CAA Operational Assessment

Title of airspace change proposal	Installation of Engineered Material Arrestor System (EMAS) to enhance safety
Change sponsor	London City Airport
Project no.	ACP-2022-090
SARG project leader	[redacted]
Case study commencement date	01 March 2023
Case study report as at	16 March 2023

Instructions

In providing a response for each question, please ensure that the 'status' column is completed using the following options:

- yes
- no
- partially
- n/a

To aid the SARG project leader's efficient project management it may be useful that each question is also highlighted accordingly to illustrate what is:

resolved Green not resolved Amber not compliant Red

Executive Summary

London City Airport is installing EMAS (Engineered Material Arrestor System) providing an arrestor bed at both ends of its runway. This will enhance safety and reduce the risk to aircraft and passengers should an aeroplane overrun or undershoot 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 operate safely. A review and minor amendments of the Instrument Flight Procedures are required to support this change.

The periodic (5 year) review of the London City IFPs is also being conducted in coordination with this change.

1.	Justification for change and options analysis (operational/technical)	Status
1.1	Is the explanation of the proposed change clear and understood?	YES

There is a clear safety benefit. This is especially obvious at the end of RWY09, which if an aircraft were to over-run currently it would end up in the water, potentially at a severe nose-down attitude, which could cause injury/death and hamper rescue operations. The EMAS should reduce the risk of this happening. The changes to runway threshold positions will not result in significant movement of flight paths. The small increase in runway length will enable newer aircraft types to operate from LCY (e.g. Embraer E190-E2/E195-E2), however these are quieter and emit less CO_2 per passenger than the types they would replace (E190/E195).

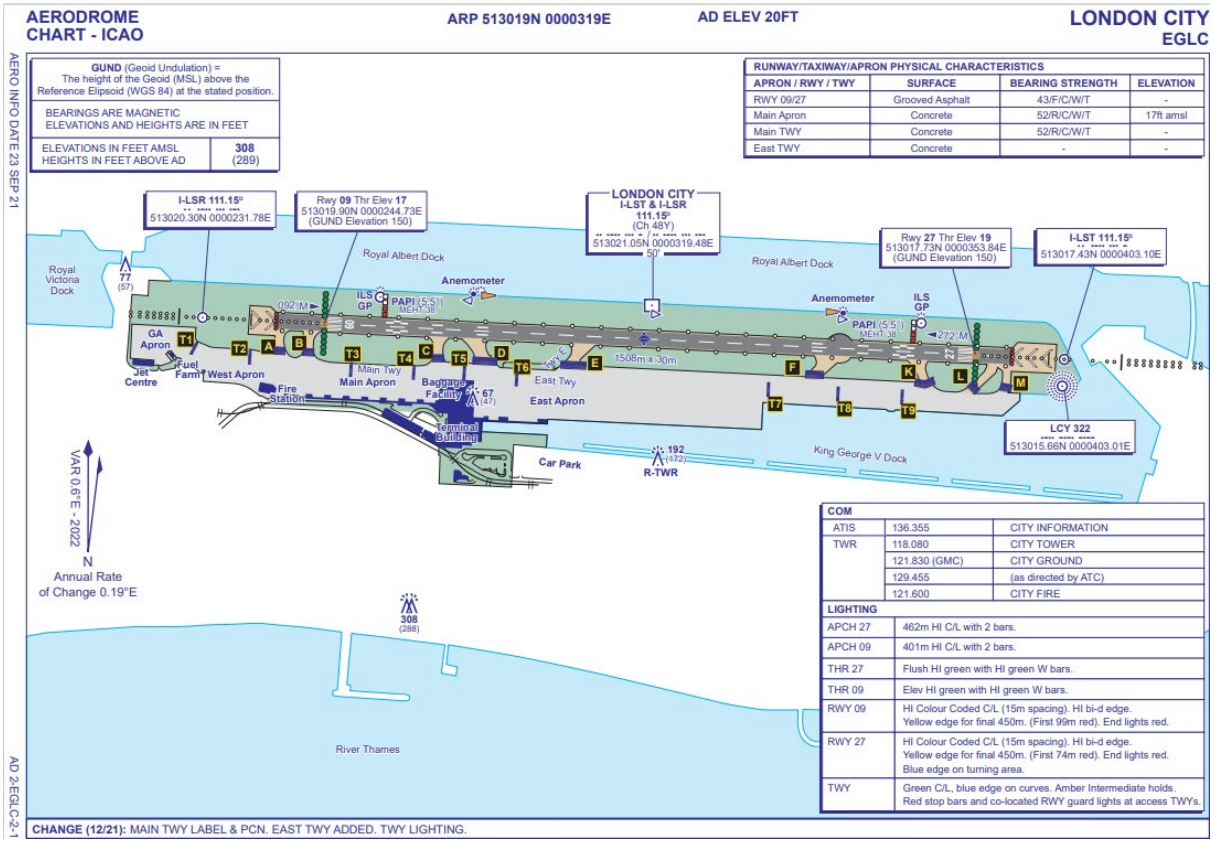
1.2	Are the reasons for the change stated and acceptable?	YES

Yes, safety justification.

1.3	Have all appropriate alternative options been considered, including the 'do nothing' option?	N/A

The benefits of EMAS out-weigh the do-nothing option. There are no feasible alternative options apart from do-nothing.		
1.4	Is the justification for the selection of the proposed option sound and acceptable?	YES
There is clear safety benefit.		

2.	Airspace description and operational arrangement	Status
2.1	Is the type of proposed airspace design clearly stated and understood?	YES



Details of the EMAS locations and positions of the proposed new runway threshold positions have not yet been received.

Diagrams below show JB assumptions (16/02/2023)


Docklands Lbry
Longbridge house
27
Proposed
EMAS


Yi-Ban
London Borough of Newham
LAS EOC London North
oubleTree by Hilton London ExCel
Connaught Bridge
Proposed
EMAS
09
A112
Travelodge London City Airport
Boots
Hartmann Rd
Camel Rd
ge City Airport

Figure A1-1. Standard EMAS Installation Provides a Level Of Safety That is Equivalent to a Standard Runway Safety Area (RSA).

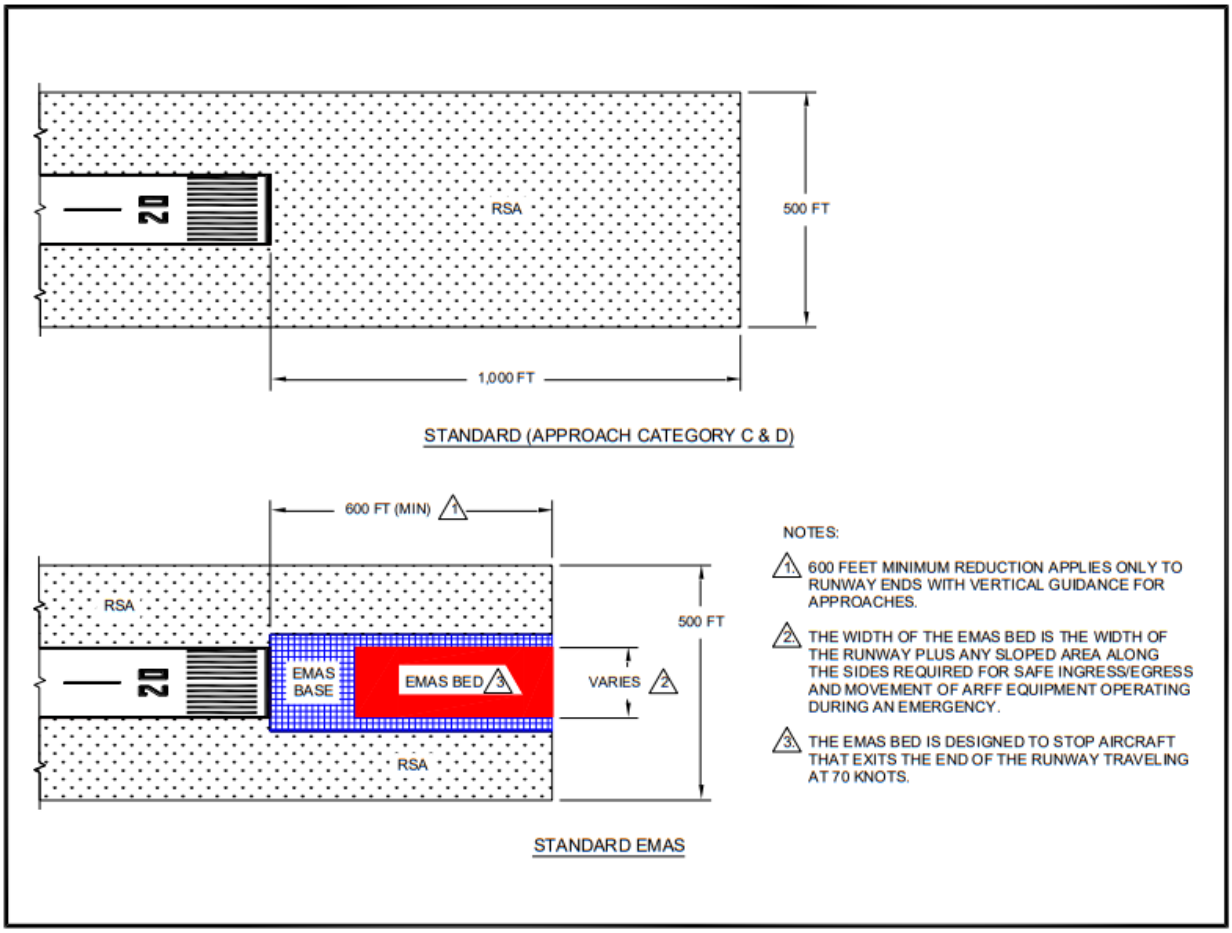


Diagram above taken from FAA EMAS certification information.

2.2	Are the hours of operation of the airspace and any seasonal variations stated and acceptable?	N/A

No change.

2.3	Is any interaction with adjacent domestic and international airspace structures stated and acceptable including an explanation of how connectivity is to be achieved? Has the agreement of adjacent States been secured in respect of High Seas airspace changes?	N/A

2.4	Is the supporting statistical evidence relevant and acceptable?	N/A

No change to aircraft movement numbers. .

2.5	Is the analysis of the impact of the traffic mix on complexity and workload of operations complete and satisfactory?	N/A

No change so N/A

2.6	Are any draft Letters of Agreement and/or Memoranda of Understanding included and, if so, do they contain the commitments to resolve ATS procedures (ATSD) and airspace management requirements?	N/A
2.7	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 ATC Procedures can be devised, what action has the change sponsor carried out to resolve any conflicting interests?	N/A
2.8	Is the evidence that the airspace design is compliant with ICAO SARPs, airspace design & FUA regulations, and Eurocontrol guidance satisfactory?	N/A
No change		
2.9	Is the proposed airspace classification stated and justification for that classification acceptable?	N/A
No change in airspace classification		
2.10	Within the constraints of safety and efficiency, does the airspace classification permit access to as many classes of user as practicable?	N/A
2.11	Is there assurance, as far as practicable, against unauthorised incursions? (This is usually done through the classification and promulgation.)	N/A
2.12	Is there a commitment to allow access to all airspace users seeking a transit through controlled airspace as per the classification, or in the event of such a request being denied, a service around the affected area?	N/A
2.13	Are appropriate arrangements for transiting aircraft in place in accordance with stated commitments?	N/A
2.14	Are any airspace user group's requirements not met?	NO
2.15	Is any delegation of ATS justified and acceptable? (If yes, refer to Delegated ATS Procedure).	N/A
2.16	Is the airspace design of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to contain horizontal and vertical flight activity (including holding patterns) and associated protected areas in both radar and non-radar environments?	N/A

2.17	Have all safety buffer requirements (or mitigation of these) been identified and described satisfactorily (to be in accordance with the agreed parameters or show acceptable mitigation)? (Refer to buffer policy letter.)	N/A
2.18	Do ATC procedures ensure the maintenance of prescribed separation between traffic inside a new airspace structure and traffic within existing adjacent or other new airspace structures?	N/A
2.19	Is the airspace structure designed to ensure that adequate and appropriate terrain clearance can be readily applied within and adjacent to the proposed airspace?	N/A
2.20	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, have appropriate operating arrangements been agreed?	N/A
2.21	Where terminal and en-route structures adjoin, is the effective integration of departure and arrival routes achieved?	N/A

3.	Supporting resources and communications, navigation and surveillance (CNS) infrastructure	Status
3.1	Is the evidence of supporting CNS infrastructure together with availability and contingency procedures complete and acceptable? The following are to be satisfied:	
	• **Communication**: Is the evidence of communications infrastructure including RT coverage together with availability and contingency procedures complete and acceptable? Has this frequency been agreed with AAA Infrastructure?	N/A
	• **Navigation:** Is there sufficient accurate navigational guidance based on in-line VOR 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? For example, for navaids, has coverage assessment been made, such as a DEMETER report, and if so, is it satisfactory?	YES
The coverage of navaids is sufficient, and the changes to the IFPs are within the areas of existing coverage. The DME beacons and ILS glideslope transmitter will be moved as part of these changes, however this does not affect the coverage.		
	• **Surveillance:** Radar provision – have radar diagrams been provided, and do they show that the ATS route/airspace structure can be supported?	N/A
3.2	Where appropriate, are there any indications of the resources to be applied, or a commitment to provide them, in line with current forecast traffic growth acceptable?	N/A

4.	Maps/charts/diagrams	Status
4.1	Is a diagram of the proposed airspace included in the proposal, clearly showing the dimensions and WGS84 co-ordinates? (We would expect sponsors to include clear maps and diagrams of the proposed airspace structure(s) – they do not have to accord with aeronautical cartographical standards (see airspace change guidance), rather they should be clear and unambiguous and reflect precisely the narrative descriptions of the proposals.)	N/A
No change to airspace		
4.2	Do the charts clearly indicate the proposed airspace change?	N/A
IFP charts provided.		
4.3	Has the change sponsor identified AIP pages affected by the change proposal and provided a draft amendment?	YES
List of AIP pages changing:		

AD 2. EGLC 2.9
2.12 (5)
2.12 (6)
2.12 (8)
2.12 (9)
2.12 (10)
2.12 (11)
2.12 (12)
2.12 (14)
2.13
2.14 (2)
2.14 (4)
2.14 (5)
2.14 (7)
2.14 (10)
2.19
2.20 6c
AD 2. EGLC 2-1, EGLC 8-1, 8-2, 8-4, 8-5

4.4	Has the change sponsor completed the WGS84 spreadsheet and submitted to the CAA for approval?	N/A
5.	**Operational impact**	**Status**
5.1	Is the change sponsor's analysis of the impact of the change on all airspace users, airfields and traffic levels, and evidence of mitigation of the effects of the change on any of these, complete and satisfactory? Consideration should be given to:	YES
	a) Impact on IFR General Aviation traffic, on Operational air traffic or on VFR General Aviation traffic flow in or through the area.	None
	b) Impact on VFR Routes.	None
	c) Consequential effects on procedures and capacity, i.e. on SIDs, STARs, holds. Details of existing or planned routes and holds.	N/A
	d) Impact on airfields and other specific activities within or adjacent to the proposed airspace.	None
	e) Any flight planning restrictions and/ or route requirements.	NO
5.2	Does the change sponsor targeted engagement material reflect the likely operational impact of the change?	YES

Due to the negligible difference to operations, environmental analysis has been limited to qualitative analysis. Changes to noise impact are beneficial (reduction in magnitude) but not significant in amplitude. Changes to CO_2 emissions are beneficial (reduction in CO_2 emissions per passenger) but not significant in amplitude.

Case study conclusions – to be completed by SARG project leader	**Yes/No**
Has the change sponsor met the SARG airspace change proposal requirements and airspace regulatory requirements above?	YES

The sponsor has met all CAP1616 ACP requirements for a Level 2c permanent airspace change. The process has been scaled in proportion with the negligible impact that the proposed change represents to airspace and flight operations.

RECOMMENDATIONS/CONDITIONS/PIR DATA REQUIREMENTS

Are there any Recommendations which the change sponsor should try to address either before or after implementation (if approved)? If yes, please list them below.	NO

Are there any Condition(s) which the change sponsor **must fulfil** either before or after implementation (if approved)? If yes, please list them below.	YES

GUIDANCE NOTE: Conditions are something that the change sponsor **must fulfil** either before or after implementation, if indeed the airspace change proposal is approved. If their proposal is approved, change sponsors **must observe** any condition(s) contained within the regulatory decision; failure to do so **will usually** result in the approval being revoked. Conditions should specify the consequence of failing to meet that condition, whether that be revoking the ACP or some alternative.

1. The IFP report authored by the sponsor's APDO identifies that a crane may have an impact on the ILS 09 procedure's obstacle clearance altitude/height but further clarifies that the entry of the obstacle has since been removed from the obstacle database. The APDO also advises that a new building was built in situ of the crane but have not identified its impact to the procedure. Therefore the APDO will be required to assess the impact of this building and NOTAM any increases in OCA/H of the procedure as necessary. This will need to be completed prior to the AIRAC effective date of the procedure.
2. The sponsor must record all over-runs and under-shoots of the runways which result in the EMAS being utilised.

Are there any specific requirements in terms of the data to be collected by the change sponsor for the Post Implementation Review (if approved)? If yes, please list them below.	NO

General summary

This ACP is for an EMAS (Engineered Material Arrestor System) providing an arrestor bed at both ends of its runway. This will enhance safety and reduce the risk to aircraft and passengers should an aeroplane overrun or undershoot a runway. These changes represent a safety benefit, and support the airport's sustainability ambitions by enabling cleaner, quieter and more fuel-efficient new generation aircraft to operate safely. Minor changes to IFPs are required to support this change (resulting from small movement of the runway threshold positions).

Comments and observations

Operational assessment sign-off/ approvals	Name	Signature	Date
Operational assessment completed by:	AR Technical Regulator [redacted]	[redacted]	16/03/2023
Operational assessment approved by:	Manager Airspace Regulator [redacted]		17/03/2023
Comment is contained in the Decision log			