ACP-2022-090

London City Airport
Installation of Engineered Material Arrestor System to enhance safety

Documentation:
CAP1616 Stages 1-4 Multi-Gateway

Issue 1.1

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Issue 1.0	15th March 2023	Submitted
Issue 1.1	16th March 2023	Updated to address CAA comments

Contents

1. Introduction

This document is a multi-gateway technical document designed to comply with the requirements of a Level 2C CAP1616 Airspace Change process (ACP)[1].

The CAA reference is ACP-2022-090, the link to the CAA progress page is here.

The intent of this document is to summarise and satisfy the requirements of CAP1616 Stages 1-4.

2. Brief Summary of this Proposal

London City Airport is installing an Engineered Material Arrestor System (EMAS) which will provide an arrestor bed at both ends of its runway, enhancing safety and reducing the risk to aircraft and passengers should an aircraft overrun or undershoot a runway. The EMAS will be placed in the existing RESAs and the future design will see changes to the threshold locations.

Procedures will be introduced in two phases:

1. pre-flight validation procedures will accommodate the new threshold locations but will not include the revised Step Down Fix (SDF) locations or altered Missed Approach gradients. These procedures will be accompanied with a higher minima.

2. post-flight validation procedures will include all elements for final operations using the new threshold locations. Minima is expected to be lower in these procedures (subject to approval by the CAA).

This ACP fulfils the requirements of the first phase of this process (pre-flight validation procedures) in order to facilitate the changes required for the installation of the Engineered Material Arrestor System (EMAS).

3. Stage 1 Define

Step 1A Assess requirement

3.1 The statement of need was submitted on 13th December 2022 [2]. A CAA case officer was subsequently allocated to this package of work.

3.2 Due to the nature of this proposal, it was deemed that a face to face Assessment Meeting was not necessary.

3.3 The Assessment Meeting was held on 3rd February 2023 via Microsoft TEAMS.

3.4 The technicalities of the proposed changes were described. A presentation was given by London City Airport Ltd to CAA, interactive with questions asked and answered.

3.5 Information subsequently supplied included:

- The original presentation slide pack, in PDF format
- The same presentation, redacted for publication
- The Assessment Meeting Minutes word document

3.6 This proposal is primarily about the changes required to facilitate the installation of EMAS.

3.7 CAA agreed that this proposal falls under the airspace change process with a provisional level of a scaled 2C.

3.8 CAA agreed that an environment assessment would be required but can be scaled to a qualitative description.

3.9 CAA agreed that engagement activities, due to the negligible impact can be limited to the London City Airport Consultative Committee (LCACC) only.

Step 1A complete

Step 1B Design principles

- Not required

Step 1B complete

4. Stage 2 Develop and Assess

Step 2Ai Options development: Design Options list

4.1 EMAS Option

The EMAS is an arrestor bed system, placed in the current RESAs at either end of the runway. These beds are formed of collapsible concrete that can bring a fully laden aircraft to a full stop at 70kts. This delivers significant safety benefits to the operation. Notably, there is water at the eastern end of the runway which would greatly increase the risk of a water borne rescue being required in the event of an overrun. Additionally, there is equipment and hard surfaces at the western runway end. The presence of these arrestor beds therefore provide tangible benefits to the safe operation of aircraft at London City Airport by preventing overrun into these hazardous areas, with reduced risk to the travelling public.

The airspace changes in this proposal enable the installation of the EMAS beds and maximise the runway distances available to aircraft using the existing paved runway surface. Altering these distances requires minor amendments to the instrument approaches that will have a minimal effect to communities on the ground.

The project allows next generation aircraft to operate at the airport that are cleaner, quieter and more environmentally friendly. This has advantages for the local community in both noise and air quality. These aircraft also generate less CO_2 emissions.

4.2 "Do Nothing" Option

An existing risk exists to aircraft in the event of an overrun, with both runway ends representing particularly unique hazards. This risk is currently mitigated by restricting the usable length of the runway. Not installing the EMAS solution would not allow these risks to be fully mitigated and remove the hazards at each runway end.

Installing the EMAS solution without amending the runway distance available for aircraft to utilise will prevent the introduction of next generation aircraft at the airport. The environmental and noise benefits would therefore not be realised.

Step 2Aii Options development: Design Principle Evaluation

4.3 Not required.

Step 2A complete

Step 2B Options appraisal

4.4 Not required.

End of Step 2B

5. Stage 3 Consult

Steps 3A-3D

5.1 Not required.

End of Steps 3A-3D

6. Stage 4 Update and Submit

6.1 The following sections cover the standard ACP sections in CAP1616, condensed to suit the technical nature of this proposal.

7. Current Airspace Description

7.1 Structures and Routes

The current IFPs which require amendment are the approaches, namely: ILS DME/NDB Runway 09, LOC/DME/NDB Runway 09, ILS DME/NDB Runway 27, LOC/DME/NDB Runway 27.

7.2 Airspace usage and proposed effect

The installation of the EMAS solution allows next generation aircraft to operate at London City Airport. These aircraft require an increase in runway distances to operate but bring environmental and noise benefits. In the event of an overrun, the EMAS beds at either end of the runway prevent serious runway excursion for these new aircraft types, as well as for existing types in operation.

The EMAS solution is an enabler for next generation operations at London City Airport and to improve safety for existing operations. Examples of next generation types that could be permitted to operate in the future (subject to certification) are the E190-E2 and E195-E2.

There would be no change to pilot or controller behaviour, and no change to lateral or vertical traffic dispersion.

7.3 Operational efficiency, complexity, delays, and choke points

There are no specific issues relating to operational efficiency, complexity, delays, or choke points associated with any of the IFPs related to this project, to be solved by this airspace change proposal.

7.4 Safety issues

There are no specific safety issues associated with any of the IFPs related to this airspace change proposal. Changes to IFP are subject to assessment and approval by the CAA. All changes in this proposal have been completed with no safety issues identified.

7.5 Environmental issues

There are no specific environmental issues associated with any of the IFPs related to this project, to be solved by this airspace change proposal.

8. Statement of Need

8.1 This proposal addresses the Statement of Need:

8.2 "London City Airport is installing EMAS (Engineer Material Arrestor System) providing an arrestor bed at both ends of its runway, enhancing safety and reducing the risk to aircraft and passengers should an aeroplane overrun or overshoot a runway. The EMAS will be placed in the existing RESAs (Runway End Safety Areas) and the future design sees changes to the Threshold (THR) locations. These changes support the airport's sustainability ambitions by enabling cleaner, quieter and more fuel-efficient new generation aircraft to safely operate. A review and minor amendments of the Instrument Flight Procedures are therefore required to support this change."

9. Proposed Airspace Description

9.1 Objectives/ requirements for Proposed Design

The primary objective for this proposed airspace design is to provide assurance to the CAA for the implementation of revised Instrument Flight Procedures (IFPs) to accommodate the installation of the EMAS.

9.2 Proposed New Airspace/ Route Definition and Usage

There is no predicted change to flight behaviour as a consequence of this airspace change proposal. This means that there would be no change to pilot or controller behaviour and no change to lateral or vertical traffic dispersion. The proposed changes will also not alter route usage within the associated airspace.

10. Impacts and Consultation

10.1 Net impacts summary for proposed route

Category	Impact	Evidence
Safety/Complexity	No impact on safety or complexity There is no impact with respect to the airspace operation, the EMAS will represent a wider safety benefit	See Paragraph 7.4
Capacity/Delay	No impact on delay	See Paragraph 0
Fuel Efficiency/CO_2	No impact, there will be no change to lateral or vertical tracks	See Paragraph 10.6
Noise – Leq/SEL	No impact, this is a Level 2C change	See Paragraph 10.7
Tranquillity, visual intrusion (AONBs & National Parks)	No impact, this is a Level 2C change	See Paragraph 10.7
Local Air Quality	No impact, this is a Level 2C change	See Paragraph 10.7
Other Airspace Users	No impact, no changes to volume or classification of CAS	See Paragraphs 10.3 to 10.5

10.2 Units affected by the proposal

London City Airport (the sponsor) is the only unit affected by this proposal.

10.3 Military impact and consultation

There were no military airspace user stakeholders identified as being impacted by the proposed changes. The changes are purely technical changes which will not lead to any material change to the current operation.

10.4 General Aviation airspace users impact and consultation

There were no GA stakeholders identified as being impacted by the proposed changes. The changes are purely technical changes which will not lead to any material change to the current operation.

10.5 Commercial air transport impact and consultation

There were no commercial air transport identified as being impacted by the proposed changes. The changes to the instrument flight procedures will not lead to any material change to the current operation.

10.6 CO_2 environmental analysis impact and consultation

There would be no change in fuel, CO_2 or greenhouse gases and emissions as a result of the proposed changes because there would no change to lateral or vertical tracks. This aligns with the driving design principle of ensuring that none of the proposed technical changes to instrument flight procedure definitions result in any change to actual flight behaviours. Changes to the fleet mix will be beneficial as they will enable older less efficient aircraft types to be replaced with similar but more environmentally efficient types (e.g. Embraer E190 with E190-E2).

10.7 Local environmental impacts and consultation

There would be no change in environmental impacts as a result of the proposed changes because there would be no change to lateral or vertical tracks. There would therefore be no impact upon, or changes to noise, tranquillity, visual intrusion, or local air quality. This aligns with the driving design principle of ensuring that none of the proposed technical changes to IFP definitions result in any change to actual flight behaviours. Further evidence for noise impacts can be found in Section 12.

10.8 Economic impacts

There are no predicted economic changes, nor any costs or benefits which could be monetised, as a result of the proposed changes. The development of this airspace change proposal has not been informed by any economic constraints or opportunities.

11. Airspace Description Requirements

	The proposal should provide a full description of the proposed change including the following:	Description for this proposal
a	The type of route or structure; for example, airway, UAR, Conditional Route, Advisory Route, CTR, SIDs/STARs, holding patterns, etc.	Instrument Approaches see Sections 7 and 9
b	The hours of operation of the airspace and any seasonal variations	As per the Airport operating hours as published in the AIP
c	Interaction with domestic and international en-route structures, TMAs or CTAs with an explanation of how connectivity is to be achieved. Connectivity to aerodromes not connected to CAS should be covered	This proposal would not have any impact on current connectivity
d	Airspace buffer requirements (if any). Where applicable describe how the CAA policy statement on 'Special Use Airspace – Safety Buffer Policy for Airspace Design Purposes' has been applied	N/A – this proposal does not involve changes to existing/ new buffers
e	Supporting information on traffic data including statistics and forecasts for the various categories of aircraft movements (passenger, freight, test and training, aero club, other) and terminal passenger numbers	This proposal would have no impact on airspace usage – see Sections 7.2 and 9.2
f	Analysis of the impact of the traffic mix on complexity and workload of operations	This proposal provides an enabler for a change in the traffic mix. see Sections 7.2 and 9.2
g	Evidence of relevant draft Letters of Agreement, including any arising out of consultation and/or airspace management requirements	N/A – this proposal does not change any existing/ introduce new LoAs
h	Evidence that the airspace design is compliant with ICAO Standards and Recommended Practices (SARPs) and any other UK policy or filed differences, and UK policy on the Flexible Use of Airspace (or evidence of mitigation where it is not)	IFP Regulator review of APDO submission in compliance with PAN-OPS and UK difference
i	The proposed airspace classification with justification for that classification	No change to existing airspace classification
j	Demonstration of commitment to provide airspace users equitable access to the airspace as per the classification and where necessary indicate resources to be applied or a commitment to provide them in line with forecast traffic growth. 'Management by exclusion' would not be acceptable	N/A – this proposal does not change airspace user access
k	Details of and justification for any delegation of ATS	No change to the delegation of ATS

12. Noise Assessment

12.1 Overview

A qualitative assessment has been carried out by London City Airport to consider if any effect on aircraft noise levels is expected for this airspace change proposal.

12.2 Departure Noise Levels

Although there will be changes to the Departure End of Runway (DER), the start of roll location, where aircraft commence their departure procedure, is not changing and the EMAS is not expected to change any airline operating procedures. Therefore, noise levels produced by departures are not expected to change.

12.3 Arrival Noise Levels

The change in the location of the arrival thresholds means that aircraft on final approach (at 5.5 degrees) will be approximately 9 metres lower for Runway 09 and 6 metres lower for Runway 27 during their final descent, when compared to current operations. Considering a point 2 nm from either end of the runway under the flight path, the predicted maximum noise levels by an Embraer E190 are presented below. This is currently the most common type operating at LCY, as well as one of the loudest. As can be seen the difference is below 1dB L_{ASmax}.

Runway End	Scenario	Altitude (ft) at D2.0	Noise Level, dB L_{ASmax}
09	Pre-EMAS	1237	73.56
	Post-EMAS	1206	73.91
	Difference	-31	+0.35
27	Pre-EMAS	1232	73.69
	Post-EMAS	1209	73.95
	Difference	-23	+0.26

Table 1: Predicted Changes in Noise Levels

The EMAS development will enable operations by the Embraer E195-E2. Compared to the Embraer E190, depending on the specific variant considered the E195-E2 ranges from 0.1 to 1.1 dB quieter than the E190 on approach. On departure the E195-E2 is between 5 and 6 dB quieter than the E190.

12.4 New Aircraft Type

Currently the most common aircraft type operating at London City is the Embraer E190. It is anticipated that over time this will be replaced by the Embraer E190-E2 and Embraer E195-E2. It is understood that although these aircraft are able to operate without the EMAS installed, it will enable them to operate more efficiently, in particular the E195-E2, and therefore assist their introduction.

Different aircraft types can be compared objectively by reviewing their noise certificates. The noise levels they show are derived from standardised tests in accordance with the International Civil Aviation Organisation (ICAO) certification process. Noise levels are provided at 3 points, known as Lateral, Flyover and Approach.

The noise certificate data for the most common operators of the E190 and the E190-E2 at London City is show in Table 2 below, alongside the data for an E195-E2 aircraft which carried out a test flight in 2022. This demonstrates that noise improvements are expected from the new aircraft types compared to the E190, particularly on departure.

Aircraft Type	Operator	MTOW (kg)	Noise Levels (EPNdB)		
			Lateral	Flyover	Approach
E190	BA	45,990	93.0	81.4	92.5
E190-E2	Swiss	54,000	85.4	77.7	91.4
E195-E2	Test Flight	61,500	86.4	79.2	91.7

Table 2: Summary of Noise Certificate Data

13. Operational Impact

	An analysis of the impact of the change on all airspace users, airfields and traffic levels must be provided, and include an outline concept of operations describing how operations within the new airspace will be managed. Specifically, consideration should be given to:	Evidence of compliance/ proposed mitigation
a	Impact on IFR general air traffic and operational air traffic or on VFR General Aviation (GA) traffic flow in or through the area	No impact to air traffic (technical changes only) – see Sections 10.3 to 10.5.
b	Impact on VFR operations (including VFR routes where applicable);	No impact on VFR operations – see Section 10.4.
c	Consequential effects on procedures and capacity, i.e. on SIDs, STARs, and/or holding patterns. Details of existing or planned routes and holds	No impact on procedures or capacity (technical changes only) – see Section 9.2.
d	Impact on aerodromes and other specific activities within or adjacent to the proposed airspace	No impact on aerodromes or other relevant activities – see Sections 10.2 and 10.4.
e	Any flight planning restrictions and/or route requirements	No impact – technical changes only.

14. Supporting Infrastructure/ Resources

	General requirements	Evidence of compliance/ proposed mitigation
a	Evidence to support RNAV and conventional navigation as appropriate with details of planned availability and contingency procedures	N/A – no change to use of existing conventional navigational equipment
b	Evidence to support primary and secondary surveillance radar (SSR) with details of planned availability and contingency procedures	Traffic uses the same regions as today in a similar manner from a surveillance point of view. Demonstrably adequate for the region
c	Evidence of communications infrastructure including R/T coverage, with availability and contingency procedures	Traffic uses the same regions as today in a similar manner from a comms infrastructure point of view. Demonstrably adequate for the region
d	The effects of failure of equipment, procedures and/or personnel with respect to the overall management of the airspace must be considered	Existing contingency procedures and ATC management protocols will continue to apply as today
e	Effective responses to the failure modes that will enable the functions associated with airspace to be carried out including details of navigation aid coverage, unit personnel levels, separation standards and the design of the airspace in respect of existing international standards or guidance material	As above
f	A clear statement on SSR code assignment requirements	N/A – no change to SSR code allocation
g	Evidence of sufficient numbers of suitably qualified staff required to provide air traffic services following the implementation of a change	As these changes are purely technical in nature and will not change any traffic patterns or behaviours, there will be no training or additional qualifications required

15. Airspace and Infrastructure

	General requirements	Evidence of compliance/ proposed mitigation
a	The airspace structure must be of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to fully contain horizontal and vertical flight activity in both radar and non-radar environments	There are no proposed changes to the airspace structure (technical changes only). See Section 9.2
b	Where an additional airspace structure is required for radar control purposes, the dimensions shall be such that radar control manoeuvres can be contained within the structure, allowing a safety buffer. This safety buffer shall be in accordance with agreed parameters as set down in CAA policy statement 'Safety Buffer Policy for Airspace Design Purposes Segregated Airspace'. Describe how the safety buffer is applied, show how the safety buffer is portrayed to the relevant parties, and provide the required agreements between the relevant ANSPs/ airspace users detailing procedures on how the airspace will be used. This may be in the form of Letters of Agreement with the appropriate level of diagrammatic explanatory detail	N/A – no new airspace structures are being proposed (technical changes only)
c	The Air Traffic Management system must be adequate to ensure that prescribed separation can be maintained between aircraft within the airspace structure and safe management of interfaces with other airspace structures	N/A – as today, no change to the existing airspace structure (technical changes only)
d	Air traffic control procedures are to ensure required separation between traffic inside a new airspace structure and traffic within existing adjacent or other new airspace structures	N/A – as today, no change to ATC procedures
e	Within the constraints of safety and efficiency, the airspace classification should permit access to as many classes of user as practicable	No change to airspace classification proposed
f	There must be assurance, as far as practicable, against unauthorised incursions. This is usually done through the classification and promulgation	No change to airspace classification or volume
g	Pilots shall be notified of any failure of navigational facilities and of any suitable alternative facilities available and the method of identifying failure and notification should be specified	Existing contingency procedures would continue to apply
h	The notification of the implementation of new airspace structures or withdrawal of redundant airspace structures shall be adequate to allow interested parties sufficient time to comply with user requirements. This is normally done through the AIRAC cycle	This will be promulgated via the AIRAC cycle
i	There must be sufficient R/T coverage to support the Air Traffic Management system within the totality of proposed controlled airspace	No change from today's Controlled Airspace. R/T coverage demonstrably adequate as per current day

j	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered	N/A – this change does not create any new structures of controlled airspace; therefore any agreements will be unchanged from today
k	Should there be any other aviation activity (low flying, gliding, parachuting, microlight site, etc.) in the vicinity of the new airspace structure and no suitable operating agreements or air traffic control procedures can be devised, the change sponsor shall act to resolve any conflicting interests	N/A – this change does not create any new airspace structures and will therefore no impact other aviation activity

	ATS route requirements	Evidence of compliance/ proposed mitigation
a	There must be sufficient accurate navigational guidance based on in-line VOR/DME or NDB or by approved RNAV derived sources, to contain the aircraft within the route to the published RNP value in accordance with ICAO/ Eurocontrol standards	N/A – no change to use of existing conventional navigational equipment
b	Where ATS routes adjoin terminal airspace there shall be suitable link routes as necessary for the ATM task	As today – no change to airspace structure including link routes
c	All new routes should be designed to accommodate P-RNAV navigational requirements	N/A – amending existing routes only (technical changes only)

	Terminal airspace requirements	Evidence of compliance/ proposed mitigation
a	The airspace structure shall be of sufficient dimensions to contain appropriate procedures, holding patterns and their associated protected areas	As today – no change to airspace structure
b	There shall be effective integration of departure and arrival routes associated with the airspace structure and linking to designated runways and published instrument approach procedures (IAPs)	As today – no change to airspace structure
c	Where possible, there shall be suitable linking routes between the proposed terminal airspace and existing en-route airspace structure	As today – no change to airspace structure
d	The airspace structure shall be designed to ensure that adequate and appropriate terrain clearance can be readily applied within and adjacent to the proposed airspace	As today – no change to airspace structure
e	Suitable arrangements for the control of all classes of aircraft (including transits) operating within or adjacent to the airspace in question, in all meteorological conditions and under all flight rules, shall be in place or will be put into effect by the change sponsor upon implementation of the change in question (if these do not already exist)	As today – no change to airspace structure
f	The change sponsor shall ensure that sufficient visual reference points are established within or adjacent to the subject airspace to facilitate the effective integration of VFR arrivals, departures and transits of the airspace with IFR traffic	As today – no change to airspace structure

g	There shall be suitable availability of radar control facilities	As today – no change to airspace structure
h	The change sponsor shall, upon implementation of any airspace change, devise the means of gathering (if these do not already exist) and of maintaining statistics on the number of aircraft transiting the airspace in question. Similarly, the change sponsor shall maintain records on the numbers of aircraft refused permission to transit the airspace in question, and the reasons why. The change sponsor should note that such records would enable ATS managers to plan staffing requirements necessary to effectively manage the airspace under their control	N/A – there are no proposed changes to airspace structure
i	All new procedures should, wherever possible, incorporate Continuous Descent Approach (CDA) profiles after aircraft leave the holding facility associated with that procedure	N/A – no new procedures

	Off-route airspace requirements	Evidence of compliance/ proposed mitigation
a	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered	N/A – no change to existing/ creation of new agreements or airspace structures
b	Should there be any other aviation activity (military low flying, gliding, parachuting, microlight site etc.) in the vicinity of the new airspace structure and no suitable operating agreements or air traffic control procedures can be devised, the change sponsor shall act to resolve any conflicting interests	N/A – no change to existing/ creation of new agreements or airspace structures

16. Environmental Assessment

	Theme	Content	Evidence of compliance/ proposed mitigation
a	WebTAG analysis	Output and conclusions of the analysis (if not already provided elsewhere in the proposal)	N/A – environmental analysis not necessary for this change. See Paragraph 10.1
b	Assessment of noise impacts (Level 1/M1 proposals only)	Consideration of noise impacts, and where appropriate the related qualitative and/or quantitative analysis If the change sponsor expects that there will be no noise impacts, the rationale must be explained	N/A – this is a Level 2C change See Section 12
c	Assessment of CO_2 emissions	Consideration of the impacts on CO_2 emissions, and where appropriate the related qualitative and/or quantitative analysis If the change sponsor expects that there will be no impact on CO_2 emissions impacts, the rationale must be explained	No change – see Paragraph 10.6

d	Assessment of local air quality (Level 1/M1 proposals only)	Consideration of the impacts on local air quality, and where appropriate the related qualitative and/or quantitative analysis If the change sponsor expects that there will be no impact on local air quality, the rationale must be explained	N/A – this is a Level 2C change
e	Assessment of impacts upon tranquillity (Level 1/M1 proposals only)	Consideration of any impact upon tranquillity, notably on Areas of Outstanding Natural Beauty or National Parks, and where appropriate the related qualitative and/or quantitative analysis If the change sponsor expects that there will be no tranquillity impacts, the rationale must be explained	N/A – this is a Level 2C change
f	Operational diagrams	Any operational diagrams that have been used in the consultation to illustrate and aid understanding of environmental impacts must be provided	N/A No change to environmental impacts – see Section 10.1
g	Traffic forecasts	10-year traffic forecasts, from the anticipated date of implementation, must be provided (if not already provided elsewhere in the proposal)	No changes to capacity or usage – see Paragraph 10.5
h	Summary of environmental impacts and conclusions	A summary of all of the environmental impacts detailed above plus the change sponsor's conclusions on those impacts	See Sections 10 and 12

17. Engagement Evidence

17.1 Engagement was limited to the London City Airport Consultative Committee (LCACC) meeting dated 8th March 2023 LACC Airport Report [5] LCACC Minutes [6].

18. Summary

18.1 This document proposes a technical change to the AIP to facilitate the installation of the Engineered Material Arrestor System (EMAS)

18.2 It aligns with the requirements of CAP1616.

18.3 There would be no negative impacts. Any change in the fleet mix as a result of the change will be beneficial in terms of noise and CO_2 impacts.

19. Conclusion

We have assessed that there are no negative impacts of this proposal. Any change in the fleet mix as a result of this change will be favourable in terms of noise and CO_2 impacts. This proposal could bring benefits for local communities and enable a tangible reduction in safety hazards within the airport operation.

20. Appendices

20.1 References

Ref No	Document Number	Hyperlink
1	CAP1616	Link
2	London City Statement of Need	Link
3	AIP changes in support of EMAS ACP	Supplied directly to CAA
4	NATS Design Submission Package titled: London City Enhanced Material Arrester System (EMAS) Implementation - Phase 1 v1.0 March 2023	Supplied directly to CAA
5	London City ACC Airport Report 9th March 2023	Link
6	London City ACC Minutes 9th March 2023	Link
7	Aircraft Noise Levels with EMAS development report	Link

End of document