipment and operational approvals may involve costs for airlines including initial investment in aircraft and avionics, ongoing costs for navigation database subscriptions and potential procedure-specific approvals.
Airport/ ANSP	Infrastructure costs	Qualitative	Airport infrastructure costs remain unchanged compared to the baseline ('do nothing') option. Airport infrastructure changes supporting traffic growth over the 2027-2036 time period are agreed within current permissions and include the terminal building and associated infrastructure. No new airport infrastructure requirements are associated with this design option.
Airport/ ANSP	Operational costs	Qualitative	This option is not expected to change airport operational costs compared to the baseline ('do nothing') option.
Airport/ ANSP	Deployment costs	Qualitative	The airspace change proposal is expected to require air traffic controller (London City Airport, and London Terminal Control Centre) familiarisation training in addition to support staff training and briefings. Some use of NATS simulator facilities may be required. Support staff are required to run the simulator (e.g. activity planning, data preparation, simulator testing, pseudo-pilots, Safety/Validation/ Human Factors, data analysts etc). Additional costs associated with the development, assurance and implementation of the designed procedures.
Airport/ ANSP	Other costs	Qualitative	No other airport/ ANSP costs are foreseen.

Conclusion

IA09_Option 3 supports the introduction of RNP AR operations, accelerating the operation of more modern, environmentally efficient, aircraft at LCY which could improve impacts on local air quality, fuel burn and CO_2 emissions compared to the baseline ('do nothing') option. An increased passenger capacity could enable a reduction in air traffic growth compared with the baseline scenario, further improving environmental impacts, and benefiting local communities by reducing the number of over-flying aircraft, as well as

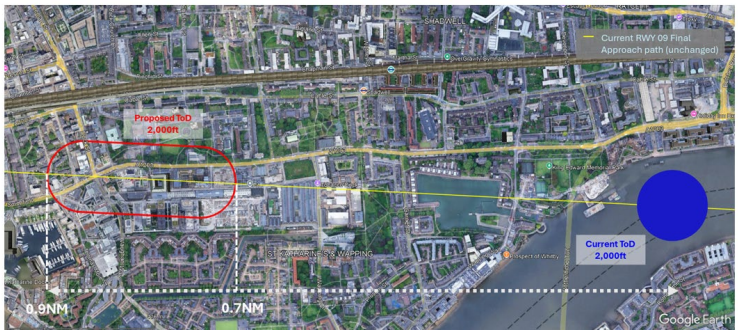
increasing airport capacity and network resilience, and improving operating costs for airline operators.

Specifically, the moderate lateral variation within this option (up to 500m of the centreline is permitted for design purposes) could benefit the local community by enabling the development of respite options; this is where different flight paths are used alternately to mitigate the impact of aircraft noise by strategically shifting air traffic over different areas at different times.

Therefore, the moderate lateral variation in IA09_Option 3 could offer greater advantage for noise mitigation when compared to IA09_Option 1 and IA09_Option 2, whilst not prohibiting any of the benefits afforded by either of these two options.

For these reasons IA09_Option 3 is considered viable and will be **PROGRESSED** to Stage 3 in preference of IA09_Option 1 and IA09_Option 2.

5.7 (4) Final Approach RWY09 Option 1 [FA09_Option 1]



Note: No changes to extant flight paths are proposed through this ACP; all existing arrival and departure procedures for RWY09 are maintained. This option supports the introduction of an additional RWY09 arrival procedure (RNP AR) at LCY.

Table 23: Final Approach RWY09 Option 1 [FA09_Option 1], Initial Options Appraisal

Group	Impact	Level of Analysis	Evidence
Communities	Noise	Qualitative	RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038. Some changes in noise impacts may result from having larger aircraft (from the fleet mix changes) operating to/from LCY, in addition to differences in vertical distance, however these impacts are not anticipated to be significant, and are discussed in further detail below. In this option the portion of approach between the proposed ToD and the current ToD, follows the same track as today; there is no change to the lateral profile, and therefore no new populations or sites are overflown. However, the vertical distance is reduced (at the maximum point) up to 375ft (114m), which may result in some change to noise impacts for communities close to the final descent area. Preliminary aircraft noise comparison data observes that the negative difference in arrival/departure noise, for the largest aircraft associated with this fleet mix change (the A320neo), when compared to the current fleet mix, is predominantly below the threshold of perceptible change in noise (3dB [45, 46]). Additionally, this airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity) as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). It is noted that aircraft on a shallower approach angle generally require a lower thrust than a steeper approach; this is due to the relationship between lift, drag, and thrust, where a shallower angle allows for a more efficient use of lift and drag

[45] A 3dB change in noise level is just perceptible by an average human being in controlled conditions and 5dB corresponds to the perceptible variation in everyday background level (Bies and Hansen (2009), and Bell and Bell (1994), respectively). 3dB is commonly described as a 'Barely Perceptible Change' and 5dB as a 'Clearly Noticeable Change'.

[46] This noise data is used for illustrative purposes only, detailed noise modelling will be conducted at Stage 3.

<table>
<tr><td></td><td></td><td></td><td>to control descent rate, minimizing the need for continuous engine thrust to maintain the glide path.
It is also noted that the area impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). Initial calculations approximate an 18% reduction in population impacted by overflight, when compared against the baseline, see Appendix F Overflight calculations for more details.
It is therefore considered that lower, and potentially quieter, thrust settings, in addition to a reduction in traffic volume and population overflown, and the marginal difference between aircraft noise levels, could contribute towards mitigating any potential noise disbenefit associated with larger aircraft (from the fleet mix changes) operating to/from LCY, and also any changes to noise impacts associated with the shallower approach profile.</td></tr>
<tr><td>Communities</td><td>Local Air quality</td><td>Qualitative</td><td>Local air quality may be improved compared to the baseline ('do nothing') option.
For this design option (4.49° - 4.40° final approach path) the distance from the runway that arrival aircraft on the new RNP AR procedure are below 1,000ft (measured from threshold elevation – approx. 19ft) [47] is as follows:
<table>
<tr><td>Approach Angle</td><td>4.49° (7.9% gradient) [48]</td><td>4.40° (7.7% gradient)</td></tr>
<tr><td>Distance from runway</td><td>2.12NM/ 3.93km</td><td>2.18NM/ 4.04km</td></tr>
</table>
This is an extension of approx. 0.37NM (0.69km) – 0.43NM (0.8km) compared to the baseline ('do nothing') option.

Aircraft engine emissions data for the Landing and Take-off (LTO) cycle demonstrates the potential for environmental benefits through lower A320neo NO_X emission levels compared to other new generation aircraft currently operating at the airport, see Appendix H Environmental impact assessment, for more details.
<table>
<tr><td>Aircraft type</td><td>A320neo</td><td>E190 E2/ E195 E2</td><td>A220</td></tr>
<tr><td>LTO cycle NO_x (g/kg)</td><td>3096</td><td>3199</td><td>3903</td></tr>
</table>
This airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is anticipated, additionally, to reduce the environmental impacts associated with this change.
Note: The LCY S73 permission provides the additional operational and environmental controls relevant to the predicted increase in passenger numbers and traffic volume with this option. As such, the impact on air quality resulting from e.g. local transport infrastructures feeding the airport, is not included for consideration here.</td></tr>
</table>

[47] In accordance with the CAP1616i, due to the effects of mixing and dispersion, emissions from aircraft above 1,000ft are considered unlikely to have a significant impact on local air quality.

[48] The descent gradient determines the rate of descent the aircraft needs to maintain, and is calculated as Tan(approach angle) x 100. For a 7.9% gradient, this means that for every 1,000ft of horizontal distance travelled, the aircraft descends 79ft.

<table>
<tr><td>Wider society</td><td>Greenhouse gas emissions</td><td>Qualitative</td><td>Greenhouse gas emissions may be improved compared to the baseline ('do nothing') option.
Greenhouse gas emissions data for the Landing and Take-off (LTO) cycle demonstrates the potential for environmental benefits through lower CO_2 emissions for this airspace change, see Appendix H Environmental impact assessment, for more details.
<table><tr><td></td><td colspan="2">Without airspace change</td><td colspan="2">With airspace change</td></tr><tr><td></td><td>Year 1</td><td>Year 10</td><td>Year 1</td><td>Year 10</td></tr><tr><td>LTO cycle CO_2 (tonnes)</td><td>42,491</td><td>61,551</td><td>39,131</td><td>60,716</td></tr></table>
This airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is anticipated to contribute to reducing the environmental impacts associated with this change.</td></tr>
<tr><td>Wider society</td><td>Tranquillity</td><td>Qualitative</td><td>Tranquillity impacts may be improved compared to the baseline ('do nothing') option.
In this option, the portion of the approach path between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile. It is noted that the area impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). As such, the sites for tranquillity that are currently overflown will remain the same, however the area overflown (by aircraft on the RNP AR procedure) may be reduced.
Additionally, this airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1
(-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is expected to reduce the number of over-flying aircraft when compared to the baseline ('do nothing') option.</td></tr>
<tr><td>Wider society</td><td>Biodiversity</td><td>Qualitative</td><td>Biodiversity impacts may be improved compared to the baseline ('do nothing') option.
In this option, the portion of the approach path between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile. It is noted that the area impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). As such, the sites for biodiversity that are currently overflown will remain the same, however the area overflown (by aircraft on the RNP AR procedure) may be reduced.
Additionally, this airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1
(-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is expected to reduce the number of over-flying aircraft when compared to the baseline ('do nothing') option.
Stakeholder feedback has requested consideration of impacts to Wapping; for this design option the proposed ToD point will reposition where aircraft commence their final descent to a location overhead St. Katharine's & Wapping. The difference in vertical distance over this location is likely to be minimal (less than 60ft) as it is the start of the descent profile and therefore</td></tr>
</table>

			biodiversity impacts in this region due to the difference in aircraft height are considered to be broadly similar to today. No new airport infrastructure requirements are associated with this design option; as such there are no biodiversity impacts from airport infrastructure development.
Wider society	Capacity/ resilience	Qualitative	Capacity/ resilience impacts may be improved compared to the baseline ('do nothing') option. By enabling a faster transition to aircraft types with increased passenger capacity, and by systemising the RNP AR approach procedure, this option is considered to increase capacity/ resilience for LCY (airport and runway) in addition to the lower airspace network (London Terminal Airspace) through a reduction in: air traffic volumes; air traffic density, complexity and delay; controller intervention and; controller workload.
General Aviation	Access	Qualitative	This option does not change any extant LCY procedures or airspace structures. General Aviation, (and particularly business aviation) would continue to be supported as per the baseline ('do nothing') option, and access impacts would not change.
General Aviation/ commercial airlines	Economic impact from increased effective capacity	Qualitative	Economic impacts may be improved compared to the baseline ('do nothing') option. This option could enable airline operators to deploy aircraft with greater capacity, lower seat costs and increased yields than would otherwise be available.
General Aviation/ commercial airlines	Fuel burn	Qualitative	Fuel burn may be improved compared to the baseline ('do nothing') option. RNP AR procedures could accelerate the operation of more modern, 'cleaner' aircraft at LCY which could improve fuel burn compared to older aircraft models, due to advancements in airframe design and more fuel-efficient engines which can reduce fuel consumption and lower overall emissions of pollutants during flights. A reduction in traffic volume (through fleet mix changes which support aircraft with greater passenger capacity) is also anticipated to reduce total annual fuel burn.
Commercial airlines	Training costs	Qualitative	This option may result in additional training cost impacts for airlines compared to the baseline ('do nothing') option. Specialized training will be required for airline personnel to safely and effectively operate aircraft using RNP AR procedures at LCY.
Commercial airlines	Other costs	Qualitative	RNP AR equipment and operational approvals may involve costs for airlines including initial investment in aircraft and avionics, ongoing costs for navigation database subscriptions and potential procedure-specific approvals.
Airport/ ANSP	Infrastructure costs	Qualitative	Airport infrastructure costs remain unchanged compared to the baseline ('do nothing') option. Airport infrastructure changes supporting traffic growth over the 2027-2036 time period are agreed within current permissions and include the terminal building and associated infrastructure. No new airport infrastructure requirements are associated with this design option.
Airport/ ANSP	Operational costs	Qualitative	This option is not expected to change airport operational costs compared to the baseline ('do nothing') option.
Airport/ ANSP	Deployment costs	Qualitative	The airspace change proposal is expected to require air traffic controller (London City Airport, and London Terminal Control Centre) familiarisation training in addition to support staff training and briefings. Some use of NATS simulator facilities may be required. Support staff are required to run the simulator (e.g. activity planning,

			data preparation, simulator testing, pseudo-pilots, Safety/Validation/ Human Factors, data analysts etc). Additional costs associated with the development, assurance and implementation of the designed procedures.
Airport/ ANSP	Other costs	Qualitative	No other airport/ ANSP costs are foreseen.

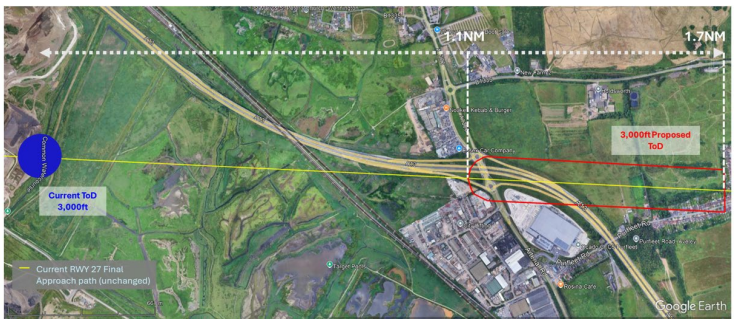
Conclusion

FA09_Option 1 supports the introduction of RNP AR operations, accelerating the operation of more modern, environmentally efficient, aircraft at LCY which could improve impacts on local air quality, fuel burn and CO_2 emissions compared to the baseline ('do nothing') option. An increased passenger capacity could enable a reduction in air traffic growth compared with the baseline scenario, further improving environmental impacts, and benefiting local communities by reducing the number of over-flying aircraft, as well as increasing airport capacity and network resilience, and improving operating costs for airline operators.

In addition, the area impacted by aircraft overflying a region reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). As such, local populations and areas of tranquillity and biodiversity may benefit from a reduction in the size of area that is overflown (due to the shallower approach path).

For these reasons FA09_Option 3 is considered viable and will be **PROGRESSED** to Stage 3.

5.8 (5) Final Approach RWY27 Option 1 [FA27_Option 1]



Note: No changes to extant flight paths are proposed through this ACP; all existing arrival and departure procedures for RWY09 are maintained. This option supports the introduction of an additional RWY27 arrival procedure (RNP AR) at LCY.

Table 24: Final Approach RWY27 Option 1 [FA27_Option 1], Initial Options Appraisal

Group	Impact	Level of Analysis	Evidence
Communities	Noise	Qualitative	RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038. Some changes in noise impacts may result from having larger aircraft (from the fleet mix changes) operating to/from LCY, in addition to differences in vertical distance, however these impacts are not anticipated to be significant, and are discussed in further detail below. In this option the portion of approach between the proposed ToD and the current ToD, follows the same track as today; there is no change to the lateral profile, and therefore no new populations are overflown. However the vertical distance is reduced (at the maximum point) up to 740ft (226m), which may result in some change to noise impacts (associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic in Year 10) for communities close to the final descent area. Preliminary aircraft noise comparison data observes that the negative difference in arrival/departure noise, for the largest aircraft associated with this fleet mix change (the A320neo), when compared to the current fleet mix, is predominantly below the threshold of perceptible change in noise (3dB [49, 50]). Additionally, this airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity) as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). It is noted that aircraft on a shallower approach angle generally require a lower thrust than a steeper approach; this is due to the relationship between lift, drag, and thrust, where a

[49] A 3dB change in noise level is just perceptible by an average human being in controlled conditions and 5dB corresponds to the perceptible variation in everyday background level (Bies and Hansen (2009), and Bell and Bell (1994), respectively). 3dB is commonly described as a 'Barely Perceptible Change' and 5dB as a 'Clearly Noticeable Change'.

[50] This noise data is used for illustrative purposes only, detailed noise modelling will be conducted at Stage 3.

<table>
<tr><td></td><td></td><td></td><td>shallower angle allows for a more efficient use of lift and drag to control descent rate, minimizing the need for continuous engine thrust to maintain the glide path.
It is also noted that the area impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). Initial calculations approximate an 10% reduction in population impacted by overflight, when compared against the baseline, see Appendix F Overflight calculations for more details.
It is therefore considered that lower, and potentially quieter, thrust settings, in addition to a reduction in traffic volume and population overflown, and the marginal difference between aircraft noise levels, could contribute towards mitigating any potential noise disbenefit associated with larger aircraft (from the fleet mix changes) operating to/from LCY, and also any changes to noise impacts associated with the shallower approach profile.</td></tr>
<tr><td>Communities</td><td>Local Air quality</td><td>Qualitative</td><td>Local air quality may be improved compared to the baseline (‘do nothing’) option.
For this design option (4.49° - 4.05° final approach path) the distance from the runway that arrival aircraft on the new RNP AR procedure are below 1,000ft (measured from threshold elevation – approx. 19ft) [51] is as follows:
<table>
<tr><td>Approach angle</td><td>4.49° (7.9% gradient) [52]</td><td>4.05° (7.1% gradient)</td></tr>
<tr><td>Distance from runway</td><td>2.12NM/ 3.93km</td><td>2.36NM/ 4.37km</td></tr>
</table>
This is an extension of approx. 0.37NM (0.69km) – 0.61NM (1.13km) compared to the baseline (‘do nothing’) option.

Aircraft engine emissions data for the Landing and Take-off (LTO) cycle demonstrates the potential for environmental benefits through lower A320neo NO_X emission levels compared to other new generation aircraft currently operating at the airport, see Appendix H Environmental impact assessment, for more details.
<table>
<tr><td>Aircraft type</td><td>A320neo</td><td>E190 E2/ E195 E2</td><td>A220</td></tr>
<tr><td>LTO cycle NO_x (g/kg)</td><td>3096</td><td>3199</td><td>3903</td></tr>
</table>
This airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is anticipated, additionally, to reduce the environmental impacts associated with this change.
Note: The LCY S73 permission provides the additional operational and environmental controls relevant to the predicted increase in passenger numbers and traffic volume with this option. As such, the impact on air quality resulting from e.g. local transport infrastructures feeding the airport, is not included for consideration here.</td></tr>
</table>

[51] In accordance with the CAP1616i, due to the effects of mixing and dispersion, emissions from aircraft above 1,000ft are considered unlikely to have a significant impact on local air quality.

[52] The descent gradient determines the rate of descent the aircraft needs to maintain, and is calculated as Tan(approach angle) x 100. For a 7.9% gradient, this means that for every 1,000ft of horizontal distance travelled, the aircraft descends 79ft.

<table>
<tr>
<td>Wider society</td>
<td>Greenhouse gas emissions</td>
<td>Qualitative</td>
<td>Greenhouse gas emissions may be improved compared to the baseline ('do nothing') option.
Greenhouse gas emissions data for the Landing and Take-off (LTO) cycle demonstrates the potential for environmental benefits through lower CO_2 emissions for this airspace change, see Appendix H Environmental impact assessment, for more details.
<table>
<tr><td></td><td colspan="2">Without airspace change</td><td colspan="2">With airspace change</td></tr>
<tr><td></td><td>Year 1</td><td>Year 10</td><td>Year 1</td><td>Year 10</td></tr>
<tr><td>LTO cycle CO_2 (tonnes)</td><td>42,491</td><td>61,551</td><td>39,131</td><td>60,716</td></tr>
</table>
This airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is anticipated to contribute to reducing the environmental impacts associated with this change.</td>
</tr>
<tr>
<td>Wider society</td>
<td>Tranquillity</td>
<td>Qualitative</td>
<td>Tranquillity impacts may be improved compared to the baseline ('do nothing') option.
In this option, the portion of the approach path between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile. It is noted that the area impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). As such, the sites for tranquillity that are currently overflown will remain the same, however the area overflown (by aircraft on the RNP AR procedure) may be reduced.
Additionally, this airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is expected to reduce the number of over-flying aircraft when compared to the baseline ('do nothing') option.</td>
</tr>
<tr>
<td>Wider society</td>
<td>Biodiversity</td>
<td>Qualitative</td>
<td>Biodiversity impacts may be improved compared to the baseline ('do nothing') option.
In this option, the portion of the approach path between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile. It is noted that the area impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). As such, the sites for biodiversity that are currently overflown will remain the same, however the area overflown (by aircraft on the RNP AR procedure) may be reduced.
Additionally, this airspace change proposal predicts a reduction in annual air traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), as follows: Year 1 (-7%); Year 10 (-4.1%) and; Year 12 (-23.7%). This is expected to reduce the number of over-flying aircraft when compared to the baseline ('do nothing') option.
Stakeholder feedback has requested consideration of impacts to the Rainham Marshes; for this design option the proposed ToD point will reposition where aircraft commence their final descent to a location approximately 1.1NM to 1.7NM east of its current position. The difference in vertical distance as aircraft fly abeam the Rainham Marshes is likely to be a maximum of</td>
</tr>
</table>

			250ft (for this design option). For RWY27 aircraft commence the descent from 3,000ft, and therefore biodiversity impacts in this region due to the difference in aircraft height are considered to be broadly similar to today. Aircraft will be above the altitude that would be considered a risk for bird strikes (which is generally below 2000ft). No new airport infrastructure requirements are associated with this design option; as such there are no biodiversity impacts from airport infrastructure development.
Wider society	Capacity/ resilience	Qualitative	Capacity/ resilience impacts may be improved compared to the baseline ('do nothing') option. By enabling a faster transition to aircraft types with increased passenger capacity, and by systemising the RNP AR approach procedure, this option is considered to increase capacity/ resilience for LCY (airport and runway) in addition to the lower airspace network (London Terminal Airspace) through a reduction in: air traffic volumes; air traffic density, complexity and delay; controller intervention and; controller workload.
General Aviation	Access	Qualitative	This option does not change any extant LCY procedures or airspace structures. General Aviation, (and particularly business aviation) would continue to be supported as per the baseline ('do nothing') option, and access impacts would not change.
General Aviation/ commercial airlines	Economic impact from increased effective capacity	Qualitative	Economic impacts may be improved compared to the baseline ('do nothing') option. This option could enable airline operators to deploy aircraft with greater capacity, lower seat costs and increased yields than would otherwise be available.
General Aviation/ commercial airlines	Fuel burn	Qualitative	Fuel burn may be improved compared to the baseline ('do nothing') option. RNP AR procedures could accelerate the operation of more modern, 'cleaner' aircraft at LCY which could improve fuel burn compared to older aircraft models, due advancements in airframe design and more fuel-efficient engines which can reduce fuel consumption and lower overall emissions of pollutants during flights. A reduction in traffic volume (through fleet mix changes which support aircraft with greater passenger capacity) is also anticipated to reduce total annual fuel burn.
Commercial airlines	Training costs	Qualitative	This option may result in additional training cost impacts for airlines compared to the baseline ('do nothing') option. Specialized training will be required for airline personnel to safely and effectively operate aircraft using RNP AR procedures at LCY.
Commercial airlines	Other costs	Qualitative	RNP AR equipment and operational approvals may involve costs for airlines including initial investment in aircraft and avionics, ongoing costs for navigation database subscriptions and potential procedure-specific approvals.
Airport/ ANSP	Infrastructure costs	Qualitative	Airport infrastructure costs remain unchanged compared to the baseline ('do nothing') option. Airport infrastructure changes supporting traffic growth over the 2027-2036 time period are agreed within current permissions and include the terminal building and associated infrastructure. No new airport infrastructure requirements are associated with this design option.
Airport/ ANSP	Operational costs	Qualitative	This option is not expected to change airport operational costs compared to the baseline ('do nothing') option.
Airport/ ANSP	Deployment costs	Qualitative	The airspace change proposal is expected to require air traffic controller (London City Airport, and London Terminal Control

			Centre) familiarisation training in addition to support staff training and briefings. Some use of NATS simulator facilities may be required. Support staff are required to run the simulator (e.g. activity planning, data preparation, simulator testing, pseudo-pilots, Safety/Validation/ Human Factors, data analysts etc). Additional costs associated with the development, assurance and implementation of the designed procedures.
Airport/ ANSP	Other costs	Qualitative	No other airport/ ANSP costs are foreseen.

Conclusion

FA27_Option 1 supports the introduction of RNP AR operations, accelerating the operation of more modern, environmentally efficient, aircraft at LCY which could improve impacts on local air quality, fuel burn and CO_2 emissions compared to the baseline ('do nothing') option. An increased passenger capacity could enable a reduction in air traffic growth compared with the baseline scenario, further improving environmental impacts, and benefiting local communities by reducing the number of over-flying aircraft, as well as increasing airport capacity and network resilience, and improving operating costs for airline operators.

In addition, the area impacted by aircraft overflying a region reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). As such, local populations and areas of tranquillity and biodiversity may benefit from a reduction in the size of area that is overflown (due to the shallower approach path).

For these reasons FA27_Option 1 is considered viable and will be **PROGRESSED** to Stage 3.

5.9 Initial Options Appraisal Overview

5.9.1 Five options were carried forward from the Design Principle Evaluation to the Initial Options Appraisal.

5.9.2 As a result of the qualitative Initial Options Appraisal, it was concluded that two of the Initial/Intermediate Approach RWY09 options (IA09_Option 1 and IA09_Option 2) were sub-optimal and were discounted at this stage. IA09_Option 3, FA09_Option 1 and FA27_Option 1 have been deemed viable and will be progressed to Stage 3.

5.9.3 These three viable options (the 'shortlist') are considered the set of LCY 'preferred' design options.

5.9.4 Note: IA09_Option 3 (initial/intermediate approach) and FA09_Option 1 (final approach) will be combined into an individual concept for RWY09 arrivals and consideration of the feasibility of respite routes within this concept swathe will be addressed at Stage 3.

Addressing evidence gaps

5.9.5 Stage 3 will develop a detailed design for the preferred options which will enable more quantitative impact assessments including noise, local air quality, fuel burn, and CO2e emissions analysis. Where required, qualitative assessments will be re-assessed and updated.

Noise

• Noise modelling analysis to Category B standards[53]; we do not anticipate this category to change throughout the ACP process.

• Noise modelling analysis will use the Aviation Environmental Design Tool (AEDT) version 3g and will be validated using actual radar data and measured noise results from the airport's noise monitoring terminals in accordance with CAP2091. This methodology is the same as that agreed with the London Borough of Newham.

• Primary and Secondary noise metrics as defined in the CAP1616i [Ref 4] will be provided, namely:

-Total adverse effects of noise determined using the Department for Transport's TAG noise workbook for aviation) calculated on the basis of changes in LAeq (Equivalent Continuous Sound Level) noise exposure.

-51dB LAeq,16h (daytime) and 45dB LAeq,8h (night-time) noise exposure contours

-Noise exposure data tables for the areas impacted by noise, including population counts, number of households and noise sensitive buildings.

-Number Above Contours (N65 daytime and N60 night-time)

-Overflight contours

•Additional analysis and noise metrics that may aid stakeholders' understanding of the change in noise impacts will scoped as part of the Stage 3 activities once the more detailed noise modelling has been undertaken.

Local Air Quality

•Air quality metrics as defined in the CAP1616i [Ref 4] will be provided, namely: Oxides of Nitrogen (NOx) and Particulate Matter (PM 2.5 and PM 10) associated with aircraft movements and airside operations and modelled using a recognised and validated air quality dispersion model to calculate air pollutant concentrations in the vicinity of the airport.

•If required, monetisation of the impacts on local air quality using the Department for Transport's TAG workbook for air quality.

Fuel burn and Greenhouse Gases

• Fuel burn and CO_2e modelling analysis using the best available performance data from transport and energy models including greenhouse gas emissions inventories and flight-based modelling considering the various phases of flight (e.g. take-off, approach), flight distance and fuel burn.

•Monetisation of the impacts of greenhouse gas emissions using the Department for Transport's TAG workbook for greenhouse gases.

• Fuel costs will be based on European market IATA jet fuel costs, converted from USD to GBP, both taken on a 'snapshot' date (which will be determined during the Stage 3 development work).

Tranquillity and Biodiversity

•We currently do not expect significant change relating to tranquillity and biodiversity, however, following the detailed procedure design in Stage 3, any

[53] As defined in the CAA's Policy on Minimum Standards for Noise Modelling, CAP2091 [Ref 9], the noise modelling standards at LCY currently meet the requirements of Category B; the size of the current noise effect of the airport on its local community lies within the Category B thresholds and the proposed change is anticipated to be broadly similar with this. See the LCY Noise Action plan 2024 - 2028 for the number of people and dwellings exposed above various noise levels, forecasted to 2027.

change in impacts will be reviewed and qualitative assessments for tranquillity and biodiversity will be updated as required.

Capacity/Resilience

•We anticipate some improvements to capacity/ resilience. Following the detailed procedure design in Stage 3, any change in impacts will be reviewed and qualitative assessments for capacity/ resilience will be updated as required.

Access

•We currently do not expect significant change relating to access, however, following the detailed procedure design in Stage 3, any change in impacts will be reviewed and qualitative assessments for capacity/ resilience will be updated as required.

Economic impact

•We anticipate some improvements to economic impact. Following the detailed procedure design in Stage 3, any change in impacts will be reviewed and qualitative assessments for economic impacts will be updated as required.

Other costs

• Where possible benefits and impacts will be monetised at this stage, including any airlines training costs/other costs and airport deployment costs. Where impacts cannot be monetised, suitable justification or qualitative approaches as appropriate will be included within the assessments.

6. Safety Assessment

6.1 Overview

6.1.1 This summary covers the safety assessment meetings with LCY Tower controllers on 14th July 2025 and with London Terminal Control (TC) controllers on 21st July 2025.

6.1.2 Both safety meetings determined that this change would not present any major issues to controllers or adversely impact the operation.

6.1.3 The use of different-angled approach paths would not have an impact on how the controllers performed. Even though the shallower approach angles will present aircraft at a lower altitude than steeper approach angles, at a given range, the LCY controllers felt they only had to check the flight strips to confirm the type of aircraft and the expected angle associated with that approach. This issue is currently assessed as no impact.

6.1.4 The Airbus A320neo is the only aircraft to be authorised to fly the RNP AR approach, initially at least. It is larger and heavier than other aircraft and has a higher approach speed. This could result in a catch-up scenario. This is not a new situation for either TC and LCY controllers as it exists between the current aircraft that use the airport (i.e. Embraer vs. ATR). As this issue already exists, it is currently assessed as no impact.

6.1.5 Runway occupancy was a consideration as the A320neo is heavier than current LCY aircraft and has a higher approach speed. However, the controllers reasoned that the A320neo would not take any more time to clear the runway than the Embraer jet aircraft that already use the runway. This issue is currently assessed as no impact.

6.1.6 The Precision Approach Path Indicators (PAPIs) are set at 5.5°. Even though the new RNP AR glidepaths are lower than the current PAPI angle, the CAA have stated that PAPIs are not required for the RNP AR approach. Consequently, this issue is currently assessed as no impact.

6.2 Summary

6.2.1 The addition of RNP AR routes can be assessed as acceptably safe as there are no increased risks or additional hazards identified. The overall assessment from both LCY and TC is that the introduction of RNP AR routes to both runways does not present controllers with any additional issues or risk over what they already deal with on a day-to-day basis.

6.2.2 Future safety activities will be undertaken at a later stage in the process and will include: the development of an Assurance Plan; Safety and Human Factors Hazard Analysis workshop/s; Safety and Human Factors report/s and; a Change Assurance report.

7. Habitat Regulations Screening

7.1 Assessment

7.1.1 To identify any potential adverse effects of this airspace change proposal on European sites a screening exercise has been undertaken in line with the requirements of the CAP1616i [Ref 4].

7.1.2 The Habitats Regulations Assessment (HRA) early screening criteria form is completed in Table 25 below.

Table 25: Habitats regulations assessment early screening criteria form

Question		Answer
Q1.	**Are there any changes to air traffic patterns or number of movements expected below 3,000 feet due to the airspace change proposal?** If the answer to Q1 is 'no' then habitats regulations assessment is no longer required. If the answer to Q1 is 'yes' then proceed to Q2 below	Yes. Air Traffic Patterns: This airspace change proposes minor lateral variation in the final stages of the approach, for aircraft flying the new RNP AR approach procedure, specifically: 1)The point at which aircraft begin their final descent (and consequently a shallower angle of approach) for landing. Depending on which runway is being used, this distance is approximately 3NM/6km (for Runway 09) and 5NM/9km (for Runway 27) from the end of the runway. 2)How aircraft commence the turns on the approach to position themselves and line up with the centreline of the runway. For Runway 27 the approach does not require aircraft to turn (the flight path is a straight line). However, arrivals to Runway 09 turn twice, at approximately 10NM/ 18km and 7NM/13km from the end of the runway, (see Figure 16). Number of movements: This airspace change proposal enables larger aircraft (with greater passenger capacity) to operate at LCY, enabling the airport to increase its passenger capacity with fewer air traffic movements; a potential 23.7% reduction in annual air traffic growth by 9 million passengers per annum (when compared to the baseline scenario) is predicted with this airspace change proposal (see section 3.3 for the traffic forecast associated with this airspace change).
Q2A.	**Are there any European sites within a radius of 18 km of each runway end?**	Yes. There are two European sites, (see Figure 16), situated within 18km of each runway end that are located under the current LCY departure flight paths: • Special Protection Areas: Lee Valley • Special Areas of Conservation: Epping Forest
Q2B.	**Are any European sites identified in Q2A overflown (i.e. plane passing directly overhead or within 2,655 feet of the boundary of a European site at 3,000 feet or below) by proposed flight routes?** If the answer to Q2A and Q2B are both 'no' then habitats regulations assessment is no longer required. If the answer to Q2A or Q2B is 'yes' then proceed to Q3 below.	No. The proposed new RNP AR flight routes, (see Figure 16), affect LCY arrival flight paths which lie south of the airfield. The European sites identified in 2A are overflown by LCY extant departure flight paths which lie to the north of the airfield.
Q3A.	**Will the airspace change proposal reduce the number of movements overflying one or**	Yes. This airspace change proposal enables larger aircraft (with greater passenger capacity) to operate at LCY, enabling the airport to increase its passenger capacity

	more European sites, while not increasing them over another?	with fewer air traffic movements; a potential 23.7% reduction in annual air traffic growth by 9 million passengers per annum (when compared to the baseline scenario) is predicted with this airspace change proposal (see section 3.3 for the traffic forecast associated with this airspace change).
Q3B.	**Will the airspace change proposal increase the altitude of aircraft overflying one or more European sites, whilst not decreasing altitude over another?** If the answer to Q3A and Q3B are both 'yes' then habitats regulations assessment is no longer required. If the answer to Q3A or Q3B is 'no' then secondary screening will be required.	No. There is no change to departure flight paths or departure procedures within this airspace change proposal; as such, there is no change to the altitude of aircraft overflying the European sites. The changes associated with aircraft overflying the European sites are 1) a change in the fleet mix due to larger aircraft with greater passenger capacity operating at LCY and 2) a reduction in air traffic growth (when compared with the baseline scenario) reducing the number of aircraft over-flying these sites.

7.1.3 An illustration of the proposed route changes for this airspace change proposal, alongside current LCY arrival and departure routes and proximate European sites is shown in Figure 16.

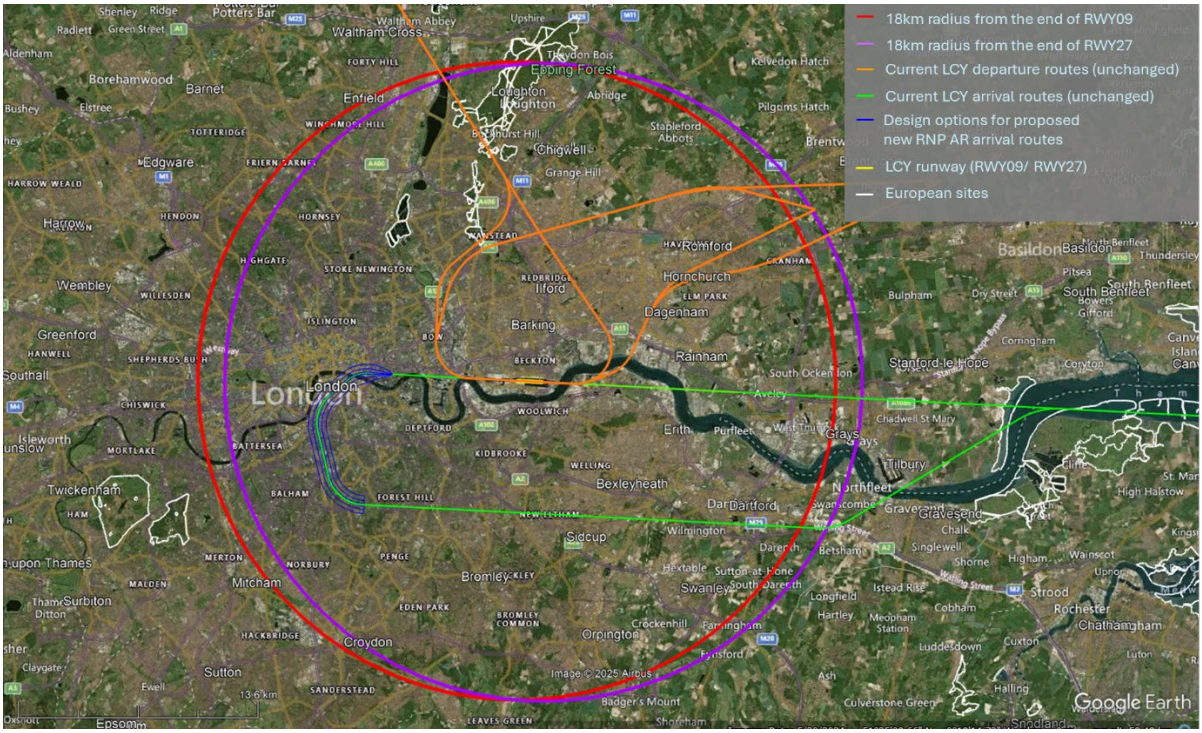


Figure 16: Illustration of the proposed route changes for this airspace change proposal, alongside current LCY arrival and departure routes and proximate European sites. [Google Earth, 2025].

7.2 Summary

7.2.1 A habitats regulation assessment has been carried out in section 7.1 and describes the effects of this airspace change proposal on European sites.

Arrivals

7.2.2 This airspace change proposes the introduction of RNP AR procedures at LCY.

7.2.3 For aircraft flying the new RNP AR approach procedure there is minor lateral variation in the final stages of the approach, and a shallower approach angle, compared to extant LCY arrival flight paths.

7.2.4 No European sites are overflown by LCY extant arrival flight paths; no European sites are overflown by the proposed new RNP AR approach procedures.

7.2.5 Stakeholder feedback from Natural England has advised that "unless the change in height would significantly affect the noise of the aircraft approaching, to the extent that it impacted the features of a designated site then it is unlikely that Natural England would need to provide detailed comments on these proposals".

Departures

7.2.6 Two European sites are impacted by LCY extant departure flight paths; the Lee Valley and Epping Forest. It should be noted that current procedures mitigate the impact of departures on these sites through the use of vertical restrictions which ensure that aircraft have a minimum altitude of 3,000ft overflying these sites. Aircraft can be higher but are not permitted to be lower.

7.2.7 There are no changes to extant departure flight paths or departure procedures with this airspace change proposal.

7.2.8 However, the airspace change enables a reduction in air traffic growth at LCY (by supporting larger aircraft with greater passenger capacity); a potential 23.7% reduction in annual air traffic growth by 9 million passengers per annum (when compared to the baseline scenario) is predicted.

7.2.9 As such, although there is no change to departure flight paths/procedures within this airspace change proposal, the number of departure flights is expected to decrease, reducing the number of aircraft over-flying these sites.

7.3 HRA Conclusion

7.3.1 We do not believe that this airspace change proposal will result in potential adverse effects on the integrity of the Lee Valley and Epping Forest European sites on the basis that there is no change to the extant flight paths or procedures associated with aircraft overflying these sites. Overflight of these sites is (unchanged from today) at a minimum vertical distance of 3,000ft and we do not believe that, at this altitude, the change in fleet mix resulting from this change, will impact upon the ecological character and functions of these sites. In addition, we consider the reduction in air traffic growth will provide benefit by reducing the number of aircraft over-flying these sites.

7.3.2 As such, a conclusion of no adverse effects on European sites has been made.

8. Conclusions and Next Steps

8.1 Conclusions

8.1.1 The process for this airspace change proposal started in January 2025 at Stage 1 with the submission of the Statement of Need, and continued with the development of Design Principles via stakeholder engagement, and progression through the CAA's regulatory Stage 1 Gateway Assessment.

8.1.2 In Stage 2, alongside the baseline ('do nothing') option, seven airspace design options were created, described, engaged upon, and formally evaluated against the Design Principles (the 'Design Principle Evaluation'). Five design options which progressed successfully through the Design Principle Evaluation were then subjected to a qualitative Initial Options Appraisal including an assessment of safety considerations.

8.1.3 Throughout Stage 2, LCY has conducted comprehensive two-way engagement with the same stakeholders who were engaged with during Stage 1 [54]. This has allowed LCY to inform and refine the baseline scenarios, the design options and the impact assessments based on stakeholder input. The outcome of this engagement has influenced the selection of the design options presented herein.

8.1.4 The Initial Options Appraisal discounted two of the Initial/Intermediate Approach RWY09 options (IA09_Option 1 and IA09_Option 2) that were progressed at the Design Principle Evaluation, resulting in three viable options (the 'shortlist') which are considered suitable for progression to Stage 3 of the airspace change process. These design options are considered the set of LCY 'preferred' design options, and are as follows:

- IA09_Option 3
- FA09_Option 1
- FA27_Option 1

8.1.5 An HRA screening form was completed and a conclusion of no adverse effects on European sites has been made.

8.2 Next Steps

8.2.1 Subject to CAA approval at Stage 2, the work will progress on to Stage 3 Consult, and a full public consultation will be undertaken for this airspace change proposal.

8.2.2 Stage 3 will develop a detailed design for the preferred options which will enable more quantitative impact assessments including noise, local air quality, fuel burn, and CO_2e emissions analysis. Where required, qualitative assessments will be re-assessed and updated.

Noise

• Noise modelling analysis to Category B standards [55]; we do not anticipate this category to change throughout the ACP process.

[54] No stakeholders have been removed from the Stage 1 stakeholder list, however 10 new organisations have been added and these are detailed in Appendix A.

[55] As defined in the CAA's Policy on Minimum Standards for Noise Modelling, CAP2091 [Ref 9], the noise modelling standards at LCY currently meet the requirements of Category B; the size of the current noise effect of the airport on its local community lies within the Category B thresholds and the proposed change is anticipated to be broadly similar with this. See the LCY Noise Action plan 2024 - 2028 for the number of people and dwellings exposed above various noise levels, forecasted to 2027.

• Noise modelling analysis will use the Aviation Environmental Design Tool (AEDT) version 3g and will be validated using actual radar data and measured noise results from the airport's noise monitoring terminals in accordance with CAP2091. This methodology is the same as that agreed with the London Borough of Newham.
• Primary and Secondary noise metrics as defined in the CAP1616i [Ref 4] will be provided, namely:
-Total adverse effects of noise determined using the Department for Transport's TAG noise workbook for aviation) calculated on the basis of changes in LAeq (Equivalent Continuous Sound Level) noise exposure.
-51dB LAeq,16h (daytime) and 45dB LAeq,8h (night-time) noise exposure contours
-Noise exposure data tables for the areas impacted by noise, including population counts, number of households and noise sensitive buildings.
-Number Above Contours (N65 daytime and N60 night-time)
-Overflight contours
•Additional analysis and noise metrics that may aid stakeholders' understanding of the change in noise impacts will scoped as part of the Stage 3 activities once the more detailed noise modelling has been undertaken.

Local Air Quality
•Air quality metrics as defined in the CAP1616i [Ref 4] will be provided, namely: Oxides of Nitrogen (NOx) and Particulate Matter (PM 2.5 and PM 10) associated with aircraft movements and airside operations and modelled using a recognised and validated air quality dispersion model to calculate air pollutant concentrations in the vicinity of the airport.
•If required, monetisation of the impacts on local air quality using the Department for Transport's TAG workbook for air quality.

Fuel burn and Greenhouse Gases
• Fuel burn and CO_2e modelling analysis using the best available performance data from transport and energy models including greenhouse gas emissions inventories and flight-based modelling considering the various phases of flight (e.g. take-off, approach), flight distance and fuel burn.
•Monetisation of the impacts of greenhouse gas emissions using the Department for Transport's TAG workbook for greenhouse gases.
• Fuel costs will be based on European market IATA jet fuel costs, converted from USD to GBP, both taken on a 'snapshot' date (which will be determined during the Stage 3 development work).

Tranquillity and Biodiversity
•We currently do not expect significant change relating to tranquillity and biodiversity, however, following the detailed procedure design in Stage 3, any change in impacts will be reviewed and qualitative assessments for tranquillity and biodiversity will be updated as required.

Capacity/Resilience
•We anticipate some improvements to capacity/ resilience. Following the detailed procedure design in Stage 3, any change in impacts will be reviewed and qualitative assessments for capacity/ resilience will be updated as required.

Access
•We currently do not expect significant change relating to access, however, following the detailed procedure design in Stage 3, any change in impacts will be

reviewed and qualitative assessments for capacity/ resilience will be updated as required.

Economic impact

•We anticipate some improvements to economic impact. Following the detailed procedure design in Stage 3, any change in impacts will be reviewed and qualitative assessments for economic impacts will be updated as required.

Other costs

• Where possible benefits and impacts will be monetised at this stage, including any airlines training costs/other costs and airport deployment costs. Where impacts cannot be monetised, suitable justification or qualitative approaches as appropriate will be included within the assessments.

8.2.3 A date for the Stage 3 public consultation has not yet been set. For the latest information on this proposal, please subscribe to email updates on the CAA's airspace change portal (link).

8.2.4 We would like to thank all stakeholders who were able to participate in the Stage 2 engagement and look forward to their continued involvement with the development of this proposal.

9. Appendix A Summary of Stakeholder Engagement Activities

9.1 Engagement timeline

9.1.1 Table 26 provides a chronology of the Stage 2 engagement activities.

9.1.2 Throughout Stage 2, two-way communication has been maintained between LCY and its stakeholders. The various emails and telephone conversations are not detailed here, but have been provided as evidence directly to the CAA.

Table 26: Chronology of the Stage 2 engagement activities

Date/2025	Activity
6th June	Participation invite (via email) for the Stage 2 engagement activities
12th June	London City Airport Consultative Committee (LCYCC) meeting
12th June	Industry Groups & Businesses additional invite sent
16th June	Pilot Forum members participation invite follow-up
17th June	Participation invite (via post) for the Stage 2 engagement activities
25th June – 1st July	Engagement workshop joining instructions sent
3rd July	TEAMS online engagement workshop 1 (aviation stakeholders)
3rd July	Post workshop emails, including thank-you and presentation material, sent
8th July (AM)	Face-to-face engagement workshop 2 (public authorities)
8th July (PM)	TEAMS online engagement workshop 3 (property interests)
8th July	Post workshop emails, including thank-you and presentation material, sent
11th July	TEAMS online engagement workshop 4 (other stakeholders)
11th July	Post workshop emails, including thank-you and presentation material, sent
11th July	Presentation material sent out in advance of workshop 5 (following stakeholder request)
16th July	Face-to-face engagement workshop 5 (residents and community groups)
23rd July	Feedback reminder emails sent
3rd-25th July	Feedback response period
14th August	Thank-you emails and a copy of the Stage 2 Develop & Assess document sent to stakeholders including: all the design options, stakeholder feedback, the Design Principle Evaluation, and a glossary of the technical terms used.
14th August	Summary of the designs and the environmental impact assessment sent to Natural England.

9.2 Methodology

9.2.1 During Stage 1, LCY Subject Matter Experts (SMEs) qualitatively assessed which areas are most likely to be impacted, as a result of this airspace change proposal, in order to determine our stakeholder list. Key stakeholders were identified across a broad spectrum of aviation and non-aviation (including local community) stakeholder groups. For more details on stakeholder identification, see the Stage 1 Define document [Ref 6], section 10.1.

9.2.2 Included within the stakeholder list are certain stakeholders who we are required to contact as part of an airspace change: namely representatives from the National Air Traffic Management Advisory Committee (NATMAC), which covers a wide variety of airlines and aviation organisations and the Ministry of Defence (MoD).

9.2.3 We have additionally engaged with Natural England, providing an overview of the proposed airspace changes and the environmental impact assessments for this stage of the design work. Feedback from Natural England advises that "unless the change in height would significantly affect the noise of the aircraft approaching, to the extent that it impacted the features of a designated site

then it is unlikely that Natural England would need to provide detailed comments on these proposals." We will continue to keep Natural England informed about this airspace change proposal and welcome any feedback.

9.3 Stakeholder Contact Database

9.3.1 It is normally a process requirement to use the same stakeholders as Stage 1. However, through continued work to map potential impacts against affected stakeholder groups, for Stage 2 there have been 10 new organisations (2 local authorities, 1 airline, 1 private operator, and 6 property developers) added to the stakeholder list, and additionally some organisations requested for additional representatives from their organisations to be included. Those stakeholders who were added to the stakeholder list for Stage 2 are highlighted in green in the table below.

9.3.2 These stakeholders are identified as key stakeholders for this airspace change proposal but LCY will continue to welcome feedback from all stakeholders throughout the process should they wish to provide it.

9.3.3 Stakeholders were invited to the engagement workshops by email unless otherwise stated.

Stakeholder	Position
Councillors	
Newham	Mayor
Bexley	Thamesmead East Ward Councillor
Greenwich	Mottingham, Coldharbour and New Eltham Ward Councillors
Redbridge	Cabinet Member for Environment and Sustainability Mayor
Walthamstow	Deputy Leader and Cabinet Member for Climate and Air Quality
Southwark	Dulwich Wood Ward Councillor Cabinet Member for Clean Air, Streets and Waste
Greater London Assembly	
Labour	Mayor of London Assembly Member Assembly Member Deputy Mayor Environment and Energy
Green Party	Assembly Member
UK Parliament	
Member of Parliament	East Ham
Member of Parliament	Dulwich and West Norwood
Member of Parliament	Lewisham West and Penge
Member of Parliament	Eltham and Chislehurst
Member of Parliament	Ilford North
Member of Parliament	Greenwich and Woolwich
Member of Parliament	Leyton and Wanstead
Member of Parliament	West Ham and Beckton
Member	House of Lords
Member	House of Lords
Secretary of State	Secretary of State for Transport
Local Authorities/Government	
London Borough of Newham	Principal Aviation Officer Director of Planning Chief Executive Officer Noise and Pollution Team Manager
London Borough of Tower Hamlets	Chief Executive Officer Environmental Protection Team Leader Principal Environmental Protection Officer (Noise)
Royal Borough of Greenwich	Chief Executive Officer Assistant Director Planning and Building Control

London Borough of Waltham Forest	Assistant Director Development Management and Building Control Strategic Transport Lead
London Borough of Bexley	Deputy Director Housing and Strategic Planning
London Borough of Southwark	Director of Planning and Growth Planning Policy Team Lead Environmental Health – Noise Environmental Health – Air Quality
London Borough of Redbridge	Director of Planning and Building Group Manager, Environmental Health Team Member Air Quality Officer
London Borough of Hackney	Head of Planning and Building Control
London Borough of Lewisham	Director of Planning
London Borough of Barking and Dagenham	Head of Planning Decisions and Assurance Principal Planning Manager (Policy) Planning Policy
London Borough of Havering	Director of Planning and Public Protection
Westminster City Council	Executive Director for Growth, Planning and Housing
Greater London Authority	Head of Development and Place - Royal Docks Team Community Relations Manager
Transport for London	Aviation Strategy Lead City Planner
City of London Corporation	Planning and Development Director
London Borough of Lambeth	Director Climate, Planning and Transport
Thurrock Council	Chief Planning Officer
Interest Groups/Parties	
HACAN East	Chair Committee Member
London City Airport Consultative Committee (LCYCC)	Chair
RSPB Rainham Marshes	
Royal Docks Management Authority	Managing Director Operations Manager
KL Grant Consulting Limited	Director
Swanson Aviation Consultancy	Director
Thames River Trust	Chief Executive Officer
Forest Hill Society	Society Member Society Member
Airlines	
Helvetic	Chief Executive Officer Flight Operations
Lufthansa	Procurement Lead
BA Cityflier	General Manager Manager Flight Efficiency Captain and Flight Technical Manager Flight Technical and Safety Manager Flight Technical Manager
KLM Cityhopper	Chief Executive Officer Chief Pilot
Swiss	Procurement Lead Senior First Officer Pilot
Luxair	Chief Commercial Officer Fleet Chief Pilot E2 Fleet Chief Deputy Fleet Chief
ITA	UK General Manager Chief Pilot
Loganair	Chief Executive Officer

	Director of Flight Operations
Aurigny	Chief Executive Officer Head of Flight Operations
Air Domoliti	Captain Fleet Chief Flight Operations Engineering, Efficiency, Sustainability & ATM
EasyJet	Strategy, Network & Fleet Director
Finnair	Head of Network
LOT	Network planner First Officer Captain
KM Malta	Head of Network
German Airways	Director Flight Operations Captain
Jet Centre	
NetJets EU	President
NetJets	Pilot in Command – Global 6000 Pilot
Globe Air	Chief Executive Officer
Shell Aircraft Ltd	President Pilot
VistaJet GmbH	Founder and Chairman
Aerowest	Chief Executive Officer
CAT Aviation	Chief Executive Officer
Saxon Air Charter	Chief Executive Officer
AirGo	Chief Executive Officer
Air Alsie	Chief Executive Officer
Pad Aviation	Chief Executive Officer
Starjet Aviation	Chief Executive Officer
Dassault Aviation	Director of Operations
Gulfstream Aerospace	Senior International Sales Engineering Specialist
Neighbouring Airports	
Southend	Chief Executive Officer
Gatwick	Chief Planning Officer
Heathrow	Director of Operations Airspace Communications and Engagement
Biggin Hill	Head of Estates
Environment	
Natural England	Senior Officer Sustainable Development
Industry Groups and Businesses	
BusinessLDN	Chief Executive
Canary Wharf Group	Chief Executive Officer
LCCI	Chief Executive
ExCel	Chief Executive
London Chamber	Head of Partnerships
LendLease	Development Director – Silvertown Silvertown Project Director Operations and Project Lead - Thamesmead Waterfront
Embraer	Chief Commercial Officer Regional Director Airline Marketing Market Analyst
Airbus	Regulatory & External Engagement (GR)
DLR	Service Delivery Director
Tate & Lyle	Managing Director Head of Property and Local Affairs
Ballymore	Group Managing Director Chief Planner
ABP Development	Managing Director
Albert Island	Project Lead for London Regional

University of East London	President
Barratt Homes	Development Manager
G Park	Development Manager
Berkeley Group	Head of Development Development Manager
General Projects	Development Manager
AE Pathways	Chief Executive Officer
Ada Infrastructure	Data Centre Delivery Director
NATMAC	
Airlines UK	
AirportsUK	
Airfield Operators Group (AOG)	
Airfield Operators Group (AOG)	
Aircraft Owners and Pilots Association (AOPA)	
Airspace Change Organising Group (ACOG)	
Association of Remotely Piloted Aircraft Systems UK (ARPAS UK)	
Aviation Environment Federation (AEF)	
British Airways (BA)	
BAe Systems	
British Airline Pilots Association (BALPA)	
British Balloon and Airship Club	
British Business and General Aviation Association (BBGA)	
British Gliding Association (BGA)	
British Helicopter Association (BHA)	
British Hang Gliding and Paragliding Association (BHPA)	
British Microlight Aircraft Association (BMAA)	
British Skydiving	
Drone Major	
General Aviation Alliance (GAA)	
Guild of Air Traffic Control Officers (GATCO)	
Honourable Company of Air Pilots (HCAP)	
Helicopter Club of Great Britain (HCGB)	
Isle of Man CAA	
Light Aircraft Association (LAA)	
Low Fare Airlines	
Military Aviation Authority (MAA)	
MoD - Defence Airspace and Air Traffic Management (MoD DAATM)	
NATS	
Navy Command HQ	
PPL/IR (Europe)	
UK Airprox Board (UKAB)	
UK Flight Safety Committee (UKFSC)	
Potential Noise Affected Buildings	
Alphabet House Nursery E16 2FW	
Little Limehouse Pre-School E14 7EY	
Bright Horizons East India Dock Nursery E14 2ED	
Rising Stars Childcare SE28 8PF	
Lanterns Arts & Educational Nursery E14 9XP	
Little St Matthias Pre School E14 0AE	
Fabulous Tots Nursery SE28 8BG	
Magic Roundabout Nurseries E14 9YQ	
Moksliukas E16 1LN	
NurtureVille Nursery E16 2LH	
Tiny Town Daycare E16 1TU	

Goldensparks Nursery E16 1XE	
Nest Royal Wharf E16 2TF	
Rise N Shine Nursery E14 9TS	
Puddle Jumpers Nursery E14 8HH	
Docklands Village Nursery E14 9AA	
New Birth Day Nursery E16 2DE	
Little Jems SE28 8EY	
KidsLab Day Nursery and Preschool E14 9TS	
Nurture House Montessori SE28 8AS	
Garden Nursery and Preschool E16 2RD	
Faraday School E14 0FH	
River House Montessori School E14 9XP	
New Directions E16 2LS	
Bishop John Robinson Church of England Primary School SE28 8LW	
Britannia Village Primary School E16 2AW	
Castilion Primary School SE28 8QA	
Cyril Jackson Primary School E14 8HH	
Discovery Primary School SE28 0JN	
Drew Primary School E16 2DP	
Hawksmoor School SE28 8AS	
Jubilee Primary School SE28 8JB	
Lansbury Lawrence Primary School E14 6DZ	
Culloden Primary - A Paradigm Academy E14 0PT	
Linton Mead Primary School SE28 8DT	[no email address – engagement letter sent by post]
Mayflower Primary School E14 6DU	[no email address – engagement letter sent by post]
Our Lady and St Joseph Catholic Primary School E14 0DE	
Royal Wharf Primary School E16 2ZA	
St Joachim's Catholic Primary School E16 3DT	
St Margaret Clitherow Catholic Primary School SE28 8GB	
Windrush Primary School SE28 8AR	
Woolmore Primary School E14 0EW	
Oasis Academy Silvertown E16 2TX	
Royal Docks Academy E16 3HS	
Woolwich Polytechnic school for Girls SE28 8RF	
Harris Garrard Academy DA18 4DW	[no email address – engagement letter sent by post]
London Design and Engineering UTC E16 2RD	
Richard House Children's Hospice E16 3RG	

10. Appendix B Preliminary aircraft noise comparison data

10.1.1 The noise comparison data provided in this section is for illustrative purposes only, and is used (at this early stage of the design work) to inform the qualitative assessment of noise impacts for this airspace change.

10.1.2 A more detailed quantitative assessment of aircraft noise levels will be provided at Stage 3 (Consult) of the CAP1616 process as we progress the preferred design options through more detailed modelling.

Methodology

10.1.3 Bickerdike Allen Partners LLP (BAP) calculated the difference in noise level for A320neo arrivals operating at an approach angle of 4.49° compared to other aircraft types operating at the 5.5° steep approach angle.

10.1.4 The aircraft types operating at LCY which were considered in this comparison were the current generation Embraer E190, the new generation Embraer E190-E2 and E195-E2, and the Airbus A220-100.

10.1.5 The predicted noise levels were based on those predicted by the Aviation Environmental Design Tool (AEDT). In the case of the Embraer E190, Embraer E190-E2, and Airbus A220-100 these predictions were validated using measured noise data from the airport's noise monitoring terminals.

10.1.6 The Embraer E195-E2 has not routinely operated at LCY, so there were limited measured noise results for this type. The modelled noise levels for the Embraer E195-E2 were therefore based on those for the validated Embraer E190-E2, but with an allowance for the higher certification noise levels for E195-E2.

10.1.7 As it has not previously operated at the airport, there were no measured results for the A320neo operating at LCY, therefore the noise levels for this aircraft were based on the default predicted noise levels from the AEDT software with an allowance for a 4.49° approach angle.

10.1.8 The difference in noise level for departures was also calculated. No restriction on the departure climb angle was set; the modelling reflects the average climb rates for the different aircraft types (or uses an equivalent profile based on the available data) and exceeds the minimum climb angles required for obstacle clearance specified on the instrument departure procedures.

Arrivals

10.1.9 The noise differences for A320neo arrivals operating at an approach angle of 4.49° compared to other aircraft types at 5.5° have been predicted and are shown in Table 27 for Runway 27 operations and Table 28 for Runway 09 operations. The noise levels have been predicted at 10 locations spaced in 0.5 km steps from the threshold of the runways, with the noise level expressed using the SEL [56] metric. The arrival assessment locations are shown in Figure 17.

10.1.10 From the results it can be observed that the negative difference in individual arrival aircraft noise, for the A320neo operating at 4.49° when compared to other aircraft that currently operate at LCY at 5.5°, is predominantly below the threshold

[56] Sound Exposure Level (SEL) is a noise metric that quantifies the total sound energy of a noise event, regardless of its duration, by normalizing it to a one-second period. In aviation, SEL is frequently used to assess the noise impact of individual aircraft flyovers.

of perceptible change in noise (3dB [57, 58]) and fully below the threshold of clearly noticeable change (5dB).

Assessment Location	Distance from Rwy 27 Threshold, km	Noise Level, dB(A) SEL	Noise Level Difference, dB(A) SEL			
		Airbus A320neo 4.49°	Airbus A220-100 5.5°	Embraer E190 5.5°	Embraer E190-E2 5.5°	Embraer E195-E2 5.5°
A	0.5	93.5	-0.8	+2.2	-1.5	-0.8
B	1.0	90.5	-1.3	+1.7	-1.5	-1.4
C	1.5	88.5	-1.5	+1.5	-1.5	-1.3
D	2.0	86.8	-1.7	+1.3	-1.4	-1.1
E	2.5	85.5	-1.8	+1.2	-1.4	-1.0
F	3.0	84.3	-1.8	+1.2	-1.3	-0.8
G	3.5	83.4	-2.3	+0.7	-1.2	-0.9
H	4.0	82.4	-2.7	+0.3	-1.3	-0.9
I	4.5	81.6	-3.2	-0.2	-1.3	-0.9
J	5.0	80.8	-4.0	-1.0	-1.9	-0.9

Table 27: RWY27 Arrival noise levels

Assessment Location	Distance from Rwy 09 Threshold, km	Noise Level, dB(A) SEL	Noise Level Difference, dB(A) SEL			
		Airbus A320neo 4.49°	Airbus A220-100 5.5°	Embraer E190 5.5°	Embraer E190-E2 5.5°	Embraer E195-E2 5.5°
K	0.5	93.5	-0.8	+2.2	-1.5	-0.8
L	1.0	90.5	-1.3	+1.7	-1.5	-1.4
M	1.5	88.4	-1.5	+1.5	-1.5	-1.3
N	2.0	86.8	-1.7	+1.3	-1.4	-1.1
O	2.5	85.5	-1.7	+1.3	-1.3	-0.9
P	3.0	84.3	-1.8	+1.2	-1.2	-0.8
Q	3.5	83.3	-2.3	+0.7	-1.3	-0.9
R	4.0	82.4	-2.7	+0.3	-1.3	-0.9
S	4.5	81.6	-3.2	-0.2	-1.3	-0.9
T	5.0	80.8	-3.9	-0.9	-1.8	-0.9

Table 28: RWY09 Arrival noise levels

[57] A 3dB change in noise level is just perceptible by an average human being in controlled conditions and 5dB corresponds to the perceptible variation in everyday background level (Bies and Hansen (2009), and Bell and Bell (1994), respectively). 3dB is commonly described as a 'Barely Perceptible Change' and 5dB as a 'Clearly Noticeable Change'.

[58] This noise data is used for illustrative purposes only, detailed noise modelling will be conducted at Stage 3.

Figure 17: The arrival noise assessment locations for RWY27 (locations A to J) and RWY09 (locations K to T). © Crown copyright and database rights 2024 Ordnance Survey 0100031673

Departures

10.1.11 The noise differences for A320neo departures compared to the other aircraft types have been predicted and are shown in Table 29 for Runway 27 operations and Table 30 for Runway 09 operations. The noise levels have been predicted at 10 locations spaced in 0.5 km steps from the far end of the runways, with the noise level expressed using the SEL metric. The departure assessment locations are shown in Figure 18.

10.1.12 From the results it can be observed that the difference in individual departure aircraft noise, for the A320neo when compared to other aircraft that currently operate at LCY, is fully below the threshold of perceptible change in noise (3dB [59, 60]).

[59] A 3dB change in noise level is just perceptible by an average human being in controlled conditions and 5dB corresponds to the perceptible variation in everyday background level (Bies and Hansen (2009), and Bell and Bell (1994), respectively). 3dB is commonly described as a 'Barely Perceptible Change' and 5dB as a 'Clearly Noticeable Change'.

[60] This noise data is used for illustrative purposes only, detailed noise modelling will be conducted at Stage 3.

Assessment Location	Distance from Rwy 09 Threshold, km	Noise Level, dB(A) SEL	Noise Level Difference, dB(A) SEL			
		Airbus A320neo	Airbus A220-100	Embraer E190	Embraer E190-E2	Embraer E195-E2
K	0.5	93.4	-0.9	+4.6	-2.2	+0.8
L	1.0	90.3	-0.9	+4.6	-1.6	+0.4
M	1.5	88.4	-1.1	+4.5	-1.9	-0.3
N	2.0	86.7	-0.7	+4.8	-2.7	-0.4
O	2.5	85.1	-1.1	+4.4	-2.5	-1.2
P	3.0	83.9	-1.1	+4.4	-2.5	-1.3
Q	3.5	83.0	-1.0	+4.5	-2.5	-1.4
R	4.0	81.8	-0.6	+4.9	-1.9	-1.3
S	4.5	80.2	-0.1	+5.6	-1.2	-0.8
T	5.0	79.6	-0.3	+5.3	-1.6	-0.9

Table 29: RWY27 Departure noise levels

Assessment Location	Distance from Rwy 27 Threshold, km	Noise Level, dB(A) SEL	Noise Level Difference, dB(A) SEL			
		Airbus A320neo	Airbus A220-100	Embraer E190	Embraer E190-E2	Embraer E195-E2
A	0.5	93.4	-0.9	+4.6	-2.2	+0.8
B	1.0	90.4	-0.9	+4.6	-1.6	+0.4
C	1.5	88.5	-1.1	+4.5	-1.9	-0.3
D	2.0	86.8	-0.8	+4.7	-2.7	-0.5
E	2.5	85.3	-1.1	+4.4	-2.5	-1.2
F	3.0	84.0	-1.2	+4.3	-2.5	-1.4
G	3.5	82.7	-1.1	+4.5	-2.5	-1.5
H	4.0	81.3	-0.8	+4.8	-2.1	-1.4
I	4.5	79.9	-0.3	+5.2	-1.6	-1.1
J	5.0	79.0	-0.2	+5.3	-1.5	-1.1

Table 30: RWY09 Departure noise levels

Figure 18: The departure noise assessment locations for RWY27 (locations K to T) and RWY09 (locations A to J). © Crown copyright and database rights 2024 Ordnance Survey 0100031673

11. Appendix C A320neo flyability testing

Methodology

11.1.1 Preliminary performance assessments were conducted to assess the feasibility of using an RNP AR procedure at LCY for the A320neo.

11.1.2 Different angles of approach were assessed on a representative A320 simulator.

11.1.3 Various flyability tests were conducted, including approach scenarios with different temperatures, wind direction and wind strength.

11.1.4 It should be noted that, at this early stage assessment, procedure design for the proposed RNP AR procedures is not yet defined. As such, representative straight-in approaches for RWY09 and RWY27 have been used to provide geometrical trajectories for the purpose of providing a preliminary flyability assessment only.

Results

11.1.5 At a 5.5° angle of approach, in normal conditions (ISA temperature [61], no wind), the aircraft develops excessive vertical deviation from the vertical flight path. As such a 5.5° angle of approach is not acceptable from a guidance perspective.

11.1.6 Lowering the angle of approach to 5.0° in normal conditions (ISA temperature, no wind), shows more acceptable aircraft behaviours. However, at this approach angle the aircraft is close to its performance limits; higher wind or temperature scenarios result in unacceptable results, immediately introducing vertical deviation from the vertical path. As such a 5.0° angle of approach is not considered to be robust in day-to-day operations.

11.1.7 A 4.5° angle of approach was subsequently tested, in normal conditions as well as degraded conditions (temperature changes, wind and engine failure), and assessed as the maximum slope achievable to provide satisfactory results for the A320neo on an RNP AR approach.

[61] The Internal Standard Atmosphere (ISA) is a standardised model of the Earth's atmosphere, defining standard temperature, pressure, and density values at various altitudes.

12. Appendix D Property and Land Development, Housing Allocations

12.1 Known property and land developments

12.1.1 A detailed list of known property and land developments proximate to the new proposed RNP AR approach flight paths [62] is provided in the table below. These planned developments are considered relevant to this airspace change proposal and have been identified and, where possible agreed [63], with relevant LCY stakeholders including property developers and the local authorities. This information is available in the public domain on the relevant local authority websites.

Borough	Borough Ref	Address	Description	Details
London Borough of Newham	14/01605/OUT	Silvertown Quays, E16 1UR	Masterplan would deliver 684,477 sqm GEA of residential floor space and 288,227 sqm of a range of non-residential uses and would include infilling and excavation of parts of the dock area and restoration of the existing dock walls. The original Masterplan was granted consent in 2016 (14/01605/OUT) and the revised scheme will replace the existing OPP.	Link
	14/00618/OUT	ABP Royal Albert Dock	The Outline Component comprises a business-led mixed use development for up to 374,067 sq m (GEA) of floorspace (excluding basement) for business; retail, financial and professional services, food and drink uses, community and cultural, and assembly and leisure uses; residential; car parking and energy centre; new servicing routes, highways and landscaping, public realm improvements, public open space, access, and associated development.	Link
	24/00440/FUL	ABP Royal Albert Dock	The Detailed Component of the application seeks approval for 63,118 sq m (GEA) of floorspace comprising business, serviced apartments, retail, financial and professional services, food and drink uses, community and cultural, and assembly and leisure uses, temporary car park and energy centre (including temporary access road and associated works), access and connectivity improvements, landscaping and public realm improvements, open space and associated development, and the change of use of two existing Grade II listed buildings	Link

[62] Specifically, site selection is influenced by the proposed shallower RNP AR approach for RWY09 and RWY27 (FA09_Option 1, FA27_Option 1, FA27_Option 2, and FA27_Option 3). The lateral path changes associated with IA09_Option 1, IA09_Option 2 and IA09_Option 3 are not anticipated to impact property development and are not included here. At this stage of the design work, full procedure design is not complete; any protection areas associated with the proposed RNP AR procedures are understood at a high level only. Following the detailed procedure design work at Stage 3, full assessment of the impacts on property/land development can be undertaken. Should any impacts be identified, then the relevant stakeholders will be contacted to ensure that they are aware of this airspace change proposal prior to public consultation and included in any discussions on proposed mitigation strategies as appropriate.

[63] We have received formal confirmation from the London Borough of Newham and we have engaged with the London Boroughs of Greenwich and Tower Hamlets and are waiting on confirmation from these stakeholders. We have also engaged with local property development companies throughout the Stage 2 process. This information may be subsequently updated for Stage 3.

	18/00623/FUL	Gallions 3B, Magellan Boulevard, E16 2FU	Redevelopment of the site to provide for no.238 residential units (use class C3) contained within two distinct urban blocks. The proposals comprise a perimeter block with heights ranging from three up to twelve storeys as well as a separate building of part seven/part nine storeys, together with provision of vehicular access onto Magellan Boulevard, under-croft vehicle and cycle parking, hard and soft landscaping (including the provision of temporary landscaped open space), and all associated ancillary works and structures.	Link
	22/00418/FUL	Etap Accor Hotel, North Woolwich Road, Silvertown, E16 2EE	Redevelopment of the site to provide 140 residential units (45no. 1 bed units, 59 no. 2 bed units, 35 no. 3 bed units and 1 no. 4 bed unit) in three linked buildings ranging from 7 to 11 storeys in heights, with associated 5 disable car parking, landscaping amenity areas, secure cycle parking and other associated works.	Link
	20/00051/FUL	Development Site At Albert Island Woolwich Manor Way North Woolwich E16 2QS	Hybrid planning application for the phased employment-led redevelopment of Albert Island. Full Planning Permission is sought for Enabling Works Phase comprising site enabling works, demolitions, utility diversions, installation of pedestrian bridge, and river wall works; Stage One (Zone B) comprising an employment hub delivering a mix of light industrial, long term storage and distribution logistics warehouse including provision of service yards and parking facilities, flexible industrial and educational uses and café within the Ideas Factory building, site management office, long stay car parking, access, new landscape, public realm and associated works; and Stage Two (Zone C) comprising 16 residential units (Class C3), RoDMA office and facilities, and associated car and cycle parking, access, landscaping and other necessary works. Outline Planning Permission (all matters reserved apart from access) is sought for Stage 3 Three (Zone A) comprising a replacement marina, boatyard and a passenger pier.	Link
	20/01046/FUL	Unit 3 Thames Road Silvertown	Demolition of the existing warehouse and redevelopment of the site to provide 161 units comprising three residential buildings of 8, 12 and 9 storeys, including site access, landscaping and associated works.	Link
	18/03557/OUT	Land at Central Thameside West and Carlsberg Tetley Dock Road, Silvertown, E16 2AB	Hybrid planning application comprising: 1.Detailed planning application for Phase 1 with works to include: Proposed demolition of existing buildings and structures, erection of buildings, including tall buildings, comprising: 460 residential Units(Use Class C3), 3,417sqm(GEA) of flexible employment floorspace (Use Classes B1b, B1c, B2 (restricted), B8); 162 sqm(GEA) of flexible retail floorspace (Use Classes A1-A4) ;a new/altered access road from Dock Road/North Woolwich Road; new streets, open spaces, landscaping and public realm; car, motorcycle and bicycle parking spaces and servicing spaces; and other works incidental to the proposed development. 2. Outline planning application (all matters reserved) for phased delivery of the balance of the site for the proposed demolition of existing buildings and structures; erection of buildings, including tall buildings, comprising: a new local centre; a primary school (Use Class D1); residential and older person units (Use Class C3); flexible employment floorspace (Use Classes B1b, B1c, B2 (restricted), B8) ; flexible employment floorspace (Use Classes B1c, B2, B8); flexible retail floorspace (Use Classes A1-A4); community and leisure floorspace (Use Classes D1 and D2) ; the construction of a new flood defence wall and delivery of ecological habitat adjacent to the River Thames and associated infrastructure; streets, open spaces, landscaping and public realm (including new park and SINC	Link

			improvements); car, motorcycle and bicycle parking spaces and servicing spaces; utilities including energy centre, electricity substations and incidental works.	
	19/01791/FUL	Lyle Park West Land Adjacent to West Silvertown DLR Station, Knights Road, Silvertown, E16 2AT	Comprehensive redevelopment of site to provide residential led, mixed-use development of 3no. blocks ranging from 12 to 20 storeys in height comprising 252 residential units (Use Class C3), and new local centre at ground level comprising 1,078sqm (GIA) of flexible commercial floorspace (Use Class A1/A2/A3/D1/D2) with associated new public realm, landscaping, car parking, cycle parking and associated works. This application site affects the setting of Listed Buildings and Structures.	Link
London Borough of Tower Hamlets	PA/24/00812/A1	Orchard Wharf, Orchard Place, London, E14	Full phased planning application for redevelopment of the site following demolition of all existing buildings and structures and enabling works to provide a mixed-use development consisting of basement excavation, and the erection of new buildings connected to or situated above a safeguarded wharf box which would deliver: i. Purpose Built Student Accommodation (Sui Generis) and ancillary accommodation; ii. Residential dwellings (Use Class C3) and ancillary accommodation; iii. General Industrial / Storage or Distribution floorspace (Use Classes B2 / B8 / E(g)(iii)) and ancillary accommodation within the safeguarded wharf box; iv. External infrastructure and all other related works (including marine works) for waterborne freight handling; and v. Flexible commercial (Use Class E) and community floorspace (Use Class F). Other associated works to include the provision of hard and soft landscaping; private internal and external amenity space; vehicular access and servicing facilities; provision of car parking and cycle parking; plant and other associated works incidental to the proposals including works to the River Wall.	Link
	PA/24/00348/A1	Land bounded by Prestage Way, Naval Row, Quixley Street and Scouler Street E14	Application for approval of reserved matters of layout, scale, appearance, landscaping and access pursuant to Condition A1 of planning permission PA/12/00001 dated 30 March 2012 in relation to Phase 4a (Development Zones 3 and 4) for Building Parcels K, M1, N and O. Comprising residential use, associated landscaping, public realm and other ancillary work. Approval of conditions A10, A11, A13, D14, D18, L1, L2, L3, L4, L5, L6, L7, M3, M4, M6, M8, O1, O2, O3, O4, O5, O6, O8, P2, P3, P5, Pursuant to planning permission PA/12/0001 dated 30.03.2012	Link
	PA/20/01421/A1	North Quay, Aspen Way, London, E14	Application for outline planning permission (all matters reserved) for the redevelopment of the North Quay site for mixed use comprising: Demolition of existing buildings and structures; Erection of buildings and construction of basements; The following uses: - Business floorspace (B1) - Hotel/Serviced Apartments (C1) - Residential (C3) - Co-Living (C4/Sui Generis) - Student Housing (Sui Generis) - Retail (A1-A5) - Community and Leisure (D1 and D2) - Other Sui Generis Uses - Associated infrastructure, including a new deck over part of the existing dock; - Creation of streets, open spaces, hard and soft landscaping and public realm; - Creation of new vehicular accesses and associated works to Aspen Way, Upper Bank Street, Hertsmere Road and underneath Delta Junction; - Connections to the Aspen Way Footbridge and Crossrail Place (Canary Wharf Crossrail Station); - Car, motorcycle, bicycle parking spaces, servicing; - Utilities including energy centres and electricity substation(s); and - Other minor works incidental to the proposed development. This application is accompanied by an Environmental Statement.	Link

	PA/24/01804/A1	St Georges Leisure Centre, 221 The Highway, London, E1W 3BP	Demolition of the existing leisure centre building and other associated structures as part of a phased redevelopment of the site to include erection of a replacement leisure centre building with ancillary café use and external cycle parking; erection of an 8 storey residential building to provide 29 affordable homes; public realm improvements to St George's Gardens including landscaping and new and replacement play provision; shared accessible car parking and a servicing yard with access from The Highway and associated works; restoration of former mortuary building for flexible Use Class E; re-location of 52 headstones which have been previously re-located during the construction works for the existing St George's Leisure Centre, to be positioned against listed wall adjacent to Angel Mews.	Link
	PA/19/00764/NC	Former News International Site, 1 Virginia Street, London, E98 1XY	A hybrid application (part outline/part detailed) comprising: (1) Outline submission for demolition of all buildings and structures on the site with the exception of the Pennington Street Warehouse and Times House and comprehensive mixed use development comprising a maximum of 221,924 sq m (GEA) (excluding basement) of floorspace for the following uses: residential (C3); business uses including office and flexible workspace (B1); retail, financial and professional services, food and drink uses (A1, A2, A3,A4 & A5); community and cultural uses (D1); a secondary school (D1); assembly and leisure uses (D2); energy centre, storage, car and cycle parking; and formation of new pedestrian and vehicular access and means of access and circulation within the site together with new private and public open space. (2) Detailed submission for 82,596 sq m GEA of floorspace (excluding basement) in five buildings - the Pennington Street Warehouse, Times House and Building Plots A, B and C comprising residential (C3), office and flexible workspaces (B1), community and leisure uses (D1/D2), retail and food and drink uses (A1, A2, A3, A4, A5) together with car and cycle parking, associated landscaping and new public realm.	Link
London Borough of Greenwich	23/2150/F	Plot N0201, Peninsula Square, Greenwich, SE10 0DX	Construction of a 36-storey building comprising Purpose Built Student Accommodation with ancillary amenity space (Sui Generis), with ground floor commercial/ retail floorspace (Use Class E), associated landscaping, plant, servicing, and cycle parking.	Link
	23/1565/F	Plot M0121, Lower Riverside, Greenwich Peninsula, Greenwich, SE10	Residential development on Plot M0121, including provision of private and communal amenity space, car parking and cycle parking, servicing and access, public realm, hard and soft landscaping	Link
	19/2733/O	Greenwich Peninsula Masterplan and Plots 18.02 & 18.03, London, SE10	Outline planning permission with all matters reserved, for the demolition of buildings and mixed-use redevelopment up to a maximum of 737,100sqm comprising: up to 533,900sqm of residential development which could include: i up to 5,813 residential dwellings ii up to 25,000sqm student accommodation (up to 500 rooms) and/or co-living units up to 19,600sqm Class A1-A5 use (food and non-food retail, restaurants, bars and cafes); up to 68,700sqm Class B1 (a) (b) (c) (business); up to 24,200sqm Class C1 (hotel) for up to 350 rooms; up to 13,200 sqm Class D comprising D2 (Sport and Recreation), Class D1 (health care facilities/nursery/creche); up to 4,200sqm D1 (education facilities) up to 8,000sqm Theatre (Class Sui Generis); residential and non-residential car parking, as	Link

			well as a minimum of 2000 AEG parking spaces (for the O2), cycle parking; associated community facilities; public realm and open space; hard and soft landscaping; a new transport hub and associated facilities; realignment of the cultural route traversing the site (The Tide); highway and transport works and associated ancillary works (proposals to revise part of the approved Greenwich Peninsula 2015 Masterplan (15/0716/O). Uplift of 1,757 residential dwellings from the 2015 Masterplan). And detailed planning permission, for a residential development comprising 476 residential units, up to 100sqm (GEA) A1/A2/A3/B1/D1/D2 floorspace plus ancillary car parking, access, landscaping and public realm works and associated infrastructure works. This application is an EIA development and is accompanied by an Environmental Statement. (Re-consultation due to amended description and updated and additional documents including an updated Environmental Statement Non-Technical Summary, Environmental Statement Review: GPM Response Report June 2020, updated Chapter 10 Daylight, Sunlight and Overshadowing, Supplementary Technical Note Daylight, Sunlight and Overshadowing (July 2020), Updated Chapter 12 Cumulative Effects, Updated Environmental Statement Volume III Townscape and Visual Impact Assessment, Environmental Statement Volume 3 ? Part B: Built Heritage (Addendum) and an Environmental Statement of Conformity which provide further information to the Environmental Statement referred to above as well as updated drawings and additional and updated information submitted with the planning application.)	

12.2 Housing Allocations

12.2.1 The following list provides the local housing allocations which correspond to the areas associated with all the RNP AR design options presented in this document. We consider that the lateral path changes associated with option IA09_Option1, IA09_Option 2 and IA09_Option 3 are important for local noise considerations and, as such, housing allocations relating to these options have been included in this list. This information is available in the public domain on the relevant local authority websites.

Borough	Site reference	Address	Existing use	Site allocation
London Borough of Newham	N1.SA1	Pier Road E16 2JJ	North Woolwich Ferry Bus Stand, former railway station last used as a museum, and vacant brownfield land	Residential with employment uses, community facility and open space.
	N1.SA2	Rymill Street E16 2TX	Vacant land and former temporary school.	Residential, main town centre uses and social infrastructure, including community facilities, health centre, and open space.
	N2.SA1	Land at Silvertown Quays, North Woolwich Road	Vacant land, vacant heritage assets and waste use. Waste management sites identified in the East London Waste Plan Evidence Base 2022 are located within the boundary of the allocation (Drum Distribution Services U K Ltd and Waste Transfer Station, Silvertown).	Residential, employment uses, main town centre uses and social infrastructure, including community facilities, sports and recreation facilities, education, and open space.
	N2.SA2	Land at Knights Road and Bradfield Road	West Silverton DLR Station, residential and employment uses. The site contains waste sites with temporary planning permissions.	Residential, employment uses, open space, main town centre uses and social infrastructure, including community facilities.

	N2.SA3	Thames Road and North Woolwich Road	The site contains St Mark's Industrial Estate and Thames Road Industrial Estate. Waste management sites identified in the East London Waste Plan Evidence Base 2022 are located within the boundary of the allocation (Connolley's Yard / Jighand Limited and Harrow Green - Silvertown Recycling Centre). Residential developments to the south of North Woolwich Road. Site also contains hotels and a community facility (Brick Lane Music Hall).	Residential development, employment uses, open space, main town centre uses, and social infrastructure, including community facilities and education facilities.
	N2.SA4	Land At Thameside West And Carlsberg Tetley Dock Road Silvertown London	The site is currently industrial in nature, and contains waste sites with temporary planning permissions. Some smaller employment units operate from units underneath the flyover. There are strips of inaccessible open space to the north. Part of the site is safeguarded for the construction of the Silvertown Tunnel river crossing. The site also contains a mooring point for the Riverbus Service and sits within the cable car protection zone, which runs above the site.	Residential and employment uses, new DLR station, open space, main town centre uses and social infrastructure, including community facilities and education facilities.
	N2.SA5	Excel Western Entrance, Western Gateway, E16	Main entrance to Excel conference centre with open space, a nursery, offices and residential accommodation at Warehouse W.	Residential development, community facility and open space.
	N3.SA1	Land North of Royal Albert Dock, Beckton London	The site contains a cluster of hotel developments, a listed public house, water sports centre, restaurant and gym to the west of the site. Office space has been delivered as part of the first phase of 14/00618/OUT. London Design and Engineering University Technical College is located to the east of the site. The site also contains car parking, open space, a temporary energy centre and a variety of heritage buildings.	Residential development, employment uses, open space, main town centre uses and social infrastructure, including community facilities, higher education facilities and sports and recreation facilities.
	N4.SA2	Fen Street; Nelson Street; Caxton Street North; Huntingdon Street	Industrial uses and community facility in the form of a gym and boxing club.	Residential, employment uses, and sports and recreation facilities.
	N4.SA3	Holiday Inn Express, 1 - 3 Silvertown Way, Canning Town, London, E16 1EA and Shirley Street Canning Town, London	Hotel and associated car parking to the south-western half of the site. To the north-east are a range of employment uses.	Residential development, employment uses, open space and main town centre uses and social infrastructure, including community facilities.
	N4.SA4	Limmo Site, Lower Lea Crossing, Canning Town London	Site contains Canning Town Station and Bus Station, structures and buildings associated with the Elizabeth Line alongside vacant land and scrubland.	Residential development and open space.
	N5.SA1	Custom House Area Redevelopment Project, Freemasons Road	The site contains residential uses with Custom House Local Centre along Freemasons Road. The Local Centre includes a GP surgery. The site also contains a local growing space at William Patton Gardens, as well as a vacant former public house.	Residential, open space, main town centre uses and social infrastructure, including community facilities and a health centre.
	N5.SA2	Coolfin North development site, Custom House	Residential, including accommodation for older people, school (Hallsville Primary) and open space.	Residential development, education and open space.
	N5.SA3	Russell Road; Burrard Road; Maplin Road; Chevron Close;	Residential and retail shop.	Residential development and open space.

		Butchers Road; and Freemasons Road, E16		
	N5.SA4	Land at Royal Road, E16 3HS	Fenced greenspace currently inaccessible to the public.	Education, residential and open space.
	N17.SA1	Gallions Reach Retail Park and Beckton Gas Works, Beckton, E6	The site contains remnants of the former Beckton gas works, the Gallions Reach shopping park and associated car parking and the Beckton DLR depot, which sits to the south of the former Beckon Gas works site, within retained Strategic Industrial Land. The site contains a range of industrial uses in the south west corner of the site also designated as a Strategic Industrial Location. The site also contains larger areas of open space adjacent to the River Thames and the A1020, including an area designated as SINC, which includes an attenuation pond serving Gallions Reach.	Residential development, employment uses, open space, main town centre uses and social infrastructure, including community facilities, education uses, sports and recreation facilities and a health centre.
London Borough of Tower Hamlets	4.1	Aspen Way	Residential and college	Housing Employment: a range of floorspace sizes, including small-to-medium enterprises
	4.2	Trafalgar Way	Market and associated parking	Employment: Preferred Office Location (secondary) with ancillary supporting uses such as gyms, hotels, restaurants and retail. Housing
	4.9	Upper Bank Street	Vacant	Employment: Preferred office location (secondary) with ancillary supporting uses such as gyms, hotels, restaurants and retail. Housing
	4.10	Paul Julius Close	Vacant	Housing. Employment: re-provision of existing employment by way of intensifying employment job numbers
	4.11	Westferry Circus	Vacant	Employment: Preferred office location (secondary) with ancillary supporting uses such as gyms, hotels, restaurants and retail. Housing
	1.2	Pennington Street	Industrial, commercial	Housing. Employment: a range of floorspace sizes, including small-and-medium enterprises
London Borough of Southwark	NSP02	62-67 Park Street	Development site	Residential 80 homes
	NSP05	1 Southwark Bridge and Red Lion Court	Office	Mixed use including 261 homes
	NSP07	Land between Great Suffolk Street and Glasshill Street	Development site	Residential 132 homes
	NSP08	Swan Street cluster	Development site	Residential 98 homes
	NSP75	Rotherhithe Gasometer	Disused gas infrastructure	Residential 160 homes

	NSP76	St Olav's Business Park, Lower Road	Commercial	Residential 125 homes
	NSP77	Decathlon Site	Retail	Residential 796 homes
	NSP78	Canada Water Masterplan	Major development site	Mixed use including 2,535 homes from 2025 to 2035.
	NSP79	Croft Street Depot	Development site	Residential 56 homes
London Borough of Lambeth	Site 1	Royal Street	Residential, offices, car parking	Residential 129 units, office, cultural facilities
	Site 8	110 Stamford Street SE1	Vacant	Residential 30 units, community/office floorspace
	Site 9	Gabriel's Wharf and Princes Wharf SE1	Shops, food and drink, cultural uses, TV studios	Mixed-use redevelopment for cultural uses, office and residential.
Greater London Authority	2	Thamesmead Town Centre	Small scale commercial	Residential 3,800 new homes, leisure, civic, cultural and evening uses. Supported by DLR and bus transit.
	3	Thamesmead Waterfront	No current use	Residential 6,000 new homes
London Borough of Bexley	BEL01	Lower Road, Belvedere	Retail with car parking	Residential 460 homes, mixed use town centre development.
	BEL02	Station Road, Belvedere	Community facilities; utilities; highways land	Residential 80 homes, ground floor main town centre uses
	BEL03	Station Road and Picardy Street, Belvedere	Main town centre uses, residential; highways land	Residential 40 homes, ground floor main town centre uses
	BEL04	Halt Robin Road, Belvedere	Vacant buildings	Residential 140 homes
	BEL05	Yarnton Way, Belvedere	Decommissioned utilities infrastructure	Residential 465 homes
	BEL06	Station Road North, Belvedere	Industrial	Residential 90 homes

13. Appendix E Traffic Forecast

13.1 Passenger demand and traffic growth modelling methodology

13.1.1 The forecasting model has been provided by York Aviation and uses statistical methods for predicting future passenger demand and traffic growth. The modelling is broadly divided into 2 stages of work.

Stage 1

13.1.2 The first stage is a top-down approach which is used to model long-term air travel demand. It estimates the total demand for air travel originating within LCY's broad catchment area. This catchment includes Greater London and parts of the wider South East, encompassing areas where passengers may choose among multiple competing airports. The key steps and features associated with this part of the process include:

13.1.3 **Demand Segmentation**
The model segments total travel demand by: passenger origin, flight destination type (domestic, short haul, international, long haul), purpose of travel (business vs. leisure) and nationality.

Economic Drivers

13.1.4 Values estimated by the UK Department for Transport (DfT) which define how air travel demand changes in response to various factors (such as price, income, or travel time) are used to link demand to:

- Economic growth in origin and destination regions (using economic growth forecasts sourced from the OBR (Office for Budget Responsibility) and the OECD (Organisation for Economic Co-Operation and Development)) and;

13.1.5 - Real air fares (differentiated according to market segment (e.g. business vs. leisure) and distance-based pricing)

Elasticity Parameters

13.1.6 'Elasticity' measures how much one variable (like air travel demand) changes in response to a change in another variable (like price).

13.1.7 Time-series regression analyses, which provide the ability to see how past values of a variable affects its future value, have been carried out to obtain the characteristics of these elasticities.

Fare Construction

13.1.8 Air fares have been modelled using base fare levels (from airline schedules data), fuel costs (based on future projections and aircraft fuel efficiency), Sustainable Aviation Fuel (SAF) uptake and pricing, carbon pricing (which assigns a cost to carbon dioxide emissions produced by air travel), and air passenger duties.

Monte Carlo simulation

13.1.9 Rather than a single traffic demand prediction, Monte Carlo simulations are used to generate a probabilistic range of demand trajectories from thousands of simulations, creating an 'envelope' of potential market growth paths, from pessimistic to optimistic outcomes.

Purpose and Output

13.1.10 This stage produces a detailed picture of how total potential demand for air travel is expected to evolve in the South East over time and forms the foundation for subsequent market allocation modelling.

Stage 2

13.1.11 Once total demand is established, the next step is to estimate how this demand is distributed across airports in the South East, including London City Airport, London Heathrow Airport, London Gatwick Airport, London Stansted Airport, London Luton Airport, and others such as Birmingham Airport.

13.1.12 This is achieved through an 'alternative-specific conditional logit model' which analyses situations where individuals choose among multiple alternatives and looks at the probability of choosing one specific alternative given the available options. This type of modelling is widely used in transport economics and endorsed by the DfT. The key steps and features associated with this part of the process include:

Passenger Choice Simulation

13.1.13 The model simulates passenger choices about which airport to use. The likelihood of choosing a given airport is driven by its utility, which considers factors such as travel time/distance/cost, public transport connections, flight frequency and network breadth, fare levels, airline types, and market segment preferences (e.g. business vs. leisure).

District-Level Resolution

13.1.14 The model operates at local authority district level, allowing it to capture fine-grained geographical variation in airport accessibility and traveller behaviour.

Scenario Testing and Constraints

13.1.15 The model is run iteratively to project airport-level market shares over time, and incorporates the capacity constraints at other airports e.g. London Heathrow Airport passenger capacity is capped at 90–135 million passengers per annum depending on runway assumptions.

Historical Calibration

13.1.16 The model is calibrated using CAA Passenger Survey data and airline schedule data from the OAG (Official Airline Guide), ensuring that it replicates observed passenger behaviour and travel patterns.

Output and Interpretation

13.1.17 Together, these two modelling components provide a comprehensive, policy-compliant, framework for forecasting future passenger demand and traffic growth at London City Airport.

13.1.18 This methodology has been successfully deployed in public inquiry contexts and accepted by planning authorities.

13.2 Future fleet mix

13.2.1 The fleet mixes associated with the different growth scenarios, and particularly their evolution over time, is based on analysis of:

- the aircraft operating at LCY in 2024 and the annual movements associated with each aircraft type taken from the airport's operational database;
- the fleets available to airlines at LCY and their future orders identified from ch-aviation and other sources;

- public statements by key airlines around their future fleet strategy and delivery profiles;
- discussions between the LCY commercial team and customer airlines;
- the nature of the markets served by individual airlines at LCY and how operating patterns on these routes might evolve over time.

13.2.2 The modelling assumptions are summarised as follows:

-Airlines will continue to invest in new aircraft over time to upgrade their aging fleets, support growth, and achieve operational and cost efficiencies.

-Outside of this airspace change, the nature of airlines, aircraft types, levels of service and routes served at LCY are not likely to change fundamentally.

- Airlines will predominantly transition towards aircraft types that are either already in operation within their fleets or that are currently on order.

13.2.3 It should be recognised that fleet transition is not something that can be 'modelled' in a statistical sense, and that this process is reliant on forecaster judgment to a significant degree, adapting a diverse range of quantitative and qualitative evidence from a range of sources to develop a reasoned assessment of fleet evolution at the airport. In developing the future fleet mix, the key concern is ensuring that the evolution is reasonable and reflects effectively the broad dynamics in the market.

14. Appendix F Overflight calculations

14.1.1 The overflight calculations provided in this section are for illustrative purposes only, and are used (at this early stage of the design work) to inform the qualitative assessments of overflight for this airspace change.

14.1.2 A more detailed quantitative assessment of overflight will be provided at Stage 3 (Consult) of the CAP1616 process as we progress the preferred design options through more detailed modelling.

Methodology

14.1.3 A calculation of overflight (population count and number of households[64]) is provided for the baseline scenario and the design options, and is based on the likely lateral dispersion of traffic about the centreline of each route and the altitude of aircraft on the procedures.

14.1.4 For the baseline scenario, the lateral dispersion is determined from actual radar data; the 95th percentile is used to provide a realistic view of the typical behaviour of flights as they transition through the turns onto final approach (for RWY09), or make a straight-in approach (for RWY27), and subsequently make their descent from the current ToD point to the runway threshold.

14.1.5 For the design options, overflight is calculated assuming negligible lateral dispersion from the centreline of the procedure. Note: the proposed lateral track for RNP AR arrivals to RWY27 is unchanged from today, however for the RWY09 initial/intermediate approach segment, the precise flight path will not be determined until the Stage 3 procedure design work is complete, and will depend on how the RNP turns are modelled for this procedure.

14.1.6 As such, for RWY09, the initial/intermediate approach design options (IA09_Option 1, IA09_Option 2, and IA09_Option 3) are all modelled identically, using the same route centreline. These calculations serve to illustrate the track-keeping capability for aircraft on an RNP procedure only. RNP allows aircraft to follow a precise flight path with high accuracy and these calculations are illustrative of the potential reduction in population overflight as a result of this tighter track-keeping ability, and in particular for those portions of the approach which require aircraft to carry out a turn procedure. The earlier and shallower descent for the single RWY09 final approach design option (FA09_Option 1) is also included in this overflight calculation, as illustrated in Figure 19.

[64] Current population and household data is sourced from CACI, ©2025 CACI Limited. This report shall be used solely for academic, personal and/ or non-commercial purposes.

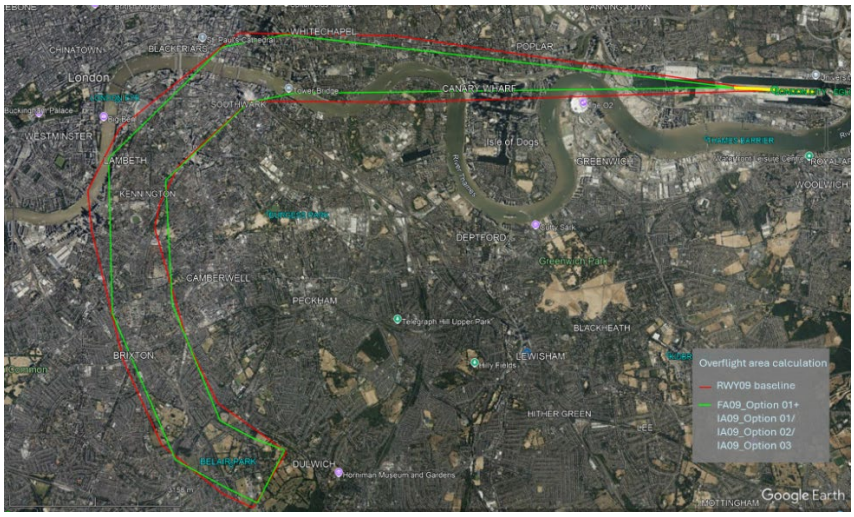


Figure 19: Overflight calculation for RWY09. The overflight area (or 'cone of overflight') for the baseline ('do nothing') option is shown in red, and the RNP AR approach options are shown in green. [Google Earth, 2025].

14.1.7 For RWY027, the three different final approach options have the same lateral path, but different descent gradients and are calculated separately to show the impact of vertical distance on population overflight, as illustrated in Figure 20.

Figure 20: Overflight calculation for RWY27. The overflight area (or 'cone' of overflight) for the baseline ('do nothing') option is shown in red, and the RNP AR approach options are shown in green. [Google Earth, 2025].

14.1.8 All scenarios use the calculation for overflight as defined in the CAP1498 [Ref 19] Figure 11, using a 48.5° elevation angle threshold to determine the 'cone' of overflight, which is used to determine the population count and the number of households for the baseline ('do nothing') option and each design option, see Table 31 below.

		Overflight	
	Option	**Number of households (comparison against the baseline)**	**Population count (comparison against baseline)**
RWY 09	RWY09 Baseline ('do nothing')	88,500 (n/a)	204,300 (n/a)
	IA09_Option 1/ IA09_Option 2/ IA09_Option 3 + FA09_Option 1	72,300 (-18%)	167,500 (-18%)
RWY27	RWY 27 Baseline ('do nothing')	21,500 (n/a)	56,800 (n/a)
	FA27_Option 1	19,200 (-11%)	51,000 (-10%)
	FA27_Option 2	19,000 (-12%)	50,300 (-11%)
	FA27_Option 3	18,500 (-12%)	48,700 (-14%)

Table 31: Number of households and population count for the baseline ('do nothing') option and each design option. [Current population and household data is sourced from CACI, ©2025 CACI Limited. This report shall be used solely for academic, personal and/ or non-commercial purposes].

15. Appendix G Design Principle Evaluation Proforma

15.1 (0) Baseline ('Do Nothing') - REJECTED

Baseline ('Do Nothing')			REJECT	Assessment
This option represents the existing airspace design i.e. the 'do nothing' option. It maintains the extant LCY RNAV1/ ILS arrival procedures for RWY09 and RWY27 with no additional RNP AR procedures introduced.				
M_DP1	**Safety**	High	**MET**	Enhanced - improvement over today's level of safety. Maintained - safety risk could be maintained within acceptable levels of today's operation
The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.				
Stakeholder feedback has raised concerns with nuisance TCAS alerts, associated with the H4 helicopter route, which currently exist for pilots on a final approach to RWY09. Whilst this is noted, these nuisance alerts are not considered to pose serious safety concerns to the operation, and undesired alerts frequently occur during altitude changes, and particularly aircraft descents. This airspace change is not being proposed to address any existing safety concerns, and therefore the 'do nothing' scenario maintains an acceptable level of safety risk, taking into account future increases in traffic levels.				
M_DP2	**Policy**	High	**PARTIAL**	Minor and justifiable inconsistencies - Incomplete conformance with relevant legislation, the CAA's airspace modernisation strategy and Secretary of State and CAA's policy and guidance.
The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.				
In the 'do nothing' scenario, LCY will continue to deliver environmental sustainability improvements through noise mitigation strategies and with gradual changes to fleet mix as existing LCY airline operators refleet (onto more modern, environmentally efficient, aircraft) over the period 2027 - 2036. However there would be no proactive contribution towards the AMS strategic objectives of "Integration" or "Simplification" or the "efficient and expeditious flow of air traffic" as defined in Section 70 of the Transport Act 2000.				
M_DP3	**Environment**	High	**PARTIAL**	Minor and justifiable inconsistencies - Incomplete conformance with the Government's Air Navigation Guidance 2017.
The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.				
In the 'do nothing' scenario, LCY will continue to deliver environmental sustainability improvements through noise mitigation strategies and with gradual changes to fleet mix as existing LCY airline operators refleet (onto more modern, environmentally efficient, aircraft) over the period 2027 - 2036, this aligns with the government's key environmental objectives designed to minimise the environmental impact of aviation within the context of supporting a strong and sustainable aviation sector. However, the potential impact of this benefit could be limited by the anticipated increase in traffic volume over the corresponding period.				
B_DP4	**Planning permissions**	High	**MET**	No changes required for the airport to meet the conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.
The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.				
The 'do nothing' scenario would result in no changes for the airport to meet its conditional and legal obligations as contained in the CADP planning permission and associated section 106 agreement. Airport infrastructure changes supporting traffic growth over the 2027-2036 time period are agreed within current permissions and include the terminal building and associated infrastructure (independent of this airspace change proposal). The gradual changes to fleet mix at LCY, introducing more modern,' quieter' aircraft, supports a reduction in the maximum size of the 9.1km^2 57dB noise contour to 7.2km^2 by 9 million passengers.				
D_DP5	**Performance based navigation**	High	**PARTIAL**	PBN standard as per today's operation
The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.				
The 'do nothing' scenario would result in no change to existing navigation standards.				
D_DP6	**Local context and circumstances**	High	**PARTIAL**	Manageable impact and not safety critical
The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.				
Over the period 2027-2036, property development and population growth proximate to the final portions of the approach for both RWY09 and RWY27 are anticipated to add approximately 79,000 people to these areas. Residents have raised concerns about the current impact of aircraft noise on their daily lives. Local property developers have expressed frustration with current aerodrome/procedure protection areas that limit development close to the airport. Additionally, they have expressed a preference to limit any uncertainty associated with future changes to the size of these protection areas. It is noted that changes in ICAO criteria may result in changes to Obstacle Limitation Surfaces for ILS approaches in the next few years. The airport monitors noise levels and is working towards reducing the impact of aircraft noise through various measures outlined in its Noise Action Plan. It is considered that the noise mitigation schemes in place for LCY operations, and their ongoing monitoring and review, will ensure that changes to traffic volumes and the corresponding noise impacts continue to be appropriately managed. Safe aircraft operations is the primary goal of aerodrome/procedure protection areas; these are not static volumes of airspace, but necessarily evolve as airport procedures change and traffic volumes grow. Developers are encouraged to engage with the airport early in the planning process to identify potential issues and find solutions. It is considered that collaboration between the airport, developers and local planning authorities will ensure that any impacts continue to be appropriately managed. Stakeholder feedback has requested consideration of impacts to Wapping and the Rainham Marshes; in the baseline scenario there are no changes to extant arrival and departure flight paths, and therefore these regions that are currently overflown will remain the same, however the frequency of overflight is likely to increase in line with traffic growth. The LCY S73 permission provides the additional operational and environmental controls relevant to the predicted increase in passenger numbers and traffic volume with this option.				
D_DP7	**Noise**	High	**MET**	Enhanced - Reduction in the total adverse effects from aircraft noise.
The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.				
It is considered that the 'do nothing' scenario would result in an improvement to the total adverse effects from aircraft noise. In this scenario, gradual changes are anticipated to the fleet mix as existing LCY airline operators refleet (onto more modern, environmentally efficient, aircraft) over the period 2027 - 2036, which is anticipated to contribute positively towards a reduction in noise impacts. However, the potential impact of this benefit could be limited by the anticipated increase in traffic volume over the corresponding period.				
B_DP8	**Economics**	Medium	**PARTIAL**	No change, or cost-effectiveness is broadly similar compared to today's operation
The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.				
The 'do nothing' scenario would result in no change to the cost-effectiveness of airline operations at LCY.				
D_DP9	**Noise**	Medium	**MET**	Consistent with existing published airspace arrangements.
Where options for route design for the airspace change proposal 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.				
The 'do nothing' scenario would result in no change to existing published airspace arrangements.				
B_DP10	**Environment**	Medium	**MET**	Operation of environmentally efficient aircraft is improved compared to today's operation
The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.				
In the 'do nothing' scenario, gradual changes are anticipated to the fleet mix as existing LCY airline operators refleet (onto more modern, environmentally efficient, aircraft) over the period 2027 - 2036.				
D_DP11	**Other aviation stakeholders**	Low	**MET**	No change in impact or a positive impact
The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.				
The 'do nothing' scenario would result in no change to other aviation stakeholders.				

Conclusion:	**Option 0: Baseline ('Do Nothing') represents no change to the existing airspace design. 5 DPs are PARTIAL (4 of which are priority 'HIGH'), hence this option was REJECTED and will not be progressed.**

15.2 (1) IA09_Option 1 - PROGRESSED

IA09_Option 1			Accept & Progress	Assessment
This option represents RWY09 RNP AR initial and intermediate approach transitions which will closely follow the same lateral track as today.				
M_DP1	**Safety**	High		
The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.			MET	Enhanced - improvement over today's level of safety. Maintained - safety risk could be maintained within acceptable levels of today's operation
This airspace change is not being proposed to address any safety concerns. However, the characteristics of RNP AR approaches are considered to contribute positively to safety, helping to manage residual operational risk.				
M_DP2	**Policy**	High		
The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.			MET	Consistent with relevant legislation, the CAA's airspace modernisation strategy and Secretary of State and CAA's policy and guidance.
This option contributes towards the AMS strategic objectives: "Integration" - facilitates access to a wider range of aircraft operators, facilitates the integration of different aircraft types, and integrates air traffic by ensuring compatibility between aircraft operating on the existing ILS and aircraft on the proposed RNP approach procedures. "Simplification" - uses PBN to optimise aircraft performance capabilities, increases network resilience by systemising the approach procedure (reducing the need for controller intervention), increases runway and airport capacity by supporting aircraft types with increased passenger capacity, reduces delays by supporting aircraft types with increased passenger capacity (enabling a reduction in traffic volumes, thereby reducing air traffic delay), increases London Terminal Airspace capacity by reducing traffic volumes. "Environment" - enables LCY to meet passenger growth, with fewer aircraft movements than the 'do nothing' option. This option contributes to Section 70 of the Transport Act 2000: "Efficient use of airspace" - ensures the volume and classification of regulated airspace is no bigger/higher than necessary (this airspace change will ensure that no additional controlled airspace is required as a result of this change), it systemises the approach procedure to reduce the number of controller interactions, and reduces overall ATM movements, making the most efficient use of airspace. "Expeditious flow of air traffic" - reduces delays by supporting aircraft types with increased passenger capacity (enabling a reduction in traffic volumes, and therefore air traffic delay). "Satisfy the requirements of operators and owners of all classes of aircraft" - enables a greater range of operators to operate at LCY, increasing access and reducing operating costs.				
M_DP3	**Environment**	High		
The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.			MET	Consistent with the Government's Air Navigation Guidance 2017.
This option is considered to be consistent with existing published airspace arrangements, closely following the same lateral track as today. As such, the sites that are currently overflown will remain the same; there are no new National Parks, AONBs, or noise sensitive buildings overflown. No new populations are overflown. RNP AR procedures could increase the operation of more modern, 'quieter', 'cleaner' aircraft at LCY which could improve environmental impacts compared to older aircraft models, due to advancements in airframe design and more fuel-efficient engines which reduce fuel consumption, lower overall emissions of pollutants during flights and reduce noise. The airspace change has the potential to reduce air traffic growth compared with the baseline scenario (through fleet mix changes which support aircraft with greater passenger capacity) which is also anticipated to reduce environmental impacts.				
B_DP4	**Planning permissions**	High		
The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.			MET	No changes required for the airport to meet the conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.
This design option enables the introduction of aircraft at LCY with greater passenger capacity supporting a greater reduction in the maximum size of the 9.1km^2 57dB noise contour to 7.2km^2 by 9 million passengers (through a reduction in air traffic growth, and also fleet mix changes to more modern,' quieter' aircraft). Airport infrastructure changes supporting traffic growth over the 2027-2036 time period are agreed within current permissions and include the terminal building and associated infrastructure. No new airport infrastructure requirements are associated with this design option. Under current permissions, the introduction of new aircraft types at LCY requires approval under the Aircraft Noise Categorisation Scheme (ANCS) (which ensures that only aircraft that meet strict noise thresholds are able to operate). The continued application of this scheme ensures that only permissible aircraft operate at LCY, and remains unchanged by this option.				
D_DP5	**Performance based navigation**	High		
The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.			MET	Increased PBN standard compared to today's operation
This option introduces RNP AR approaches at LCY, enhancing the navigation standard for the approach phase of flight.				
D_DP6	**Local context and circumstances**	High		
The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.			MET	No impact or positive impact
This option is considered to be consistent with existing published airspace arrangements, closely following the same lateral track as today, with minor changes to the flight path that are not anticipated to significantly change the impact on communities close to the airport. RNP AR procedures are anticipated to reduce air traffic growth at LCY compared with the baseline scenario (by supporting aircraft with greater passenger capacity) which could benefit the local community by reducing the number of aircraft over-flying those proximate to LCY arrival and departure flight paths. Note: there is no change to departure flight paths within this airspace change proposal, however new aircraft types (with greater passenger capacity) may land using the proposed RNP AR approach procedures and would then follow the current (unchanging) procedures on departure. As such, it is anticipated that the required passenger capacity would be achieved with fewer departure flights. The LCY S73 permission provides the additional operational and environmental controls relevant to the predicted increase in passenger numbers and traffic volume with this option. No extension to the current aerodrome/procedure protection areas is required with this design option. Stakeholder feedback has requested consideration of impacts to Wapping; this design option is considered to be consistent with existing published airspace arrangements, closely following the same lateral track as today. As such, the sites for biodiversity that are currently overflown (including Wapping) will remain the same. However, this airspace change proposal predicts a reduction in traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), which may reduce the number of aircraft over-flying these locations.				
D_DP7	**Noise**	High		
The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.			MET	Enhanced - Reduction in the total adverse effects from aircraft noise.
RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038. Some changes in noise impacts may result from having larger aircraft (from the fleet mix changes) operating to/from LCY, in addition to differences in lateral dispersion, however these impacts are not anticipated to be significant, and are discussed in further detail below. Aircraft are anticipated to fly an RNP approach procedure more precisely than the extant RNAV1/ILS procedure. This enhanced navigational accuracy is unlikely to impact those portions of the approach procedure that are a straight line (for RNAV1 navigation standards, aircraft already fly these portions with good precision), but could increase the concentration of aircraft tracks around the turn regions of the approach, most noticeably as aircraft transition from the initial approach onto intermediate approach, and then from intermediate approach onto final approach. As such, the RNP approach procedure may result in some change to noise impacts at these locations. Preliminary aircraft noise comparison data observes that the negative difference in arrival/departure noise, for the largest aircraft associated with this fleet mix change (the Airbus A320neo), when compared to the current fleet mix, is predominantly below the threshold of perceptible change in noise (3dB). Additionally, RNP AR procedures are anticipated to reduce the number of over-flying aircraft (by supporting aircraft with greater passenger capacity, reducing traffic volume). We anticipate the marginal difference between aircraft noise levels, alongside a reduction in the number of over-flying aircraft, would potentially mitigate any noise disbenefit associated with larger aircraft operating to/from LCY, and also any changes to noise impacts resulting from the concentration of aircraft tracks around RNP turn regions. It should also be noted that lateral dispersion around the turn regions will still take place for aircraft on the extant RWY09 RNAV1/ILS approach procedures, and that any concentration of tracks in these areas is associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic.				
B_DP8	**Economics**	Medium		
The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.			MET	Increased cost-effectiveness compared to today's operation
This option could enable airline operators to deploy aircraft with greater capacity, lower seat costs and increased yields than would otherwise be available.				
D_DP9	**Noise**	Medium		
Where options for route design for the airspace change proposal 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.			MET	Consistent with existing published airspace arrangements.
This option is considered to be consistent with existing published airspace arrangements, closely following the same lateral track as today.				
B_DP10	**Environment**	Medium		
The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.			MET	Operation of environmentally efficient aircraft is improved compared to today's operation
RNP AR procedures could increase accessibility for a wider range of modern aircraft, enabling new operators to fly from LCY and providing incentive for existing airline operators at LCY to accelerate their refleeting to take advantage of more modern aircraft with greater passenger capacity and increased yields.				
D_DP11	**Other aviation stakeholders**	Low		
The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.			MET	No change in impact or a positive impact
This option would result in no change to other aviation stakeholders.				
Conclusion:	**IA09_Option 1 supports the introduction of RNP AR operations, improving access to a wider range of modern, environmentally efficient, aircraft at LCY, enhancing the navigation standard for the approach phase of flight, and creating more capacity whilst remaining compliant with the CADP planning permission and the associated section 106 agreement. This option maintains close alignment with the current RWY09 approach path; no new populations or sites are overflown. Overall, RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts; the marginal difference between aircraft noise levels, alongside a reduction in the number of over-flying aircraft, would potentially mitigate any noise disbenefit associated with larger aircraft (from the fleet mix changes) operating to/from LCY, and also any changes to noise impacts resulting from the concentration of aircraft tracks around RNP turn regions. No extension is anticipated to the current aerodrome/procedure protection areas. This option is considered a promising candidate and has been PROGRESSED to the next stage.**				

15.3 (2) IA09_Option 2 - PROGRESSED

IA09_Option 2			Accept & Progress	Assessment
This option represents RWY09 RNP AR initial and intermediate approach transitions which will allow minor lateral variation from today.				
M_DP1	**Safety**	High		
The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.			MET	Enhanced - improvement over today's level of safety. Maintained - safety risk could be maintained within acceptable levels of today's operation
This airspace change is not being proposed to address any safety concerns. However, the characteristics of RNP AR approaches are considered to contribute positively to safety, helping to manage residual operational risk.				
M_DP2	**Policy**	High		
The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.			MET	Consistent with relevant legislation, the CAA's airspace modernisation strategy and Secretary of State and CAA's policy and guidance.
This option contributes towards the AMS strategic objectives: "Integration" - facilitates access to a wider range of aircraft operators, facilitates the integration of different aircraft types, and integrates air traffic by ensuring compatibility between aircraft operating on the existing ILS and aircraft on the proposed RNP approach procedures. "Simplification" - uses PBN to optimise aircraft performance capabilities, increases network resilience by systemising the approach procedure (reducing the need for controller intervention), increases runway and airport capacity by supporting aircraft types with increased passenger capacity, reduces delays by supporting aircraft types with increased passenger capacity (enabling a reduction in traffic volumes, thereby reducing air traffic delay), increases London Terminal Airspace capacity by reducing traffic volumes. "Environment" - enables LCY to meet passenger growth, with fewer aircraft movements than the 'do nothing' option. This option contributes to Section 70 of the Transport Act 2000: "Efficient use of airspace" - ensures the volume and classification of regulated airspace is no bigger/higher than necessary (this airspace change will ensure that no additional controlled airspace is required as a result of this change), it systemises the approach procedure to reduce the number of controller interactions, and reduces overall ATM movements, making the most efficient use of airspace. "Expeditious flow of air traffic" - reduces delays by supporting aircraft types with increased passenger capacity (enabling a reduction in traffic volumes, and therefore air traffic delay). "Satisfy the requirements of operators and owners of all classes of aircraft" - enables a greater range of operators to operate at LCY, increasing access and reducing operating costs.				
M_DP3	**Environment**	High		
The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.			MET	Consistent with the Government's Air Navigation Guidance 2017.
This option permits minor lateral variation on the initial and intermediate approach transitions. However, the lateral variation within this option (up to 250m of the centreline) is maintained within the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure. As such, the sites that are currently overflown will remain the same; there are no new National Parks, AONBs, or noise sensitive buildings overflown. No new populations are overflown. RNP AR procedures could increase the operation of more modern, 'quieter', 'cleaner' aircraft at LCY which could improve environmental impacts compared to older aircraft models, due to advancements in airframe design and more fuel-efficient engines which reduce fuel consumption, lower overall emissions of pollutants during flights and reduce noise. The airspace change has the potential to reduce air traffic growth compared with the baseline scenario (through fleet mix changes which support aircraft with greater passenger capacity) which is also anticipated to reduce environmental impacts.				
B_DP4	**Planning permissions**	High		
The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.			MET	No changes required for the airport to meet the conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.
This design option enables the introduction of aircraft at LCY with greater passenger capacity supporting a greater reduction in the maximum size of the 9.1km^2 57dB noise contour to 7.2km^2 by 9 million passengers (through a reduction in air traffic growth, and also fleet mix changes to more modern,' quieter' aircraft). Airport infrastructure changes supporting traffic growth over the 2027-2036 time period are agreed within current permissions and include the terminal building and associated infrastructure. No new airport infrastructure requirements are associated with this design option. Under current permissions, the introduction of new aircraft types at LCY requires approval under the Aircraft Noise Categorisation Scheme (ANCS) (which ensures that only aircraft that meet strict noise thresholds are able to operate). The continued application of this scheme ensures that only permissible aircraft operate at LCY, and remains unchanged by this option.				
D_DP5	**Performance based navigation**	High		
The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.			MET	Increased PBN standard compared to today's operation
This option introduces RNP AR approaches at LCY, enhancing the navigation standard for the approach phase of flight. The lateral variation within this option (up to 250m of the centreline) provides additional flexibility for the procedure design, which may enable optimisation of the turn regions, improving flyability/manoeuvrability for aircraft on the RNP AR procedure.				
D_DP6	**Local context and circumstances**	High		
The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.			MET	No impact or positive impact
This option permits minor lateral variation on the initial and intermediate approach transitions. However, the lateral variation within this option (up to 250m of the centreline) is maintained within the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure, and as such is not anticipated to significantly change the impact on communities close to the airport. RNP AR procedures are anticipated to reduce air traffic growth at LCY compared with the baseline scenario (by supporting aircraft with greater passenger capacity) which could benefit the local community by reducing the number of aircraft over-flying those proximate to LCY arrival and departure flight paths. Note: there is no change to departure flight paths within this airspace change proposal, however new aircraft types (with greater passenger capacity) may land using the proposed RNP AR approach procedures and would then follow the current (unchanging) procedures on departure. As such, it is anticipated that the required passenger capacity would be achieved with fewer departure flights. The LCY S73 permission provides the additional operational and environmental controls relevant to the predicted increase in passenger numbers and traffic volume with this option. No extension to the current aerodrome/procedure protection areas is required with this design option. Stakeholder feedback has requested consideration of impacts to Wapping; the lateral variation within this option (up to 250m of the centreline) is maintained within the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure. As such, the sites for biodiversity that are currently overflown (including Wapping) will remain the same. However, this airspace change proposal predicts a reduction in traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), which may reduce the number of aircraft over-flying these locations.				
D_DP7	**Noise**	High		
The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.			MET	Enhanced - Reduction in the total adverse effects from aircraft noise.
RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038. Some changes in noise impacts may result from having larger aircraft (from the fleet mix changes) operating to/from LCY, in addition to differences in lateral dispersion, however these impacts are not anticipated to be significant, and are discussed in further detail below. Aircraft are anticipated to fly an RNP approach procedure more precisely than the extant RNAV1/ILS procedure. This enhanced navigational accuracy is unlikely to impact those portions of the approach procedure that are a straight line (for RNAV1 navigation standards, aircraft already fly these portions with good precision), but could increase the concentration of aircraft tracks around the turn regions of the approach, most noticeably as aircraft transition from the initial approach onto intermediate approach, and then from intermediate approach onto final approach. As such, the RNP approach procedure may result in some change to noise impacts at these locations. Preliminary aircraft noise comparison data observes that the negative difference in arrival/departure noise, for the largest aircraft associated with this fleet mix change (the Airbus A320neo), when compared to the current fleet mix, is predominantly below the threshold of perceptible change in noise (3dB). Additionally, RNP AR procedures are anticipated to reduce the number of over-flying aircraft (by supporting aircraft with greater passenger capacity, reducing traffic volume). We anticipate the marginal difference between aircraft noise levels, alongside a reduction in the number of over-flying aircraft, would potentially mitigate any noise disbenefit associated with larger aircraft operating to/from LCY, and also any changes to noise impacts resulting from the concentration of aircraft tracks around RNP turn regions. It should also be noted that lateral dispersion around the turn regions will still take place for aircraft on the extant RWY09 RNAV1/ILS approach procedures, and that any concentration of tracks in these areas is associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic.				
B_DP8	**Economics**	Medium		
The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.			MET	Increased cost-effectiveness compared to today's operation
This option could enable airline operators to deploy aircraft with greater capacity, lower seat costs and increased yields than would otherwise be available.				
D_DP9	**Noise**	Medium		
Where options for route design for the airspace change proposal 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.			PARTIAL	Minor and justifiable inconsistencies - Incomplete conformance with existing published airspace arrangements.
This option permits minor lateral variation on the initial and intermediate approach transitions. However, the lateral variation within this option (up to 250m of the centreline) is maintained within the range of lateral dispersion for aircraft on the current RNAV1/ILS approach procedure. As such, no new populations are overflown and the number of people potentially affected by total adverse noise effects is considered to be broadly unchanged.				
B_DP10	**Environment**	Medium		
The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.			MET	Operation of environmentally efficient aircraft is improved compared to today's operation
RNP AR procedures could increase accessibility for a wider range of modern aircraft, enabling new operators to fly from LCY and providing incentive for existing airline operators at LCY to accelerate their refleeting to take advantage of more modern aircraft with greater passenger capacity and increased yields.				
D_DP11	**Other aviation stakeholders**	Low		
The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.			MET	No change in impact or a positive impact
This option would result in no change to other aviation stakeholders.				

Conclusion:	**IA09_Option 2 supports the introduction of RNP AR operations, improving access to a wider range of modern, environmentally efficient aircraft at LCY, enhancing the navigation standard for the approach phase of flight, and creating more capacity whilst remaining compliant with the CADP planning permission and the associated section 106 agreement. This option provides minor lateral variation (up to 250m of the centreline) of the current RWY09 approach path; however this design envelope is consistent with the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure, and no new populations or sites are overflown. Overall, RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts; the marginal difference between aircraft noise levels, alongside a reduction in the number of over-flying aircraft, would potentially mitigate any noise disbenefit associated with larger aircraft (from the fleet mix changes) operating to/from LCY, and also any changes to noise impacts resulting from the concentration of aircraft tracks around RNP turn regions. No extension is anticipated to the current aerodrome/procedure protection areas. This option is considered a promising candidate and has been PROGRESSED to the next stage.**

15.4 (3) IA09_Option 3 - PROGRESSED

IA09_Option 3			Accept & Progress	Assessment
This option represents RWY09 RNP AR initial and intermediate approach transitions which will allow moderate lateral variation from today.				
M_DP1	**Safety**	High	**PARTIAL**	Reduced - Issue(s) identified which could result in an elevated (but manageable) level of safety risk when compared to today's operation
The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.				
This airspace change is not being proposed to address any safety concerns. However, the characteristics of RNP AR approaches are considered to contribute positively to safety, helping to manage residual operational risk. For this option, there may be a requirement to provide mitigation (such as increased controller spacing requirements) for successive arrivals on the different types of arrival procedure i.e. where one aircraft is on an ILS approach and the other is RNP AR, due to the lateral variation in tracks affecting the separation distance between aircraft in the sequence.				
M_DP2	**Policy**	High	**MET**	Consistent with relevant legislation, the CAA's airspace modernisation strategy and Secretary of State and CAA's policy and guidance.
The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.				
This option contributes towards the AMS strategic objectives: 'Integration' - facilitates access to a wider range of aircraft operators, facilitates the integration of different aircraft types, and integrates air traffic by ensuring compatibility between aircraft operating on the existing ILS and aircraft on the proposed RNP approach procedures. 'Simplification' - uses PBN to optimise aircraft performance capabilities, increases network resilience by systemising the approach procedure (reducing the need for controller intervention), increases runway and airport capacity by supporting aircraft types with increased passenger capacity, reduces delays by supporting aircraft types with increased passenger capacity (enabling a reduction in traffic volumes, thereby reducing air traffic delay), increases London Terminal Airspace capacity by reducing traffic volumes. 'Environment' - enables LCY to meet passenger growth, with fewer aircraft movements than the 'do nothing' option. This option contributes to Section 70 of the Transport Act 2000: 'Efficient use of airspace' - ensures the volume and classification of regulated airspace is no bigger/higher than necessary (this airspace change will ensure that no additional controlled airspace is required as a result of this change), it systemises the approach procedure to reduce the number of controller interactions, and reduces overall ATM movements, making the most efficient use of airspace. 'Expeditious flow of air traffic' - reduces delays by supporting aircraft types with increased passenger capacity (enabling a reduction in traffic volumes, and therefore air traffic delay). 'Satisfy the requirements of operators and owners of all classes of aircraft' - enables a greater range of operators to operate at LCY, increasing access and reducing operating costs.				
M_DP3	**Environment**	High	**MET**	Consistent with the Government's Air Navigation Guidance 2017.
The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.				
This option permits moderate lateral variation on the initial and intermediate approach transitions. However, the lateral variation within this option (up to 500m of the centreline) is maintained within the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure. As such, the sites that are currently overflown will remain the same; there are no new National Parks, AONBs, or noise sensitive buildings overflown. No new populations are overflown. RNP AR procedures could increase the operation of more modern, 'quieter', 'cleaner' aircraft at LCY which could improve environmental impacts compared to older aircraft models, due to advancements in airframe design and more fuel-efficient engines which reduce fuel consumption, lower overall emissions of pollutants during flights and reduce noise. The airspace change has the potential to reduce air traffic growth compared with the baseline scenario (through fleet mix changes which support aircraft with greater passenger capacity) which is also anticipated to reduce environmental impacts.				
B_DP4	**Planning permissions**	High	**MET**	No changes required for the airport to meet the conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.
The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.				
This design option enables the introduction of aircraft at LCY with greater passenger capacity supporting a greater reduction in the maximum size of the 9.1km^2 57dB noise contour to 7.2km^2 by 9 million passengers (through a reduction in air traffic growth, and also fleet mix changes to more modern,' quieter' aircraft). Airport infrastructure changes supporting traffic growth over the 2027-2036 time period are agreed within current permissions and include the terminal building and associated infrastructure. No new airport infrastructure requirements are associated with this design option. Under current permissions, the introduction of new aircraft types at LCY requires approval under the Aircraft Noise Categorisation Scheme (ANCS) (which ensures that only aircraft that meet strict noise thresholds are able to operate). The continued application of this scheme ensures that only permissible aircraft operate at LCY, and remains unchanged by this option.				
D_DP5	**Performance based navigation**	High	**MET**	Increased PBN standard compared to today's operation
The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.				
This option introduces RNP AR approaches at LCY, enhancing the navigation standard for the approach phase of flight. The lateral variation within this option (up to 500m of the centreline) provides additional flexibility for the procedure design, which may enable optimisation of the turn regions, improving flyability/manoeuvrability for aircraft on the RNP AR procedure.				
D_DP6	**Local context and circumstances**	High	**MET**	No impact or positive impact
The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.				
This option permits moderate lateral variation on the initial and intermediate approach transitions. However, the lateral variation within this option (up to 500m of the centreline) is maintained within the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure, and as such is not anticipated to significantly change the impact on communities close to the airport. RNP AR procedures are anticipated to reduce air traffic growth at LCY compared with the baseline scenario (by supporting aircraft with greater passenger capacity) which could benefit the local community by reducing the number of aircraft over-flying those proximate to LCY arrival and departure flight paths. Note: there is no change to departure flight paths within this airspace change proposal, however new aircraft types (with greater passenger capacity) may land using the proposed RNP AR approach procedures and would then follow the current (unchanging) procedures on departure. As such, it is anticipated that the required passenger capacity would be achieved with fewer departure flights. The LCY S73 permission provides the additional operational and environmental controls relevant to the predicted increase in passenger numbers and traffic volume with this option. No extension to the current aerodrome/procedure protection areas is required with this design option. The lateral variation within this option could benefit the local community by enabling the development of respite options; this is where different flight paths are used alternately to mitigate the impact of aircraft noise by strategically shifting air traffic over different areas at different times. Stakeholders have expressed a preference for this option, as it provides the potential for respite. Stakeholder feedback has requested consideration of impacts to Wapping; the lateral variation within this option (up to 500m of the centreline) is maintained within the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure. As such, the sites for biodiversity that are currently overflown (including Wapping) will remain the same. However, this airspace change proposal predicts a reduction in traffic growth compared with the baseline scenario (due to new aircraft types with greater passenger capacity), which may reduce the number of aircraft over-flying these locations.				
D_DP7	**Noise**	High	**MET**	Enhanced - Reduction in the total adverse effects from aircraft noise.
The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.				
RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038. Some changes in noise impacts may result from having larger aircraft (from the fleet mix changes) operating to/from LCY, in addition to differences in lateral dispersion, however these impacts are not anticipated to be significant, and are discussed in further detail below. Aircraft are anticipated to fly an RNP approach procedure more precisely than the extant RNAV1/ILS procedure. This enhanced navigational accuracy is unlikely to impact those portions of the approach procedure that are a straight line (for RNAV1 navigation standards, aircraft already fly these portions with good precision), but could increase the concentration of aircraft tracks around the turn regions of the approach, most noticeably as aircraft transition from the initial approach onto intermediate approach, and then from intermediate approach onto final approach. As such, the RNP approach procedure may result in some change to noise impacts at these locations. Preliminary aircraft noise comparison data observes that the negative difference in arrival/departure noise, for the largest aircraft associated with this fleet mix change (the Airbus A320neo), when compared to the current fleet mix, is predominantly below the threshold of perceptible change in noise (3dB). Additionally, RNP AR procedures are anticipated to reduce the number of over-flying aircraft (by supporting aircraft with greater passenger capacity, reducing traffic volume). We anticipate the marginal difference between aircraft noise levels, alongside a reduction in the number of over-flying aircraft, would potentially mitigate any noise disbenefit associated with larger aircraft operating to/from LCY, and also any changes to noise impacts resulting from the concentration of aircraft tracks around RNP turn regions. It should also be noted that lateral dispersion around the turn regions will still take place for aircraft on the extant RWY09 RNAV1/ILS approach procedures, and that any concentration of tracks in these areas is associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic.				
B_DP8	**Economics**	Medium	**MET**	Increased cost-effectiveness compared to today's operation
The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.				
This option could enable airline operators to deploy aircraft with greater capacity, lower seat costs and increased yields than would otherwise be available.				
D_DP9	**Noise**	Medium	**PARTIAL**	Minor and justifiable inconsistencies - Incomplete conformance with existing published airspace arrangements.
Where options for route design for the airspace change proposal 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.				
This option permits moderate lateral variation on the initial and intermediate approach transitions. However, the lateral variation within this option (up to 500m of the centreline) is maintained within the range of lateral dispersion for aircraft on the current RNAV1/ILS approach procedure. As such, no new populations are overflown and the number of people potentially affected by total adverse noise effects is considered to be broadly unchanged. The lateral variation within this option could benefit the local community by enabling the development of respite options; this is where different flight paths are used alternately to mitigate the impact of aircraft noise by strategically shifting air traffic over different areas at different times.				
B_DP10	**Environment**	Medium	**MET**	Operation of environmentally efficient aircraft is improved compared to today's operation
The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.				
RNP AR procedures could increase accessibility for a wider range of modern aircraft, enabling new operators to fly from LCY and providing incentive for existing airline operators at LCY to accelerate their refleeting to take advantage of more modern aircraft with greater passenger capacity and increased yields.				
D_DP11	**Other aviation stakeholders**	Low	**MET**	No change in impact or a positive impact
The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.				
This option would result in no change to other aviation stakeholders.				

Conclusion:	**IA09_Option 3 supports the introduction of RNP AR operations, improving access to a wider range of modern, environmentally efficient, aircraft at LCY, enhancing the navigation standard for the approach phase of flight, and creating more capacity whilst remaining compliant with the CADP planning permission and the associated section 106 agreement. This option provides moderate lateral variation (up to 500m of the centreline) of the current RWY09 approach path; however this design envelope is consistent with the range of lateral dispersion for aircraft on the current RWY09 RNAV1/ILS approach procedure, and no new populations or sites are overflown. Overall, RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts; the marginal difference between aircraft noise levels, alongside a reduction in the number of over-flying aircraft, would potentially mitigate any noise disbenefit associated with larger aircraft (from the fleet mix changes) operating to/from LCY, and also any changes to noise impacts resulting from the concentration of aircraft tracks around RNP turn regions. Additionally, the lateral variation within this option could benefit the local community by enabling the development of respite options; this is where different flight paths are used alternately to mitigate the impact of aircraft noise by strategically shifting air traffic over different areas at different times. No extension is anticipated to the current aerodrome/procedure protection areas. This option is considered a promising candidate and has been PROGRESSED to the next stage.**

15.5 (4) FA09_Option 1 – PROGRESSED

FA09_Option 1			Accept & Progress	Assessment
This option represents RWY09 RNP AR 4.49° - 4.40° final approach path				
M_DP1	Safety	High		
The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.				
This airspace change is not being proposed to address any safety concerns. However, the characteristics of RNP AR approaches are considered to contribute positively to safety, helping to manage residual operational risk. For this option, there may be a requirement to provide mitigation (such as increased controller spacing requirements) for successive arrivals on the different types of arrival procedure i.e. where one aircraft is on an ILS approach and the other is RNP AR, due to aircraft on the shallower approach reducing their speed earlier in the procedure to facilitate their descent. Additionally, there may be a potential minor change in impact (not safety critical) for helicopter procedures following the H4 helicopter route (from the Isle of dogs to Vauxhall Bridge along the Thames); a change in the ToD for final approach could require the current procedures regarding Helicopter transits to be reviewed. Stakeholder feedback has raised concerns for a potential increase in TCAS nuisance alerts associated with a shallower approach path for RWY09 which will need to be assessed in the Stage 3 safety work. It is not anticipated that the heights and movements of vessels in the Thames will be impacted for this design option, however further assessment of the impact of the design on shipping operations will be included in the Stage 3 safety work.			PARTIAL	Reduced - Issue(s) identified which could result in an elevated (but manageable) level of safety risk when compared to today's operation
M_DP2	Policy	High		
The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.				
This option contributes towards the AMS strategic objectives: "Integration" - facilitates access to a wider range of aircraft operators, facilitates the integration of different aircraft types, and integrates air traffic by ensuring compatibility between aircraft operating on the existing ILS and aircraft on the proposed RNP approach procedures. "Simplification" - uses PBN to optimise aircraft performance capabilities, increases network resilience by systemising the approach procedure (reducing the need for controller intervention), increases runway and airport capacity by supporting aircraft types with increased passenger capacity, reduces delays by supporting aircraft types with increased passenger capacity (enabling a reduction in traffic volumes, thereby reducing air traffic delay), increases London Terminal Airspace capacity by reducing traffic volumes. "Environment" - enables LCY to meet passenger growth, with fewer aircraft movements than the 'do nothing' option. This option contributes to Section 70 of the Transport Act 2000: 'Efficient use of airspace' - ensures the volume and classification of regulated airspace is no bigger/higher than necessary (this airspace change will ensure that no additional controlled airspace is required as a result of this change), it systemises the approach procedure to reduce the number of controller interactions, and reduces overall ATM movements, making the most efficient use of airspace. 'Expeditious flow of air traffic' - reduces delays by supporting aircraft types with increased passenger capacity (enabling a reduction in traffic volumes, and therefore air traffic delay). 'Satisfy the requirements of operators and owners of all classes of aircraft' - enables a greater range of operators to operate at LCY, increasing access and reducing operating costs.			MET	Consistent with relevant legislation, the CAA's airspace modernisation strategy and Secretary of State and CAA's policy and guidance.
M_DP3	Environment	High		
The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.				
In this option, the portion of the approach path between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile. As such, the sites that are currently overflown will remain the same; there are no new National Parks, AONBs, or noise sensitive buildings overflown. No new populations are overflown. It is noted that the area impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). As such, the sites that are currently overflown will remain the same, however the area overflown (by aircraft on the RNP AR procedure) may be reduced. RNP AR procedures could increase the operation of more modern, 'quieter', 'cleaner' aircraft at LCY which could improve environmental impacts compared to older aircraft models, due to advancements in airframe design and more fuel-efficient engines which reduce fuel consumption, lower overall emissions of pollutants during flights and reduce noise. The airspace change has the potential to reduce air traffic growth compared with the baseline scenario (through fleet mix changes which support aircraft with greater passenger capacity) which is also anticipated to reduce environmental impacts.			MET	Consistent with the Government's Air Navigation Guidance 2017.
B_DP4	Planning permissions	High		
The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.				
The Noise Action Plan (NAP) references a 5.5° approach as a quiet operating procedure; however, a 5.5° approach is not a conditional requirement under the CADP permission. Revision of the NAP can take place during the implementation . Revision of the NAP can take place during the implementation for this design option if required. Note: the 5.5° approach is retained for all aircraft operating on current the ILS approach. This design option enables the introduction of aircraft at LCY with greater passenger capacity supporting a greater reduction in the maximum size of the 9.1km^2 57dB noise contour to 7.2km^2 by 9 million passengers (through a reduction in air traffic growth, and also fleet mix changes to more modern,' quieter' aircraft). Airport infrastructure changes supporting traffic growth over the 2027-2036 time period are agreed within current permissions and include the terminal building and associated infrastructure. No new airport infrastructure requirements are associated with this design option. Under current permissions, the introduction of new aircraft types at LCY requires approval under the Aircraft Noise Categorisation Scheme (ANCS) (which ensures that only aircraft that meet strict noise thresholds are able to operate). The continued application of this scheme ensures that only permissible aircraft operate at LCY, and remains unchanged by this option.			PARTIAL	No significant environmental impact - Minor change(s) required for the airport to meet the conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.
D_DP5	Performance based navigation	High		
The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.			MET	Increased PBN standard compared to today's operation
This option introduces RNP AR approaches at LCY, enhancing the navigation standard for the approach phase of flight.				
D_DP6	Local context and circumstances	High		
The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.				
In this option, the portion of approach path between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile, and therefore no new populations or sites are overflown. However, the vertical distance is reduced (at the maximum point) up to 375ft (114m), which may result in some change to noise impacts for communities close to the final descent area; for a detailed discussion of noise impacts, see D_DP7. Additionally, in the 2027-2036 timeframe, property development and population growth proximate to the RWY09 final approach path (adding approximately 35,000 people to the region) is anticipated. The LCY S73 permission provides the additional operational and environmental controls relevant to the predicted increase in passenger numbers and traffic volume with this option. Whilst the parameters for the new RNP AR procedures are not yet established, impacts to the aerodrome/procedure protection area are provided as an approximation only; we anticipate minor impact to the current aerodrome/procedure protection areas with this design option. A small lateral volume (extending the current protection area by approximately 185m at the widest part, and then tapering to zero) may be required approximately 2.5NM from the RWY09 threshold. Stakeholder feedback has requested consideration of impacts to Wapping, for this design option the proposed ToD point will reposition where aircraft commence their final descent to a location overhead St. Katharine's & Wapping. The difference in vertical distance over this location is likely to be minimal (less than 60ft) as it is the start of the descent profile and therefore environmental impacts are considered to be broadly unchanged.			PARTIAL	Manageable impact and not safety critical
D_DP7	Noise	High		
The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.				
RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038. Some changes in noise impacts may result from having larger aircraft (from the fleet mix changes) operating to/from LCY, in addition to differences in vertical distance, however these impacts are not anticipated to be significant, and are discussed in further detail below. In this option the portion of approach between the proposed ToD and the current ToD, follows the same track as today; there is no change to the lateral profile, and therefore no new populations or sites are overflown. However, the vertical distance is reduced (at the maximum point) up to 375ft (114m), which may result in some change to noise impacts for communities close to the final descent area. Preliminary aircraft noise comparison data observes that the negative difference in arrival/departure noise, for the largest aircraft associated with this fleet mix change (the Airbus A320neo), when compared to the current fleet mix, is predominantly below the threshold of perceptible change in noise (3dB). Additionally, RNP AR procedures are anticipated to reduce the number of over-flying aircraft (by supporting aircraft with greater passenger capacity, reducing traffic volume). It noted that aircraft on a shallower approach angle generally require a lower thrust than a steeper approach; this is due to the relationship between lift, drag, and thrust, where a shallower angle allows for a more efficient use of lift and drag to control descent rate, minimizing the need for continuous engine thrust to maintain the glide path. It is also noted that the population size impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). (Population size impacted by aircraft on the extant RWY09 RNAV1/ILS approach procedures remains unchanged, any reduction in population overflown is associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic). Aircraft are anticipated to fly an RNP approach procedure more precisely than the extant RNAV1/ILS procedure. The enhanced navigational accuracy is unlikely to affect noise impacts for this design option, as this portion of the approach procedure is a straight line (for RNAV1 navigation standards, aircraft already fly these portions with good precision). It is therefore considered that lower, and potentially quieter, thrust settings, in addition to a reduction in the number of over-flying aircraft and population overflown, and the marginal difference between aircraft noise levels, would potentially mitigate any noise disbenefit associated with larger aircraft operating to/from LCY, and also any changes to noise impacts associated with the shallower approach profile.			MET	Enhanced - Reduction in the total adverse effects from aircraft noise.
B_DP8	Economics	Medium		
The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.			MET	Increased cost-effectiveness compared to today's operation
This option could enable airline operators to deploy aircraft with greater capacity, lower seat costs and increased yields than would otherwise be available.				
D_DP9	Noise	Medium		
Where options for route design for the airspace change proposal 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.			MET	Consistent with existing published airspace arrangements.
This option is considered to be consistent with existing published airspace arrangements; it follows the same lateral track as today.				
B_DP10	Environment	Medium		
The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.			MET	Operation of environmentally efficient aircraft is improved compared to today's operation
RNP AR procedures could increase accessibility for a wider range of modern aircraft, enabling new operators to fly from LCY and providing incentive for existing airline operators at LCY to accelerate their refleeting to take advantage of more modern aircraft with greater passenger capacity and increased yields.				
D_DP11	Other aviation stakeholders	Low		
The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.			PARTIAL	Minor change in impact, but not safety critical
Potential minor change in impact (not safety critical) for helicopter procedures following the H4 helicopter route (from the Isle of dogs to Vauxhall Bridge along the Thames); a change in the ToD for final approach could require the current procedures regarding Helicopter transits to be reviewed. Stakeholder feedback has requested consideration of the impacts on Vertiports, drone and UAV operations. To prevent interference with aircraft operations and ensure the safety of passengers and personnel, UAV and drone operations near to the airport will continue to require permission, and the airspace will remain restricted (as today) to these activities. Vertiport operations are not considered part of LCY operations at this time.				

Conclusion:	**FA09_Option 1 supports the introduction of RNP AR operations, improving access to a wider range of modern, environmentally efficient, aircraft at LCY, enhancing the navigation standard for the approach phase of flight, and creating more capacity. This option is consistent with the conditions and obligations attached to the CADP planning permissions, however the Noise Action Plan pursuant to the permission may require updating to ensure consistency with the updated Quiet Operating Procedures. This option represents a shallower RWY09 4.49° - 4.40° final approach path which may result in some change to noise impacts for communities close to the final descent area. Overall, RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts; lower, and potentially quieter, thrust settings, in addition to a reduction in traffic volume and population overflown, would potentially mitigate any noise disbenefit associated with larger aircraft (from the fleet mix changes) operating to/from LCY, and also any changes to noise impacts associated with the shallower approach profile. We anticipate minor impact to the current aerodrome/procedure protection areas with this design option. This option is considered a promising candidate and has been PROGRESSED to the next stage.**

15.6 (5) FA27_Option 1 – PROGRESSED

FA27_Option 1			Accept & Progress	Assessment
This option represents RWY27 RNP AR 4.49° - 4.05° final approach path				
M_DP1	**Safety**	High	**PARTIAL**	Reduced - Issue(s) identified which could result in an elevated (but manageable) level of safety risk when compared to today's operation
The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.				
This airspace change is not being proposed to address any safety concerns. However, the characteristics of RNP AR approaches are considered to contribute positively to safety, helping to manage residual operational risk. For this option, there may be a requirement to provide mitigation (such as increased controller spacing requirements) for successive arrivals on the different types of arrival procedure i.e. where one aircraft is on an ILS approach and the other is RNP AR, due to aircraft on the shallower approach reducing their speed earlier in the procedure to facilitate their descent. It is not anticipated that the heights and movements of vessels in the Thames will be impacted for this design option, however further assessment of the impact of the design on shipping operations will be included in the Stage 3 safety work.				
M_DP2	**Policy**	High	**MET**	Consistent with relevant legislation, the CAA's airspace modernisation strategy and Secretary of State and CAA's policy and guidance.
The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.				
This option contributes towards the AMS strategic objectives: "Integration" - facilitates access to a wider range of aircraft operators, facilitates the integration of different aircraft types, and integrates air traffic by ensuring compatibility between aircraft operating on the existing ILS and aircraft on the proposed RNP approach procedures. "Simplification" - uses PBN to optimise aircraft performance capabilities, increases network resilience by systemising the approach procedure (reducing the need for controller intervention), increases runway and airport capacity by supporting aircraft types with increased passenger capacity, reduces delays by supporting aircraft types with increased passenger capacity (enabling a reduction in traffic volumes, thereby reducing air traffic delay), increases London Terminal Airspace capacity by reducing traffic volumes. "Environment" - enables LCY to meet passenger growth, with fewer aircraft movements than the 'do nothing' option. This option contributes to Section 70 of the Transport Act 2000: "Efficient use of airspace" - ensures the volume and classification of regulated airspace is no bigger/higher than necessary (this airspace change will ensure that no additional controlled airspace is required as a result of this change), it systemises the approach procedure to reduce the number of controller interactions, and reduces overall ATM movements, making the most efficient use of airspace. "Expeditious flow of air traffic" - reduces delays by supporting aircraft types with increased passenger capacity (enabling a reduction in traffic volumes, and therefore air traffic delay). "Satisfy the requirements of operators and owners of all classes of aircraft" - enables a greater range of operators to operate at LCY, increasing access and reducing operating costs.				
M_DP3	**Environment**	High	**MET**	Consistent with the Government's Air Navigation Guidance 2017.
The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.				
In this option, the portion of the approach path between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile. As such, the sites that are currently overflown will remain the same; there are no new National Parks, AONBs, or noise sensitive buildings overflown. No new populations are overflown. It is noted that the area impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). As such, the sites that are currently overflown will remain the same, however the area overflown (by aircraft on the RNP AR procedure) may be reduced. RNP AR procedures could increase the operation of more modern, 'quieter', 'cleaner' aircraft at LCY which could improve environmental impacts compared to older aircraft models, due to advancements in airframe design and more fuel-efficient engines which reduce fuel consumption, lower overall emissions of pollutants during flights and reduce noise. The airspace change has the potential to reduce air traffic growth compared with the baseline scenario (through fleet mix changes which support aircraft with greater passenger capacity) which is also anticipated to reduce environmental impacts.				
B_DP4	**Planning permissions**	High	**PARTIAL**	No significant environmental impact - Minor change(s) required for the airport to meet the conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.
The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.				
The Noise Action Plan (NAP) references a 5.5° approach as a quiet operating procedure; however, a 5.5° approach is not a conditional requirement under the CADP permission. Revision of the NAP can take place during the implementation . Revision of the NAP can take place during the implementation for this design option if required. Note: the 5.5° approach is retained for all aircraft operating on current the ILS approach. This design option enables the introduction of aircraft at LCY with greater passenger capacity supporting a greater reduction in the maximum size of the 9.1km^2 57dB noise contour to 7.2km^2 by 9 million passengers (through a reduction in air traffic growth, and also fleet mix changes to more modern, 'quieter' aircraft). Airport infrastructure changes supporting traffic growth over the 2027-2036 time period are agreed within current permissions and include the terminal building and associated infrastructure. No new airport infrastructure requirements are associated with this design option. Under current permissions, the introduction of new aircraft types at LCY requires approval under the Aircraft Noise Categorisation Scheme (ANCS) (which ensures that only aircraft that meet strict noise thresholds are able to operate). The continued application of this scheme ensures that only permissible aircraft operate at LCY, and remains unchanged by this option.				
D_DP5	**Performance based navigation**	High	**MET**	Increased PBN standard compared to today's operation
The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.				
This option introduces RNP AR approaches at LCY, enhancing the navigation standard for the approach phase of flight.				
D_DP6	**Local context and circumstances**	High	**PARTIAL**	Manageable impact and not safety critical
The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.				
In this option, the portion of approach path between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile, and therefore no new populations or sites are overflown. However the vertical distance is reduced (at the maximum point) up to 740ft (226m), which may result in some change to noise impacts for communities close to the final descent area; for a detailed discussion of noise impacts, see D_DP7. Additionally, in the 2027-2036 timeframe, property development and population growth proximate to the RWY27 final approach path (adding approximately 44,000 people to the region) is anticipated. The LCY S73 permission provides the additional operational and environmental controls relevant to the predicted increase in passenger numbers and traffic volume with this option. Whilst the parameters for the new RNP AR procedures are not yet established, impacts to the aerodrome/procedure protection area are provided as an approximation only; we anticipate minor impact to the current aerodrome/procedure protection areas with this design option. A small lateral volume (extending the current protection area by approximately 185m at the widest part, and then tapering to zero) may be required approximately 2.5NM from the RWY27 threshold. Stakeholder feedback has expressed a preference for this RWY27 design option, as it supports the RNP concept whilst maintaining arrivals as high as possible for as long as possible. Stakeholder feedback has requested consideration of impacts to the Rainham Marshes; for this design option the proposed ToD point will reposition where aircraft commence their final descent to a location approximately 1.1NM to 1.7NM east of its current position. The difference in vertical distance as aircraft fly abeam the Rainham Marshes is likely to be a maximum of 250ft (for this design option). For RWY27 aircraft commence the descent from 3,000ft, and therefore the difference in vertical distance (at this height) is considered unlikely to result in any changes to environmental impacts. Aircraft will be above the altitude that would be considered a risk for bird strikes (which is generally below 2000ft).				
D_DP7	**Noise**	High	**MET**	Enhanced - Reduction in the total adverse effects from aircraft noise.
The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.				
RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts over the short-term period (1-5 years) through the increased, and accelerated, operation of more modern, environmentally efficient, aircraft. This reduction in noise impacts is anticipated to be broadly maintained through the 10 year timeframe, followed by subsequent longer term (>10 years) noise benefits once more significant reductions in overall traffic volumes are achieved by 2038. Some changes in noise impacts may result from having larger aircraft (from the fleet mix changes) operating to/from LCY, in addition to differences in vertical distance, however these impacts are not anticipated to be significant, and are discussed in further detail below. In this option, the portion of approach between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile and therefore no new populations or sites are overflown. The portion of approach between the proposed ToD and the current ToD does not impact any populated areas. However, the vertical distance is reduced (at the maximum point) up to 740ft (226m), which may result in some change to noise impacts for communities close to the final descent area. Preliminary aircraft noise comparison data observes that the negative difference in arrival/departure noise, for the largest aircraft associated with this fleet mix change (the Airbus A320neo), when compared to the current fleet mix, is predominantly below the threshold of perceptible change in noise (3dB). Additionally, RNP AR procedures are anticipated to reduce the number of over-flying aircraft (by supporting aircraft with greater passenger capacity, reducing traffic volume). It noted that aircraft on a shallower approach angle generally require a lower thrust than a steeper approach; this is due to the relationship between lift, drag, and thrust, where a shallower angle allows for a more efficient use of lift and drag to control descent rate, minimizing the need for continuous engine thrust to maintain the glide path. It is also noted that the population size impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). (Population size impacted by aircraft on the extant RWY09 RNAV1/ILS approach procedures remains unchanged, any reduction in population overflown is associated with RNP aircraft on the new RNP AR procedure only, which represent approximately 50% of the arrival traffic). Aircraft are anticipated to fly an RNP approach procedure more precisely than the extant RNAV1/ILS procedure. The enhanced navigational accuracy is unlikely to affect noise impacts for this design option, as this portion of the approach procedure is a straight line (for RNAV1 navigation standards, aircraft already fly these portions with good precision). It is therefore considered that lower, and potentially quieter, thrust settings, in addition to a reduction in the number of over-flying aircraft and population overflown, would potentially mitigate any noise disbenefit associated with larger aircraft operating to/from LCY, and also any changes to noise impacts associated with the shallower approach profile.				
B_DP8	**Economics**	Medium	**MET**	Increased cost-effectiveness compared to today's operation
The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.				
This option could enable airline operators to deploy aircraft with greater capacity, lower seat costs and increased yields than would otherwise be available.				
D_DP9	**Noise**	Medium	**MET**	Consistent with existing published airspace arrangements.
Where options for route design for the airspace change proposal 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.				
This option is considered to be consistent with existing published airspace arrangements; it follows the same lateral track as today.				
B_DP10	**Environment**	Medium	**MET**	Operation of environmentally efficient aircraft is improved compared to today's operation
The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.				
RNP AR procedures could increase accessibility for a wider range of modern aircraft, enabling new operators to fly from LCY and providing incentive for existing airline operators at LCY to accelerate their refleeting to take advantage of more modern aircraft with greater passenger capacity and increased yields.				
D_DP11	**Other aviation stakeholders**	Low	**MET**	No change in impact or a positive impact
The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.				
Stakeholder feedback has requested consideration of the impacts on Vertiports, drone and UAV operations. To prevent interference with aircraft operations and ensure the safety of passengers and personnel, UAV and drone operations near to the airport will continue to require permission, and the airspace will remain restricted (as today) to these activities. Vertiport operations are not considered part of LCY operations at this time. This option would result in no change to other aviation stakeholders.				

Conclusion:	**FA27_Option 1 supports the introduction of RNP AR operations, improving access to a wider range of modern, environmentally efficient, aircraft at LCY, enhancing the navigation standard for the approach phase of flight, and creating more capacity.This option is consistent with the conditions and obligations attached to the CADP planning permissions, however the Noise Action Plan pursuant to the permission may require updating to ensure consistency with the updated Quiet Operating Procedures. This option represents a shallower RWY27 4.49° - 4.05° final approach path which may result in some change to noise impacts for communities close to the final descent area. Overall, RNP AR procedures are anticipated to contribute positively to a reduction in noise impacts; lower, and potentially quieter, thrust settings, in addition to a reduction in traffic volume and population overflown, would potentially mitigate any noise disbenefit associated with larger aircraft (from the fleet mix changes) operating to/from LCY, and also any changes to noise impacts associated with the shallower approach profile. We anticipate minor impact to the current aerodrome/procedure protection areas with this design option. This option is considered a promising candidate and has been PROGRESSED to the next stage.**

15.7 (6) FA27_Option 2 – REJECTED

FA27_Option 2			REJECT	Assessment
This option represents RWY27 RNP AR 4.05° - 3.75° final approach path				
M_DP1	**Safety**	High	PARTIAL	Reduced - Issue(s) identified which could result in an elevated (but manageable) level of safety risk when compared to today's operation
The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.				
This airspace change is not being proposed to address any safety concerns. However, the characteristics of RNP AR approaches are considered to contribute positively to safety, helping to manage residual operational risk. For this option, there may be a requirement to provide mitigation (such as increased controller spacing requirements) for successive arrivals on the different types of arrival procedure i.e. where one aircraft is on an ILS approach and the other is RNP AR, due to aircraft on the shallower approach reducing their speed earlier in the procedure to facilitate their descent. It is not anticipated that the heights and movements of vessels in the Thames will be impacted for this design option, however further assessment of the impact of the design on shipping operations will be included in the Stage 3 safety work.				
M_DP2	**Policy**	High	MET	Consistent with relevant legislation, the CAA's airspace modernisation strategy and Secretary of State and CAA's policy and guidance.
The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.				
This option contributes towards the AMS strategic objectives: "Integration" - facilitates access to a wider range of aircraft operators, facilitates the integration of different aircraft types, and integrates air traffic by ensuring compatibility between aircraft operating on the existing ILS and aircraft on the proposed RNP approach procedures. "Simplification" - uses PBN to optimise aircraft performance capabilities, increases network resilience by systemising the approach procedure (reducing the need for controller intervention), increases runway and airport capacity by supporting aircraft types with increased passenger capacity, reduces delays by supporting aircraft types with increased passenger capacity (enabling a reduction in traffic volumes, thereby reducing air traffic delay), increases London Terminal Airspace capacity by reducing traffic volumes. "Environment" - enables LCY to meet passenger growth, with fewer aircraft movements than the 'do nothing' option. This option contributes to Section 70 of the Transport Act 2000: "Efficient use of airspace" - ensures the volume and classification of regulated airspace is no bigger/higher than necessary (this airspace change will ensure that no additional controlled airspace is required as a result of this change), it systemises the approach procedure to reduce the number of controller interactions, and reduces overall ATM movements, making the most efficient use of airspace. "Expeditious flow of air traffic" - reduces delays by supporting aircraft types with increased passenger capacity (enabling a reduction in traffic volumes, and therefore air traffic delay). "Satisfy the requirements of operators and owners of all classes of aircraft" - enables a greater range of operators to operate at LCY, increasing access and reducing operating costs.				
M_DP3	**Environment**	High	MET	Consistent with the Government's Air Navigation Guidance 2017.
The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.				
In this option, the portion of the approach path between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile. As such, the sites that are currently overflown will remain the same; there are no new National Parks, AONBs, or noise sensitive buildings overflown. No new populations are overflown. It is noted that the area impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). As such, the sites that are currently overflown will remain the same, however the area overflown (by aircraft on the RNP AR procedure) may be reduced. RNP AR procedures could increase the operation of more modern, 'quieter', 'cleaner' aircraft at LCY which could improve environmental impacts compared to older aircraft models, due to advancements in airframe design and more fuel-efficient engines which reduce fuel consumption, lower overall emissions of pollutants during flights and reduce noise. The airspace change has the potential to reduce air traffic growth compared with the baseline scenario (through fleet mix changes which support aircraft with greater passenger capacity) which is also anticipated to reduce environmental impacts.				
B_DP4	**Planning permissions**	High	PARTIAL	No significant environmental impact - Minor change(s) required for the airport to meet the conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.
The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.				
The Noise Action Plan (NAP) references a 5.5° approach as a quiet operating procedure; however, a 5.5° approach is not a conditional requirement under the CADP permission. Revision of the NAP can take place during the implementation Revision of the NAP can take place during the implementation for this design option if required. Note: the 5.5° approach is retained for all aircraft operating on current the ILS approach. This design option enables the introduction of aircraft at LCY with greater passenger capacity supporting a greater reduction in the maximum size of the 9.1km^2 57dB noise contour to 7.2km^2 by 9 million passengers (through a reduction in air traffic growth, and also fleet mix changes to more modern,' quieter' aircraft). Airport infrastructure changes supporting traffic growth over the 2027-2036 time period are agreed within current permissions and include the terminal building and associated infrastructure. No new airport infrastructure requirements are associated with this design option. Under current permissions, the introduction of new aircraft types at LCY requires approval under the Aircraft Noise Categorisation Scheme (ANCS) (which ensures that only aircraft that meet strict noise thresholds are able to operate). The continued application of this scheme ensures that only permissible aircraft operate at LCY, and remains unchanged by this option.				
D_DP5	**Performance based navigation**	High	MET	Increased PBN standard compared to today's operation
The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.				
This option introduces RNP AR approaches at LCY, enhancing the navigation standard for the approach phase of flight.				
D_DP6	**Local context and circumstances**	High	NOT MET	Insupportable or safety critical impact
The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.				
The Obstacle Limitation Surface (OLS) protection area remaining unchanged is a key concern for local authorities and property developers; changes to the approach path down to 4° are considered to support the existing OLS. As such, this option, which reduces the approach angle below 4°, may require a consequential change to the OLS (as the OLS would no longer include the area of protection for the new RNP AR procedure) which could impact property development in this area.				
D_DP7	**Noise**	High	NOT MET	Significant change to the total adverse effects from aircraft noise.
The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.				
In this option, the portion of approach between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile and therefore no new populations are overflown. However, the vertical distance is reduced (at the maximum point) up to 925ft (282m), and the proposed ToD point will reposition where aircraft commence their final descent to a location over the village of Averley (population approximately 10,000 people). The vertical profile difference for this option is sizeable, and therefore the likelihood of experiencing adverse noise effects could be increased such that consideration would need to be given to mitigating and minimising those effects.				
B_DP8	**Economics**	Medium	MET	Increased cost-effectiveness compared to today's operation
The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.				
This option could enable airline operators to deploy aircraft with greater capacity, lower seat costs and increased yields than would otherwise be available.				
D_DP9	**Noise**	Medium	MET	Consistent with existing published airspace arrangements.
Where options for route design for the airspace change proposal 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.				
This option is considered to be consistent with existing published airspace arrangements; it follows the same lateral track as today.				
B_DP10	**Environment**	Medium	MET	Operation of environmentally efficient aircraft is improved compared to today's operation
The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.				
RNP AR procedures could increase accessibility for a wider range of modern aircraft, enabling new operators to fly from LCY and providing incentive for existing airline operators at LCY to accelerate their refleeting to take advantage of more modern aircraft with greater passenger capacity and increased yields.				
D_DP11	**Other aviation stakeholders**	Low	MET	No change in impact or a positive impact
The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.				
Stakeholder feedback has requested consideration of the impacts on Vertiports, drone and UAV operations. To prevent interference with aircraft operations and ensure the safety of passengers and personnel, UAV and drone operations near to the airport will continue to require permission, and the airspace will remain restricted (as today) to these activities. Vertiport operations are not considered part of LCY operations at this time. This option would result in no change to other aviation stakeholders.				

Conclusion:	**FA27_Option 2 represents a shallower RWY27 4.05° - 3.75° final approach path which may require some changes to the existing OLS protection area, and also may lead to an increase in the total adverse effects from aircraft noise. 2 DPs are NOT MET (both of which are priority HIGH), and 2 DPs are PARTIAL (both of which are priority HIGH), hence this option was REJECTED and will not be progressed.**

15.8 (7) FA27_Option 3 – REJECTED

FA27_Option 3			REJECT	Assessment
This option represents RWY27 RNP AR 3.75° - 3.50° final approach path				
M_DP1	Safety	High	PARTIAL	Reduced - Issue(s) identified which could result in an elevated (but manageable) level of safety risk when compared to today's operation
The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.				
This airspace change is not being proposed to address any safety concerns. However, the characteristics of RNP AR approaches are considered to contribute positively to safety, helping to manage residual operational risk. For this option, there may be a requirement to provide mitigation (such as increased controller spacing requirements) for successive arrivals on the different types of arrival procedure i.e. where one aircraft is on an ILS approach and the other is RNP AR, due to aircraft on the shallower approach reducing their speed earlier in the procedure to facilitate their descent. It is not anticipated that the heights and movements of vessels in the Thames will be impacted for this design option, however further assessment of the impact of the design on shipping operations will be included in the Stage 3 safety work.				
M_DP2	Policy	High	MET	Consistent with relevant legislation, the CAA's airspace modernisation strategy and Secretary of State and CAA's policy and guidance.
The airspace change proposal should not be inconsistent with relevant legislation, the CAA's airspace modernisation strategy or Secretary of State and CAA's policy and guidance.				
This option contributes towards the AMS strategic objectives: "Integration" - facilitates access to a wider range of aircraft operators, facilitates the integration of different aircraft types, and integrates air traffic by ensuring compatibility between aircraft operating on the existing ILS and aircraft on the proposed RNP approach procedures. "Simplification" - uses PBN to optimise aircraft performance capabilities, increases network resilience by systemising the approach procedure (reducing the need for controller intervention), increases runway and airport capacity by supporting aircraft types with increased passenger capacity, reduces delays by supporting aircraft types with increased passenger capacity (enabling a reduction in traffic volumes, thereby reducing air traffic delay), increases London Terminal Airspace capacity by reducing traffic volumes. "Environment" - enables LCY to meet passenger growth, with fewer aircraft movements than the 'do nothing' option. This option contributes to Section 70 of the Transport Act 2000: "Efficient use of airspace" - ensures the volume and classification of regulated airspace is no bigger/higher than necessary (this airspace change will ensure that no additional controlled airspace is required as a result of this change), it systemises the approach procedure to reduce the number of controller interactions, and reduces overall ATM movements, making the most efficient use of airspace. "Expeditious flow of air traffic" - reduces delays by supporting aircraft types with increased passenger capacity (enabling a reduction in traffic volumes, and therefore air traffic delay). "Satisfy the requirements of operators and owners of all classes of aircraft" - enables a greater range of operators to operate at LCY, increasing access and reducing operating costs.				
M_DP3	Environment	High	MET	Consistent with the Government's Air Navigation Guidance 2017.
The airspace change proposal should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance 2017.				
In this option, the portion of the approach path between the proposed ToD and the current ToD follows the same track as today, there is no change to the lateral profile. As such, the sites that are currently overflown will remain the same; there are no new National Parks, AONBs, or noise sensitive buildings overflown. No new populations are overflown. It is noted that the area impacted by aircraft overflying a region, reduces as aircraft are closer to the ground (CAP1498, Definition of Overflight). As such, the sites that are currently overflown will remain the same, however the area overflown (by aircraft on the RNP AR procedure) may be reduced. RNP AR procedures could increase the operation of more modern, 'quieter', 'cleaner' aircraft at LCY which could improve environmental impacts compared to older aircraft models, due to advancements in airframe design and more fuel-efficient engines which reduce fuel consumption, lower overall emissions of pollutants during flights and reduce noise. The airspace change has the potential to reduce air traffic growth compared with the baseline scenario (through fleet mix changes which support aircraft with greater passenger capacity) which is also anticipated to reduce environmental impacts.				
B_DP4	Planning permissions	High	PARTIAL	No significant environmental impact - Minor change(s) required for the airport to meet the conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.
The airspace change should not inhibit the ability for the airport to meet its conditional and legal obligations contained within the City Airport Development Programme ('CADP') planning permission and the associated section 106 agreement.				
The Noise Action Plan (NAP) references a 5.5° approach as a quiet operating procedure; however, a 5.5° approach is not a conditional requirement under the CADP permission. Revision of the NAP can take place during the implementation . Revision of the NAP can take place during the implementation for this design option if required. Note: the 5.5° approach is retained for all aircraft operating on current the ILS approach. This design option enables the introduction of aircraft at LCY with greater passenger capacity supporting a greater reduction in the maximum size of the 9.1km^2 57dB noise contour to 7.2km^2 by 9 million passengers (through a reduction in air traffic growth, and also fleet mix changes to more modern,' quieter' aircraft). Airport infrastructure changes supporting traffic growth over the 2027-2036 time period are agreed within current permissions and include the terminal building and associated infrastructure. No new airport infrastructure requirements are associated with this design option. Under current permissions, the introduction of new aircraft types at LCY requires approval under the Aircraft Noise Categorisation Scheme (ANCS) (which ensures that only aircraft that meet strict noise thresholds are able to operate). The continued application of this scheme ensures that only permissible aircraft operate at LCY, and remains unchanged by this option.				
D_DP5	Performance based navigation	High	MET	Increased PBN standard compared to today's operation
The airspace change proposal should enable efficiency benefits by using an appropriate and, where possible, optimised standard of performance-based navigation.				
This option introduces RNP AR approaches at LCY, enhancing the navigation standard for the approach phase of flight.				
D_DP6	Local context and circumstances	High	NOT MET	Insupportable or safety critical impact
The airspace change proposal must be informed by local context and circumstances; minimising impacts on the wide variety of communities close to the airport such as exposed dwellings, noise sensitive buildings, natural environment, local population, local businesses and land development.				
The Obstacle Limitation Surface (OLS) protection area remaining unchanged is a key concern for local authorities and property developers; changes to the approach path down to 4° are considered to support the existing OLS. As such, this option, which reduces the approach angle below 4°, may require a consequential change to the OLS (as the OLS would no longer include the area of protection for the new RNP AR procedure) which could impact property development in this area.				
D_DP7	Noise	High	NOT MET	Significant change to the total adverse effects from aircraft noise.
The airspace change proposal should limit and, where possible, reduce the total adverse effects from aircraft noise.				
In this option, the portion of approach between the proposed ToD and the current ToD follows the same track as today; there is no change to the lateral profile and therefore no new populations are overflown. However, the vertical distance is reduced (at the maximum point) up to 1,060ft (323m), and the proposed ToD point will reposition where aircraft commence their final descent to a location just before the village of Averley (population approximately 10,000 people). The vertical profile difference for this option is sizeable, and therefore the likelihood of experiencing adverse noise effects could be increased such that consideration would need to be given to mitigating and minimising those effects.				
B_DP8	Economics	Medium	MET	Increased cost-effectiveness compared to today's operation
The airspace change proposal should enable more cost-effective operations for airline operators at London City Airport.				
This option could enable airline operators to deploy aircraft with greater capacity, lower seat costs and increased yields than would otherwise be available.				
D_DP9	Noise	Medium	MET	Consistent with existing published airspace arrangements.
Where options for route design for the airspace change proposal 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.				
This option is considered to be consistent with existing published airspace arrangements; it follows the same lateral track as today.				
B_DP10	Environment	Medium	MET	Operation of environmentally efficient aircraft is improved compared to today's operation
The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.				
RNP AR procedures could increase accessibility for a wider range of modern aircraft, enabling new operators to fly from LCY and providing incentive for existing airline operators at LCY to accelerate their refleeting to take advantage of more modern aircraft with greater passenger capacity and increased yields.				
D_DP11	Other aviation stakeholders	Low	MET	No change in impact or a positive impact
The airspace change proposal should consider the impacts on air navigation service providers and other aviation stakeholders such as nearby airport operators.				
Stakeholder feedback has requested consideration of the impacts on Vertiports, drone and UAV operations. To prevent interference with aircraft operations and ensure the safety of passengers and personnel, UAV and drone operations near to the airport will continue to require permission, and the airspace will remain restricted (as today) to these activities. Vertiport operations are not considered part of LCY operations at this time. This option would result in no change to other aviation stakeholders.				

Conclusion:	FA27_Option 3 represents a shallower RWY27 3.75° - 3.50° final approach path which may require some changes to the existing OLS protection area, and also may lead to an increase in the total adverse effects from aircraft noise. 2 DPs are NOT MET (both of which are priority HIGH), and 2 DPs are PARTIAL (both of which are priority HIGH), hence this option was REJECTED and will not be progressed.

16. Appendix H Qualitative environmental impact assessment

16.1 Air Quality

16.1.1 The ICAO Aircraft Engine Emissions Databank [Ref 21] contains information on exhaust emissions provided by aircraft engine manufacturers. The emissions datasheets [Ref 22] have been used to compare Landing and Take-off [65] (LTO) NO_X (nitrogen oxides) values for the A320neo against other new generation aircraft types operating at LCY, using the typical engines configured for these aircraft types.

Aircraft type	A320neo	E190 E2 /E195 E2	A220
LTO cycle NO_x (g/kg)	3096	3199	3903

16.1.2 The data demonstrates the potential for environmental benefits through lower A320neo NO_X emission levels compared to other new generation aircraft currently operating at the airport. Note: this data is provided for illustrative purposes only, and is used (at this early stage of the design work) to inform the qualitative assessments for this airspace change proposal. More detailed quantitative assessment of the environmental impacts will be provided at Stage 3.

16.2 Greenhouse Gas

16.2.1 To provide an initial indication of potential impacts to greenhouse gas (GHG) emissions, the CO_2 for the LTO cycle has been calculated using ACERT (the Airport Carbon and Emissions Reporting Tool provided by the Airports Council International (ACI) World), version 7.2338.

16.2.2 The annual aircraft movements for Year 1 and Year 10 (with/without the airspace change) are categorized by specific aircraft type and used to determine CO_2 for the LTO cycle.

16.2.3 For aircraft not listed in the model, a similarly sized substitute is used as follows: the E195 E2 is substituted for the E190 E2.

16.2.4 Note: private operator flights are maintained at 2024 levels in the 10-year forecasts as these flights represent a small percentage of LCY traffic (>5%) and any variation across the forecast period is not anticipated to be notable (see Table 2 for the baseline scenario forecast and Table 4 for the airspace change scenario forecast). As the traffic volume and fleet mix remains unchanged for private operator flights, in both scenarios across the 10-year assessment period, the impacts to greenhouse gas emissions associated with these flights are assumed to be unchanged and, as such, are not included in the LTO CO_2 modelling.

	Without airspace change		With airspace change	
	Year 1	Year 10	Year 1	Year 10
LTO cycle CO_2 (tonnes)	42,491	61,551	39,131	60,716

[65] The Landing and Take-off (LTO) cycle is a standard procedure used in aviation for measuring and evaluating aircraft engine emissions, specifically focusing on the area near airports. It includes the approach, taxi/idle, climb, and take-off phases of aircraft operations.

16.2.5 The data demonstrates the potential for environmental benefits through lower CO_2 emissions for this airspace change. Note: this data is provided for illustrative purposes only, and is used (at this early stage of the design work) to inform the qualitative assessments for this airspace change proposal. More detailed quantitative assessment of the environmental impacts will be provided at Stage 3.

17. Appendix I: Airspace Modernisation Strategy Alignment

17.1.1 Table 32 demonstrates how this ACP aligns with the strategic objectives of the CAA's Airspace Modernisation Strategy, CAP1711 [Ref 23].

Table 32: ACP alignment with the strategic objectives of the AMS.

AMS Strategic Objectives	Alignment
Maintaining and, where possible, improving the UK's high levels of aviation safety	LCY supports the prioritisation and continuous improvement of aviation safety, including the introduction of new aviation technologies, such as RNP AR, to help manage residual operational risk. RNP AR procedures provide improved access to airports in challenging terrain environments like LCY; the lateral and vertical navigation (VNAV) capabilities provided by RNP AR equipped aircraft provide improvements in operational safety and reduces the risk of Controlled Flight Into Terrain (CFIT).
Integration of diverse users – including needs of defence and security	This ACP considers new LCY approach procedures that remove the current steep approach certifications associated with operating on a 5.5° glideslope. This would open the airport to more modern and efficient aircraft operations, increasing the range of operators and aircraft types that can operate at LCY, whilst accommodating our existing commercial and private transport users on extant procedures. It integrates the needs of commercial and General Aviation air traffic, as well continuing to support older generation aircraft types alongside more modern aircraft types, by ensuring compatibility between aircraft operating on the existing ILS and aircraft on the proposed RNP approach procedures.
Simplification – reducing complexity and improving efficiency	Aircraft performance and navigation capabilities have changed significantly since the first introduction of ILS procedures at LCY. Through the introduction of RNP AR approaches, this ACP seeks to better utilise the performance capabilities of modern aircraft, using performance-based navigation to provide more efficient and accessible approach routes. RNP AR procedures would improve network resilience by systemising the approach procedure (reducing the need for controller intervention). Additionally, by supporting aircraft types with increased passenger capacity, this change supports a reduction in traffic volumes, which would contribute to reducing air traffic delays, improving runway and airport capacity, and increasing London Terminal Airspace capacity.
Environmental sustainability – an overarching principle applied through all modernisation activities, in accordance with the Government's environmental objectives	In accordance with the Government's key environmental objectives with respect to air navigation, as set out in the Government's Air Navigation Guidance [Ref 25], this ACP seeks to minimise the environmental impact of aviation by limiting and, where possible, reducing the number of people significantly affected by adverse impacts from aircraft noise. This airspace change proposal maintains close alignment with existing published airspace arrangements; there are no new National Parks, AONBs, or noise sensitive buildings overflown. No new populations are overflown. RNP AR procedures could increase the operation of more modern, 'quieter', 'cleaner' aircraft at LCY which could improve environmental impacts compared to older aircraft models, due to advancements in airframe design and more fuel-efficient engines which reduce fuel consumption, lower overall emissions of pollutants during flights and reduce noise. The airspace change has the potential to reduce air traffic growth compared with the baseline scenario (through fleet mix changes which support aircraft with greater passenger capacity) which is also anticipated to reduce environmental impacts.

18. Appendix J: Other items

18.1.1 The following section reports on the progress of other items of stakeholder and CAA feedback from Stage 1 of this airspace change proposal.

Item	Progress
Stakeholder feedback	
The definition and scope of UK 'Steep Approach' classifications	The regulatory constraints associated with UK Steep Approach classifications are included within the design constraints for this airspace change proposal see section 2.2.30.
Navigation standards for RNP AR approach/missed approach procedures	Navigation standards for the RNP AR approach are defined, see section 2.3.1. Navigation standards for missed approach procedures will be determined in Stage 3 following the detailed procedure design work.
Weather limitations associated with RNP AR: high wind/crosswind conditions	More detailed procedure design work will be progressed in the later stages of the CAP1616 process, including (as required) any flyability assessments with airline operators or manufacturers. This work will consider weather limitations in the design and operation of LCY RNP AR procedures.
Safety impacts associated with any reduction in obstacle clearance zones	The detailed procedure design work will be undertaken in Stage 3, providing the parameters for the new RNP AR procedures including the safety impacts of any changes to the aerodrome/procedure protection area.
Ensuring RNP AR aircraft on a go-around do not conflict with other traffic	Contingency procedures will be provided in Stage 3 to integrate consistently with extant LCY procedures and will be impact assessed as part of the Stage 3 safety work.
Any consequential impacts with the Biggin Hill ACP	No consequential impacts are identified with the current Biggin Hill airspace change proposals: 03 RNP AIRSPACE TRIAL (ACP-2023-075); REMOVAL of DVOR DEPENDENCY (ACP-2022-077); RNAV (GNSS) RUNWAY 21 (ACP-2019-86) and; Biggin Hill - Redesign of Departure and Arrival Routes and Procedures (FASI-South) (ACP-2018-69).
Noise impact of aircraft using nose-in stand layouts	Nose-in configuration has been approved under the CADP permission, but is not a requirement of A320neo operations. Regardless, there is not anticipated to be any discernible difference to ground noise between nose-in and self-manoeuvre stand layout.
Consultation on any changes required to the LCY Noise Action Plan (NAP)	The Noise Action Plan (NAP) references a 5.5° approach as a quiet operating procedure; however, a 5.5° approach is not a conditional requirement under the CADP permission. Revision of the NAP can take place during the implementation for this design option if required. Note: the 5.5° approach is retained for all aircraft operating on current the ILS approach.
Implications on the development potential of surrounding sites	All design options at Stage 2 have been evaluated with respect to local context and circumstances which includes the development potential of surrounding sites. It should be noted however, until the detailed procedure design work is completed in

	Stage 3, the parameters for the new RNP AR procedures are not yet established, and impacts to the aerodrome/procedure protection area are provided as an approximation only.
CAA Recommendations	
It is recommended that the airspace change sponsor engages with Natural England to ensure that any Habitats Regulation Assessment related requirements (if applicable) are appropriately considered in the development of design options.	Natural England has been included in the Stage 2 engagement and, for the introduction of RNP AR procedures, has advised that "unless the change in height would significantly affect the noise of the aircraft approaching, to the extent that it impacted the features of a designated site then it is unlikely that Natural England would need to provide detailed comments on these proposals". An HRA screening form was completed, see section 7.1, and a conclusion of no adverse effects on European sites has been made.
At stage 2, the change sponsor should provide a glossary of technical terms as part of their engagement materials to help aide understanding considering the high proportion of non-aviation groups within the stakeholder audience.	The Stage 2 engagement material has been written using clear language that all stakeholders can understand; it can be read without a high level of specialist aviation-related knowledge and is geared towards the high proportion of non-aviation groups within the stakeholder audience. A glossary of technical terms has been included in the material provided to stakeholders.
At stage 2, the sponsor should provide rationale for decisions taken regarding engagement methodology, for e.g., reasons for length of initial engagement period and for not holding any workshops as in-person events.	The Stage 2 engagement methodology and rationale is provided in section 2.4.
Sponsor to utilise the same appraisal year going forward when developing the current day scenario. As part of this submission, it's noted that environmental metrics have been informed by a 2023 annual performance report, but current day demand is 2024. Although demand/impacts are unlikely to be drastically different, for consistency the base year should be aligned across all impact assessments.	The LCY Annual Performance Reports are published at the end of June each year. At the time of writing the Stage 1 Define document [Ref 6], the London City Airport Annual Performance Report 2023 was the latest annual report available. The LCY 2024 annual performance report has subsequently been published and this data has been used to inform the Stage 2 impact assessments, see Table 2.

19. Appendix K: Glossary of terms; abbreviations and acronyms

19.1.1 A glossary of terms, abbreviations and acronyms is provide below.

ACP	Airspace Change Proposal
Aerodrome	A defined area, including any buildings, installations, and equipment, on land or water, intended to be used for the arrival, departure, and movement of aircraft.
ACERT	Airport Carbon and Emissions Reporting Tool
ACI	Airports Council International
AEDT	Aviation Environmental Design Tool AEDT is a software system that models aircraft performance to estimate fuel consumption, emissions, noise, and air quality consequences.
AIP	Aeronautical Information Publication The UK AIP serves as the primary source of static information for pilots, air traffic controllers, and other aviation professionals. It outlines regulations, procedures, and other details necessary for safe and efficient air navigation within the UK.
AMS	Airspace Modernisation Strategy The CAA's AMS is a plan to modernize the UK's airspace to improve efficiency, reduce environmental impact, and enhance safety.
ANCS	Aircraft Noise Categorisation Scheme The system used to categorize and manage aircraft noise impact by allocating specific noise "QC scores" to different aircraft types permitted to operate at LCY.
AONB	Areas of Outstanding Natural Beauty
Approach surface	An area extending from the end of the runway threshold, sloping upwards and outwards, designed to ensure safe aircraft approaches and landings.
AR	Authorisation Required
ASAS	Airport Surface Access Strategy
ATF	Air Transport Forum
ATZ	Aerodrome Traffic Zone An ATZ is a cylinder of airspace designed to protect aircraft operating in the vicinity of an aerodrome, in particular during approach, take-off, landing and low-level manoeuvres.
Bank angle	The angle at which an aircraft is tilted in the turn.
BAP	Bickerdike Allen Partners Limited Liability Partnership
CAA	Civil Aviation Authority The CAA is responsible for the regulation of aviation safety in the UK, determining policy for the use of airspace.
CADP	City Airport Development Programme The City Airport Development Programme ('CADP') is the planning permission that LCY operates under. The CADP Planning Permission was granted in 2016 by the Secretaries of State for Transport and Communities and Local Government following a public inquiry. All of the background to this planning permission including the decision notice and the section 106 agreement can be accessed from Newham Council's planning register using the reference 13/01228/FUL.
CFIT	Controlled Flight Into Terrain CFIT occurs when an airworthy aircraft, under the control of the pilot, is unintentionally flown into the ground, water, or an obstacle. The key characteristic of a CFIT accident is that the flight crew is unaware of the impending collision until it is too late to take corrective action.
CO_2e	Carbon Dioxide Equivalent

	This is a standard unit for measuring the impacts of different greenhouse gases by converting them to the equivalent amount of carbon dioxide
CTA	Control Area A CTA is a designated area of controlled airspace, designed to protect aircraft operating to and from the airport.
CTR	Control Zone A CTR is a designated volume of controlled airspace, extending from the surface to a specific upper limit. It is designed to ensure the safe and efficient movement of aircraft during take-off, approach and landing.
Decision Height Minima	The lowest altitude at which the pilot must assesses whether they have sufficient visual reference with the runway environment (e.g. runway lights, markings) to continue the approach safely, or else decide to discontinue their attempt to approach the airport.
DP	Design Principle
DME	Distance Measuring Equipment DME is a radio navigation system that provides aircraft with distance information from a ground station.
DPE	Design Principle Evaluation A qualitative assessment of each design option against each of the Design Principles, which progresses those design options which fit best and (where appropriate) discounts those which fit least.
DfT	Department for Transport
EGLC	London City Airport
FASI	Future Airspace Strategy Implementation The FASI programme is addressing the large scale optimisation of London airspace, and includes network changes (above 7,000ft) alongside airport changes (below 7,000ft).
FMS	Flight Management System The FMS is an onboard computer system that manages various aspects of a flight, including navigation, flight planning, and performance calculations.
FRZ	Flight Restriction Zone A designated area around airports, airfields, heliports, and spaceports where drone and model aircraft flights are restricted to ensure safety.
GA	General Aviation GA is used to describe all non-scheduled civil aviation operations (e.g. business aviation, private travel and recreational flying).
Glide Slope	A glide slope, or glide path, is the vertical path a plane follows during its descent for landing, providing guidance to help the pilot maintain the correct angle of approach. It is a crucial part of the Instrument Landing System (ILS), ensuring a safe and controlled descent to the runway.
IAP	Instrument Approach Procedures IAPs are a series of pre-determined manoeuvres, using flight instruments, to guide an aircraft from the beginning of the approach to landing/a point where a visual landing can be completed.
ICAO	International Civil Aviation Organization ICAO is a specialist agency of the United Nations set up to define international safety, environmental and operating standards for civil aviation.
PANS-OPS	Procedure for Air Navigation Services, Aircraft Operations ICAO Document 8168 provides the international standards and recommended practices for designing instrument flight procedures.
IFP	Instrument Flight Procedure

	An IFP is a predetermined, standardized set of instructions for navigating aircraft using instruments, primarily in conditions where visibility is limited.
IFP protection areas	These areas prevent obstacles from interfering with flight paths during instrument approaches and departures.
IFR	Instrument Flight Rules A set of regulations governing how aircraft are flown under conditions where visual reference is limited or unavailable
IHS	Inner Horizontal Surface The IHS is a critical component of the Obstacle Limitation Surfaces (OLS). The IHS is the lowest of these protective surfaces and is generally a horizontal plane above the aerodrome.
ILS	Instrument Landing System An ILS is a precision radio navigation system that provides both vertical and horizontal guidance to aircraft during approach and landing, particularly in adverse weather conditions. It helps pilots align their aircraft with the runway centreline and maintain the correct descent angle for a safe landing
ILS protection areas	These areas protect the integrity of ILS signals from interference.
ISA	Internal Standard Atmosphere ISA is a standardised model of the Earth's atmosphere, defining standard temperature, pressure, and density values at various altitudes.
LAMP	London Airspace Management Programme Part of FASI, an airspace programme involving the London airports which seeks to address the large scale optimisation of London airspace.
LCY	London City Airport
LCYCC	London City Airport Consultative Committee
LDA	Landing Distance Available The length of the runway declared available and suitable for the ground run of an aircraft landing.
Local Plan	A strategic document created by local planning authorities to guide development and land use within their areas.
LOC	Localizer A LOC approach is a type of non-precision instrument approach that provides pilots with horizontal guidance (lateral alignment) to the runway centreline during landing.
LTO	Landing and Take-Off cycle The LTO cycle is a standard procedure used in aviation for measuring and evaluating aircraft engine emissions, specifically focusing on the area near airports. It includes the approach, taxi/idle, climb, and take-off phases of aircraft operations.
LTMA	London Terminal Manoeuvring Area The LTMA is a designated area of controlled airspace surrounding London's major airports, specifically designed to manage the flow of aircraft entering and exiting the area, particularly during take0off and landing.
MP	Member of Parliament
MOCA	Minimum Obstruction Clearance Altitude. MOCA is the lowest published altitude between fixes on route segments that ensures obstacle clearance for the entire route segment. It ensures that aircraft flying along a route segment maintain a minimum vertical distance from obstacles like buildings and terrain.
NAP	Noise Action Plan The Noise Action Plan for 2024-2028 outlines LCY's commitments to monitor, manage, and reduce aircraft noise impacts. These noise mitigation measures have

	been developed through engagement and consultation with the London City Airport Consultative Committee, local communities, airlines, and other stakeholders and business partners. Further information is available at the following link: London City Airport Noise Action Plan | London City Airport
NATMAC	National Air Traffic Management Advisory Committee NATMAC is a non-statutory advisory body chaired by the CAA. It includes a wide variety of airlines and aviation organisations.
NATS	NATS is the UK's leading provider of air traffic control services.
NDB	Non-Directional Beacon An NDB approach is a type of non-precision instrument approach in aviation that uses a ground-based transmitter to provide lateral guidance to pilots during landing.
Non-precision approach	An instrument approach procedure that provides lateral guidance but does not provide a continuous vertical glide path to guide aircraft down to the runway.
NSL	NATS Services Limited
Nuisance alerts	Notifications that indicate a potential hazard or emergency when, in reality, no such situation exists.
OAG	Official Airline Guide
OBR	Office for Budget Responsibility
OECD	Organisation for Economic Co-Operation and Development
OLS	Obstacle Limitation Surface These areas are defined by specific surfaces that rise and extend outwards from the runway, specifying height restrictions which developments and obstacles are not permitted to infringe upon, therefore ensuring that aircraft have sufficient obstacle-free airspace.
PAPIs	Precision Approach Path Indicators PAPIs are visual aids that provide pilots with guidance, ensuring they are on the correct glide path for a safe landing. These systems consist of a series of lights, typically four, positioned beside the runway, that display different colours to indicate the aircraft's position relative to the desired glide path.
PBN	Performance Based Navigation PBN is a set of standards defining how aircraft navigate using on-board equipment, rather than relying solely on traditional ground-based navigation aids
PSZ	Public Safety Zone These are areas around the runway where development is restricted to minimize the number of people potentially at risk from an aircraft accident.
RA	Resolution Advisory An RA alert is an alert that provides specific instructions to the pilot (e.g. "Climb", "Descend") to avoid a collision.
Ramsar	Ramsar Sites are wetlands of international importance designated under the Ramsar Convention, an intergovernmental treaty focused on wetland conservation. These sites are crucial for biodiversity, supporting a wide range of species and playing a vital role in maintaining ecological balance.
Restricted Area	Designated airspace where flight is restricted or prohibited under specific conditions. It is established for safety or security reasons and these areas are often around sensitive locations like military installations, prisons, or during events like airshows; they may be temporary or permanent.
RNAV	Area Navigation RNAV is a method of aircraft navigation that enables aircraft to fly more direct routes between waypoints defined by geographic coordinates, rather than being restricted to traditional airways defined by ground-based beacons.

RNP AR	Required Navigation Performance Authorisation Required A specific type of instrument approach procedure in aviation that utilizes advanced navigation technology and requires special authorization for aircraft and flight crews to use. RNP AR allows for more precise and flexible flight paths, including curved approaches, and is particularly suited to challenging environments with obstacles or complex terrain.
RPZ	Runway Protection Zone A designated area at the end of a runway aimed at enhancing safety for both aircraft and people/property on the ground.
SAC	Special Areas of Conservation A SAC is a protected area designated under the European Union's Habitats Directive to conserve natural habitats and species of European importance.
Safeguarding zone	A designated area surrounding an airport where restrictions are placed on development to ensure the safe operation of aircraft.
SEL	Sound Exposure Level SEL is a noise metric that quantifies the total sound energy of a noise event, regardless of its duration, by normalizing it to a one-second period. In aviation, SEL is frequently used to assess the noise impact of individual aircraft flyovers.
SINC	Site of Importance for Nature Conservation SINCs are areas recognized for their importance to biodiversity and wildlife and are designated at a local level by Local Authorities.
SID	Standard Instrument Departure A pre-defined flight path, published on charts and used by aircraft operating under Instrument Flight Rules (IFR). SIDs are designed to transition aircraft from the departure end of the runway to the enroute phase of flight.
SFC	Surface
SME	Subject Matter Experts
SoN	Statement of Need The Statement of Need provides a brief description of the proposed airspace change.
SPA	Special Protection Area A SPA is a protected area designated to conserve wild birds, especially those that are rare, threatened, or vulnerable, as well as migratory species
TCAS	Traffic Collision Avoidance System TCAS is an aircraft system designed to prevent mid-air collisions by alerting pilots to potential threats.
TMA	Terminal Manoeuvring Area TMAs are established to manage the high volume of air traffic associated with major airports. The provide a controlled environment for aircraft to transition between enroute airspace and the airport environment.
ToD	Top of Descent For the final approach, the Top of Descent is the calculated point on the final approach path, at which aircraft begin their descent for landing.
TORA	Take Off Run Available The TORA refers to the specific length of runway pavement that's designated and suitable for an aircraft's ground run during take-off.
UKADS	UK Airspace Design Service
VNAV	Vertical Navigation VNAV is a feature of modern aircraft flight management systems that assists pilots in managing the aircraft's altitude and optimising climb and descent profiles. It uses onboard systems to compute a desired vertical path during approaches.

VFR	Visual Flight Rules VFR is a set of regulations under which a pilot operates an aircraft in weather conditions generally clear enough to allow the pilot to see where the aircraft is going.
VTOL	Vertical Take Off and Landing VTOL refers to aircraft that can take off and land vertically without needing a runway.