Airspace Change Proposal

ACP-2025-003

Introduction of RNP AR procedures at London City Airport

Formal Stage 2 Engagement

Agenda

- Welcome and Objectives of today
- Introduction to the change
- Current Operation
- Design Constraints and Assumptions
- Design Options
- Draft Design Principle Evaluation
- Next Steps
- How to Provide Feedback
- Questions

Objectives of Today

- As part of the CAA's CAP1616 Airspace Change Process we are presenting our development options that have the potential to deliver the desired change outlined in the Statement of Need (explained in Stage 1)
- We are presenting an overview of the change again and an initial assessment of each development option against the Design Principles developed in Stage 1
- The main purpose is to provide an opportunity to help our stakeholders understand the different design options being explored and to seek feedback which will be used to further shape the development of our design options
- More detailed designs will be then progressed when we reach Stage 3 of the process
- This engagement session is planned for 3 hours and we encourage discussion and key points and we will pause for questions as we progress through each session. You will also have the opportunity to provide views following this session through email.
- This slide pack will be made available after the session.

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Introduction to the change

What we're doing

- We have applied to the CAA for a new flight procedure RNP AR (Required Navigation Performance – Authorisation Required) to allow a shallower approach for the A320neo aircraft which is unable to operate the existing steep approach.
- This will allow a shallower approach than the current ILS approach of 5.5 degrees. RNP AR is more stringent than the ILS approach and allows very precise landing approaches (utilising PBN).
- Airlines and crew will require special approval to fly the RNP AR approach. This is because of the advanced avionics, additional pilot training and strict procedures involved.
- The physical change is a small alteration to the final kilometres of approach (shown indicatively in yellow here). All existing procedures remain the same for other aircraft types.

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Why we're doing this

- The change will enable the A320neo (pictured here) to operate from LCY. This is a new generation aircraft cleaner and quieter than current aircraft at LCY and the original A320 seen at other airports.
- The A320neo is larger than any aircraft type at LCY. Its introduction will incentivise faster transition to this new generation aircraft, while remaining within our 9mppa passenger and 111,000ATM caps.
- Its capacity means that more passengers can be carried on fewer flights, meaning that passenger growth with the A320neo has the potential to have fewer environmental impacts.
- This will also support the Government's objectives to drive economic growth and sustainable aviation.
- The precision that comes with RNP AR will mean the already high levels of safety at LCY will be that much higher, enabling increased resilience and safety for LCY operations.

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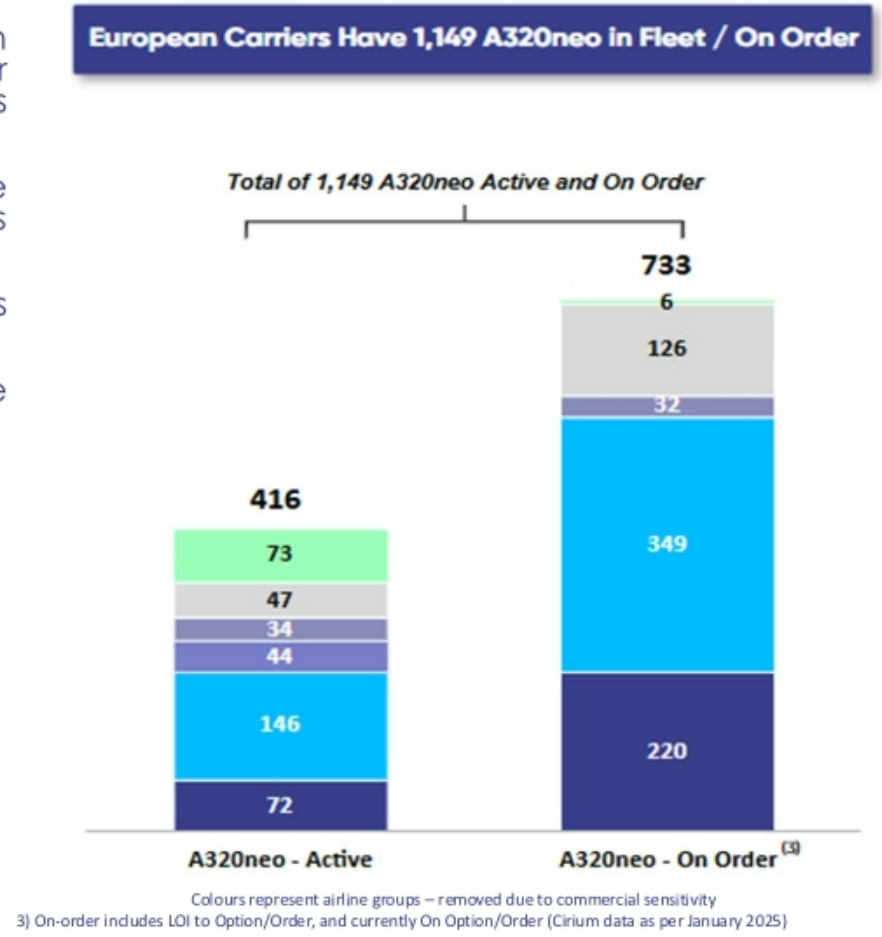
What this means for the LCY customers

- For airlines, there is a wide pool of A320neo aircraft in the system and large numbers on order. This procedure would allow greater flexibility for airlines and potentially open the airport to new airlines to operate from LCY.
- The larger passenger capacity and increased fuel efficiency of the A320neo means that airlines have the potential for greater yields and/or passenger volumes.
- For passengers, there will potentially be greater choice of airlines and destinations and opportunities for lower seat prices.
- The A320neo will also encourage a move toward leisure destinations, which responds to feedback from our passengers.

Aircraft family	2023 London shorthaul operated	AC families with LCY certified aircraft	LCY 2023 capacity share
A320	67.5%		0.0%
B737	25.0%		0.0%
Embraer	3.4%	5.2%	86.0%
A220	1.2%		16.8%
ATR	0.3%		16.5%
Q400	0.2%		88.3%
Others (incl. widebody)	2.4%		0.0%
	100.0%		**3.4%**



What this means for the local community

- Initial indications from specification data points to the A320neo being quieter overall than the current E190, even with the shallower approach.
- The procedure will only be introduced if it can be demonstrated that no overall environmental impact on local communities will occur.
- We believe this new generation of aircraft at LCY could help us better manage and reduce the environmental impacts on the local community, including noise, given the forecasted predicted growth of traffic at the airport over the next 10-15years (without this change).
- Importantly, this procedure is not intended for the current generation of aircraft operating at LCY, so lowering the approach path will not be available to all aircraft types.

Questions

Current Operation

Baseline Scenarios

- What do we mean by 'baseline'?
  - It defines the future **without** the airspace change for the year of implementation (2027 – Year 1) to 10-years after implementation (2036 – Year 10)
  - It assumes the current-day airspace situation with anticipated
    - Traffic growth
    - Fleet changes
    - Planned housing developments and housing provision/ local development frameworks
    - Any other known or anticipated factors that may be changing

Current-Day Scenario (from Stage 1)

Airspace Design: The airport and its runways

Figure 1: Orientation of London City Airport's runway (extract from Google Earth, 2025)

Airspace Design: Instrument Flight Procedures

The aircraft fleet using LCY all comply with Performance Based Navigation (PBN) navigation standards, specifically RNAV1 (Area Navigation, part of the wider PBN standard).

Aircraft and crews equipped and approved for RNAV 1 operations fly into LCY via RNAV1arrival 'transitions' which are pre-programmed systemised flight paths that link the exit from the higher holding area to the final approach for the runway.

Typically they are followed accurately in three dimensions by an aircraft's flight management system with minimal pilot or controller intervention, though at the higher (outer) areas controllers often tactically instruct aircraft to bypass the full length of the route (if the traffic situation allows) and take a shortcut with reduced track miles, and therefore reduced CO_2 and fuel burn, rejoining the transition closer to the airport.

The procedures for inbound aircraft to LCY are detailed in the UK Aeronautical Publication (AIP) [Ref 5] AD 2-EGLC-7-RNAV 1 arrival charts, and reproduced in Figure 2, Figure 3 and Figure 4 below. These procedures are additionally described in sections 5.2 and 5.5.

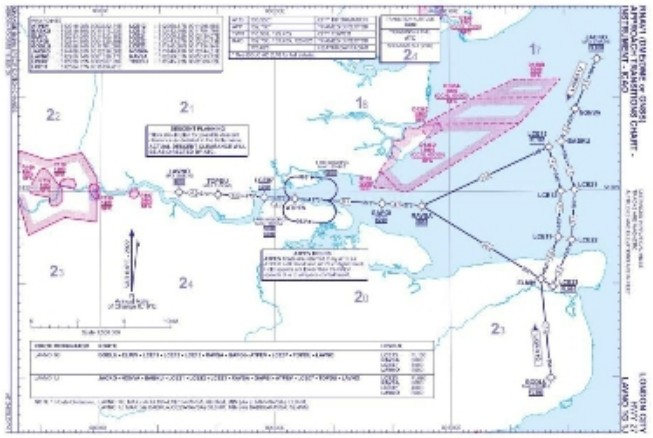


Figure 2: RNAV1 (DME/DME or GNSS) APPROACH TRANSITIONS CHART - INSTRUMENT RWY 27 LAVNO 1G 1J – ICAO, UK AIP, March 2025.

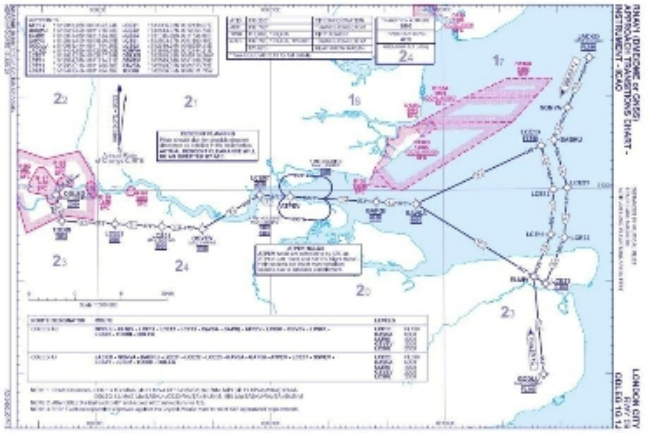


Figure 3: RNAV1 (DME/DME or GNSS) APPROACH TRANSITIONS CHART - INSTRUMENT RWY 09 ODLEG 1G 1J – ICAO, UK AIP, March 2025.

Current-Day Scenario (from Stage 1)

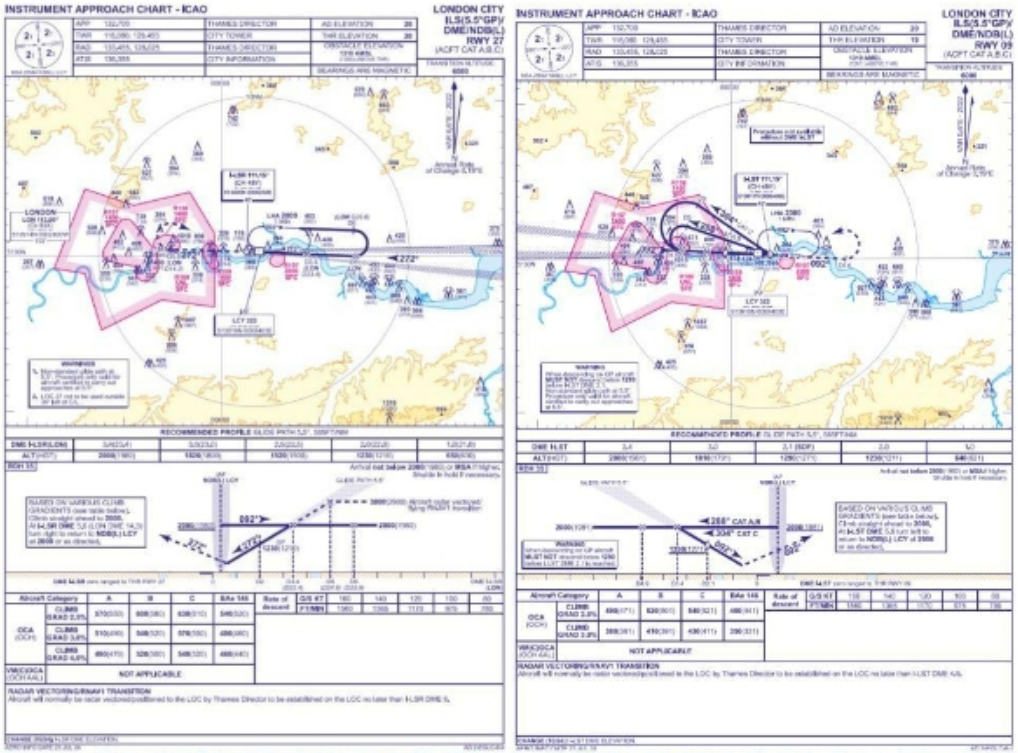


Figure 4: (Left) INSTRUMENT APPROACH CHART ILS (5.5° GP)/DME/NDB(L) RWY 27 (CAT A,B,C) – ICAO. (Right) INSTRUMENT APPROACH CHART ILS (5.5° GP)/DME/NDB(L) RWY 09 (CAT A,B,C) – ICAO. UK AIP, March 2025.

Runway approach angle

The approach descent angle (also known as the glideslope) is a vertical path that directs arrival aircraft to the touchdown zone of the runway. The glideslope for LCY is part of the Instrument Landing System (ILS) and is set at 5.5° which is much steeper than most airports and is needed to ensure adequate safety margins for aircraft on the ILS approach against the surrounding buildings. (In aviation this is known as 'obstacle clearance').

This steep 5.5° glideslope is the same for both Runway 09 and Runway 27, although it is Runway 09 which has the more stringent obstacle clearance requirements, see section 5.3.

Once aircraft are established on the 5.5° glideslope, they descend at a rate of approximately 316ft/km (9.6% gradient[13]). For comparison, the industry standard glideslope is 3° which provides a descent rate of approximately 173ft/km (5.2% gradient).

Today's steep approaches require special aircraft requirements and flight crew certification.

The 5.5° approach angle is also 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. Future final approaches must therefore ensure, not only obstacle clearance, but also that the airport's noise level limits can still be adhered to.

In addition, the management of noise levels at LCY uses a noise quota count (QC) system. Each aircraft in operation is allocated a separate QC score for arrival and departure operations, based on its certified noise levels, and this is also adjusted to reflect the 5.5° approach angle used at LCY. Any changes to the angle of approach will need to be incorporated into the QC scheme to reflect the noise certification value for aircraft on a shallower approach procedure.

Current-Day Scenario (from Stage 1)

Airspace Usage: air traffic movements, aircraft types and airline operators

An 'air traffic movement' is defined as an arrival aircraft or a departure aircraft at LCY.

LCY had 50,948 movements in 2024[2]; half were arrivals, half were departures.

LCY does not display seasonal peaks and the numbers of arrivals and departures are broadly consistent across the year.

Approximately 12,512 air traffic movements took place over the summer period. For airspace change purposes, 'summer' is defined as the 92-day period from 16th June to 15th September[3].

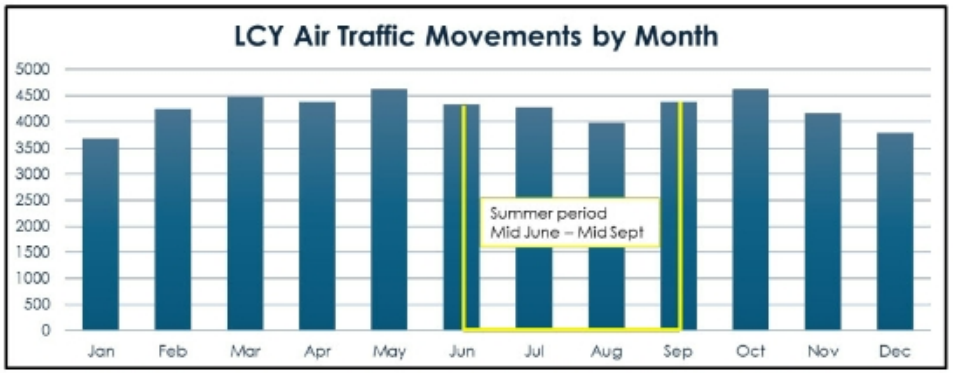


Figure 5: Airport Operational Database data - LCY air traffic movements in 2024, by month. Total annual movements 50,948, with 12,512 movements over the summer period, highlighted in yellow.

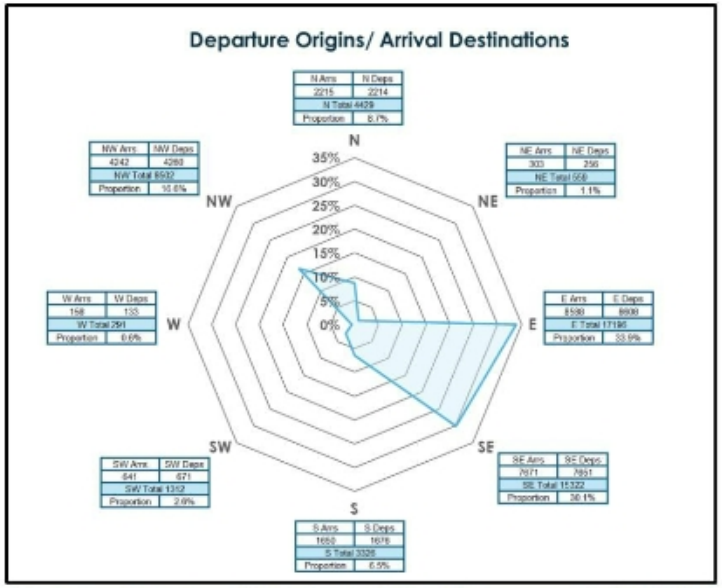


Figure 6: Airport Operational Database data - LCY air traffic movements in 2024. Illustration of departure and arrival origins/destinations (straight line between airports.

On average, LCY had 136 daily movements over the summer; 68 arrivals and 68 departures.

In 2024, on the busiest day there were 196 daily movements (101 arrivals and 95 departures).

About 34% of movements were to and from the east (such as northern and central European origins/destinations), about 17% to and from the northwest (for example Ireland and UK domestic origins/destinations), and about 30% to and from the southeast (for example southern European and Mediterranean origins/destinations), as illustrated in Figure 6.

Current-Day Scenario (from Stage 1)

The most common aircraft category was the 70-90 seat regional jet (average 73.0% of all flights), and the most common specific type was the Embraer 190.

The heaviest aircraft in 2024 was the Airbus A220-100, which is noise-categorised by the CAA as being a 125-180 seat single aisle twin jet (although at LCY it operates with fewer seats for take-off weight reasons). The A220-100 averaged 10.4% of all flights in 2024.

Other aircraft types using LCY include smaller commercial jets, business jets and propeller aircraft in the 50-70 seat range.

Figure 7 shows the airlines and the proportions of flights which accounted for more than 1% of the total traffic at LCY in 2024.

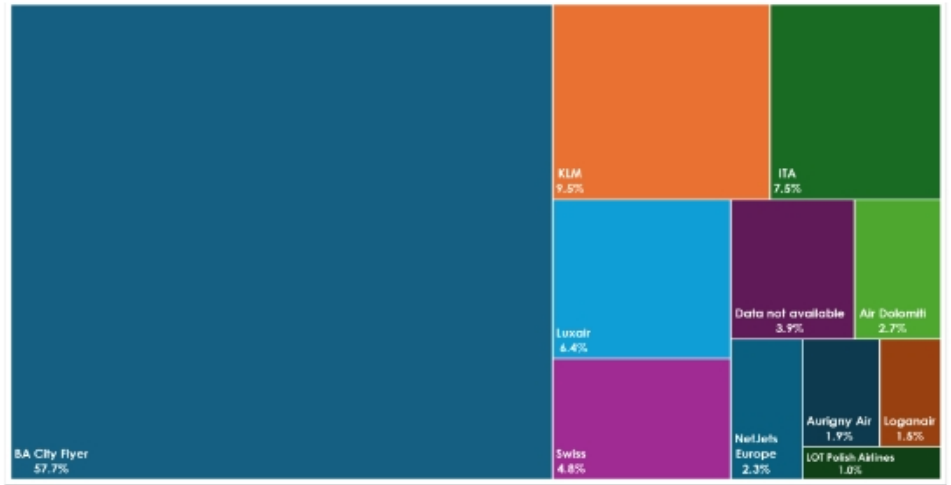


Figure 7: Airport Operational Database data - LCY air traffic movements in 2024. List of operators and proportion of flights which accounted for >1% of LCY traffic.

Current-Day Scenario (from Stage 1)

Local features below 7,000 feet

Figure 10 illustrates the approximate geographical region for current-day LCY air traffic movements below 7,000ft and below 3,000ft.

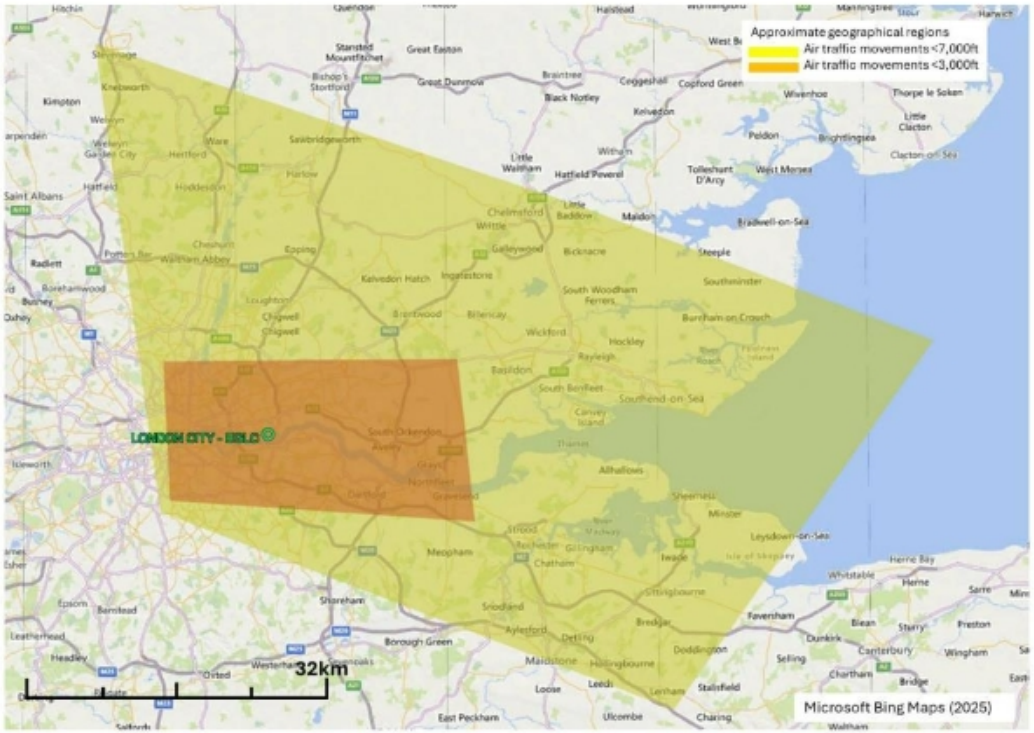


Figure 10: Illustration of the approximate geographical region for LCY air traffic movements. Based on radar track data, arrival and departure flights, 7 days in Sept 2024, (02nd-08th Sept, 989 flights). (Microsoft Bing Maps, 2025).

Central London has numerous Air Quality Management Areas (AQMAs), and the majority of the London boroughs have declared AQMAs (as the whole borough) due to the levels of air pollution in the city.

The following National Parks and Areas of Outstanding Natural Beauty (AONB)[6] are proximate to LCY: Kent Downs AONB, Surrey Hills AONB and Chilterns AONB.

There are no designated Quiet Areas currently impacted by noise from London City airport.

Current-Day Scenario (from Stage 1)

European sites overflown below 3,000 feet

The approximate geographical region[7] for this airspace change proposal is illustrated approximately in Figure 11 below, alongside the closest European sites.

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Source: https://magic.defra.gov.uk

Figure 11: Illustration of the approximate geographical region[7] for this airspace change proposal and the relative position of European sites.

'European sites' encompasses Special Areas of Conservation (SAC), possible SACs, Special Protection Areas (SPA), potential SPAs, Ramsar sites (wetlands of international importance), proposed Ramsar sites; and compensatory habitats (areas secured to compensate for damage to SACs, SPAs and Ramsar sites).

LCY is located in London's Royal Docks which support an unusual mix of both sea and freshwater fish species. Although it is not a Special Area of Conservation, the Royal Docks have been designated as a Site of Importance for Nature Conservation (SINC). In 2017, LCY installed an artificial fish habitat (submerged wire mesh panel to support shelter and food for marine wildlife) into the King George V Dock to compensate for the loss of sections of the dock wall during the City Airport Development Programme (CADP) construction programme, (for more information on CADP see Appendix A).

No European sites[8] are currently overflown below 3,000ft, and no European sites have been identified in the proposed airspace change region.

Current-Day Scenario (from Stage 1)

Potential safety risks

LCY's Public Safety Zones (PSZs) are areas around the runway where development is restricted to minimize the number of people potentially at risk from an aircraft accident. The Public Safety Controlled Zone (PSCZ) is the outer boundary of the PSZ (shown as black outline triangles in Figure 13), and the Public Safety Restricted Zone (PSRZ) is an inner, higher-risk zone, within the PSZ (shown in orange in Figure 13). 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

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.

LCY carries out safeguarding to ensure that any developments or activities within the airport's vicinity do not adversely affect the safe and efficient movement of aircraft. The safeguarding zones are illustrated in Figure 13, and require the airport to be consulted on planning applications and any other activities in these areas which may affect the safe operation of aircraft.

During our Stage 1 engagement, stakeholders have identified concerns with potential increases in the size of the safeguarding zones. However, 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 and, as such, this airspace change proposal is not anticipated to significantly impact the LCY aerodrome safeguarding zones.

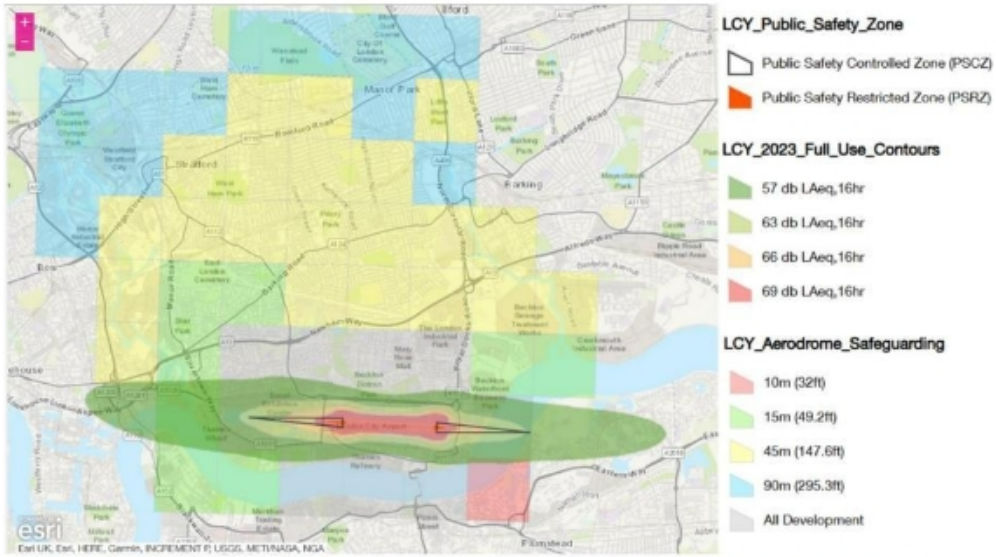

Figure 13: LCY constraints map illustrating the public safety zones, 2023 'full use' contours, and safeguarding. Source: https://lbnewham.maps.arcgis.com/apps/webappviewer/index.html?id=0dfb729da32a4979aee36d17cdb3b2aa

Current-Day Scenario (from Stage 1)

Forecast: Current-day scenario

Based on the current-day scenario and the 2024 traffic data, LCY analytics team has forecast the 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), see Table 1.

The passenger demand at LCY is expected to increase to nearly 7 million passengers annually, accommodated by around 78,000 air traffic movements, including 3,000 business flights[4]. This long term forecast is likely to be realised by the mid to late 2030s.

Year	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Commercial flights										
Airbus A220	6,700	7,200	7,800	8,300	9,100	9,800	10,700	11,500	12,500	14,600
ATR 72	1,900	2,000	2,000	2,100	2,200	2,200	2,300	2,300	2,400	2,400
ATR42 /ATR72	0	0	0	0	0	0	0	0	0	0
Dash 8	4,100	4,400	4,800	0	0	0	0	0	0	0
Embraer 190	38,100	38,000	37,900	37,500	37,900	31,300	23,100	13,200	6,600	0
Embraer 190 E2	1,200	1,300	1,400	1,500	1,600	1,700	1,900	2,000	2,200	2,600
Embraer E195 E2	1,000	2,100	3,200	7,100	8,700	16,100	24,800	34,900	42,300	54,900
Total no. of commercial flights	53,000	54,900	57,100	56,500	59,400	61,100	62,700	64,000	66,100	74,500
Private Operator flights										
Jet Centre	3,154	3,154	3,154	3,154	3,154	3,154	3,154	3,154	3,154	3,154
Total no. of private operator flights	3,154	3,154	3,154	3,154	3,154	3,154	3,154	3,154	3,154	3,154
Air Traffic Movements										
Total no. of air traffic movements (commercial + private operator flights)	56,154	58,054	60,254	59,654	62,554	64,254	65,854	67,154	69,254	77,654
Passenger numbers (millions)										
Total no. of passengers	4.1	4.2	4.4	4.6	4.8	5.1	5.4	5.7	6.0	6.9

Table 1: Current-day scenario, forecast growth of traffic at LCY including changes to fleet-mix: 2027 (implementation year) to 2036 (10 years post implementation).

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Current-Day Scenario – other factors

Densely populated areas

LCY is situated in central London which is a densely populated urban area. There are relatively unpopulated areas such as the River Thames itself, the valley of the River Lea (also known as the Lee Valley), parks, marshes and industrial areas, but these are all adjacent to (and interspersed between) commercial buildings, roads, railways, bridges and residential areas.

There is limited scope to develop arrival flightpaths that avoid the populated areas, especially at the lowest altitudes close to the airport.

Within 2027-2036, property development and population growth proximate to the RWY 09 final approach path is anticipated to add approximately 50,000 people to the region. Significant population growth near to the RWY 27 final approach path is not anticipated (no major property development proposals are identified within this area).

Questions

Design Constraints and Assumptions

Design Assumptions & Constraints

- The LCY RNP AR approach design options have been developed using a user-centred design process.
- This process uses first-hand knowledge provided through SMEs (subject matter experts), in this case ATC (air traffic controllers) and airspace procedure design experts and Airbus to develop options which are theoretically feasible within the constraints and demands of the airspace and, additionally, safe and feasible for aircraft operations.
- We have not attempted to list every possible solution which could be proposed if starting without any assumptions or constraints; only those options which are considered feasible, and which deliver against the Statement of Need are presented here.
- The following slides provide an overview of the design assumptions and constraints to demonstrate the complexity of the considerations and is not considered exhaustive.

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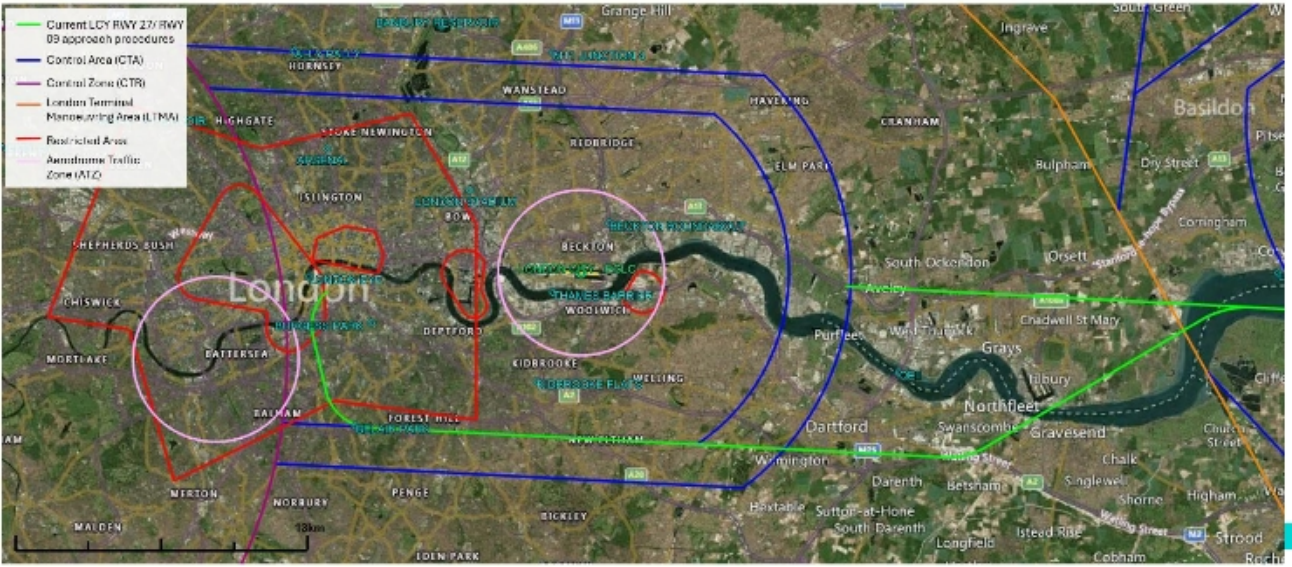
Design Constraints - Airspace

1. 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;

- London City CTA
- Southend CTA
- London CTR
- London TMA
- Restricted Areas: EGR107 Belmarsh, EGR160 The Specified Area, EGR157 Hyde Park, EGR158 City of London, EGR159 Isle of Dogs
- London City ATZ
- London Heliport ATZ



2. All design options are contained within existing controlled airspace to ensure aircraft remain within existing designated boundaries and separation minima.

3. The Top of Descent for the final approach for RWY09 is maintained at a vertical altitude of 2,000ft (as today) and for RWY 27 at 3,000ft (as today) 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.

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Design Constraints – Route structure & traffic flows

4. LCY is within the most complex region of UK airspace. There are many interacting flightpaths 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. All design options provide the required separation minima against existing procedures for the other London airports.

The key conflicting traffic flows below 7,000ft include:

- London Heathrow arrivals to RWY 27 Left (the southern runway) and RWY 27 Right (the northern runway)
- London City Airport departures
- London Gatwick departures to the northeast
- London Stansted departures to the southeast
- Biggin Hill and Southend traffic

Design Constraints – Aircraft capabilities & procedure design

- 5. Instrument approach procedures are classified into aircraft approach categories (A, B, 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. Current LCY Instrument Approach procedures support three 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)
- The A320neo is in CAT C. Therefore, design options will be designed in accordance with the 'most demanding' current approach category - CAT C - and minima (lowest altitude and visibility) will be provided for corresponding CAT A and B operations.
- 6. Flight simulator testing by Airbus has demonstrated that the A320neo is unable to fly the current LCY 5.5° steep approach; during testing activities 4.5° has been 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.

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Design Constraints – Aircraft capabilities & procedure design

7. All design options adhere to ICAO Doc 9905 (RNP AR) and 8168 (PANS-OPS). 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:

a) aircraft stay within protected airspace to maintain a safe distance from obstacles and;

b) aircraft can follow the published procedures with ease and safety.

Examples include:

- maximum and minimum speeds during turns in the procedure, which determines the minimum turn radius;
- the entry point of a turn;
- the exit point of a turn;
- the minimum distance required between one waypoint (geographical location along the route) and the next;
- the minimum length of a straight segment following a turn;
- the distance between the exit of a turn and the runway threshold.

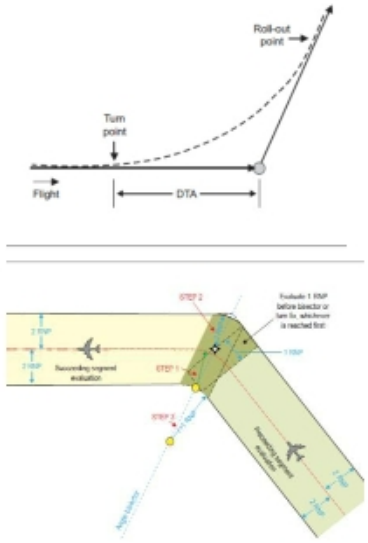

Figure 4-7. Small turn at fly-by fix

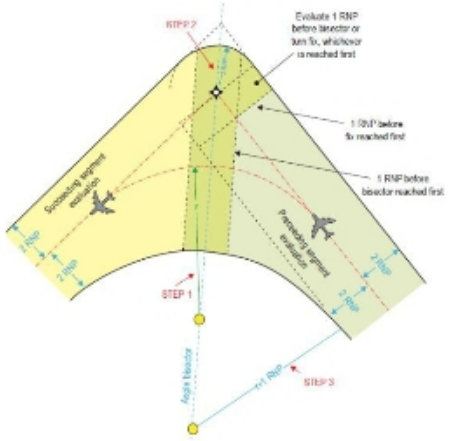

Figure 4-8. Large turn at fly-by fix

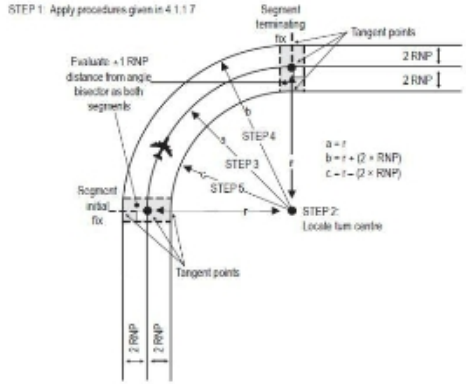

Figure 4-9. RF turn construction

Design Constraints – Regulations and Safety

8. 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 an RNP AR procedure that will remove the current 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.

9. Preliminary procedure design work 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.

a. RWY 09 (easterly runway direction), the angle of approach must be no lower than 4.4°
b. RWY 27 (westerly runway direction), the angle of approach must be no lower than 3.5°

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Design Assumptions

- LCY RNP AR procedures will, as closely as possible, follow the current LCY approach procedures.
- 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 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 be wholly contained within current Instrument Flight Procedure 'protection areas' i.e. no expansion is required to those volumes of airspace that are currently defined to ensure obstacle clearance and safe navigation for aircraft on the approach flight path.
- LCY RNP AR procedures will utilise the RNP 0.3 navigation specification (which is the standard level of navigation accuracy used for RNP approaches). It will be possible for standards with a higher level of accuracy, down to RNP 0.1, to be additionally supported.
- Design options should not impact the Obstacle Limitation Surface (OLS) Approach surface (this is an area extending from the end of the runway threshold, sloping upwards and outwards, designed to ensure safe aircraft approaches and landings. It is a key component of the OLS that protects the airspace around an aerodrome).
- 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.

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Questions

Design Options

Stage 2 Design Options Summary

- 7 design options have been identified to support RNP AR approach procedures at LCY.
- These design options satisfy the assumptions and constraints for the Stage 2 design work and have been divided into two categories according to the stage of the approach that they are associated with: 'Initial/Intermediate Approach' and 'Final Approach'.
- Illustrations and descriptions for all 7 design options are provided in the following slides.
- Basic procedure design work has been carried out to provide reasonable confidence regarding the flyability of all the designs presented.
- 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.
- 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.

Initial/ Intermediate Approach Options	IA09_Option 1
	IA09_Option 2
	IA09_Option 3
Final Approach Options	FA09_Option 1
	FA27_Option 1
	FA27_Option 2
	FA27_Option 3

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Initial/ Intermediate Approach

- 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.
- 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.
- RNP AR approaches can utilise 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.
- For RWY 27 the transition between initial, intermediate and final approach does not require any turn modelling (the transitions are in a straight line). However, the transitions for RWY 09 involve two turns to turn the aircraft 180° from the transition/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 RWY 09 approach path could track slightly differently from today. For RWY 09, three different options for Initial/Intermediate approach have been identified which satisfy the assumptions and constraints for the design and are presented in the following slides.

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Initial/ Intermediate Approach Options RWY 09 Radar Track Data May 2025 (2,228 flights)

- To help compare the RWY 09 initial/ intermediate design options with current flight paths, the illustration below shows the radar tracks (in yellow) for LCY arrivals to RWY 09, May 2025 (2,228 flights).
- These arrivals are following the current RNAV1 Transition to ILS approach procedure and can be seen to have a lateral dispersion (shown in blue), of approximately 500m of the route centreline, with the widest deviations taking place around the turn areas.

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Initial/ Intermediate Approach Options RWY 09 IA09_Option 1

- For the first RWY 09 option, the modelling of RNP AR turns on the transitions for initial and intermediate approach will closely follow the **same lateral track** as today.
- Within this option, up to 50m lateral variation (shown in blue) from the centreline of the current flight path is permitted for design purposes.

Initial/ Intermediate Approach Options RWY 09 IA09_Option 2

- For the second RWY 09 option, the modelling of RNP AR turns on the transitions for initial and intermediate approach will allow **minor lateral variation** from today.
- Within this option, up to 250m lateral variation (shown in blue) from the centreline of the current flight path is permitted for design purposes.

Initial/ Intermediate Approach Options RWY 09 IA09_Option 3

- For the third RWY 09 option, the modelling of RNP AR turns on the transitions for initial and intermediate approach will allow **moderate lateral variation** from today.
- Within this option, up to 500m lateral variation (shown in blue) from the centreline of the current flight path is permitted for design purposes.

Initial/ Intermediate Approach Options RWY 09 Radar Track Data May 2025 (2,228 flights)

- To help compare the RWY 09 initial/ intermediate design options with current flight paths, the illustration below shows the radar tracks (in yellow) for LCY arrivals to RWY 09, May 2025 (2,228 flights).
- These arrivals are following the current RNAV1 Transition to ILS approach procedure and can be seen to have a lateral dispersion (shown in blue), of approximately 500m of the route centreline, with the widest deviations taking place around the turn areas.

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Final Approach

- The final approach is the last segment of an aircraft's approach path.
- 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.
- It is a crucial phase of flight, requiring precision in maintaining the correct flight path, speed, and descent angle.
- 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.
- 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 RWY 09/3,000ft for RWY 27) by the time it reaches the runway threshold.
- For RWY 09 a single option for final approach has been identified which satisfies the assumptions and constraints for the design. For RWY 27, three different options for final approach have been identified which satisfy the assumptions and constraints for the design. The final approach design options are presented in the following slides.

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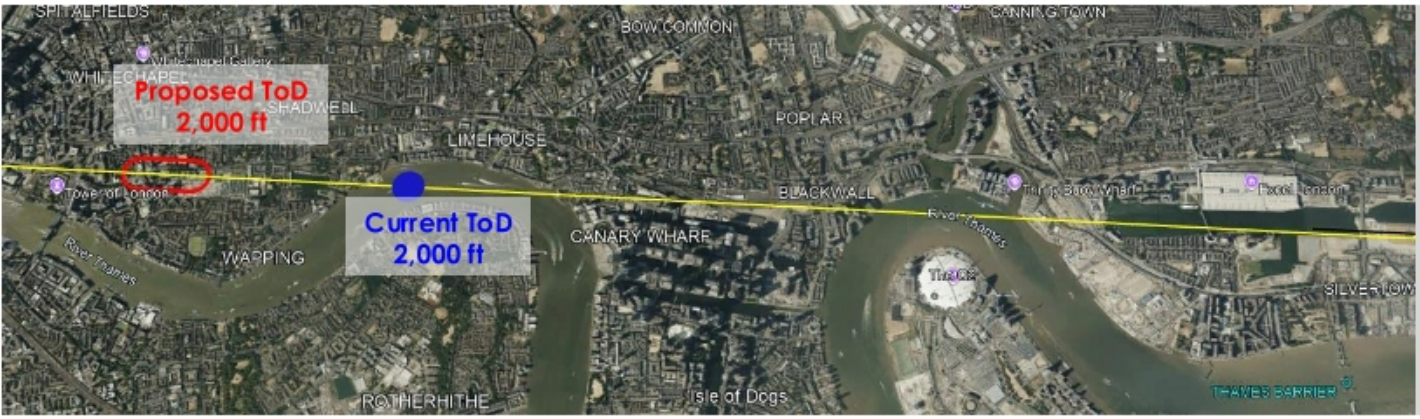
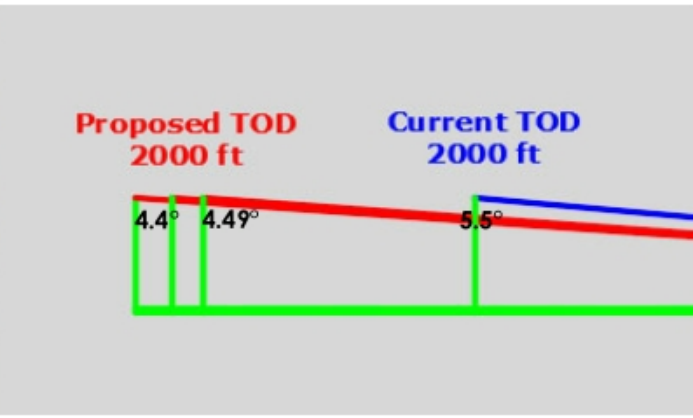
Final Approach Options RWY 09
FA09_Option 1

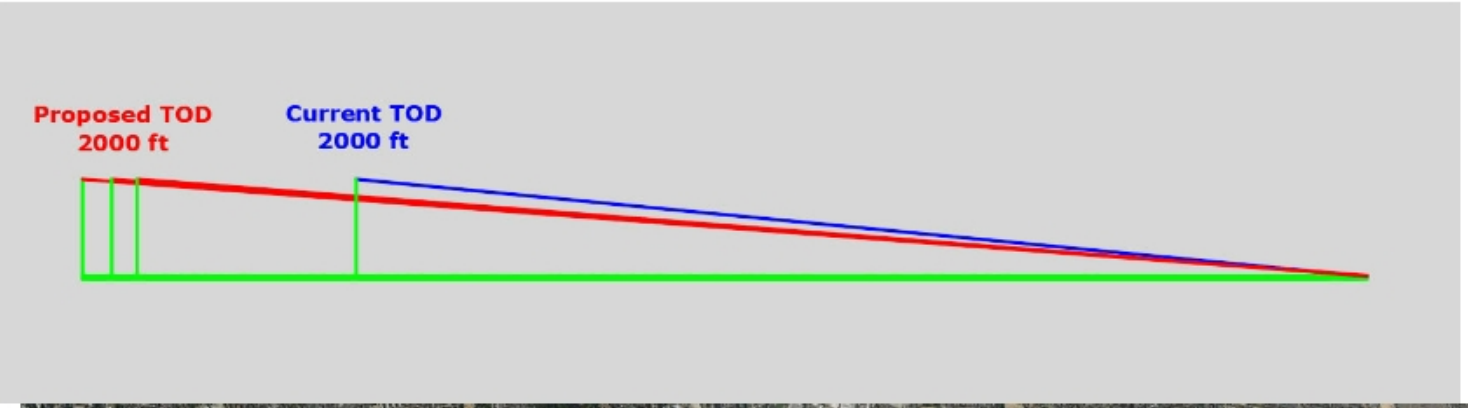
- Due to stringent obstacle clearance requirements for RWY 09, only a single option for final approach has been identified which satisfies the assumptions and constraints for the design.
- For this RWY 09 option, the track over the ground will remain as today, and the approach angle is reduced from 5.5° (current operations) to between 4.49° - 4.40° which will mean the ToD will move approximately 0.7 NM to 0.9 NM west of its current position.
- Therefore, instead of aircraft being at 2,000 ft for this portion of the flight path, they will descend to be approximately 340-375ft lower at the current ToD. This would be the maximum vertical difference between the current descent path and this option.
- A more detailed view of the proposed ToD area is provided on the next slide.

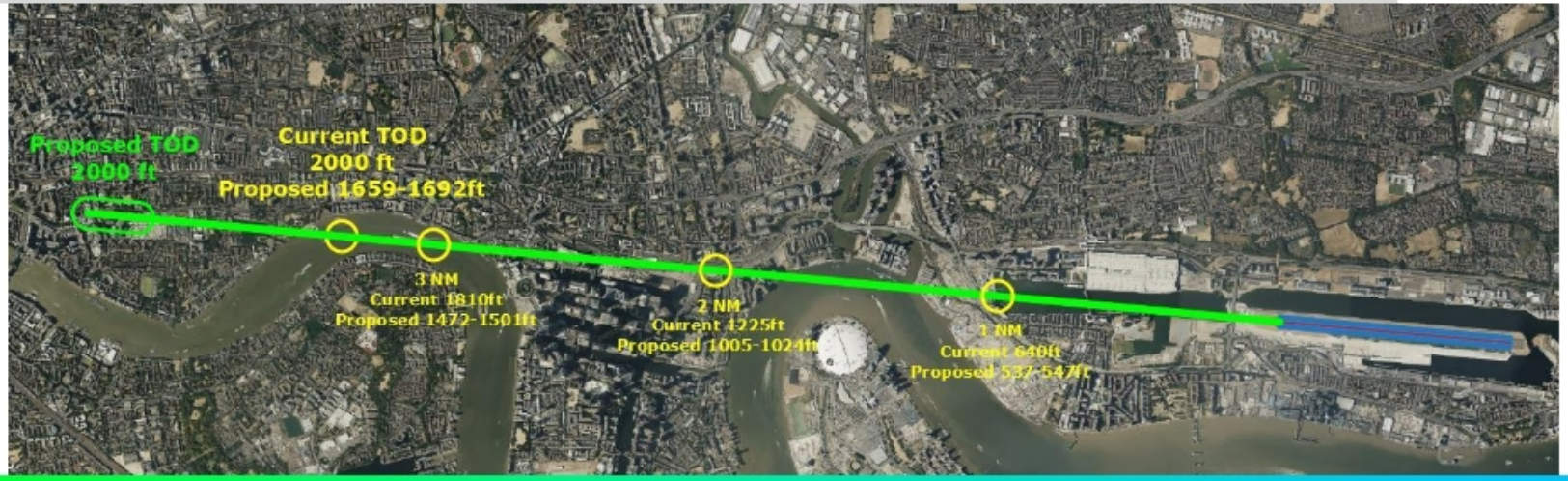




Final Approach Options RWY 09
FA_09 Option 1 (detailed view)

Final Approach Options RWY 09
FA09_Option 1





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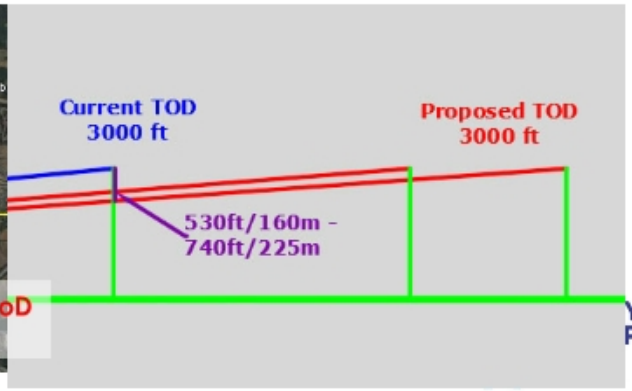
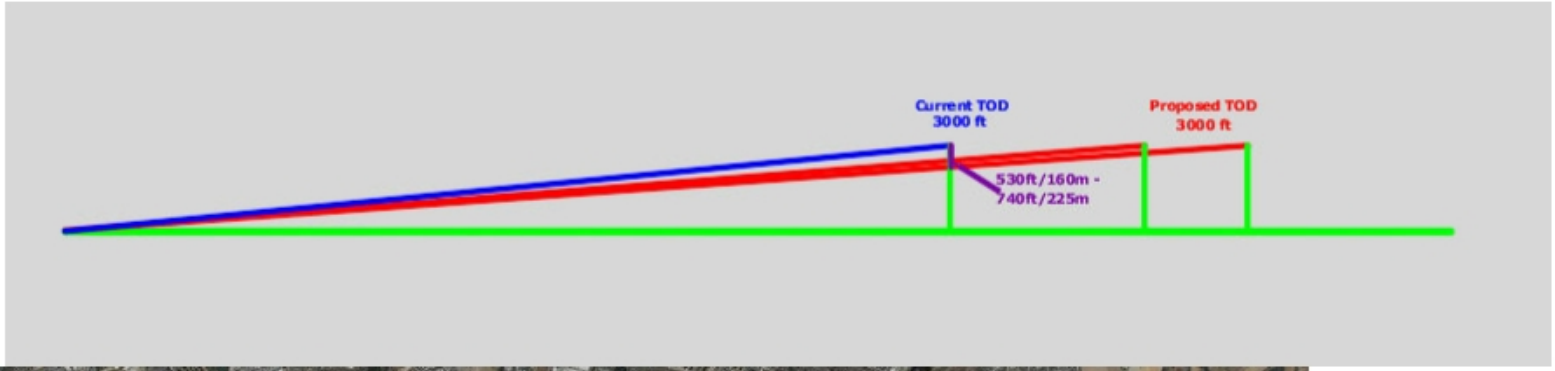
Final Approach Options RWY 27
FA_27 Option 1

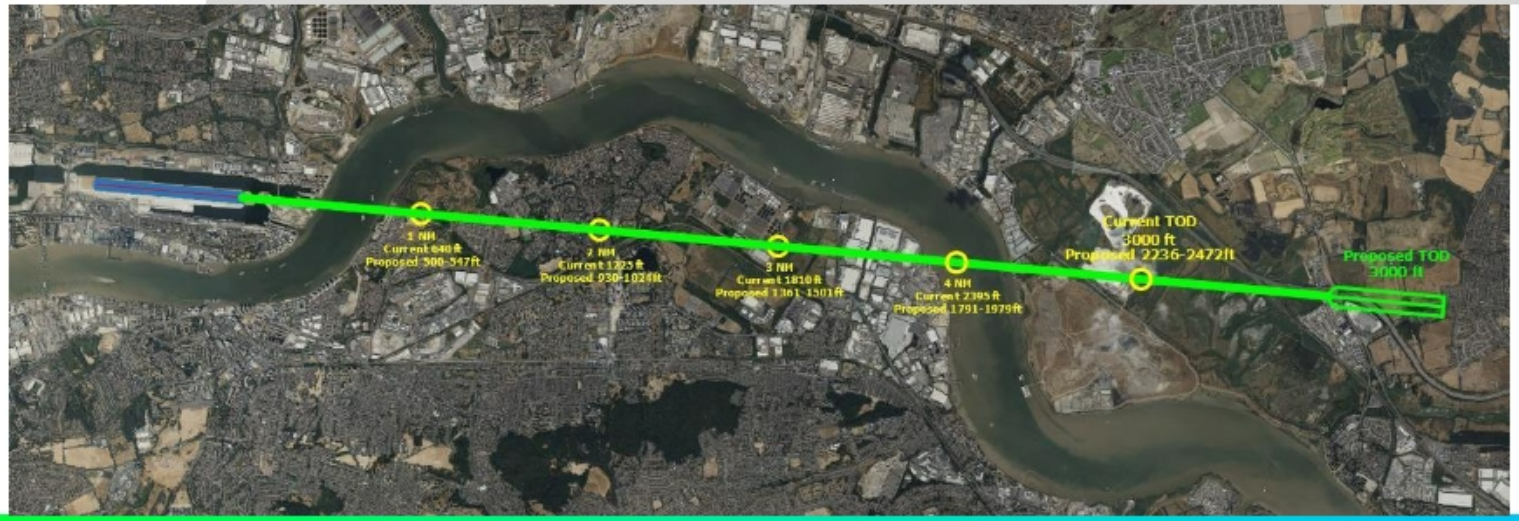
- The obstacle clearance requirements for RWY 27 are less stringent than RWY 09, and as such three different options for final approach have been identified which satisfy the assumptions and constraints for the design.
- For the first RWY 27 option, the track over the ground will remain as today, and 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.
- Therefore, instead of aircraft being at 3,000 ft for this portion of the flight path, they will descend to be between approximately 530-740ft lower at the current ToD. This would be the maximum vertical difference between the current descent path and this option.
- A more detailed view of the proposed ToD area is provided on the next slide.



Final Approach Options RWY 27
FA_27 Option 1 (detailed view)

Final Approach Options RWY 27
FA_27 Option 1





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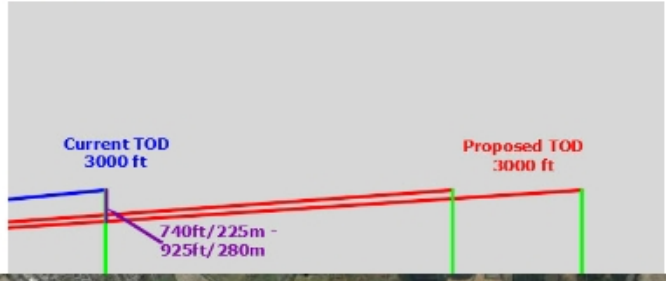
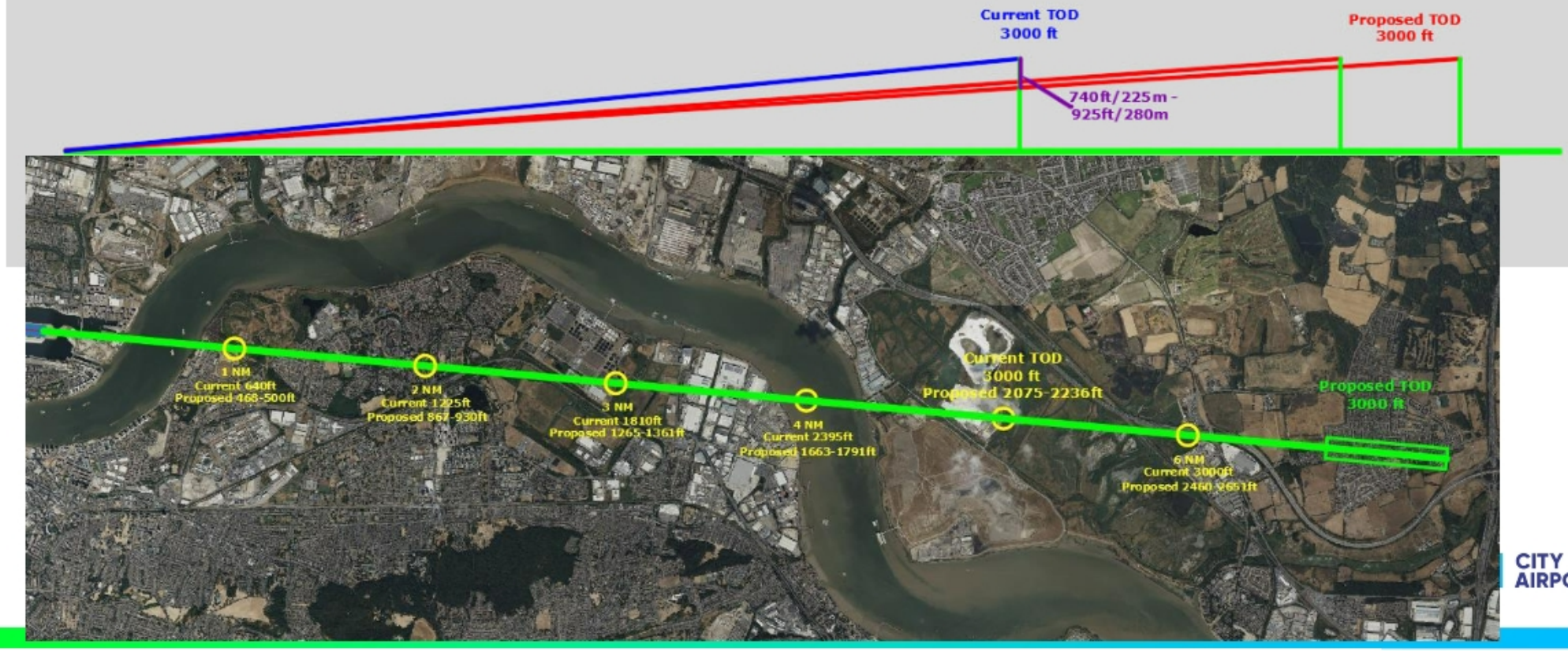
Final Approach Options RWY 27
FA_27 Option 2

- For the second RWY 27 option, the track over the ground will remain as today, 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.
- Therefore, instead of aircraft being at 3,000 ft for this portion of the flight path, they will descend to be approximately 740-925ft lower at the current ToD. This would be the maximum vertical difference between the current descent path and this option
- A more detailed view of the proposed ToD area is provided on the next slide.



Final Approach Options RWY 27
FA_27 Option 2 (detailed view)

Final Approach Options RWY 27
FA_27 Option 2



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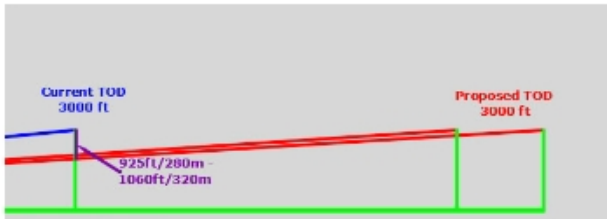
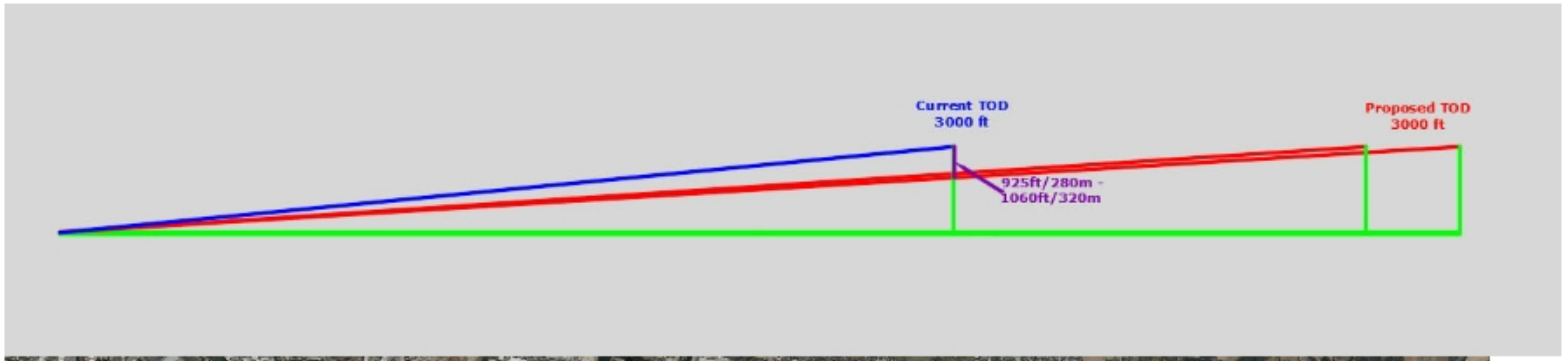
Final Approach Options RWY 27
FA_27 Option 3

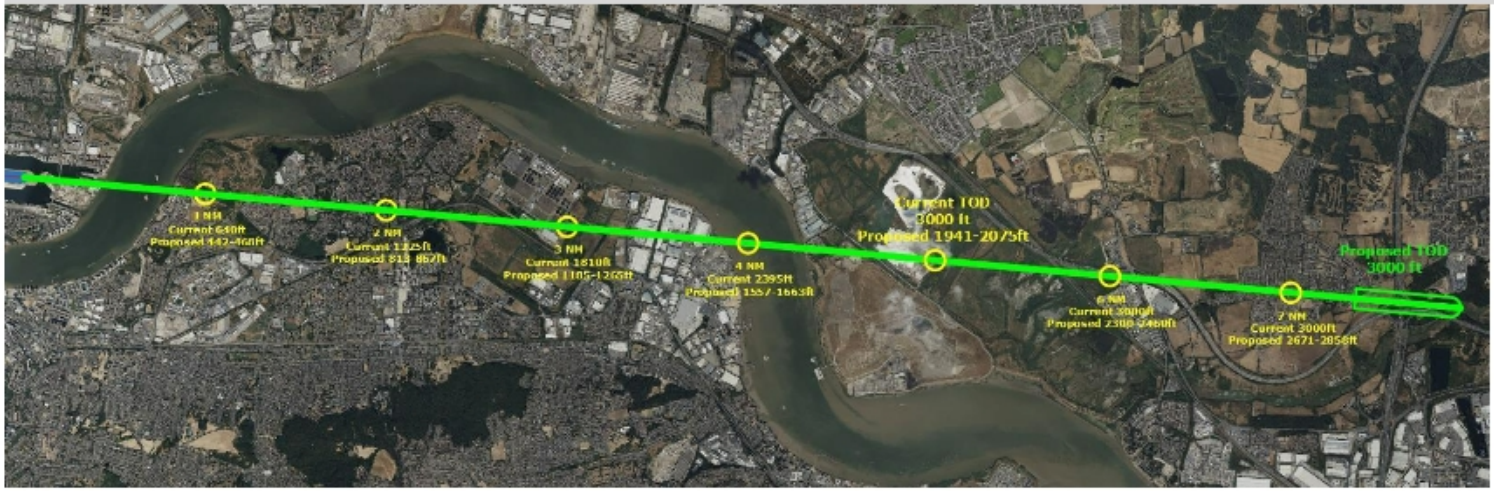
- For the third RWY 27 option, the track over the ground will remain as today, and the approach angle is reduced from 5.5° (current operations) to between 3.75° - 3.50° which will mean the ToD will move approximately 2.3NM to 2.9NM east of its current position.
- Therefore, instead of aircraft being at 3,000 ft for this portion of the flight path, they will descend to be approximately 925-1060ft lower at the current ToD. This would be the maximum vertical difference between the current descent path and this option
- A more detailed view of the proposed ToD area is provided on the next slide.



Final Approach Options RWY 27
FA_27 Option 3 (detailed view)

Final Approach Options RWY 27
FA_27 Option 3





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Questions

Draft Design Principle Evaluation

Draft Design Principle Evaluation

- The Design Principle Evaluation (DPE) is used to evaluate the baseline scenarios and design options against each of the design principles (which were developed with Stakeholders during Stage 1 of the CAP1616 process).

Ref	Category	Priority	Description
M_DP1	Safety	High	The airspace change proposal must maintain a high standard of safety and should seek to enhance current levels of safety.
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.
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.
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.
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.
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.
D_DP7	Noise	High	The airspace change proposal should limit and, where possible, reduce 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.
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.
B_DP10	Environment	Medium	The airspace change proposal should facilitate the use of additional new generation, environmentally efficient aircraft at London City Airport.
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.

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Draft Design Principle Evaluation

- To better understand the impacts of this proposal, which are associated primarily with changes to fleet mix and traffic volume, an initial DPE assessment has been performed and is being shared with stakeholders at this stage to facilitate discussion and feedback.
- Once all stakeholder feedback is received, and the design options are finalised, the DPE will be updated to ensure that it adequately reflects the views of the stakeholders specially with regards to the design options.

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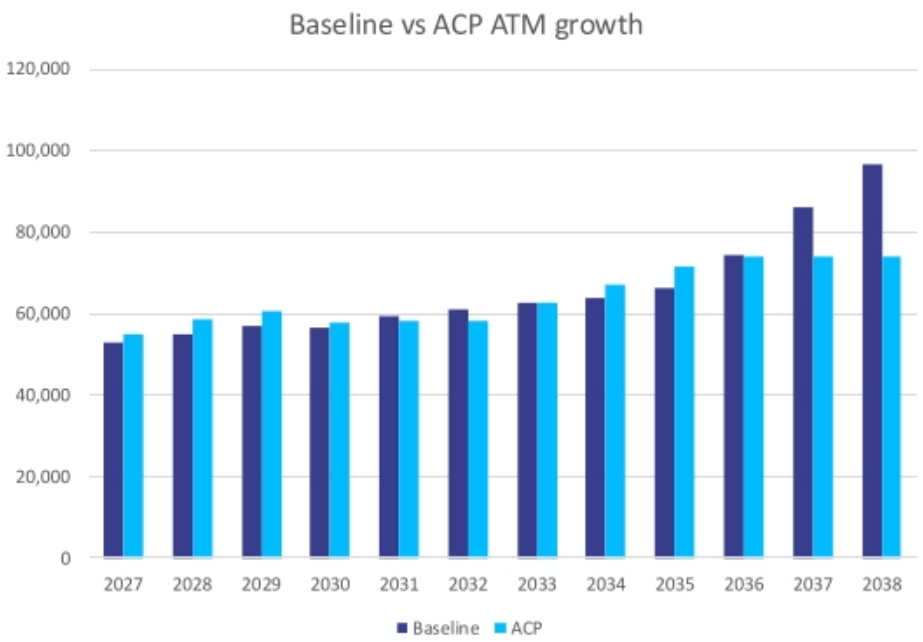
Draft Design Principle Evaluation

Traffic volumes, fleet mix changes 2027-2036



- For the CAP1616 process, designs are assessed at two points in the future: Year 1 (the implementation year, 2027) and 10-years after implementation (2036).
- The initial assessments on the following slides adhere to this time-period.
- To provide additional context to this airspace change proposal, it is worth noting that the full benefits of this change are associated with long-term traffic volume reductions, which are forecast to be realised by 2040; the introduction of RNP AR procedures enable the operation of greater passenger-capacity aircraft, reducing the total no. of air traffic movements by more than 20% annually, delivering long-term environmental benefits.

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Draft Design Principle Evaluation
Baseline "Do Nothing"

Ref		Description	Pros	Cons
Option 0	Baseline (Do nothing)	Represents the existing airspace design i.e. the "do nothing" option. Keep everything as it is currently.	• Maintains current, acceptable level of safety risk • No changes required to CADP planning permissions and S106 • Consistent with existing published airspace agreements • Gradual changes to fleet mix contribute to improved environmental efficiencies • No new populations overflown • No impact to other aviation stakeholders	• Does not contribute positively towards government airspace modernisation initiatives • Environmental benefits associated with fleet mix changes may be limited by traffic volume increases • Does not improve/optimise navigation standards • Does not improve cost-effectiveness of airline operations

Draft Design Principle Evaluation
Initial/ Intermediate Approach – RWY09

Ref		Description	Pros	Cons
Option 1	IA09_Option 1	Represents RWY09 initial and intermediate approach transitions which will closely follow the same lateral track as today.	• Contributes positively to safety • Contributes positively to objectives in the CAA's AMS and Section 70 of the Transport Act 2000 • No changes required to CADP planning permissions and S106 • Consistent with existing published airspace agreements • Increases the operation of more modern 'quieter' aircraft • Improves/optimises navigation standards for approach • Reduces total adverse effects from aircraft noise • No new populations overflown • Improves cost-effectiveness for airline operators • No impact to other aviation stakeholders	
Option 2	IA09_Option 2	Represents RWY09 initial and intermediate approach transitions which will allow minor lateral variation from today.	• Contributes positively to safety • Contributes positively to objectives in the CAA's AMS and Section 70 of the Transport Act 2000 • No changes required to CADP planning permissions and S106 • Increases the operation of more modern 'quieter' aircraft • Improves/optimises navigation standards for approach • Reduces total adverse effects from aircraft noise • No new populations overflown • Improves cost-effectiveness for airline operators • No impact to other aviation stakeholders	
Option 3	IA09_Option 3	Represents RWY09 initial and intermediate approach transitions which will allow moderate lateral variation from today.	• Contributes positively to safety • Contributes positively to objectives in the CAA's AMS and Section 70 of the Transport Act 2000 • No changes required to CADP planning permissions and S106 • Increases the operation of more modern 'quieter' aircraft • Improves/optimises navigation standards for approach • Reduces total adverse effects from aircraft noise • No new populations overflown • Improves cost-effectiveness for airline operators • No impact to other aviation stakeholders	• Spacing considerations for successive aircraft on the different types of arrival procedure (ILS/RNP)

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Draft Design Principle Evaluation
Final Approach RWY 09

Ref		Description	Pros	Cons
Option 4	FA09_Option 1	Represents RWY09 4.49° - 4.40° final approach path	• Contributes positively to safety • Contributes positively to objectives in the CAA's AMS and Section 70 of the Transport Act 2000 • Increases the operation of more modern 'quieter' aircraft • Improves/optimises navigation standards for approach • No changes to Obstacle Limitation Surface • Reduces total adverse effects from aircraft noise • No new populations overflown • Improves cost-effectiveness for airline operators	• Spacing considerations for successive aircraft on the different types of arrival procedure (ILS/RNP) • May require revision of the LCY Noise Action Plan and Noise Management and Mitigation Strategy • May require review of procedures for Helicopter transits

Draft Design Principle Evaluation

Final Approach RWY 27

Ref		Description	Pros	Cons
Option 5	FA27_Option 1	Represents RWY27 4.49° - 4.05° final approach path	• Contributes positively to safety • Contributes positively to objectives in the CAA's AMS and Section 70 of the Transport Act 2000 • Increases the operation of more modern 'quieter' aircraft • Improves/optimises navigation standards for approach • No changes to Obstacle Limitation Surface • Reduces total adverse effects from aircraft noise • No new populations overflown • Improves cost-effectiveness for airline operators • No impact to other aviation stakeholders	• Spacing considerations for successive aircraft on the different types of arrival procedure (ILS/RNP) • May require revision of the LCY Noise Action Plan and Noise Management and Mitigation Strategy
Option 6	FA27_Option 2	Represents RWY27 4.05° - 3.75° final approach path	• Contributes positively to safety • Contributes positively to objectives in the CAA's AMS and Section 70 of the Transport Act 2000 • Increases the operation of more modern 'quieter' aircraft • Improves/optimises navigation standards for approach • No new populations overflown • Improves cost-effectiveness for airline operators • No impact to other aviation stakeholders	• Spacing considerations for successive aircraft on the different types of arrival procedure (ILS/RNP) • May require revision of the LCY Noise Action Plan and Noise Management and Mitigation Strategy • May require change to Obstacle Limitation Surface • May result in slight noise disbenefit at start of descent
Option 7	FA27_Option 3	Represents RWY27 3.75° - 3.50° final approach path	• Contributes positively to safety • Contributes positively to objectives in the CAA's AMS and Section 70 of the Transport Act 2000 • Increases the operation of more modern 'quieter' aircraft • Improves/optimises navigation standards for approach • No new populations overflown • Improves cost-effectiveness for airline operators • No impact to other aviation stakeholders	• Spacing considerations for successive aircraft on the different types of arrival procedure (ILS/RNP) • May require revision of the LCY Noise Action Plan and Noise Management and Mitigation Strategy • May require change to Obstacle Limitation Surface • May result in slight noise disbenefit at start of descent

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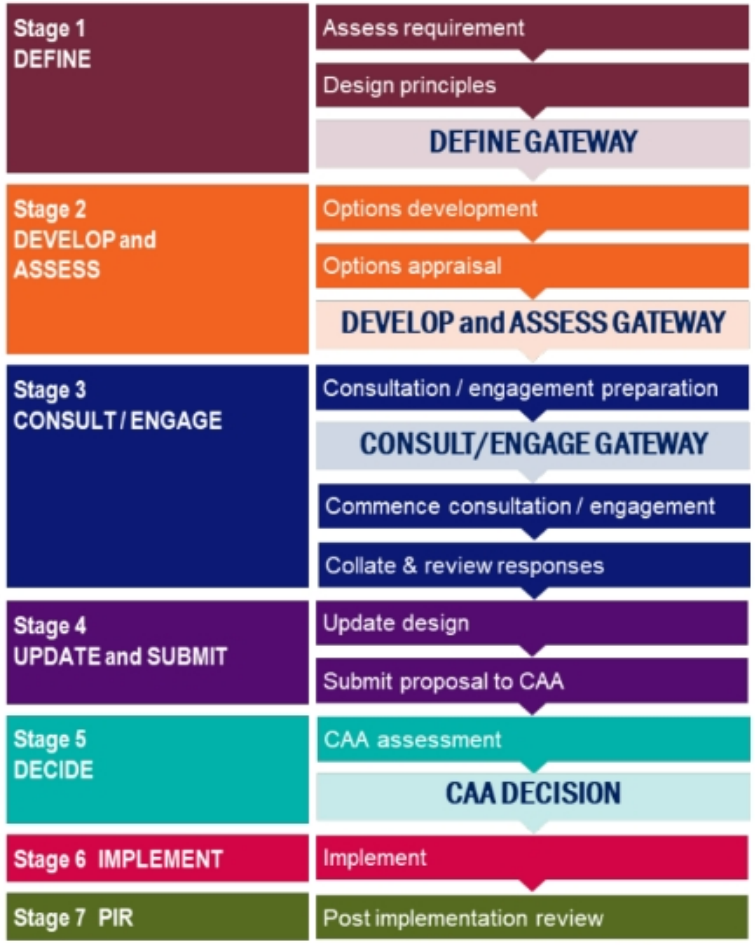
Draft Design Principle Evaluation

- If you have any feedback on the baseline scenarios, or the design options that could impact this assessment, we would like to hear your views.
- Once we have completed the final DPE, we will share the results with you.

Questions

Next Steps

- Following engagement Stakeholders are requested to provide feedback to LCY-ACP@londoncityairport.com
- We will consider your responses in the designs and describe how your feedback has influenced the design options
- Stage 2 documentation for the new options will be completed and options shortlisted
- This will be submitted to the CAA for a Stage 2 gateway assessment
- Subject to CAA approval for Stage 2 the ACP shall progress through the further stages of the CAP1616 process



Timeline

CAP1616 Gateways – Completion Dates	Indicative Timeline
Assessment meeting	Complete
Stage 1 - Define	May 2025
Stage 2 - Develop and Assess	August 2025
Stage 3 - Consult	March – May 2026
Stage 4 - Update and Submit	July 2026
Stage 5 - Decide	September 2026
Stage 6 - Implement	January 2027
Stage 7 - Post Implementation Review	2028

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How to provide feedback

- We value your feedback. Please send any comments and thoughts to us at:

LCY-ACP@londoncityairport.com by 25th July 2025

- For more information regarding the Airspace Change Process please follow the below link:

London City Airport Airspace Change Process | London City Airport

Questions

Thank You