



# LEEDS EAST AIRPORT

## AIRSPACE CHANGE PROPOSAL ACP-2016-013

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## 1 Introduction

1.1 The purpose of this document is to show how Makin Enterprises, owner and operator of Leeds East Airport (LEA), will demonstrate to the Civil Aviation Authority (CAA) the methods by which it intends to safely introduce Performance Based Navigation (PBN) compliant Required Navigation Performance (RNP) instrument approaches procedures (IAPs)<sup>1</sup>, without approach control, to runways 06 & 24. Availability and access to these RNP procedures will be controlled using a pre-booked slot system and detailed pilot briefing.

1.2 This is an Airspace Change Proposal (ACP) which has been written using CAP725 CAA Guidance on the Application of the Airspace Change Process. However, there is no new controlled airspace (CAS) contained within this proposal. It refers to defined routes, in mainly Class G airspace, with some elements in Leeds Bradford Airport's CAS which are accommodated in a Letter of Agreement (LoA) with LBA. Safety assurance commenced using the CAP1122 document and, latterly, through submission of answers to questions derived from a CAA ATS Bow tie risk-modelling tool<sup>2</sup>.

1.3 A good neighbour policy has been adopted in all the design work and the development of procedures to minimise the effect on the local environment and other airspace users.

1.4 This has included accommodating several changes resulting from feedback from the gliding community based at a number of sites in the local area.

1.5 A report on the engagement/consultation with local communities and airspace stakeholders sets out how LEA have communicated the effects of the proposed changes and listened to feedback. This report is provided as separate document titled LEA Consultation Report 2021.

## 1.6 Background

1.7 Flying commenced when RAF Church Fenton opened in 1937. The local village gave its name to the base which is 4 miles southeast of Tadcaster and 6 miles north west of Selby, and within the North Riding of Yorkshire. The base was operated by a variety of Squadrons throughout the 2<sup>nd</sup> World War up to December 2013 when it closed. The base was bought by Makin Enterprises in December 2014 reopening as a GA airfield in January 2015.

1.8 A CAA Ordinary use licence was granted in September 2016 and an Air Traffic Zone (ATZ) 2.5 nautical mile radius and 2000ft Above Ground Level in Class G airspace, established with an Air/Ground (AGCS) radio service. The original application to the CAA for IAPs was lodged shortly after reopening in June 2016. However, delays including the COVID-19 pandemic have meant conclusion of the process is now planned for 2022.

1.9 LEA's revival has had an effect on Sherburn-in-Elmet aerodrome, approximately 3 miles south. An existing Letter of Agreement (LoA) has proved effective in managing the adjacent operations. Sherburn Aero Club (SAC) has its own ACP for RNP approaches currently underway, the co-dependency this creates is both acknowledged and dealt with in the LoA which has been redrafted as a consequence.

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<sup>1</sup> These procedures are satellite based using the GPS navigation system.

<sup>2</sup> Now referred to as the ATM Questionnaire

1.10 So far, LEA's annual traffic figures have been:

2017 – 7329

2018 – 6112

2019 – 5274

2020 – Covid-19 effects have made the data for 2020 too low to use

2021 – 7,080 to end of October (estimate of 7750 for the year)

1.11 Using 2017, 2018, & 2019 traffic figures the average movements are 6250 PA. The additional 8 on average RNP approaches per day would mean between 15% and 20% of approaches could use the IFPs which equates to 1500 per year. As some of these would be already based aircraft the growth in traffic stimulated by having the IAPs will most likely be less than 10%.

1.12 Even with an upturn in movements afforded by the introduction of RNP approaches, including the basing of a number of executive/business aircraft, utilisation is not likely to take up the total available daily slot opportunities. This comprises a maximum 11 slots per day in summer and 8 in winter, depending on slots used by SAC. The slots are shared with SAC on a mutually exclusive basis permitting only one aircraft to make an approach in the allocated period. LEA makes provision for out-of-hours arrivals & departures movements. See para 3.2.3 for further explanation.

1.13 There is one flying training school based at LEA, and external flying schools from other airfields also use LEA for training.

1.14 International Airports in the vicinity are Leeds Bradford Airport (LBA) and Doncaster Sheffield Airport (DSA) and LoAs for both have been agreed.

1.15 Two helicopter fixed-base operations are situated beneath the runway 06 IAPs either side of Wakefield; the Yorkshire Air Ambulance at Nostell Priory and the National Police Aviation Service based at West Yorkshire Police HQ, Carr Gate. Existing LoAs with both organisations have been agreed.

1.16 Aviation activities take place at several local sites. A comprehensive search was conducted as part of the pre-consultation engagement activities with many locations contacted for discussions. Due to Covid-19 lockdown some site owners were not available for discussions. Where those contacted were willing, LEA has endeavoured to produce LoAs with them. A number of very small sites declined the offer but indicated they were happy with that situation. See LoA file in the submission.

## **2 Operational Report**

### **2.1 Justification for the Change and Analysis of Change Options**

2.1.1 The continuing improvements in satellite-based services provided by the US Department of Defense NAVSTAR constellation and the European Union's spaced-based augmentation system EGNOS (European Geostationary Navigation Overlay System), coupled with wider availability of approved aircraft receiver equipment, means RNP approaches are now the only cost-effective method for operators wishing to land at LEA in weather below Visual Meteorological Conditions (VMC) i.e. when there is low cloud and/or reduced visibility.

## Analysis of options

2.1.2 Currently, aircraft intending to land at LEA have to make a visual approach as there are no landing aids provided and many business aircraft operators regulated by an Air Operators Certificate (AOC) have Standard Operating Procedures (SOPs) which do not permit approaches in Class G airspace without a laid down Instrument Approach Procedure (IAP).

2.1.3 The establishment of IAPs using any appropriate ground-based navigation aids (Navaid) increases availability during poor weather as suitably equipped aircraft can descend on the procedure to the published Obstacle Clearance Altitude (Height) OCA(H) which is significantly safer.

2.1.4 Apart from the 'Do Nothing' option which doesn't figure in LEA's plans, the purchase, installation and operation of Nav aids such as a ground-based Instrument Landing System (ILS) and/or Distance Measuring Equipment (DME) is nonviable in terms of capital investment (Circa £1.5 to £2m) and ongoing maintenance costs. The move to PBN approaches across the globe will eventually see such old technology equipment rendered obsolete thus further reducing payback.

2.1.5 Even older ground-based Nav aids such as Non-Directional Beacons (NDBs) have been discounted since the CAA removed aircraft carriage requirements from the Air Navigation Order.

2.1.6 In order to offer the regularity of a defined instrument approach, even when limited to a 500' Decision Height, an RNP approach is judged the only option. It is therefore the means by which access can be improved for certain operators and is the subject of this ACP.

## 2.2 Airspace Description

2.2.1 Although the phrase Airspace Change is used frequently throughout this document, it comes from CAP725. In LEA's case the proposal does not include an application for the notification of CAS. The design of the ICAO Doc 8168 Volume 1 PANSOPS<sup>3</sup> compliant IAPs provides defined routes to follow but aircraft intending to commence an approach from any Initial Approach Fix (IAF) will use own navigation to those locations. An air traffic service may be available from an adjacent Air Traffic Service Unit (ATSU) such as LBA or DSA and this could include deconfliction against other IFR traffic. One of the 06 IAPs is partly in LBA CAS, the other below LBA CAS with some of the LBA procedures in conflict with the LEA procedures. The use of a dedicated transponder squawk (C5077) and procedures agreed with LBA in the LoA mitigate the risks identified to as low as reasonably practicable (ALARP).

2.2.2 It will be the aircraft commander's responsibility to remain clear of adjacent CAS or negotiate access on a tactical basis. A mandatory pilot brief provides crews with all the required information to use the LEA RNP's safely.

2.2.3 Design of the IAPs started many years ago when a CAA Approved Procedure Design Organisation (APDO) known as gCap was contracted to design the approaches. Subsequently the company was absorbed into Osprey CSL who gained APDO status in 2020 and subsumed the designs into their own system.

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<sup>3</sup> The internationally accepted design guide for procedure designers to follow.

2.2.4 The original designs are described below. However due to lengthy and wide-ranging engagement with the Gliding Community and other local aerodromes in 2019/20 substantial changes have been made. In accordance with the process laid out in CAP725 this triggered a consultation on those elements of the changes judged to affect stakeholders.

2.2.5 IAP's to runways 06 and 24 are of a standard design in accordance with ICAO Doc 8168 PANSOPS. Minima lines for LNAV, LNAV/VNAV and LPV were included for Cat A, B, C, & D aircraft. Although computed OCA(H) are as low as 242' (214') in 3D for CAT A aircraft, all will be raised to 528' (500') as per the CAP1122 Appendix 2 requirement. The use by CAT C & D aircraft will be limited and subject to additional conditions and restriction.

2.2.6 In terms of Aeronautical Ground Lighting (AGL), runway 24 has Full (FALS) provision and runway 06 Basic (BALS) high intensity lighting provision. This high level of runway facilities helps to ensure the greatest possible chance of a successful approach at night and during poor weather conditions.

2.2.7 LEA provides an Air Ground Communications Service (AGCS) from the former RAF Visual Control Room, manned continuously during notified hours of operations. An exemption from ANO Article 183 is sought as part of the ACP. Procedures have been developed to ensure only one aircraft at any time commences an approach to either LEA or Sherburn-in-Elmet through strict application of a mutually exclusive slot allocation system.

2.2.8 Should an aircraft on approach perform a missed approach the slot system can accommodate one further approach. A subsequent failure to land will normally result in the subject aircraft diverting to its preplanned alternate airport.

2.2.9 The combined slot allocation system allows for only 1 slot per hour at either LEA or SAC. Although demand at first is likely to be in the region of 8 per day, the opportunity exists for a maximum of 11 slots per day in summer and 8 in winter. An out of hours operation will be available should an aircraft return later than published operating hours.

#### **IAP LEA 24 RNP Technical description as originally designed.<sup>4</sup>**

2.2.10 The design originally incorporated three IAFs at 3000', TUF EK from the north, IDPUS from the east and LEGNU from the southeast with an anti-clockwise hold.

Original 5LNC	Temporary identifier
TUF EK	IAWP1
IDPUS	Deleted
LEGNU	IAWP2

There were 5 nm legs descending to 2300' for the IF at CM24I. All TAAs were lower than their adjacent IAF. CM24I is set at 2300' with a 3.3 nm leg to the FAF CM24F at 2000'. The 6 nm final approach follows a 3.0-degree glide path. From the MAPt, waypoints directed aircraft in a right-hand turn with a continuous climb to 3000' back to the hold at IDPUS. Following this route keeps aircraft away from Sherburn, avoids LBA's CAS and minimised potential airborne conflicts with glider and other operations.

<sup>4</sup> See para 2.2.19 re changes to designator names.

2.2.11 In placing these IAFs careful consideration was given to existing controlled airspace, notably DSA's CTA to the south. TUFEK's location meant aircraft inbound from the north avoid overflying the City of York and its surrounding conurbation. Additionally, it minimises effects on other local stakeholders.

2.2.12 The missed approach path makes an early right turn routing via fly-by waypoints CMM02 and CMM03 to avoid infringing LBA's controlled airspace 8 nm to the southwest.

#### **IAP LEA 06 RNP Technical description as originally designed.**

2.2.13 Complex controlled airspace to the west and southwest of LEA imposed restrictions on the number of IAFs that could be accommodated. Locating the two IAFs was constrained by CAS, however the straight in approach avoids Leeds City centre to the north and the towns of Wakefield and Castleford to the south.

Original 5LNC	Temporary identifier
BATLI	IAWP1
IVGOB	IAWP2

2.2.14 Only two IAF are provided; BATLI at 2200' for joining from the south and IVGOB at 3000' for a straight in approach. The FAF CM06F is at 2200' and 6.7 nm from MAPt again permitting a 3.0-degree glide path. The leg from BATLI to CM06I passes between Wakefield and Castleford.

2.2.15 Joining the approach at IVGOB at 3000' will require a clearance from LBA Approach. This is specifically dealt with under the LoA between LEA and LBA. Furthermore, the mandatory pilot brief provides details for crews.

2.2.16 The missed approach path climbed straight ahead to CMM21 then turned right continuing to climb direct to LEGNU and the hold at 3000'

#### **Changes to the designs following engagement with stakeholders.**

2.2.17 As a result of the engagement process following representations from other GA stakeholders, changes were made to the proposed designs. IDPUS sat overhead Full Sutton Aerodrome and although their circuit height is 1000'QFE (1100'amsl) traffic on the procedure would have been at 3000' amsl, so this IAF was seen as unnecessary in view of the unconstrained airspace to the east of IDPUS. Aircraft on approach from the east intending to land on Runway 24 could with little extra track miles join at either of the other two IAFs.

2.2.18 There are a number of gliding sites in the vicinity of LEA and the proposed IAPs. From north to south these are

- A. Rufforth West (York Gliding Centre)
- B. Pocklington (Wolds Gliding Club)
- C. Burn (Burn Gliding Club)

2.2.18 There was engagement with these operators, and as a result of their concerns the procedures were amended to minimise the impact on their operations.

2.2.19 At the same time as this redesign the APDO moved the work into their own software system and dispensed with the ICAO five letter name codes (5LNCs) replacing with generic identifiers.

2.2.20 With the new versions the approaches remain as previous with the IAFs now designated IAWP1,2,3 & 4.

- a) The different missed approach procedures for CAT A/B and for CAT C/D aircraft have been designed with the intention of reducing the likelihood of airborne conflicts in the vicinity of all local stakeholders.
- b) In the case of Burn Gliding Club, where runway 06 CAT C/D MAP track passes close to the chartered Burn launching Site. LEA has offered not to use this route without prior coordination with them.
- c) For CAT A/B aircraft the 06 missed approach path continues straight ahead routing north of Burn launching site.

2.2.21 On runway 24 both missed approaches climb straight ahead before turning right at CMM07 to avoid infringing LBA CAS. Either routing brings aircraft back towards and LEA overhead, then routes back to IAWP1.

2.2.22 For CAT A/B aircraft fly-by waypoints turn the aircraft as tight as possible to keep well away from Rufforth West. For CAT C/D aircraft the leg lengths from CMM07 are slightly longer due to design constraints and the minimum radii of turns for larger aircraft. LEA has offered not to use this route without prior coordination with them.

2.2.23 A design report has been prepared by the APDO which includes charting and coding. This report is provided as separate document titled OspreyCSL Design Report 2021. Images contained in this document are indicative only.

### **2.3 Supporting Infrastructure/Resources**

2.3.1 LEA sits between two major international airports, LBA and DSA. Both are surrounded by controlled airspace and manoeuvre their traffic using radar control. LoAs have been developed and agreed with both these Air Traffic Service Units.

2.3.2 The present notified Designated Operational Coverage (DOC) for LEA's VHF radio frequency is 10nm and 3000ft. This will be extended out to 25nm and 5000ft to include the IAFs with coverage to allow time for inbound aircraft to establish two-way communications in advance of commencing an approach. However, the CAA has confirmed that due to potential interference with other stations a change of frequency/channel will be required. Due to the high cost of the change including modification to radio equipment and publicity material the change will only be effected after the Implementation phase of the ACP has commenced. CAA reports that the 56-day AIRAC cycle will take longer than issuing the approval hence derisking the change.

2.3.3 Should an aircraft suffer radio failure during an approach the standard procedure as set out in the UK AIP ENR 1.1 para 3.4.2.2 Failure of Two-way Radio Communications Equipment has to be followed.

2.3.4 A discrete transponder code has been allocated for aircraft on the instrument approach (C5077). This will indicate to LBA & DSA Radar Controllers an aircraft intending to use the IAPs at either LEA or SAC. Furthermore, the Pilot Brief includes the AFTN addresses of LBA & DSA so they can receive copies of inbound flight plans.

2.3.5 LEA has two runways, 16/34 1134m x 45m and 06/24 1827m x 45m. The latter has been chosen for these IAPs being the 'into wind' runway (75% R24 & 25% R06) and is the longest.

2.3.6 The runway and associated Obstacle Limitation Surfaces including Instrument Strip comply with CAP168 Chapter 3 Aerodrome Physical Characteristics Table 3.1 Aerodrome Reference Code 4.

2.3.7 The painted markings have been applied following CAP168 Ch 7 Fig 7.23(a) 2(iii) and 3(i) as a Precision Instrument runway.

2.3.8 The runway also benefits from CAP168 Chapter 6 Scale L2 Category lighting. R24 has full CAT 1 high intensity approach lighting and R06 has a Simple Approach array.

2.3.9 LEA employs sufficient Air Ground Operators (AGOs) to help ensure the VR is continuously manned during notified operating hours by a qualified person. The facility has 8.33 MHz compliant radios, Vaisala weather station and marked Visibility Reference Points on each window. Its location affords good visibility of the approach and manoeuvring area.

2.3.10 For Rescue and Fire Fighting Services Cover the Aerodrome's Fire Category is 2 (3 with remission) which allows LEA to accept aircraft no longer in overall length than 18 metres with the current equipment and manpower.

2.3.11 Should an aircraft longer than 18m fuselage length request permission to land at LEA temporary RFFS arrangements will be made to accommodate it.

## 2.4 Operational Effect

2.4.1 The small number of aircraft movements at LEA *circa* 6000pa<sup>5</sup> with the even smaller number subset of those conducting instrument approaches, means that any operational effect on other airspace users is considered not to be significant. There are only 11 slots available a day in summer (8 in winter) divided between LEA and SAC.

2.4.3 Nevertheless, all other aerodromes, gliding sites and helipads in the vicinity of LEA and the RNP tracks have been identified and contacted. Where possible engagement with local aviation entities has resulted in either an LoA being agreed or confirmation that no formality was required. Some entities such as Full Sutton Aerodrome have declined to engage and risk assessments provided suitable mitigation where interaction may occur. After extensive work with the local glider community, which saw highly developed LoAs produced, all three clubs decided not to ratify any agreements. Nevertheless, LEA plans to adopt the procedures including notification as if the LoAs had been adopted. The former RAF Rufforth is actually divided in two and the microlight operation at Rufforth East had agreed an LoA which remains on the table.

2.4.4 LEA does provide an Air Ground Communications Service. The default concept of operations is that pilots of inbound aircraft with an approved slot will use own navigation to position to an appropriate Initial Approach Fix depending on the runway in use and direction from which they intend to join the procedure. Should UK FIS be available from LBA or DSA the Pilot Brief will encourage their use. Once in contact with LEA, it will be the commander's responsibility for the safe conduct of the flight. Should all or part of the

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<sup>5</sup> COVID-19 caused a temporary cessation of operations in 2020/21. At the time of writing meaningful projections for the future are proving difficult

procedure be flown in VMC then the Rules of the Air require that portion is to be flown under 'see and avoid' principles placing the onus of lookout on the pilot/crew.

## **2.5 Economic effect**

2.5.1 The development of this ACP has not been influenced by any economic restrictions or benefits, beyond the net financial benefit to LEA, through improving access in bad weather. The very small change in this proposal precludes a worked cost-benefit model, as defined in the Government Green Book. A qualitative assessment considered the scale of change negligible on all stakeholders, although, a significant economic benefit to LEA's continued viability. The consultation raised no issues in this respect.

## **2.6 Safety Management**

2.6.1 This application is being made in accordance with CAP725 accompanied by a separate Safety Case. Supporting the Safety Case will be LoAs and Mandatory Pilot Brief.

2.6.2 As part of the LEA change management process an initial hazard identification and risk assessment workshop has been held. The resulting documents have been added to the LEA risk register.

### **Air traffic management**

2.6.3 Introduction of the IAPs requires an overall assessment of the effect on the surrounding airspace and how aircraft flying the RNP approach procedure will integrate with it. The following is a summary based on the Safety Case. The primary challenge was operating without approach control, which LEA argues can be achieved with an acceptable level of safety by adopting PPR (prior permission required) and arrival slot allocation arrangements. Since LEA requires PPR for all aircraft anyway, this formed the basis of the argument that utilisation could be controlled.

Letters of Agreement provide that:

- a) Within particular arrival directions/runways in use, aircraft will contact either LBA or DSA ATC to request an air traffic service outside of controlled airspace. The provision of this service will be subject to ATC capacity.
- b) When ATC workload permits, provision of a traffic or deconfliction service may assist in providing mitigation against conflict with non-participating traffic that may be passing in the vicinity of the IAP.

2.6.4 segregation of visual circuit traffic at LEA and that approaching on the IAP will be managed by:

- i) Informing pilots, on behalf of the Aerodrome owner, that the circuit is unavailable during that part of the approach from arrival at the IAF and until the aircraft has landed or commenced a MAP
- ii) Requesting aircraft on the ground hold until the subject aircraft has landed or diverted.

## **2.7 Airspace and Infrastructure Requirements**

2.7.1 There is no new controlled airspace associated with this proposed change.

### 2.8 Supporting Maps, Charts and Diagrams



Figure 1 – UK AIP Chart of Aerodrome

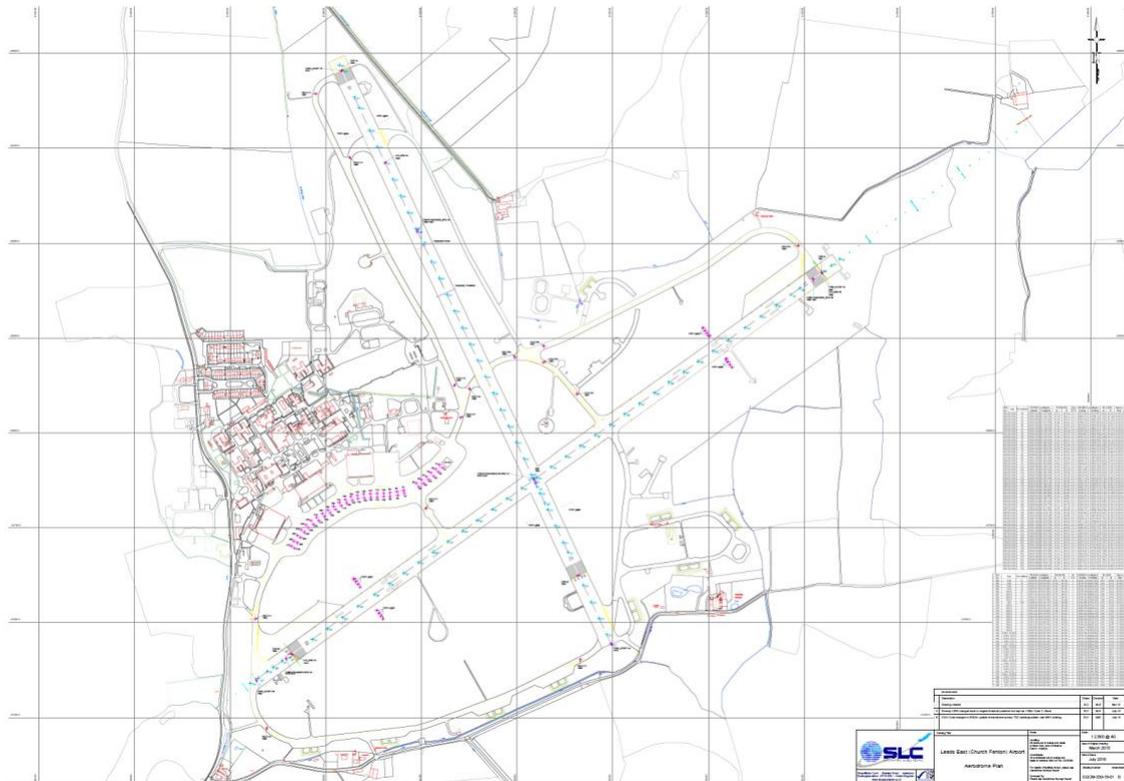


Figure 2 – SLC CAP232 Survey Chart of Aerodrome



Figure 3 – CAA 1:500 000 Chart showing existing airspace [will require updating to latest issue showing Linton closed]

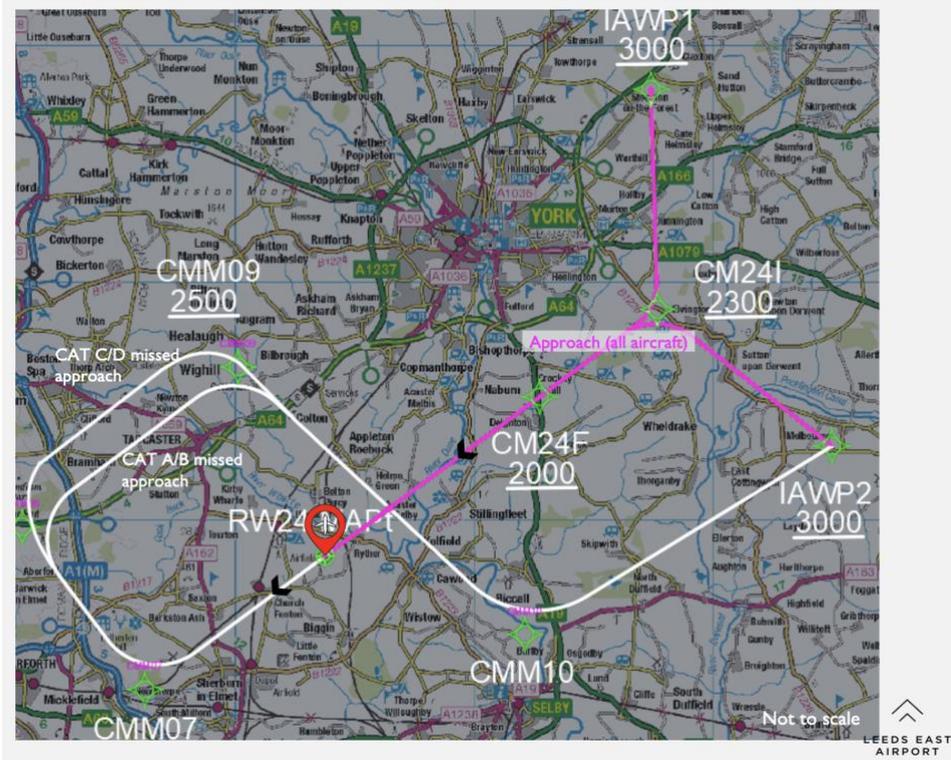


Figure 4 – Chart showing proposed procedure route for Runway 24

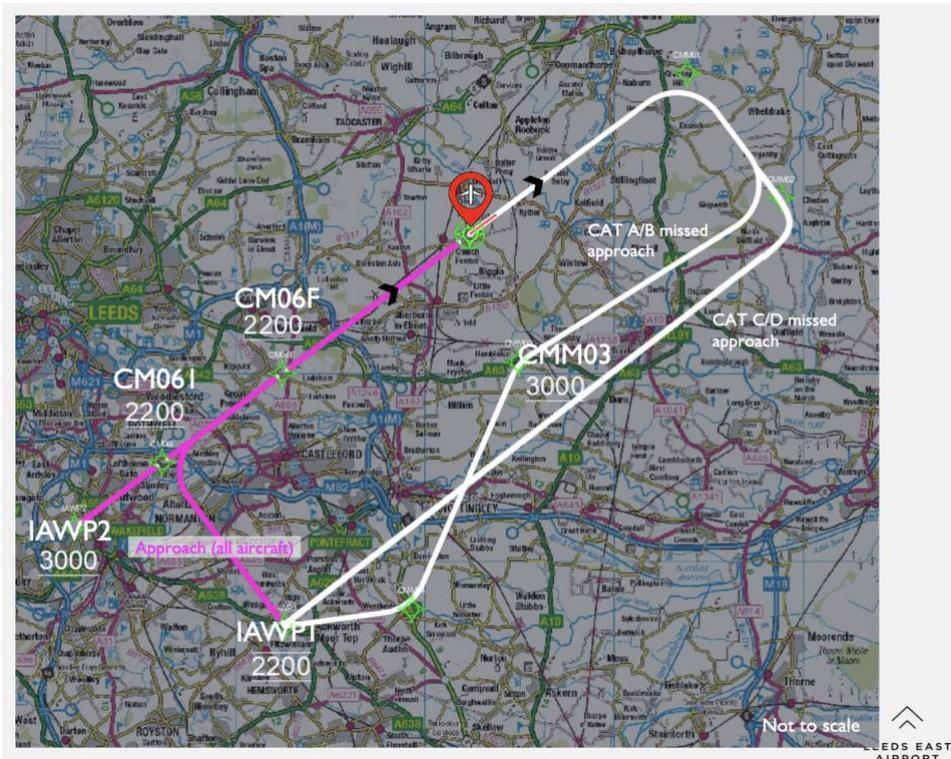


Figure 5 – Chart showing proposed procedure route for Runway 06

## 2.9 Ongoing review

2.9.1 The utilisation will be continuously monitored in the first month and any safety issues identified will be assessed as soon as possible by LEA management with immediate corrective action applied if required. The operational experience of using the IAPs will be formally reviewed after three, six & twelve months of publication and annually thereafter. LEA's Accountable Manager will be responsible for ensuring this takes place and presenting the findings. The Accountable Manager will sanction any changes in response to all safety or environmental issues identified, which will be addressed through the LEA SMS.

2.9.2 The review will include:

- 1) Review the log of RNP approaches (the issue of PPR numbers)
- 2) Study any pilot reports
- 3) Study any incident reports, or MORs
- 4) Study the number, type, and location of any noise complaints
- 5) Identify any required changes in the approach and missed approach paths
- 6) Review the overall environmental effect
- 7) Produce a review document for consideration.

2.9.3 Any noise or issues that do occur can be discussed with local stakeholders via the existing channels.

2.9.4 It is anticipated that Post Implementation Review (PIR) will be conducted by the CAA after at least 1 year of operations.

## 3 Environmental Report

### 3.1 Description of the Airspace Change

3.1.1 The following paragraphs discuss the potential environmental consequences of the proposals with reference to CAP725 especially paragraph B103 which states:

*B.103 Change Sponsors **must** demonstrate how the design and operation of airspace will impact on emissions. The kinds of questions that need to be answered by the Change Sponsor are:*

*Are there options which reduce fuel burn in the vertical dimension, particularly when fuel burn is high e.g. initial climb?*

[See para 3.4 below]

*Are there options that produce more direct routeing of aircraft, so that fuel burn is minimised?*

[See Para 3.4 below]

*Are there arrangements that ensure that aircraft in cruise operate at their most fuel-efficient altitude, possibly varying altitude during this phase of flight?*

None of the above are applicable to the IAPs as proposed.

3.1.2 The main purpose of RNP approaches is to allow safer, defined and more accurate approaches to LEA particularly during periods of reduced cloud ceiling and/or visibility. The introduction of these approaches at LEA is aligned with international and UK safety

objectives related to performance-based navigation (PBN) and CAP1711 UK Airspace Modernisation Strategy (AMS).

3.1.3 Details of the Airspace Change are fully explained in Para 2.2

### 3.2 Traffic Forecasts

3.2.1 As mentioned in para 1.9 to 1.12 aircraft movements at LEA are historically very low at ~6k pa compared to say SAC circa 35k per annum. This means that small increases in activity create a disproportionate rise in the figures percentage wise. Even if the number of based, IFR capable aircraft doubled and the enlarged fleet doubled the amount of approaches demand would still be met by the available slots.

3.2.2 2020 saw a dramatic reduction in GA activity across the UK. The effects of the pandemic are likely to be felt for a long time and an accurate forecasting traffic figures for future years is therefore very difficult.

3.2.3 The following table is the current best estimate of traffic broken down by approach speed category.

Year	VFR				RNP				Total Movements	RNP	/Day
	CAT A	CAT B	CAT C	CAT D	CAT A	CAT B	CAT C	CAT D			
2019	4889	314	71						5274	0	0
2021	6700	300	47						7047	0	0
2022	7500	50	12		500	450	80		8592	1030	2.82
2023	7900	50	12		600	500	80		9142	1180	3.23
2024	8000	50	12		850	1000	80		9992	1930	5.29
2025	8100	50	12		900	1200	80		10342	2180	5.97

3.2.4 Referring to the righthand column it can be seen that on this estimate the demand for slots is not going to exceed supply for a number of years and allows capacity for SAC allocated slots

### 3.3 An Assessment of the Effects on Noise

3.3.1 Since start of civil operations LEA has not gathered noise data, nor is it required so to do. Examination of CAP 2091 CAA Policy on Minimum Standards for Noise Modelling with particular reference to Section 78 of the Civil Aviation Act 1982, (CAA82) it is clear that the Secretary of State for Transport has not designated LEA for noise purposes. Furthermore, para 1.4 of the CAP deals with proportionality and the sponsor is certain that even if designated then the Category would be E.

3.3.2 All certified aircraft must have a noise certificate. This includes aircraft on approach with undercarriage extended and landing flaps set at the correct number of degrees measured 2000m from the landing threshold. By reference to the US FAA Advisory Circular Number 36-3H Estimated Airplane Levels in A-Weighted Decibels<sup>6</sup> and European Aviation Safety Agency type-certificate data sheets, figures can be found for four based aircraft types plus two sample larger aircraft.

<sup>6</sup> [https://www.faa.gov/documentLibrary/media/Advisory\\_Circular/AC\\_36-3H\\_with\\_chg\\_1.pdf](https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_36-3H_with_chg_1.pdf)

3.3.3 Categorisation of aircraft for this purpose is based on final approach speed as per this table.

Category A	Speed 90 knots or less
Category B	Between 91 and 120 knots
Category C	Between 121 and 140 knots
Category D	Between 141 knots and 165 knots

3.3.4 To aid understanding of the above the following aircraft types with engine type and typical seating capacity are as follows.

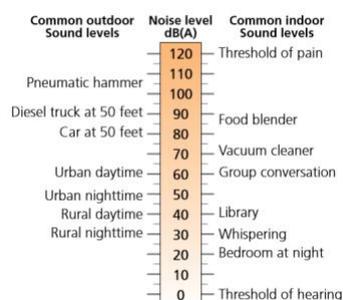
Category	Aircraft description	Noise rating
CAT A	Piper PA-28 Warrior (single piston engine – 4 seats)	61.0 dB
CAT B	Pilatus PC-12 (single turbine engine – 12 seats)	73.2 dB
CAT C	Cessna Conquest II (twin turbine engine – 6 seats)	76.5 dB
CAT C	Canadair 604 Challenger (twin jet engine – 19 seats)	80.4 dB
CAT C	Boeing B737/Airbus A320 (twin jet airliner – 185 seats)	85.0 dB
CAT D	Boeing B777-300ER (twin jet airliner – 290 seats)	89.5 dB

3.3.5 In comparison the level of background (technically called ambient) noise differs between rural and urban locations. The difference in impact of noise on rural or urban areas is acknowledged in the British Standard (BS4142) for industrial purposes and is recognised by the International Organisation for Economic Co-operation and Development (OECD) for transportation purposes. The OECD recommends limits on sound levels in dB(A) for transportation noise sources in urban and rural outdoor locations.

3.3.6 There is a marked difference in the geography and population density to the east and west of LEA with rural character underneath the runway 24 approach versus more urban landscape under the runway 06 approach. Nevertheless, it is felt that numbers of the population under the final approach exposed to 51dB(LAeq16h) will remain below 750.

3.3.7 The following taken from a recent noise study shows typical levels for certain activities.

Figure 1. Common dB(A) soundlevels (van Deventer2014)



3.3.8 It can be seen from the above that vehicular transport creates more noise than the aircraft typically using LEA. What must also be taken into account is that the approaches are flown from an initial height of 3000' down to approximately 200' crossing the airport boundary fence, hence the perceived noise will be less than the Certification figures to many observers on the ground.

3.3.9 Furthermore, the final approach path flown to either runway looked at in plan view is exactly the same as is followed today. Aircraft line up with the runway at sufficient distance to complete a stable approach. The advantage in noise term is that the aircraft will follow a defined glideslope generated by the internal navigation computers, thus ensuring a rate of descent of around 300ft/mile from 6 miles out.

### **3.4 An Assessment of the Change in Fuel Burn/CO2**

3.4.1 Flying an aircraft without coupling to its RNP instrument approach path using the autopilot allows its crew to find their own route to the runway. This may not be the optimum nor most fuel efficient. As the IAPs route aircraft directly along the shortest but stabilised approach it follows that the minimum possible fuel consumption will result.

3.4.2 Due to the very low numbers of movements no quantitative assessment can be meaningfully made. A qualitative view based on judgement is that the effects will be negligible. Taking the above in context of the existing number of landings a year, LEA is confident that the effects on CO2 emissions of introducing RNP approaches to the areas around the airport will be very low.

### **3.5 An Assessment of the Effect on Local Air Quality**

3.5.1 As aircraft land, engine thrust is reduced to idle and with the short distance from runway to parking emissions will be very low. Therefore, local air quality issues are not considered to be an issue. Running engines and auxiliary power units on the ground is already severely restricted by LEAs terms and conditions of use.

3.5.2 A check on the Government website <https://uk-air.defra.gov.uk/aqma/> for Air Quality Management Areas (AQMA) has not revealed any in the vicinity of the aerodrome nor approaches.

### **3.6 An assessment of the effect on Visual Intrusion**

3.6.1 As the new IAPs define routes already flown by the majority of larger aircraft inbound to LEA the only effect will be a small increase in traffic based on the traffic forecast above. Some of the extra traffic using the IAPs may be doing so on days when lower cloud would normally preclude landing. In this case such aircraft will not be visible for most of the approach. It should also be noted that, as the airspace surrounding LEA is open to any other type of flying, many aircraft seen will not be associated with LEA.

### **3.7 An assessment of the effect on Areas of Outstanding Natural Beauty**

3.7.1 There are no AONBs affected by this proposal.

### **3.8 An assessment of the effect on Special Sites of Scientific Interest**

3.8.1 There are no SSSIs affected by this proposal.

[Ends]