



# Introduction of RNP AR Procedures at EGLC

Stage 1 Define  
Assessment Meeting  
ACP-2025-003  
March 2025  
London City Airport/ NSL

# Agenda

- Introductions
- Statement of Need
- Opportunities/ Issues from the proposed change
- Exploiting the Opportunities
- Addressing the Identified Issues
- Current day scenario
- Concept
- Environmental: Overflight/Noise
- Safety Assessment Requirements
- Provisional Scaling & Process
- Draft Submission/Gateway Timescales
- Next steps
- Questions & AOB

# Statement of Need (Submitted 24<sup>th</sup> Jan 2025)

- The introduction of RNP AR (GNSS) based procedures using existing tracks over the ground and non-standard approach angles to facilitate the operation of cleaner, quieter, new generation aircraft at London City Airport (EGLC). 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 FASl 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.

# Statement of Need (Submitted 24<sup>th</sup> Jan 2025 - cont.)

- 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 79,000 ATMs 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.

# Opportunities/ Issues from the Proposed Change

## Opportunities

- The introduction of LCY RNP AR procedures seeks to:
  - Support the Government's objectives of driving economic growth and sustainable aviation;
  - Improve the accessibility of arrival routes enabling additional capacity;
  - Enable a new generation of aircraft at LCY which could reduce the environmental impacts of aviation;
  - Incentivise airlines to accelerate the modernisation of their fleet, moving to quieter, more fuel-efficient aircraft;
  - Reduce the environmental impact for the local community;
  - Potentially create more choice of destinations for passengers;
  - Maintain the high levels of safety within the London City Airport operation; and
  - Provide the opportunity for new airlines and aircraft types to operate at LCY.

## Issues

- A number of issues will need to be addressed including the:
  - Impact of shallower angle of approach procedures on airport obstacle clearance and environmental impact;
  - Wider operational impacts associated with the change (including workload, situation awareness and safety);
  - Dependency on the aircraft manufacturers to support procedure design and aircraft capability assessments;
  - Regulatory approval for RNP AR approach
  - Requirement for NATS RNP AR Airspace Procedure Design Organisation (APDO) licence
  - Year 1 forecasts and evidence collection period for the Post Implementation Review
  - Impact on runway and ground operations, and airport capacity;
  - Potential redistribution of departures based on prospective new destinations; and
  - Potential to blight the development potential of sites given the shallower approach angle.

# Exploiting the Opportunities

Opportunities	Description
Support the Government's objectives of driving economic growth, and sustainable aviation	The concept seeks to make best use of existing runway capacity by increasing passenger capacity per flight using the existing runway and airfield infrastructure, maintaining existing passenger and ATM limits, complying with noise and operational restrictions secured by its planning permission. LCY also has permission for passenger numbers to grow from 6.5mppa to 9mppa; this change provides realistic prospects, and is a key enabler, for reaching this level in the 10-year forecast.
Improve the accessibility of arrival routes; enabling additional capacity	In addition to current procedures at LCY, the concept aims to expand the approach procedures (all extant procedures will remain), by removing the current steep approach certifications associated with operating on a 5.5° glideslope; this opens the airport to more modern and efficient aircraft operating at LCY, with increased passenger capacity per flight, within the existing limits of air traffic movements at the airport.
Enable a new generation of aircraft at LCY which could reduce the environmental impacts of aviation.	Specifically, the Airbus A320neo, which is a cleaner and quieter new generation aircraft. Preliminary flyability and IFP design work is underway to explore viable angle of approach for this aircraft type. It is desirable to not have to implement an 'aircraft-type' specific procedure, but we recognise the need to control who is eligible to use it.
Incentivise airlines to accelerate the modernisation of their fleet, moving to quieter, more fuel-efficient aircraft	By removing the current 5.5° glideslope certifications for A320neo only, airlines will be incentivised to refleet to this new generation aircraft faster than the standard aircraft replacement cycle so they can utilise the opportunity to deploy an aircraft with greater capacity, lower seat costs and increased yields than would otherwise be available at LCY.
Reduce the environmental impact for the local community	Preliminary noise modelling indicates the potential for Approach Noise Level benefits when comparing the Airbus A320neo (~70% of flights in the London market are the A320 aircraft family type) against the Embraer E190 (~90% of flights at LCY are the Embraer aircraft family type). A reduction in the angle of approach for these procedures could potentially reduce the population significantly affected by noise compared to today.
Potentially create more choice of destinations for passengers	Removing the constraint of steep-approach procedures, and the introduction of new generation aircraft creates the opportunity for new operators to fly from LCY, to a greater range of destinations than previously.
Maintain the high levels of safety within the London City Airport operation	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 reduced Controlled Flight Into Terrain (CFIT) risks.
Provide the opportunity for new airlines to operate at LCY	In addition to current procedures at LCY, the concept aims to expand the approach procedures (all extant procedures will remain), by removing the current steep approach certifications associated with operating on a 5.5° glideslope. This allows for a greater range of prospective airline operators at LCY, especially those operating the A320neo.

# Addressing the Identified Issues

Issues	Description
Impact of shallower angle of approach procedures on airport obstacle clearance and environmental impact.	As the design options are developed, IFP assurance and safety analysis will ensure that non-feasible design options are no longer progressed.
Wider operational impacts associated with the change (including workload, situation awareness and safety).	As the design options are developed, operational assessments using subject matter experts will ensure that only those options that are operationally feasible are progressed.
Dependency on feedback from the aircraft manufacturers to support procedure design and aircraft capability and safety assessments.	LCY will maintain close collaborative working alongside aircraft manufacturers to ensure the flyability and safety of any proposed changes to the angle of approach
Regulatory approval for RNP AR approach	Coordination with the CAA to understand the applicable regulatory requirements and ensure regulatory compliance: including Steep Approach Approval compliance vs. RNP AR Approval compliance, ICAO procedure design criteria vs. procedure-specific approval, Regulator RNP AR training, competency and resourcing
Requirement for NATS RNP AR Airspace Procedure Design Organisation (APDO) licence	NATS is currently progressing RNP AR on their APDO licence
Year 1 forecasts and evidence collection period for the Post Implementation Review	Where deployment takes place at the mid/ end of an implementation year, this may distort metrics used for comparison against the baseline. In this case, airspace change modelling for the year of implementation (Year 1) could assume a 'January' deployment to ensure 12 months of scenario data is used against the baseline (no change scenario). Similarly, the PIR data collection period could extend to the following Jan-Dec period, to ensure full capture of metrics across the 92-day busy summer period.
Impact on runway and ground operations, and airport capacity	Feasibility work into how the airfield will operate will inform the options development and appraisal in the later stages of the design process.
Potential redistribution of departures based on prospective new destinations	Any impact on departure flights, including fleet mix, SID distributions and noise modelling will inform the options development and appraisal in the later stages of the design process.
Potential to blight the development potential of sites given the shallower approach angle	Any impact on the development potential of sites will inform the options development and appraisal in the later stages of the design process.

# Current Day Scenario

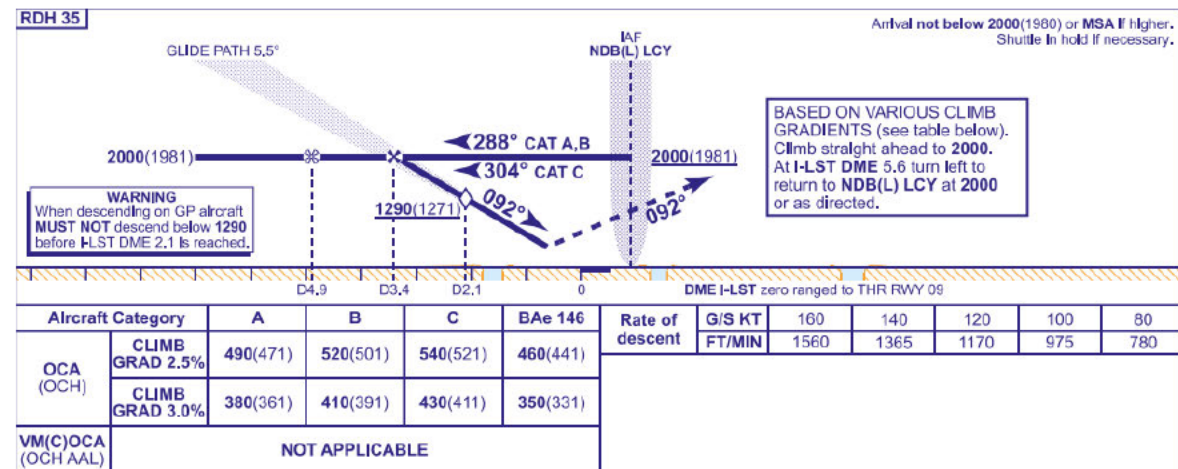
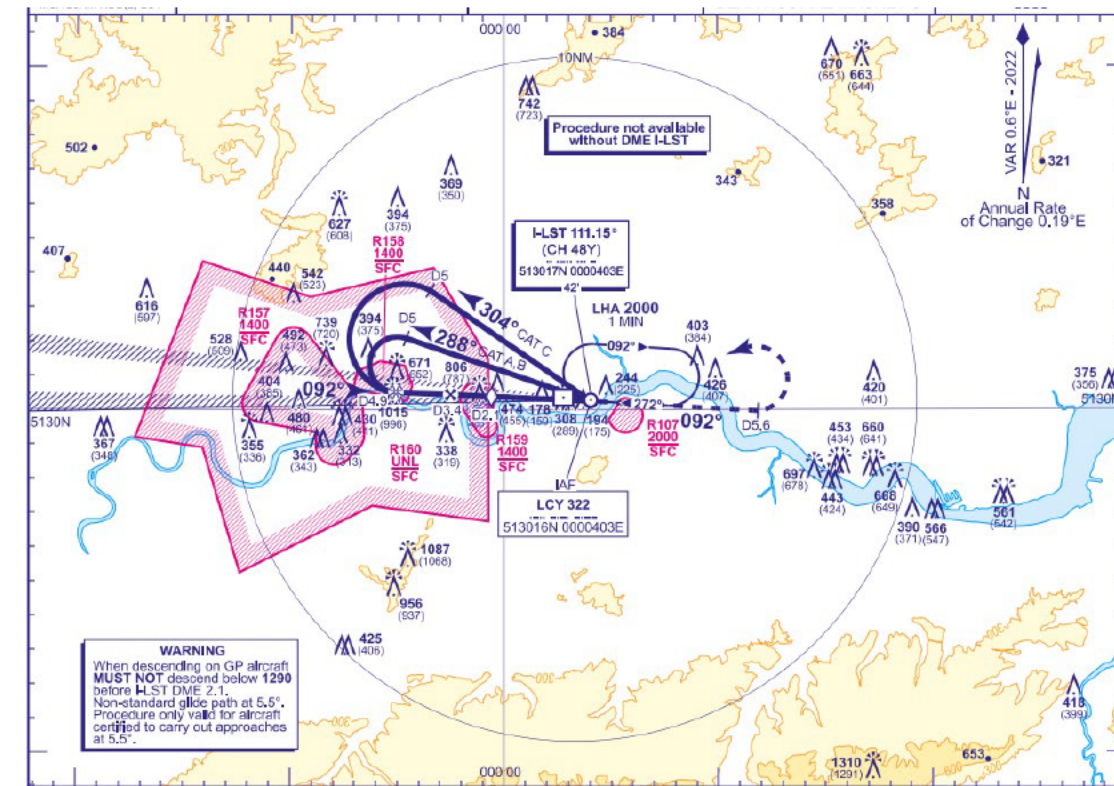
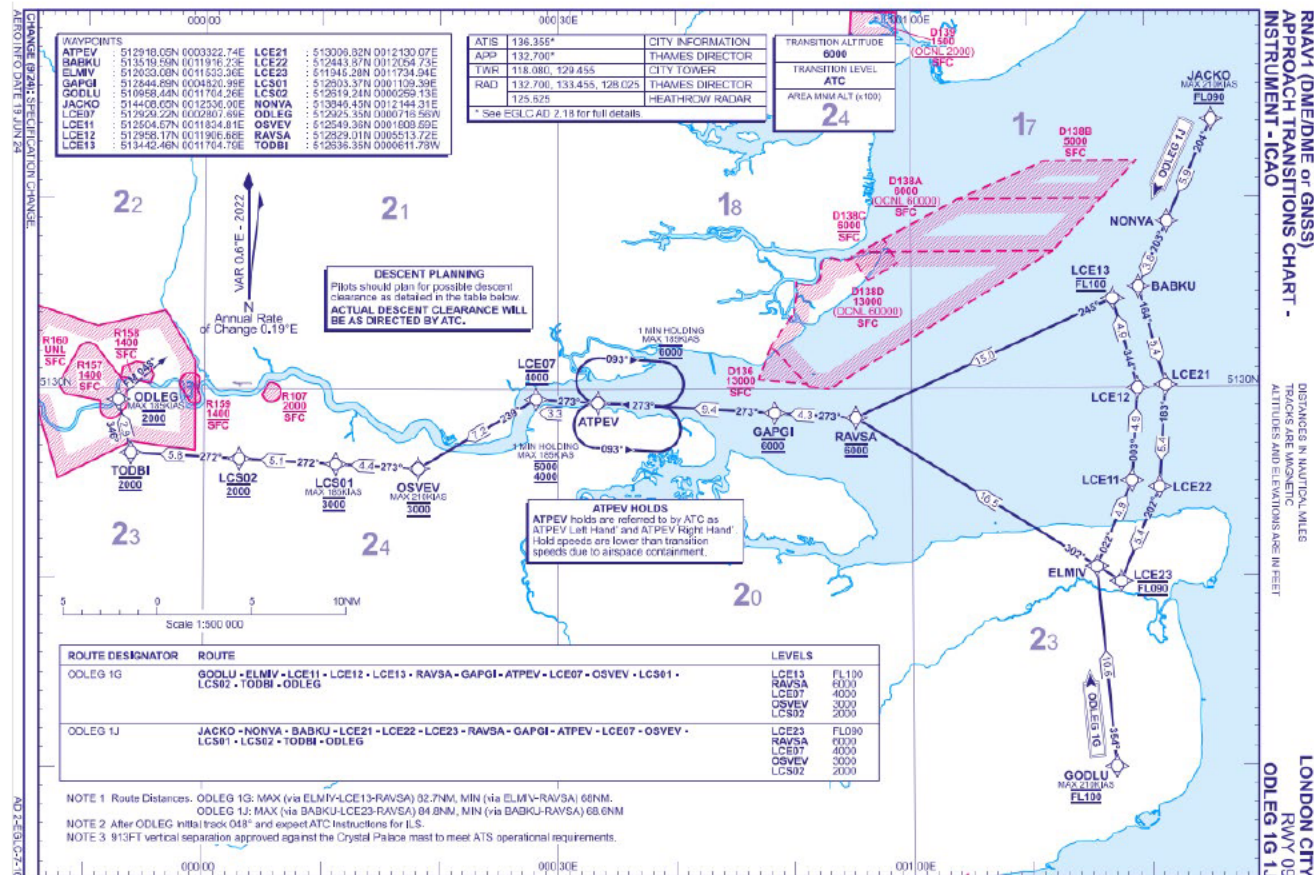
Map showing today's airspace and population centres in the area



- LCY has a single 1,500m runway that can be used in either direction; Runway 09 for aircraft taking off/ landing from the east, and Runway 27 for those taking off/ landing from the west.
- The angle of approach for both Runway 09 and Runway 27 is set at 5.5° to ensure adequate safety margins against the surrounding buildings (obstacle clearance\*) following the introduction of precision approaches at the airport in 2016. \*Obstacle clearance specifically relates to approaches from the East on RWY09. The 5.5° angle of approach for approaches from the West on RWY 27 is for consistency.

- The industry standard (optimum) angle of approach is 3° and anything above 3.5° is considered a steep angle.
- Today's steep approaches require special aircraft requirements and flight crew certification.
- An EMAS (Engineered Material Arrestor System) exists at both runway ends as safety mitigation for aircraft overshooting the runway on departure or arrival.

# Current Day Scenario



# Concept

RNP-AR relies on satellite-based navigation systems (such as GPS or GNSS) combined with onboard equipment, including multi-sensor navigation systems and flight management systems (FMS) removing a dependency on ground-based navigational equipment such as an Instrument Landing System (ILS). It is defined by a requirement for the aircraft to stay within a certain lateral and vertical accuracy along the flight path. RNP AR procedures are more stringent and have tighter navigation tolerances compared to standard RNP or RNAV procedures.

The 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  $\pm 0.3$  nautical miles or less and can be as low as  $\pm 0.1$  nautical miles. Due to this level of accuracy, the obstacle assessment area is much smaller when compared to an ILS protection area meaning many of the tall buildings in Canary Wharf that have led to the 5.5° approach into LCY can be discounted.

Special authorisation from the regulatory authority is needed for both the airline and the crew to conduct RNP AR procedures. This is because these procedures often require advanced avionics, additional pilot training, and a strict approval process due to the often-complex approaches.

We are exploring the development of an RNP AR procedure to both runways for use by Airbus A320neo aircraft operators at a shallower angle foregoing the need for the aircraft to be steep approach certified.



**NOTE IMAGES ARE ILLUSTRATIVE ONLY, AND NOT TO SCALE OR SHAPE**

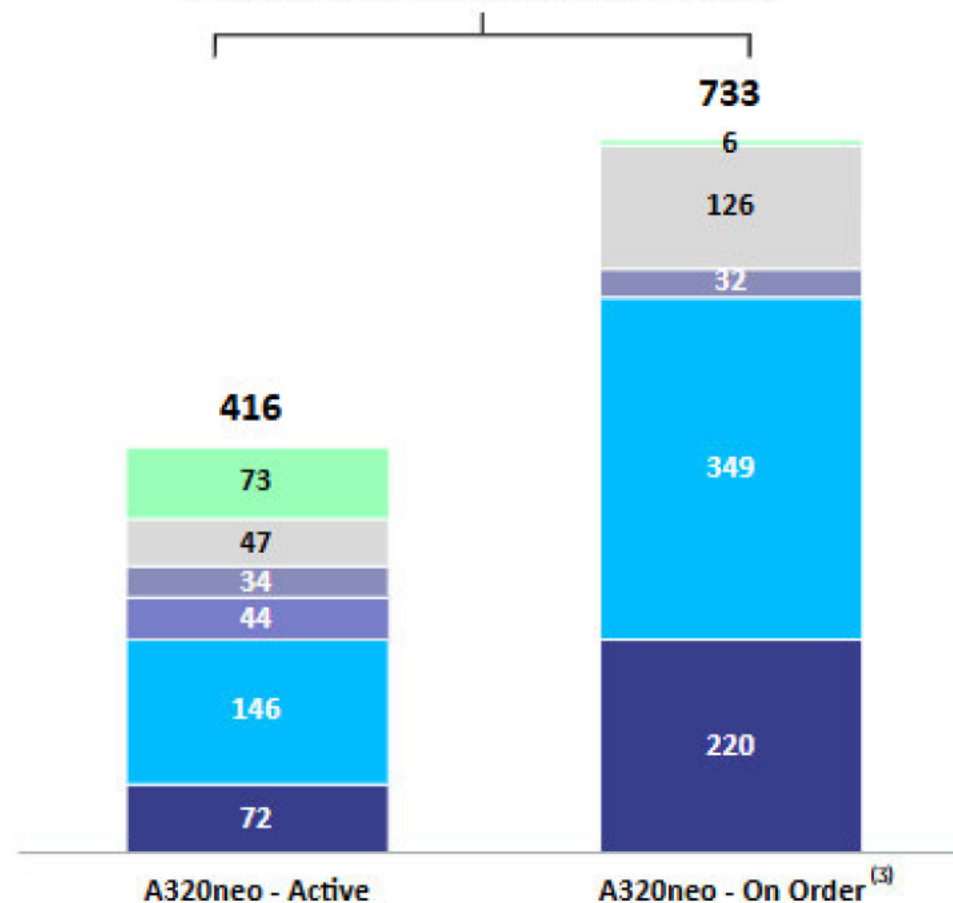
# Concept

- Enabling the A320neo to operate at LCY would open the airport for use by a wider range of airlines serving a broader network of routes. In turn this would provide East London with stronger connectivity to Europe and the social and economic benefits that would unlock.

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%		86.0%
A220	1.2%		16.8%
ATR	0.3%	5.2%	16.5%
Q400	0.2%		88.3%
Others (incl. widebody)	2.4%		0.0%
	100.0%		3.4%

European Carriers Have 1,149 A320neo in Fleet / On Order

Total of 1,149 A320neo Active and On Order



Colours represent airline groups – removed due to commercial sensitivity

3) On-order includes LOI to Option/Order, and currently On Option/Order (Cirium data as per January 2025)

# Environmental: Overflight/ Noise

## Reduced Angle of Approach

- It is anticipated that any proposed new angle of approach will alter the impact to those under the flight paths; lower flying aircraft reduce the overflight footprint whilst modern aircraft are quieter.

## Analyses required

- Total Adverse Effects on People
- Equivalent Continuous Noise Levels (LAeq) and Contours
- Number Above Contours (N65 daytime and N60 night-time)
- Overflight Contours
- Noise sensitive buildings
- Air Quality

# Safety Assessment Requirements

- RNP AR Approach operational implementation requires: airline capability, aircraft capability, air traffic capability, airport capability and regulatory capability.
- Initial obstacle assessments have been conducted; these indicate that with the narrower protection corridor, obstacles that drive the 5.5° angle for ILS approaches do not preclude a reduction of the approach angle.
- Initial test flights in the A320neo simulator have been conducted; at different angles these indicate that a small reduction of the approach angle provides a good level of stability which could operate in varied weather conditions at LCY.
- LCY operates an EMAS system which is a key safety enabler; provides protection against obstacles, densely populated areas, roads etc. should aircraft overrun the runway on take-off or landing.
- LCY will maintain close collaborative working alongside aircraft manufacturers to ensure the flyability and safety of any proposed changes to the angle of approach
- LCY will maintain close collaborative working alongside the airlines, using their subject matter experts to develop options and understand any safety impacts, including human factors (e.g. cockpit situation awareness and workload, varied angle of approach instrument reporting). ATC safety assessment (HAZId), simulation activities with Tower and Swanwick TC Approach controllers
- Validation of the procedures: e.g. by aircraft manufacturers in the simulator, test flight by the airline operator

# Provisional Scaling and Process Discussion

- It is expected that traffic distribution below 7000ft will be changed. As such this ACP is expected to be scaled as a Level 1 change.
- This ACP is sponsored by London City Airport
- NATS (NSL) is supporting London City Airport in developing their ACP (for Stage 1).
- This ACP is independent of changes taking place within the Future Airspace Strategy Implementation (FASI) programme and proposes to implement before FASI.

# Draft Gateway Timescales

Activity	Submit Paperwork	Proposed Gateway Date
Assessment Meeting (Today)	n/a	n/a
Stage 1 – Define Gateway	16 <sup>th</sup> May 2025	30 <sup>th</sup> May 2025
Stage 2 – Develop and Assess Gateway	15 <sup>th</sup> August 2025	29 <sup>th</sup> August 2025
Stage 3 – Consult Gateway	16 <sup>th</sup> January 2026	30 <sup>th</sup> January 2026
Consultation	2 <sup>nd</sup> March 2026 – 4 <sup>th</sup> May 2026	
Stage 4 – Update and Submit	31 <sup>st</sup> July 2026	
Stage 5 – Decide	25 <sup>th</sup> September 2026	
Stage 6 - Implement	21 <sup>st</sup> January 2027	

# Next Steps

- Planned next steps
  - To follow the airspace change process as described in the CAP1616, including
    - Continued refinement of the concepts and definition of the scope; including feasibility assessments of any changes to the angle of approach: Flyability, IFP design, Safety and Human Factors
    - Continued Analytics work to understand fleet mix, passenger numbers and environmental impacts
    - Close collaboration with the airlines to support procedure design
    - Engagement with the wider aviation community including airports, GA and MoD.
    - Engagement with community stakeholders including local and national media.

# Questions & AOB

- Does anyone have any other points/ questions/ comments they would like to raise?

Thank you

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