



**LEEDS EAST  
AIRPORT**

**AIRSPACE CHANGE PROPOSAL  
ACP-2016-013**

**RNP  
INSTRUMENT APPROACH PROCEDURES**

**SAFETY CASE**

30<sup>th</sup> January 2023

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## Section 1

### 1 Preface

- 1.1 Leeds East Airport (LEA) started its application with the CAA to introduce RNAV(GNSS)<sup>1</sup> instrument approach procedures (IAPs) without Approach Control to runway 06/24 in July 2016; CAA Form DAP1916 refers.<sup>2</sup> Work associated with preparing the application started beforehand with an initial development meeting held at CAA House on 26/10/16.
- 1.2 As confirmed by the DfT in a letter to CAA on 18/3/19, LEA's application has been permitted to continue under the DfT's Air Navigation Guidance 2014 (ANG14). In consequence this Safety Case relies on, in part, guidance contained in CAP1122 - '*Application for Instrument Approach Procedures to Aerodromes without an Instrument Runway and/or Approach Control.*'
- 1.3 Although the CAA withdrew CAP1122 for new applicants, those aerodromes already in process such as LEA are continuing to use the guidance. The Airspace Change Proposal (ACP) has however been prepared according to CAP725 titled '*CAA Guidance on the Application of the Airspace Change Process.*'
- 1.4 CAP1616 titled '*Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements*', has been referred to in some circumstances where appropriate.<sup>3</sup>
- 1.5 Peel Holdings, owners of Doncaster Sheffield Airport (DSA) unexpectedly announced the proposed closure of the Airport in September 2022 w.e.f 18<sup>th</sup> November 2022. As a result, references to DSA have been removed.

### 2 Introduction

- 2.1 The objective of this document is to demonstrate that RNP approaches can be operated with an acceptable degree of safety with risks reduced as low as reasonably practicable (ALARP). Residual risks are judged by the sponsor to be tolerable and cannot be reduced further without unsustainable cost. The Sponsor will continue to monitor the residual risks as per the post implementation requirements under the LEA Safety Management System (SMS).
- 2.2 LEA has used CAP1122 as a guide and carried out hazard identification and risk assessments to examine where each part of existing regulations currently provides mitigation against a specific incident type or types. These are documented below showing areas that required further alternative risk-based safety arguments and where required these are also included.
- 2.3 Since version 1.0 of the document was completed in October 2019 additional consideration of CAP760 titled '*Guidance on the Conduct of Hazard Identification, Risk*

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<sup>1</sup> Changes in international nomenclature since 2016 means these types of approaches fall under Performance Based Navigation (PBN). Subsequently all approaches which fall under this category have been renamed Required Navigation Performance Approaches (RNP APCH).

<sup>2</sup> See Appendix 1

<sup>3</sup> Fourth Edition as Amended February 2021

*Assessment and the Production of Safety Cases'* to assist the Change Sponsor has been embraced.

### 3 The Need for Change

- 3.1 The proposed change is in support of the development of the airport into a Business and Executive Aviation hub for North Yorkshire as part of the continued transition from military to civil operations. As it is intended to encourage more business general aviation to use Leeds East Airport, RNP approaches are an essential part of the airport's plans to offer increased access across a greater range of weather minima.

### 4 Current Airspace Description

- 4.1 LEA is situated in Class G airspace southeast of Leeds Bradford Airport (LBA) which is surrounded by controlled airspace and manoeuvres traffic using radar control. A Letter-of Agreement (LoA) has been developed with them. (See files supplied under separate cover). Additionally, aviation activity takes place at the following locations, in the vicinity of the approaches, and LoAs have been agreed/drafted.

Name of Stakeholder	Status
Leeds Bradford Airport	Signed and agreed
Sherburn Aero Club	Signed and agreed
National Police Air Service	Signed and agreed
Yorkshire Air Ambulance	Signed and agreed
Garforth Airstrip	Signed and agreed
Elvington Aerodrome	Draft agreed

- 4.2 Humberside Airport (HUY) provides a lower airspace radar service (LARS) within a 30-mile radius. This covers the approach to the runway 24 IAF for traffic arriving in a quadrant from the east to east southeast.
- 4.3 To the east, Brighton and Full Sutton airfields declined to engage in the development of LoAs; however, the Risk Assessment of Mid Air Collision (MAC) occurring whilst an aircraft was inbound to LEA on an RNP IAP did not identify that an LoA with either of these airfields was required as a mitigation. (See Appendix 5)
- 4.4 As part of the extensive engagement activities draft LoAs have been produced with the local gliding stakeholders. During the engagement several modifications were made to the procedures at the request of those stakeholders. Currently<sup>4</sup> the glider stakeholders do not wish to develop LoAs further. However, LEA will abide by those parts of the agreements concerning pre-notification of slots and providing appropriate briefing materials to the clubs and making 'blind transmissions' on the agreed frequency.

The following table lists the Glider Stakeholders.

Name of Stakeholder	Status
York Gliding Centre (Rufforth West)	Draft produced.
Wolds Gliding Club (Pocklington)	Draft produced.
Burn Gliding Club (Burn)	Currently declined to engage

<sup>4</sup> End of January 2022

NOTE: LEA remains committed to improving co-ordination with all local stakeholders. If post implementation reviews indicate that progression of the LoAs would be advantageous LEA will undertake to develop the LoAs if or when stakeholders are so inclined.

- 4.5 Engagement with the gliding clubs in the vicinity of the approaches had resulted in feedback concerning the RNP tracks. As a consequence, separate routes were redrawn for the RNP tracks for to increase the lateral and vertical separation from them. A Risk Assessment of MAC occurring whilst an aircraft was inbound to LEA on an RNP IAP was conducted which indicated that LoAs were desirable but not essential mitigations. (See Appendix 5) Subsequently, CAT D aircraft were removed from the proposals and CAT C aircraft returned to the original route used by CAT A & B aircraft.
- 4.6 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. Each organisation has agreed LoAs. Also, a number of hotels and racecourses in the vicinity accept infrequent helicopter arrivals. All identified locations were contacted as part of the consultation and a communications plan to send them information they can give to visiting pilots will be developed.
- 4.7 LEA & Sherburn-in-Elmet aerodromes ATZs adjoin as they are approximately 3 miles apart. A longstanding LoA has proved effective in managing the adjacent operations. Sherburn Aero Club (SAC) has its own ACP for RNP approaches currently underway and every effort has been made to ensure safe integration of these separate IAPs, for instance by sharing a slot system to manage the coordination of RNP movements. A new LoA has been agreed to cover the RNP operations and an APP is being developed giving real time information on slots, runway in use etc.



Chart showing existing airspace

- 4.8 The closure of Doncaster Sheffield Airport (DSA) led to the withdrawal of their controlled airspace and consequent cancellation of the LoA. As a result, minor changes to the altitude at which a/c commence their approach at VUSFO and EPJUG to harmonise with MSA have been made.



4.9 A full Flight Validation task and Tree Study, approved by the CAA IFP Regulator was completed on 6<sup>th</sup> January 2023 using jet equipment capable of operating at CAT C speeds. The procedures were found satisfactory without any coding issues. The validation crew signed off the CAP785b reports which have been submitted together with photographic evidence of the navigation screens.

## 5 Proposed Concept of Operation – general description

- 5.1 Although the phrase Airspace Change is used frequently throughout this document, it derives from CAP725. In LEA's case the proposal does not include an application for the notification of new CAS. The design of the ICAO PANSOPS compliant IAP's provides defined routes to follow mostly in Class G airspace. Aircraft intending to commence an approach from any IAF will use own navigation to those locations. An air traffic service may be available from an adjacent ATSU such as LBA and this could include deconfliction against other IFR traffic. One of the 06 IAP's is partly in LBA CAS, the other below LBA CAS and some of the LBA procedures are in conflict with LEA's. The use of a dedicated squawk (C5077) and procedures have been established with LBA in the agreed LoA to mitigate the risks identified.
- 5.2 It will be the aircraft commander's responsibility to remain clear of adjacent CAS or negotiate access on a tactical basis. The LEA mandatory pilot brief provides crews with all the required information to use the LEA RNP's safely.
- 5.3 The proposed IAPs to runways 06 and 24 are of a standard design in accordance with ICAO Doc 8168 PANSOPS. Minima lines for LNAV and LNAV/VNAV are provided for CAT A, B & C aircraft including Circle to Land.
- 5.4 In terms of AGL, runway 24 has full provision (FALS) and runway 06 basic lighting (BALS) 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. See UK AIP EGCM AD 2.14 Approach and Runway lighting for details.
- 5.5 LEA provides an Air Ground Communications Service (AGCS) from the former RAF Visual Room (VR), 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 a strict application of a mutually exclusive slot allocation system. Should an aircraft on an instrument 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 should conditions not allow conversion to a VFR approach. A recent review of hazards highlighted a scenario whereby an aircraft during the conduct of an RNP approach has to perform a missed approach. Should another aircraft having taken off from Sherburn adopt a track and velocity that takes it towards the instrument traffic at LEA a risk of MAC might occur. All combinations of events were risk assessed and mitigations devised to reduce the already low risks further. The results are at Appendix 5C
- 5.6 The combined slot allocation system allows for only 1 slot per hour at either LEA or SAC. An out of hours operation will be available at LEA should need arise. In such cases the ATZ will be reactivated by NOTAM, AGCS & RFFS will be provided. The AGO manual will include an instruction to advise the following local stakeholders to prenotify them of the planned movement –

- a. Leeds Bradford Airport
- b. Sherburn Aero Club
- c. Garforth Airstrip
- d. NPAS Carr Gate
- e. Yorkshire Air Ambulance
- f. Rufforth
- g. Pocklington
- h. Burn

5.7 As Humberside Airport will provide, subject to controller workload, a LARS within a radius of 30nm of their location no requirement to pre-notify them is necessary.

5.8 For a detailed description of the IAPs please refer to the OspreyCSL design report.

## 6 Methodology

6.1 The seven steps set out in CAP760 have been utilised to see how they may inform the methodology. They are –

- Step 1 - System Description
- Step 2 - Hazard and Consequence Identification
- Step 3 - Estimation of the Severity of the Hazard Consequences
- Step 4 - Estimation/Assessment of the Likelihood of the Hazard Consequences Occurring
- Step 5 - Evaluation of the Risk
- Step 6 - Risk Mitigation and Safety Requirements
- Step 7 - Claims, Arguments and Evidence that the Safety Objectives and Safety Requirements Have Been Met and Documenting this in a Safety Case

6.2 Step 1 is the OspreyCSL design report. Steps 2 to 7 are covered by the Goals as per the table below.

Goal 1						
The IAP at (aerodrome name) will be operated with an acceptable degree of safety.						
Strategy 1						
Argument that the standards-based approach which requires approach control (Iaw ANO Art 172) and a runway equipped to CAP168 'instrument runway' standards when used in combination with other risk-reduction measures, provides an acceptable degree of safety.						
Goal 1.1	The risk of a CFIT accident is acceptably low. (CFIT)					
Goal 1.2	The risk of a runway excursion accident is acceptably low. (REXC)					
Goal 1.3	The risk of a runway collision accident is acceptably low. (RCOLL)					
Goal 1.4	The risk of a mid-air collision accident is acceptably low. (MAC)					
Goal 1.5	The risk of a loss of control accident is acceptably low. (LOC)					
Goal 1.6	The risk of an accident during the introduction to service of a new IAP at this aerodrome is acceptably low. (INTFC)					
Goal 1.7	The risk of an accident during the through-life operation of an IAP at this aerodrome is acceptably low. (THRULIFE)					

**Table 1:** Baseline top level strategy and goals

6.3 Table 1 refers to the existing CAP168 requirements applicable to aerodromes with approach control and an instrument runway.

6.4 As LEA is an aerodrome without approach control, the following table 2 sets out how the sponsor proposes to mitigate the risks identified and reduce them to tolerable levels. A comprehensive hazard identification process and risk assessments accompany this document. See Risk Assessment in Appendix 5.

6.5 Goal 1 is subdivided into seven sections as follows:



<b>Goal</b>	<b>Statement</b>
<b>Goal 1.1</b>	The risk of a CFIT accident is acceptably low (CFIT)
<b>Goal 1.2</b>	The risk of a runway excursion accident is acceptably low (REXC)
<b>Goal 1.3</b>	The risk of a runway collision accident is acceptably low (RCOLL)
<b>Goal 1.4</b>	The risk of a mid-air collision accident is acceptably low (MAC)
<b>Goal 1.5</b>	The risk of a loss of control accident is acceptably low (LOC).
<b>Goal 1.6</b>	The risk of an accident during the introduction to service of a new IAP at this aerodrome is acceptably low (INTRO)
<b>Goal 1.7</b>	The risk of an accident during the through-life operation of an IAP at this aerodrome is acceptably low (THRULIFE)

- 6.6 In each section, LEA believes it has correctly assessed which hazards have to be addressed and applied risk-based judgements on appropriate alternative safety arguments to mitigate against likelihood and severity.
- 6.7 In Section 9, Concluding Remarks, safety statements referencing each goal are made to substantiate the claim that the risks of introduction of RNP approaches at LEA have been reduced to ALARP. Residual risks are judged by the sponsor to be tolerable and cannot be reduced further without unsustainable cost. The Sponsor will continue to monitor the residual risks as per the post implementation requirements under the LEA SMS.

## Section 2                      Goal 1.1 (CFIT)

**Goal 1.1      The risk of a CFIT accident is acceptably low. (CFIT)**

**CFIT 1            CAP168 Instrument Runway Standards are met.**

CFIT 1.1      LEA's runways are compliant with a variation noted at Appendix 1. CAP 168 Chapter 6, para 3.43 (1) refers.

CFIT 1.2      Details of the compliant AGL and runway markings can be found in the LEA UK AIP entry. EGCM AD 2.14 Approach and Runway Lighting. Reference is also made to a non-standard transverse threshold painted stripe of incorrect width. In mitigation it is anticipated that such a variance would have little or no effect if a minimum of higher value was imposed for the IAP.

**CFIT 2            ANO 183 Requirement for Approach Control is mitigated by provision of AGCS**

CFIT 2.1      Altimeter Setting - Aerodrome with AGCS

At present the service provided by LEA is an Air Ground Communication Service (AGCS). The duty Air Ground Operator (AGO) shall report and confirm accurate readback of the QNH obtained from approved barometric equipment as per CAP746.

CFIT 2.2      Weather Reporting – Aerodrome AGCS.

LEA has qualified Basic Met Observers who pass unofficial weather observations and are subject to training and competency plans (See files supplied under separate cover). LEA is in the vicinity of two international airports with full ATC which publish METARs including cloud base and visibility.

AGOs are able to interrogate this information to help establish the unofficial cloud base at LEA. Any inbound aircraft to LEA is passed these weather reports via R/T in accordance with normal aviation practice.

CFIT 2.3      Requirement for Monitoring of Lateral and Vertical Flight Path – Type of Operation. Terrain safety.

The mitigation is that the IAP design is ICAO Doc 8168 PANS OPS compliant, and its requirements place TAA's at or above MSA.

**CFIT 3            The Aerodrome is licensed.**

CFIT 3.1      As the aerodrome is licensed, CAP 1732 Aerodrome Survey Standards are met and 'safeguarding' will apply both of which reduce the risk of CFIT by providing a 'known' terrain and obstacle environment.

**CFIT 4            The IAP design has been conducted in accordance with PANS OPS and the procedure notified in the UK AIP.**

CFIT 4.1 Use of PANS-OPS IAP Design criteria reduce the risk of CFIT by permitting the aircraft to fly to an altitude and position from which either a landing or missed-approach may be flown whilst remaining terrain-safe.

CFIT 4.2 The established procedures for designing and approving IAP designs (including flight validation procedures) provide participating aircraft with a flightpath which, if followed in flight, will keep them clear of terrain and obstacles.

**CFIT 5 The integrity and accuracy of the navigation aids used for the instrument approach meet the required standards.**

CFIT 5.1 The integrity and accuracy of the navigation aids used for instrument approaches are such that they will provide the crew of participating aircraft with sufficiently reliable and accurate guidance to enable them to follow the published IAP within the tolerable limits required to avoid flight into terrain or obstacles. In the case of GPS receiver equipment designed to accept an augmented signal in space, fault detection and exclusion (FDE) increases system integrity to help permit navigation by sole reference.

**CFIT 6 The crew members of participating aircraft are suitably qualified and proficient to safely execute an IAP with sufficient accuracy to remain clear of terrain and obstacles.**

CFIT 6.1 Aircrew are licensed/rated in accordance with ICAO Annex 1 Personnel Licensing.

**CFIT 7 Aerodrome ATS is not provided but mitigated by provision of AGCS.**

CFIT 7.1 Aerodrome ATS reduces the risk of CFIT by providing local meteorological Weather Reporting – Aerodrome with AGCS.

LEA has qualified Basic Met Observers who pass unofficial weather observations and are subject to training and competency plans. LEA is in the vicinity of two international airports with full ATC which publish TAFs & METARs including cloud base and visibility.

AGOs are able to interrogate this information to help establish the unofficial cloud base at LEA. Any inbound aircraft to LEA is passed these weather reports via R/T in accordance with normal aviation practice.

## Section 3                      Goal 1.2 (REXC)

**Goal 1.2      The risk of a runway excursion event is acceptably low. (RExC)**

**REXC 1      CAP 168 Instrument Runway Standards are met.**

REXC 1.1      LEA's runway dimensions, markings and lighting are CAP168 compliant and therefore assist pilots in reducing the risk of runway excursion by enhancing visual determination of runway boundaries and touchdown area, thereby aiding early visual detection and stable approach to safe touchdown in the correct position. Details of compliance can be found in the LEA AIP entry.

REXC 1.2      LEA has a CAP 168 compliant instrument runway strip and Runway End Safety Area (RESA) in order to assist in mitigating the effects should a runway excursion occur. Details of the declared distances and RESA can be found in the LEA AIP entry. EGCM AD 2.12 Runway Physical Characteristics.

Although a recent change to international standards means that the width of a code 4 runway instrument strip is now 280m LEA is maintaining the previous 300m.

**REXC 2      ANO 183 Requirement for Approach Control is mitigated by provision of AGCS.**

REXC 2.1      Runway Condition and Surface Wind Reporting – Aerodrome with AGCS. LEA has qualified Basic Met Observers who pass unofficial weather reports. The Airfield Ops Team/RFFS inspect the runway each day and record the conditions in accordance with CAP 168, more often following a significant change. An assessment of moisture/precipitation will be passed to the AGO, including any other issues affecting the runway surface condition. These details will then be relayed to the Aircraft Commander using standard phraseology as laid down in CAP413.

LEA intends introducing an IAP with Higher Minima type of approach. The use of unofficial weather observations provided by AGO's is considered acceptable on the basis that the higher minima associated with this type of approach allows an aircraft commander more time to establish a stable, visual, final approach with an adequate safety margin.

**REXC 3      The IAP design has been conducted in association with PANS OPS and the procedure notified in the UKAIP which, where appropriate, is used as the source data for coding the approaches in navigation databases and brings the required degree of data integrity.**

REXC 3.1      Use of PANS-OPS IAP Design criteria reduce the risk of runway excursion by permitting the aircraft to fly to an altitude and position from which the pilot can decide whether it is either safe to land or may execute a missed approach.

**REXC 4      The integrity and accuracy of the navigation aids used for the instrument approach meet the required standards.**

REXC 4.1 The integrity and accuracy of the navigation aids used for instrument approaches are such that they will provide the crew of participating aircraft with sufficiently reliable and accurate guidance to enable them to follow the published IAP within the tolerable limits required to allow a safe landing to be made on the runway or a safe missed approach to be executed.

**REXC 5 The crew members of participating aircraft are suitably qualified and proficient to safely execute an IAP with sufficient accuracy to allow a safe landing to be made on the runway or to execute a safe missed approach.**

REXC 5.1 Aircrew are licensed/rated in accordance with ICAO Annex 1 Personnel Licensing.

## Section 4                      Goal 1.3(RCOLL)

**Goal 1.3      The risk of a runway collision accident is acceptably low. (RCOLL)**

**RCOLL 1      ANO 183 Requirement for Approach Control is mitigated by provision of AGCS**

RCOLL 1.1      Approach control provides sequencing of Instrument Approach traffic to Management of IAP Use:

LEA has measures in place to help ensure only one aircraft is on the RNP approach at any one time. These include PPR, a strict slot system shared with SAC and making the visual circuit unavailable during that part of the approach from arrival at the IAF and until the aircraft has landed or commenced a MAP. Phraseology as per CAP413 SI 2022/01

**RCOLL 2      CAP 168 Instrument Runway Standards are met.**

RCOLL 2.1      CAP 168 compliant signage, markings and lighting assist pilots, aerodrome vehicle drivers and pedestrians in reducing the risk of runway collision by enhancing visual determination of holding points and runway boundaries. Details of the compliance of AGL and runway markings can be found in the LEA entry of the UK AIP. EGCM AD 2.9 SMGCS and Markings.

**RCOLL 3      Aerodrome ATS is mitigated by provision of AGCS.**

RCOLL 3.1      Risk of runway collision between Instrument and visual traffic

AGCS is provided at LEA. It is recognised that at AGCS aerodromes the aircraft commander is solely responsible for avoiding runway collisions between their aircraft and other aircraft, either IFR or VFR. Mitigation is available in that at LEA the AGCS position is constantly manned when the aerodrome is open and staff are rostered to this position. The AGCS Operator has a clear view of the runways and manoeuvring area and would be able to warn pilots of another aircraft on the runway. All hold positions are marked and signed in accordance with CAP 168. Further strength to the mitigation can be added by the use of a strict PPR slot booking system as described in RCOLL 1.1. above

RCOLL 3.2      Risk of runway collision between Instrument and vehicles/towed aircraft etc.

As per RCOLL 3.1. Additionally, at LEA, the AGO's are in 2-way communications with all vehicles/towed aircraft on the manoeuvring area.

RCOLL 3.3      Runway Inspections by AGCS Operator.

LEA already has a tried and tested runway inspection regime as described in the aerodrome manual. In addition to this regime, a further inspection will be carried out prior to a RNP approach, and then at no greater than hourly intervals during successive approaches. These inspections will be made by personnel such as the RFFS/Airfield Ops team or the Airfield Manager. Results of these inspections will be recorded in the Watch Log.



### RCOLL 3.3.2 Aerodrome Security, Types of Operations and Risk Exposure.

LEA has 24-hour gated security in place at the main entrance and all other entrances are secured. Boundary security is enforced with a combination of fencing and hedging and has proven effective for its former military task and since the airfield became a civil airport. LEA lies in a largely rural area and has no known history of intrusion onto the manoeuvring area.

The RNP Approach is expected to be used mainly by non-public transport operations by CAT A, B & C aircraft equipped with effective landing lights. In addition, for both day and night operations, the runway has an approved AGL system with stadium type lighting illuminating other parts of the apron and manoeuvring area. An AGCS operator is on duty in the Visual Control Room throughout the notified hours of operation and is able to visually monitor the runways and manoeuvring areas for any collision risks.

LEA has an active wildlife management policy and has demonstrated an effective reduction in the presence of hares, rabbits and concentrations of birds.

### RCOLL 3.3.3 Use of Higher Minima.

The use of a 500' DH for the IAP, particularly if used in the context of an 'IAP with Higher Minima' approach, will allow participating crews completing such an approach more time in the VMC environment in which to detect visually and to avoid obstacles or wildlife on the runway.

## **RCOLL 4 The crew members of aircraft participating in the IAP and others using the aerodrome are suitably qualified and proficient to operate safely in the vicinity of the runway.**

RCOLL 4.1 Aircrew are licensed/rated in accordance with ICAO Annex 1 Personnel Licensing.

## Section 5 Goal 1.4(MAC)

**Goal 1.4**     **The risk of a mid-air collision accident is acceptably low. (MAC)**  
**MAC 1**       **ANO 183 Requirement for Approach Control is mitigated by provision of AGCS**

MAC 1.1       Separation of Participants without ATS –Management of IAP use by Participating Aircraft Commanders.

MAC 1.1.1     LEA has measures in place to help ensure only one aircraft is on the RNP approach at any one time. These include PPR, a strict slot system shared with SAC and making the visual circuit unavailable during that part of the approach from arrival at the IAF and until the aircraft has landed or commenced a MAP

MAC 1.1.2     The AIP entry and the Aerodrome Manual will have details of procedures to help mitigate the risk of mid-air collision in the event of two aircraft wishing to use the approach at the same time. This will also be promulgated in the Pilot Brief (see file sent under separate cover) which LEA will confirm the crew are familiar with before issuing an arrival slot.

MAC 1.1.3     AGCS Operators are allowed to provide Traffic Information based on pilot reports within the authorisation of their Certificate of Competence.

MAC 1.2       Provision of surveillance data allows approach controllers to reduce the risk of MAC, both between participating traffic and against non-participating traffic.

MAC 1.2.1     Lack of surveillance data.

The risk of a MAC caused in part by the lack of surveillance data is mitigated by the following courses of action:

- a)     Infrequent instrument approaches, slot allocation system in place.
- b)     AGCS provided from the VR throughout the notified hours of operation as detailed in RCOLL 1.1 above and as NOTAM'd.
- c)     An ATZ is established as detailed in MAC 3.1 below
- d)     The aerodrome location and presence of an IAP are depicted in the UK AIP and, where appropriate, on aeronautical charts as detailed in MAC 4.1 below.
- e)     Letters of Agreement in place with neighbouring Aviation Stakeholders i.e. SAC & LBA. The LoA with LBA provides for UK FIS including surveillance services to be offered subject to controller workload.
- f)     Subject to workload HUY will provide a LARS to a/c approaching from the east southeast
- g)     A departure brief highlights the remote risk of a mid-air collision with an aircraft performing a missed approach and an aircraft taking off from SAC.
- h)     Glider Stakeholders –
  - o     Existing arriving traffic already flies in IMC along similar tracks
  - o     Coordination with gliders on daily basis where possible to inform of any IAP slots issued
  - o     Mandatory look out required for RNP participating pilots once established in VMC
  - o     Call out by Fenton Radio AGO on Glider Frequency to announce traffic information.
  - o     Mandatory position reports on Fenton Radio from pilots during an IAP
  - o     Wider deployment of EC devices for Situational Awareness
  - o     During poor visibility there is less GA traffic as shown in traffic study.

**MAC 2 An Aerodrome ATS is not provided.**

MAC 2.1 At locations where an AGCS is provided, PPR Slot time and use of higher minima and temporary suspension of the visual circuit provide mitigation.

LEA has measures in place to help ensure only one aircraft is on the RNP approach at any one time. These include PPR, a strict slot system shared with SAC and making the visual circuit unavailable during that part of the approach from arrival at the IAF and until the aircraft has landed or commenced a MAP

The ANO requires aircraft commanders flying under VFR to “see and avoid” other traffic.

**MAC 3 Airspace design measures are in place in the vicinity of the aerodrome.**

MAC 3.1 An ATZ during notified operational hours or NOTAM'd provides a ‘known’ environment close to the aerodrome itself which reduces the risk of collision between instrument traffic and non-participating visual traffic.

MAC 3.1.1 LEA is licensed according to CAP168 and has established an Aerodrome Traffic Zone (ATZ) of 2½ miles radius centred on the Aerodrome Reference Point. Pilots are to conform with CAP 393 Section 2 schedule 1 Section 3 para 11 (2). Sherburn Aero Club's ATZ adjoins LEA's ATZ to the South, but a tried and tested set of procedures and a Letter of Agreement mitigate risk of conflicts

MAC 3.2.1 This application does not include an application for Controlled Airspace.

**MAC 4 The aerodrome location and presence of an IAP are depicted in the UK AIP and, where appropriate, on aeronautical charts.**

MAC 4.1 Marking the aerodrome and instrument approach paths (feathered arrows) on aviation charts assists pilots of non-participating aircraft in avoiding these areas, thereby reducing the risk of mid-air collisions with non-participating traffic. LEA will ensure that a request is made to include the necessary chart changes at the first available chart update cycle.

**MAC 5 Visual lookout by aircraft crews and the ‘see and avoid principle’ provides some protection against mid-air collision during relevant portions of flying an IAP.**

MAC 5.1 VMC flight whilst flying the IAP.

If any portion of the procedure where an aircraft flying the IAP is in VMC the ‘see and avoid’ principle provides a degree of mitigation against the likelihood of collision with other aircraft in accordance with the ANO Rules of the Air.

MAC 5.1.1 Use of Higher Minima.

Whilst flying an IAP with a Higher Minima Approach, the more conservative aerodrome operating minima, provides more opportunity (where VMC exist) for

‘see and avoid’ principles to be utilised. This provides additional mitigation against the risk of a mid-air collision.

MAC 5.1.2 Pilot Brief

The mandatory Pilot Brief reminds pilots of the necessity for adopting “see and avoid” principles when flying the RNP approach in VMC. It also indicates the location of other stakeholders.

## Section 6                      Goal 1.5(LOC)

**Goal 1.5      The risk of a loss of control accident is acceptably low. (LOC)**

**LOC 1            ANO 183 Requirement for Approach Control is mitigated by provision of AGCS.**

LOC 1.1        Managed use of IAP:

LEA has measures in place to help ensure only one aircraft is on the RNP approach at any one time. These include PPR, a strict slot system shared with SAC and making the visual circuit unavailable during that part of the approach from arrival at the IAF and until the aircraft has landed or commenced a MAP. The time differential between approaches means that Wake Turbulence issues should never occur.

**LOC 2            An aerodrome ATS is not provided but mitigated by provision of AGCS.**

LOC 2.1        Aerodrome ATC reduces the risk of a loss of control accident arising from Wake Turbulence by sequencing visual landing traffic and participating instrument approach traffic.

LOC 2.1.1.     Managed use of IAP:

See Section LOC 1.1 above

**LOC 3            The crew members of aircraft participating in the IAP are suitably qualified and proficient to fly the IAP safely and under control.**

LOC 3.1        Aircrew are licensed/rated in accordance with ICAO Annex 1 Personnel Licensing.

## Section 7                      Goal 1.6 (INTRO)

**Goal 1.6      The risk of an accident during the introduction to service of a new IAP at this aerodrome is acceptably low. (INTRO)**

**INTRO 1      A formal approval process is followed for the introduction into service of an IAP which ensures that all associated activities needed for safe introduction, such as the publication of aeronautical information etc. have been satisfactorily completed before the IAP can be used operationally. (CAP 785 refers.)**

INTRO 1.1      LEA will apply all of the procedures and mitigations originally listed in CAP1122 Annex B "INTRO 1" and detailed in this safety case. An initial period of enhanced monitoring will be applied post implementation. A draft amendment to the UK AIP has been prepared which will be checked and amended as required prior to submission. Further publication of information to aviation stakeholders will be contained within the Communication Plan.

LEA will also undertake the following:

INTRO 1.1.1      Prior to the introduction of the IAP, all immediate aviation stakeholders will be informed. Aircraft operators based at LEA and SAC will be sent the Pilot's Brief concerning proper use of the IAP facilities. Post introduction, it is intended to hold at least one information evening at LEA to further inform local airspace users, and also a presentation will be made at a Regional Airspace User Group, BGA, LAA, and the Local Airspace Infringement Team meetings.

INTRO 1.1.2      The IAP procedure methodology and phraseology will be inserted into the LEA Aerodrome Manual and the Air Ground Operator Instructions. MET compliance documentation will be produced, including the observer manual and competence scheme. A Pilot's Brief relating to RNP procedures at LEA and SAC will be made available to all based aircraft operators at LEA and published on the LEA website.

INTRO 1.1.3      No ground-based equipment is required for the operation of the IAP other than suitable radios and Met equipment that is already in place. LEA's 8.33 kHz radios are approved by the CAA for use and have all the relevant licences and approvals. LEA's Met equipment is ICAO compliant. All such equipment is monitored, inspected and maintained. If any doubt exists as to the serviceability of any of this equipment, the IAPs will be withdrawn from service until serviceability is restored. All equipment is therefore present prior to the introduction of the IAP and suitable for service. An application to have the DOC extended to cover aircraft approaching the IAF has been lodged with CAA/OFCOM.

INTRO 1.1.4      Operational staff will be trained in a structure and managed way, where appropriate assessed to help ensure a safe introduction of the IAP's.



## Section 8                      Goal 1.7 (THRULIFE)

**Goal 1.7      The risk of an accident during the through-life operation of an IAP at this aerodrome is acceptably low. (THRULIFE)**

**THRULIFE 1 A formal process is followed for the ongoing maintenance, review and safeguarding of an IAP which requires that changes to airspace structure, survey data and magnetic variation etc. are taken into account, that records are kept by the aerodrome owner and a full review is undertaken at 5 yearly intervals (CAP 785 refers).**

THRULIFE 1.1      LEA will apply the procedures outlined in "THRULIFE 1" (Annex B, CAP1122). Safety Performance Indicators (SPIs) will be a key measure of the safe introduction of the procedures. The following data will be gathered –

- a)      Number of movements overall
- b)      Number of slot requests
- c)      Number of missed approaches
- d)      Number of divers
- e)      Number of attempted RNP arrivals without PPR/Slot.
- f)      Study any Pilot/ATC Reports
- g)      Study any incident reports, or MORs
- h)      Study the number, type, and location of any noise complaints

Additionally, the following actions will also be undertaken:

- a)      Maintenance of the IAP in accordance with the standard review procedures described in CAP785 Chapter 2, including changes to the obstacle environment and changing magnetic variation
- b)      Monitoring of the safeguarding surfaces relevant to the approach procedure to ensure that any new obstacles are identified and short-term adjustments are promulgated to approach minima if required
- c)      Ensuring that any effects on other local airspace stakeholders are considered and managed
- d)      Documenting the review procedures with nominated persons as required.
- e)      Reviewing the operation including any relevant Risk Assessments after 1 month, 3 months, 6 months and 1 year and thereafter as part of the SMS.

## Section 9 Concluding remarks

- 1 Set out below, against each safety goal, are statements to reflect the results of the risk assessments conducted. These argue that the process followed has given LEA confidence that the introduction of RNP IAPs will be acceptably safe, and that risks have been reduced to a tolerable level by the mitigations provided.
- 2 Goal 1.1 CFIT
  - The IAPs are ICAO Doc 8168 PANS OPS compliant
  - Arriving at an IAF the TAAs are set above MSA
  - In Class G terrain avoidance is the pilot's responsibility
  - AGOs have the ability to pass the aerodrome QNH/QFE
  - Runway 06/24 is fully compliant with CAP168 for an Instrument Code 4 runway.
  - AGO's are qualified Basic MET Observers and are able to provide cloud base/ceiling information
  - A 500'DH will give aircrew sufficient time to see the runway, its visual reference and make a safe landing
  - The aerodrome is licensed and CAP1732 aerodrome survey standards are met

**The risk of CFIT is assessed as low as reasonably practicable and therefore acceptable.**

- 3 Goal 1.2 REXC
  - Runway 06/24 is fully compliant with CAP168 for an Instrument Code 4 runway. It is lighted & marked for a precision approach.
  - A 500'DH will give aircrew sufficient time to see the runway, its visual references and make a safe landing
  - LEA staff will inspect the runway regularly and always before an RNP approach
  - The surface wind can be passed to inbound aircraft
  - Runway conditions can be passed in accordance with CAP2174
  - A defined approach using GPS aids a stabilised approach

**The risk of a Runway Excursion is assessed as low as reasonably practicable and therefore acceptable.**

- 4 Goal 1.3 RCOLL
  - **Time** separation is achieved by PPR and allocated arrival slots
  - AGOs can see the runway and manoeuvring area from the VR and communicate with aircraft on the ground and vehicles.
  - The runway and instrument strip are safeguarded by CAP168 runway taxiway holding positions including signs, markings and runway guard lights
  - LEA staff inspect the runway regularly and always before an RNP approach
  - LEA's wildlife policy is effective in reducing wildlife on the aerodrome.

**The risk of a Runway Collision is assessed as low as reasonably practicable and therefore acceptable.**

## 5 Goal 1.4 MAC

- During an IAP the visual circuit is unavailable to traffic during that part of the approach from arrival at the IAF and until the aircraft has landed or commenced a MAP
- Aircraft in the circuit should either land or vacate the circuit
- Traffic information will be passed regarding known aircraft in the vicinity including pre-notification to the glider sites of booked slots
- Use of PPR and allocated arrival slots manages traffic arriving via the RNP approach.
- The IAP will be published in the AIP and depicted on aeronautical chart using “Feathered Arrow” symbology.
- A dedicated squawk (C5077) is notified in the UK AIP
- LoA with LBA surveillance equipped, can provide additional mitigation.
- A local Traffic study demonstrated low levels of conflicting traffic. The UK Airprox Board data demonstrated minimal relevant issues in 20 years.

**The risk of MAC is assessed as low as reasonably practicable and therefore acceptable.**

## 6 Goal 1.5 LOC

- Time separation is achieved by PPR and allocated arrival slots
- Only appropriately licensed/rated in suitably equipped aircraft will be allowed to fly the approaches
- Upset recovery training is part of AOC operators’ SOPs and wake turbulence forms a major part of the syllabus

**The risk of LOC is assessed as low as reasonably practicable and therefore acceptable**

## 7 Goal 1.6 INTRO

- Introduction will commence under monitored conditions.
- Training will be given to staff involved or affected by the introduction of IAPs.
- Procedures to be followed by aerodrome personnel and aircrew will be monitored and reviewed.
- Equipment associated with implementation of the IAPs will be available, suitable, fit for purpose, and/or approved where necessary.
- The IAP’s will be published in the UK AIP, and to local stakeholders IAW the Communications Plan

**The risk of an accident during INTRO is assessed as low as reasonably practicable and therefore acceptable.**

## 8 Goal 1.7 THRULIFE

- Monitoring of the usage of the IAP will afford early warning of increasing risks.
- Procedures to collect and review IAP operations using feedback forms will build up a picture of developing issues.
- Monitoring and management of the aerodrome safeguarding will ensure obstacle environment remains compliant.

- Regular reviews by The Accountable Manager will ensure oversight of the procedures is maintained including any relevant Risk Assessments

**The risk of an accident during THRULIFE is assessed as low as reasonably practicable and therefore acceptable.**

# Section 10 Appendices

## Appendix 1 Form DAP 1916

**AIRSPACE DESIGN AND INSTRUMENT FLIGHT PROCEDURES – NOTIFICATION OF INTENDED AIRSPACE CHANGE PROPOSAL OR PROCEDURE DESIGN ACTIVITY**

Please complete this form online before submitting using the button at the bottom of the Form

CAA use only

Prior to commencing an airspace change proposal, or initiating design development for the establishment of new I/Ps, the amendment of existing or proposed withdrawal of an existing I/P for part of) within UK Airspace, the project Sponsor is required to notify the CAA of the proposed activity. This Form is to be completed and submitted at the earliest opportunity in the planning process. This Form is to be used for both Permanent and Temporary (or Trial) changes.

**SECTION 1: CONTACT DETAILS**

Sponsor and/or Aerodrome Name: Leeds East Airport  
 ICAO Designator (if applicable): EGCM  
 Point of Contact: [redacted] Appointment: Airfield Manager  
 Telephone Number: [redacted] Fax Number: [redacted]  
 E-mail: [redacted]  
 Alternate P.O.C.: [redacted] Appointment: [redacted]  
 Telephone Number: [redacted] Fax Number: [redacted]  
 E-mail: [redacted]

**SECTION 2: NOMINATED APPROVED PROCEDURE DESIGNER (IF proposals only)**

Name: [redacted]  
 Company: GCAP

**SECTION 3: AIRSPACE AND/OR PROCEDURE CHANGE SUMMARY (use additional sheet if required)**

IAP	SID	STAR	ATS ROUTE	TERMINAL AIRSPACE	ATSMAC
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

List of changes:

- New GNSS Approach runway 06
- New GNSS approach runway 24
- 
- 
- 
- 
- 
- 

Target AIRAC for Promulgation: To be available for operations 1st May 2017

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**SECTION 4: DESCRIPTION OF CHANGE-NEW DESIGN (include changes to existing aerodrome navigation facilities)**

Procedures have been designed for GNSS approaches to runways 06/24 at LEA. Discussions with radar providers, EGNM and EGCM are on going. Proposed procedures will be forwarded under a separate email to Airspace Regulations Department as there is no option to attach them here. CAA Aerodrome are aware of our requirements and have discussed these with Air space Regulations, and, we understand stressed the need for a swift turn around. [redacted] ATS (OPS), and [redacted] ATE are aware of our aspirations.

**SECTION 5: ADDITIONAL INFORMATION**

	Yes	No
SRG ASD - AD Inspector notified:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SRG AATSD - Regional or En Route Inspector Notified:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SRG AATSD - ATS (Engl) Inspector Notified:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SRG AATSD - ATS (Ops) Inspector Notified:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
This Form copied to contracted APD listed in Section 2:	<input type="checkbox"/>	<input type="checkbox"/>
Development Meeting Planned:	<input type="checkbox"/>	<input type="checkbox"/>

Venue: AirSpace Regulations Department London  
 Proposed Date: 14/15 July 16  
 Name: [redacted] Date: 28 June 2016

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## Appendix 2 CAP 168 Variation.

CIVIL AVIATION AUTHORITY  
 Safety and Airspace Regulation Group  
 Airspace, ATM and Aerodromes Division  
 Aerodrome Oversight (General)



**VARIATIONS FROM CAP 168 CRITERIA**

Aerodrome: LEEDS EAST  
 Type of Licence: ORDINARY

Notes:

No	Details of Variation	Reference	Head of Aerodrome Oversight	
			Date	Initials
1	Trees penetrate the Runway 06 approach surface and Runway 24 take-off climb surface.	CAP168, Chapt.4	28/4/17	[redacted]
2	Runway 06/24 – the dimensions and the spacing of some of the paint markings do not meet the requirements. Transverse threshold stripe was approx. 1.2m wide and the distance from the inner edge of the transverse threshold stripe to the threshold stripe markings was 1.9m.	CAP168, Chapt.7	28/4/17	[redacted]

## Appendix 3

### Rationale for not including a hold in the IAP design

1. This document presents the justification for not providing a holding procedure as part of the design of the proposed Instrument Approach Procedures (IAP) for LEA
2. The original designs for the IAP's included a hold. Subsequent feedback from stakeholders prompted a reappraisal of the need for a hold and in the light of this the single hold at LEGNU (now IAWP3) was removed. The following describes the rationale behind the decision, including the steps taken to mitigate against the risk of an event occurring.
3. The majority of aircraft in scope for the IAP are CAT A, B & C business jets on private flights.
4. Arrivals to the procedure are sequenced and regulated by slots which are strictly enforced. [See Appendix 4 LEA Arrivals Slot Management]
5. The maximum number of instrument arrivals per day is limited by the operational availability vs number of slots possible. The Change Sponsor estimates that demand likely to be in the order of 2 per day initially. The maximum is 11 per day in summertime and 8 in winter.
6. No Hold Rational:

#### **A hold would serve no purpose for traffic flow management and integration:**

6.1 The procedure is flown and managed by the pilot operating the aircraft as there is no approach control service to sequence and integrate traffic. Safe operation is achieved by ensuring that there is only one aircraft per slot and all other arrivals and departures are suspended on the aerodrome owner's authority by denying PPR, whilst the subject aircraft is on the IAP. Traffic in the vicinity on frequency are informed the circuit is unavailable. Therefore, there is no requirement for an arrival to hold waiting for other traffic before commencing the procedure.

6.2 Furthermore, an aircraft taking up the hold and flying a repeated track for an extended period of time in the same volume of airspace will increase the likelihood of an encounter with unknown traffic. It is considered safer for the aircraft to continue expeditiously to land without delay.

6.3 Potential locations were not covered by surveillance equipped aerodromes capable of providing UK FIS.

#### **A hold would cause unnecessary environmental impact:**

5.4 In the absence of an approach control service, aircraft would be required to fly the hold after a missed approach as the procedure would have to be flown as published, even if the preference was to return directly to the IAF. This would require the aircraft to fly more track miles, unnecessarily generating both noise and CO2 emissions and reduce fuel reserves further.

#### **A hold would be of limited use in the event of poorer than forecast weather:**

6.5 The time available within a slot allows, in general, 2 attempted approaches after which the aircraft should divert as the approach may no longer be available to them due the other slot



allocations. The Pilot Brief advises pilots that, as a hold is not included in the IAPs, particular attention should be paid to likely weather conditions and diversion plans.

### **A hold would be of limited use in the event of unforeseen circumstances:**

6.6 Unforeseen circumstances such as a blocked or contaminated runway take time to be resolve. The Pilot Brief will recommend in such circumstance that an immediate diversion is the most suitable option.

### 7. Risk Mitigations:

7.1 A missed approach is a rare event and can be prompted by a number of factors such as an emergency occurring during the final phase of the approach, a blocked runway or runway incursion. The following measures and/or infrastructure help minimise the risk of one occurring.

- Detailed Pilot Brief highlights there is no hold
- Runway equipped with high intensity AGL services
- Runway inspection carried out prior to each slot arrival
- Basic Met Observing competencies maintained IAW CAP746
- Circuit procedures imposed with aircraft on the ground held and the visual circuit unavailable
- Feathered arrows added to chart to highlight IAPs to aircraft flying in the vicinity
- No other PPR arrivals accepted during allocated instrument approach slot, and
- Timed separation assured by limiting number of slots available per day

7.2 All the above help reduce the likelihood of a missed approach so the need to enter a hold is significantly reduced.

### 8. Summary

8.1 The original decision to include a hold was made prior to feedback from affected stakeholders and before the implications were thoroughly considered. Once the need to reappraise the inclusion of a hold was accepted and the impact of removing the hold was considered, it was established that design of the procedures without a hold was the preferable and an acceptable option. Revised missed approach tracks were designed to avoid interference with local aviation stakeholders and it was clear that this was a safer and operationally more acceptable solution than establishing a hold.

8.2 No feedback during the recent consultation highlighted any concerns following its removal.

## Appendix 4

### LEA Arrivals Slot Management

- 1 All use of the IAP is subject to conforming with strict booking requirements which are set out in the Pilot Brief. PPR is strictly enforced and includes acknowledgement of having read the Pilot Brief. Any aircraft operator wishing to fly the IAP is required to obtain permission from LEA Operations prior to commencing the approach. The time slot allocation method is coordinated with Sherburn Aero Club (see Letter of Agreement with Sherburn Aero Club and Instructions to Air Ground Operators). When an aircraft obtains PPR, they will nominate an estimated time of arrival (ETA) at the relevant initial approach fix (IAF). The time slot consists of an arrival time tolerance of  $\pm 15$  minutes around the ETA at the IAF. Following the expiry of this period (i.e. 15 minutes after the planned ETA), there is a further 15-minute period during which for the approach may be completed. By the end of this period (30 minutes after the EAT at the IAF), the aircraft should have either landed, diverted or changed to a VFR approach.
- 2 There shall not be an allocation of a subsequent arrival until half an hour after the expiry of the further 15-minute period described in 10.1 (i.e. 1 hour after the ETA at the IAF). This is to ensure a minimum buffer of 15 minutes between the last time one aircraft should still be on the IAP and the earliest time the next arriving aircraft should be at the IAF. The overall rate of aircraft planned to use an IAP at either Sherburn or LEA is therefore no more than one per hour.
- 3 Pilots that anticipate being more than 15 minutes late at the IAF may request LEA and SAC co-ordination to establish whether there is a subsequent arrival slot available. If there is no further slot available, the aircraft must either divert or convert to VFR if conditions allow.
- 4 The AGO is able to pass traffic information, as detailed in CAP 413 Chapter 4 Table 3, to participating aircraft.
- 5 Pilots intending to use the RNP IAP to RWY 24 or RWY 06 are to make RTF calls on VHF 126.505MHz prior to 10 nautical miles to run to the Initial Approach Fix on the approach they are making. The purpose of this call is to positively establish that no other aircraft has commenced (or is about to commence) the procedure. The AGO at LEA will also use this call to inform traffic in the ATZ of the conditions of use which require pilots to comply with the procedure for VFR traffic during IFR approaches. This is to reduce the risk of MAC in the ATZ.
- 6 The RNP approach is not available if, by the time that the aircraft has reached the appropriate Initial Approach Fix, either:
  - a) no indication is received from the AGO about the availability of the RNP approach, or
  - b) an indication is received from any source that another aircraft is already on (or positioning for) the RNP approach.

These are covered in the separate Pilot Brief.

- 7 As LEA has a permanent AGO on duty the VR during notified hours, appropriate messages can be passed in good time to any affected aircraft. An out of hours operation will be available at LEA should need arise.

- 8 This argument is strengthened by the presence of an ATZ, and the further existing requirement for PPR for all traffic. LEA therefore believes that a cogent safety argument is made for an IAPs to be established which would safely introduce instrument traffic to the aerodrome without the provision of an Approach Control service.

Agreed ETA at IAF	Earliest time at IAF	Latest time at IAF	Clear of Procedure	No IAP movements
12.00	11.45	12.15	12.30	12.30 -12.45

**Table 3** shows an example of slot with safety buffers either side

## Appendix 5 Risk Assessments<sup>5</sup>

The following Risk Assessments have been developed using the LEA SMS Handbook and in particular Section 6 – Risk Management & Hazard Identification Process

### 1 Simple Safety Risk Management Process



- 1.1 A ‘Hazard’ is simply defined as a condition, event or circumstances that has the potential to cause harm to people or damage to aircraft, equipment or structures.
- 1.2 A ‘Risk’ is defined as the potential outcome from the hazard and is usually defined in terms of the likelihood of the harm occurring and the severity if it does.
- 1.3 For example:  
 A thunderstorm is a hazard to aircraft operations. One associated risk with this hazard is that an aircraft is struck by lightning and suffers a failure of its electrical system.  
 Bird activity in or around an aerodrome is a hazard to aircraft operations. One risk associated with this hazard is that a bird strike causes an aircraft engine to fail and the aircraft crashes.

### 3 The Risk Assessment Process

- 3.1 The purpose of the risk assessment process is to allow our organisation to assess the level of risk associated with the identified hazards in terms of the potential harm. Risks should be assessed in terms of severity and likelihood. Once we have assessed the risk in such terms a simple risk assessment matrix can be used to determine the overall level of risk. Depending on that level, appropriate mitigation measures can be taken to either eliminate the risk or to reduce the risk to a lower level or as low as reasonably practicable, so that it is acceptable to our organisation. Mitigation measures should be implemented to reduce the likelihood of the risk occurring or reduce the severity of the outcome if it does.

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<sup>5</sup> As a licensed aerodrome LEA has to have an approved SMS. This was in development before the ACP was commenced and so the methodology, vocabulary matrices displayed here align with the sponsor’s existing processes.

		Likelihood				
		1	2	3	4	5
Severity	1	1	2	3	4	5
Severity	2	2	4	6	8	10
Severity	3	3	6	9	12	15
Severity	4	4	8	12	16	20
Severity	5	5	10	15	20	25

SEVERITY		LIKELIHOOD	
1	NO EFFECT IMMEDIATELY	1	EXTREMELY IMPROBABLE
2	SIGNIFICANT INCIDENTS	2	EXTREMELY REMOTE
3	MAJOR INCIDENTS	3	REMOTE
4	SERIOUS INCIDENTS	4	REASONABLY PROBABLE
5	ACCIDENTS	5	FREQUENT

RISK SCORE	CATEGORY
1-3	LOW RISK (GREEN) ACCEPTABLE
4-6	MODERATE RISK (YELLOW) MONITOR
8-12	HIGH RISK (ORANGE) REVIEW
15-25	EXTREME RISK (RED) UNACCEPTABLE

Appendix 5A assesses five hazards set out in CAP1122

Appendix 5B assesses five hazards associated with operations at Full Sutton aerodrome

Appendix 5C assesses the hazard associated with General Aviation activities in the vicinity

Appendix 5D assesses two hazards associated with Glider activity and the RNP approaches.

## Appendix 5A: CAP1122

PART 1: Details – Leeds East Airport Risk Assessment Form XX/20XX (Dated 10/02/2022)	
Details of Risk	An accident involving aircraft conducting an Instrument Approach Procedure to LEA
List of compilers	██████████
Date of Assessment	07/07/21
Date to be reviewed	01December 2021, or 1 month after implementation of IAP procedures

Part 2: Hazard/Threat Analysis						
Hazard/Threat 1	Controlled Flight into Terrain (CFIT)					
Hazard/Threat Consequence	Loss of life, or serious injury, and damage to property					
Pre-mitigated Risk assessment	Impact/ Severity	Accident (5)	Probability/ Likelihood	Extremely Improbable (1)	Risk Class	Monitor (5)
<b>Possible Control Measures</b>						
a	Design Procedure to International standards (PANSOPS), and designed by ands APDO					
b	The runway is to Instruments standards, including lighting and marking IAW CAP168					
c	A/G provide Met information to CAP746 standards and provide accurate QNH using calibrated equipment					
d	A/G trained to basic met observer competence IAW CAP746					
e	A/G confirm readback of correct QNH, in accordance with CAP413 procedures					
f	RNP system, signal in space, provides accurate guidance which is monitored to international standards					
g	The aerodrome is surveyed IAW CAP232, and safeguarded					
h	The aerodrome is licensed IAW CAP168					
Control Measures for implementation	The following are existing measures b, f, g, & h The following are on the action plan a, c, d, & e					
Post mitigated Risk Assessment	Impact/ Severity	Accident (5)	Probability/ Likelihood	Extremely Improbable (1)	Risk Class	Monitor (5)

<b>Hazard/Threat 2</b>	Runway Excursion ( <b>REXC</b> )					
<b>Hazard/Threat Consequence</b>	Loss of life, or serious injury, and damage to property					
<b>Pre-mitigated Risk assessment</b>	<b>Impact/ Severity</b>	Serious Incidents (4)	<b>Probability/ Likelihood</b>	Remote (3)	<b>Risk Class</b>	<b>Review (12)</b>
<b>Possible Control Measures</b>						
a	Design Procedure to International standards (PANSOPS), and designed by ands APDO					
b	The runway is to Instruments standards, including lighting and marking in accordance with CAP168					
c	A/G trained to basic met observer competence IAW CAP746					
d	A/G provide Met information to CAP746 standards and provide accurate surface wind, runway surface conditions, and weather information					
e	Runway inspection prior to an RNP approach					
<b>Control Measures for implementation</b>	a, b, c, d, & e The following are existing measures a, & b The following are on the action plan c, d, & e					
<b>Post mitigated Risk Assessment</b>	<b>Impact/ Severity</b>	Serious Incidents (4)	<b>Probability/ Likelihood</b>	Extremely Improbable (1)	<b>Risk Class</b>	<b>Monitor (4)</b>

<b>Hazard/Threat</b> 3	Runway Collision ( <b>RCOLL</b> )					
<b>Hazard/Threat Consequence</b>	Loss of life, or serious injury, and damage to property					
<b>Pre-mitigated Risk assessment</b>	<b>Impact/Severity</b>	Serious Incidents (4)	<b>Probability/Likelihood</b>	Remote (3)	<b>Risk Class</b>	<b>Review (12)</b>
<b>Possible Control Measures</b>						
a	The aerodrome does not operate in a low vis environment					
b	A/G has unobstructed view of the instrument runway					
c	A/G can pass hazard warning to approaching aircraft					
d	The VR is manned during a RNP approach					
e	Runway inspection prior to an RNP approach					
f	The DH provides an extended visual segment to assess any runway obstructions					
g	The aerodrome has a wildlife hazard control plan					
h	Airside is protected by secure fence and controlled access gates					
i	Access to airside by non-based operators and visitors/contractor is controlled by fire/operations staff escort procedures.					
j	Signage and marking delineate the extent of the instrument runway					
<b>Control Measures for implementation</b>	a, b, c, d, e, f, g, h, i, & j The following are existing measures a, b, c, d, g, h, i, & J The following are on the action plan e, & f					
<b>Post mitigated Risk Assessment</b>	<b>Impact/Severity</b>	Serious Incidents (4)	<b>Probability/Likelihood</b>	Extremely Improbable (1)	<b>Risk Class</b>	<b>Monitor (4)</b>



<b>Hazard/Threat</b> 4	Mid Air Collision ( <b>MAC</b> )					
<b>Hazard/Threat Consequence</b>	Loss of life, or serious injury, and damage to property					
<b>Pre-mitigated Risk assessment</b>	<b>Impact/Severity</b>	Accident (5)	<b>Probability/Likelihood</b>	Extremely Remote (2)	<b>Risk Class</b>	<b>Review (10)</b>
<b>Possible Control Measures</b>						
a	Promulgation of Notam until Feathers are on the Charts					
b	Aviation stakeholders will be informed of the implementation of the IAP					
c	The procedures are designed by and APDO taking into account the local airspace and other stakeholders. The IAP provides known tracks & altitudes via the AIP					
d	Slot time procedure limits traffic, in bound to LEA, to 1 aircraft per hour					
e	The pilot brief reminds operators to use "see and avoid" when operating in VMC and the flight is taking place in Class G airspace					
f	In low visibility and low cloud conditions statistically, a traffic study indicates a very low volume of traffic in the vicinity of the approach					
g	A/G can provide information on known traffic operating in the circuit area to the RNP aircraft					
h	UK FIS may be available from an adjacent ATSU the Pilot brief recommends that such a service is requested.					
i	The use of a discrete Squawk code identifies aircraft on the RNP approach to local surveillance units					
j	Establishment of an ATZ provides known operating environment and is published on aeronautical charts.					
<b>Control Measures for implementation</b>	a, b, c, d, e, f, g, h, i, & j The following are existing measures g, & j The following are on the action plan a, b, c, d, e, f, h, & i					
<b>Post mitigated Risk Assessment</b>	<b>Impact/Severity</b>	Accident (5)	<b>Probability/Likelihood</b>	Extremely Remote (2)	<b>Risk Class</b>	<b>Review (10)</b>

<b>Hazard/Threat 5</b>	Loss of control ( <b>LOC</b> )					
<b>Hazard/Threat Consequence</b>	Loss of life, or serious injury, and damage to property					
<b>Pre-mitigated Risk assessment</b>	<b>Impact/ Severity</b>	Serious Incidents (4)	<b>Probability/ Likelihood</b>	Extremely Remote (2)	<b>Risk Class</b>	<b>Review (8)</b>
<b>Possible Control Measures</b>						
a	PPR slot time eliminates wake turbulence issues					
b	The RNP approach is designed by an APDO, and is operated by qualified crew in a suitably equipped aircraft					
c	The RNP approach provides a stable approach					
<b>Control Measures for implementation</b>	a, b, & c The following are on the action plan a, b, & c					
<b>Post mitigated Risk Assessment</b>	<b>Impact/ Severity</b>	Major Incidents (3)	<b>Probability/ Likelihood</b>	Extremely Improbable (1)	<b>Risk Class</b>	<b>Acceptable (3)</b>

Part 3: Action Plan				
Serial Number	Action Required	Action Lead	Due Date	Date Completed
1	Ensure RNP design package is complete and submitted for approval	█	30/12/21	Complete
2	Provide A/G operators with basic Met Observer competence training (23&24 Aug)	█	25/08/2021	Complete
3	Compliant MET equipment is installed and maintained	█	2022	Complete
4	A/G MET provision is in accordance with a competence and training plan	█	When approved	TBA
5	SOP's updated to include PPR and slot time procedure	█	When approved	TBA
6	SOP's updated to cover Runway inspections before and RNP approach	█	When approved	TBA
7	A/G competence and training plan for implementation of RNP approaches	█	When approved	TBA
8	Create an AIC and a communication plan for the introduction of a RNP approach	█	When approved	TBA
9	Change request to AIS for addition of feathered arrows on aeronautical charts	█	When approved	TBA
10	AIP update for additional RNP approach information	█	When approved	TBA
11	Finalise Pilot Brief	█	14/02/22	Complete
12	LoA with LBA to support the provision of UKFIS to RNP approach aircraft	█	07/07/21	Complete

Part 4: Department Manager (SAFO, SAGO, Site manager etc)			
<b>Pre-mitigated risk assessment</b>	1) CFIT 5, Monitor 2) REXC, 12 Review 3) RCOL, 12 Review 4) MAC, 15 Unacceptable 5) LOC, 8 review	<b>Post-mitigated Risk Assessment</b>	1) CFIT 5, Monitor 2) REXC, 4 Monitor 3) RCOL, 4 Monitor 4) MAC, 10 Review 5) LOC, 4 Monitor
<b>ALARP Argument</b>	Mitigations identified in the RA have been/will be implemented prior to commencement of RNP operations and are considered to be ALARP		
<b>Name/Appt:</b>	██████████, Accountable Manager	<b>Date</b>	xx/xx/20xx
<b>Signature</b>			

Part 5: Airport Manager Comments			
May not always be applicable; if the risk is low or AM has compiled the assessment.			
<b>Name:</b>	██████████	<b>Date</b>	xx/xx/20xx
<b>Signature</b>			

Part 6: Accountable Manager Comments			
May not always be applicable; if the risk is low, may just be, I have read the risk assessment and accept the risk as low as reasonably practicable.			
<b>Name/Appt:</b>	██████████ Makins Limited	<b>Date</b>	xx/xx/20xx
<b>Signature</b>			

Part 7: Closure			
Reason why closed			
<b>Name/Appt</b>	Who closed it and their appointment	<b>Date:</b>	Xx/xx/20x
<b>Signature</b>			

## Appendix 5B: Full Sutton

PART 1: Details – Leeds East Airport Risk Assessment Form XX/20XX (Dated 10/02/2022)	
Details of Risk	Mid Air Collision overhead Full Sutton with transiting and circuit GA traffic and an aircraft conducting an Instrument Approach Procedure to LEA
List of compilers	████████████████████
Date of Assessment	14 May 2020
Date to be reviewed	1st April 2022 or 1 month after implementation of IAP procedures

Part 2: Hazard/Threat Analysis						
Hazard/Threat 1	Mid-air collision between aircraft in the vicinity of Full Sutton or in their circuit and an aircraft conducting an Instrument Approach Procedure to LEA					
Hazard/Threat Consequence	Catastrophic with fatalities in air and possibly on ground					
Pre-mitigated Risk assessment	Impact/ Severity	Accident (5)	Probability/ Likelihood	Extremely Remote (2)	Risk Class	Review (10)
<b>Possible Control Measures</b>						
a	Removal of IAF at IDPUS overhead Full Sutton					
b	Promulgation of NOTAM until Feathered Arrows are published on the Charts					
c	Full Sutton will be informed of the RNP IAP tracks and altitudes					
d	Known tracks & altitudes published in UK AIP					
e	Slot time procedure limits traffic, in bound to LEA, to 1 aircraft per hour maximum (Slots shared with SAC)					
f	When approaches including transiting are conducted in VMC pilots are required to maintain "see and avoid" as per ANO					
g	In low visibility and low cloud conditions statistically, local traffic is extremely low					
h	Aircraft routing adjacent to LBA CAS may receive a UK Flight Information Service in the vicinity of CAS as they approach LEA. Subject to workload HUY will provide a LARS to a/c approaching from the east southeast					
i	The use of a discrete SSR Transponder code will assist ATC units to identify IAP traffic					
j	Pilot briefing will draw attention to approaches established in Class G airspace and local aerodromes					
Control Measures for implementation	a, b, c, d, e, f, g, i & j.					
Post mitigated Risk Assessment	Impact/ Severity	Accident (5)	Probability/ Likelihood	Extremely Improbable (1)	Risk Class	Monitor (5)

<b>Hazard/Threat 2</b>	Mid air collision with an aircraft out bound from Full Sutton and an aircraft conducting an Instrument Approach Procedure to LEA					
<b>Hazard/Threat Consequence</b>	Catastrophic with fatalities in air and possibly on ground					
<b>Pre-mitigated Risk assessment</b>	<b>Impact/ Severity</b>	Accident (5)	<b>Probability/ Likelihood</b>	Extremely Remote (2)	<b>Risk Class</b>	<b>High Risk</b>
<b>Possible Control Measures</b>						
a	Removal of IAF at IDPUS overhead Full Sutton					
b	Promulgation of NOTAM until Feathered Arrows are published on the Charts					
c	Full Sutton will be informed of the RNP IAP tracks and altitudes					
d	Known tracks & altitudes published in UK AIP					
e	Slot time procedure limits traffic, in bound to LEA, to 1 aircraft per hour maximum (Slots shared with SAC)					
f	When approaches including transiting are conducted in VMC pilots are required to maintain "see and avoid" as per ANO					
g	In low visibility and low cloud conditions statistically, local traffic is extremely low					
h	Aircraft routing adjacent to LBA CAS may receive a UK Flight Information Service in the vicinity of CAS as they approach LEA. Subject to workload HUY will provide a LARS to a/c approaching from the east southeast					
i	The use of a discrete SSR Transponder code will assist ATC units to identify IAP traffic					
j	Pilot briefing will draw attention to approaches established in Class G airspace and local aerodromes					
<b>Control Measures for implementation</b>	<b>a, b, c, d, e, f, g, i &amp; j</b>					
<b>Post mitigated Risk Assessment</b>	<b>Impact/ Severity</b>	Accident (5)	<b>Probability/ Likelihood</b>	Extremely Improbable (1)	<b>Risk Class</b>	<b>Monitor (5)</b>

<b>Hazard/Threat 3</b>	Mid Air collision with Aircraft in the circuit at Full Sutton and an aircraft conducting an Instrument Approach Procedure to LEA					
<b>Hazard/Threat Consequence</b>	Catastrophic with fatalities in air and possibly on ground					
<b>Pre-mitigated Risk assessment</b>	<b>Impact/ Severity</b>	Accident (5)	<b>Probability/ Likelihood</b>	Extremely Improbable (1)	<b>Risk Class</b>	<b>Monitor (5)</b>
<b>Possible Control Measures</b>						
a	Removal of IAF at IDPUS overhead Full Sutton					
b	Promulgation of NOTAM until Feathered Arrows are published on the Charts					
c	Full Sutton will be informed of the RNP IAP tracks and altitudes					
d	Known tracks & altitudes published in UK AIP					
e	Slot time procedure limits traffic, in bound to LEA, to 1 aircraft per hour maximum (Slots shared with SAC)					
f	Aircraft must join at 2000ft, circuit height at 1000ft provides a minimum of 1000ft below IAP traffic					
g	When approaches including transiting are conducted at Full Sutton in VMC pilots are required to maintain "see and avoid" as per ANO					
h	In low visibility and low cloud conditions statistically, local traffic is extremely low					
i	Aircraft routing adjacent to LBA CAS may receive a UK Flight Information Service in the vicinity of CAS as they approach LEA. Subject to workload HUY will provide a LARS to a/c approaching from the east southeast					
j	The use of a discrete SSR Transponder code will assist ATC units to identify IAP traffic					
k	Pilot briefing will draw attention to approaches established in Class G airspace and local aerodromes					
<b>Control Measures for implementation</b>	a, b, c, e, f, g, h, j & k					
<b>Post mitigated Risk Assessment</b>	<b>Impact/ Severity</b>	Accident (5)	<b>Probability/ Likelihood</b>	Extremely Improbable (1)	<b>Risk Class</b>	<b>Monitor (5)</b>



<b>Hazard/Threat 4</b>	Mid Air collision with Aircraft carrying out Aerobatics at Full Sutton and an aircraft conducting an Instrument Approach Procedure to LEA					
<b>Hazard/Threat Consequence</b>	Catastrophic with fatalities in air and possibly on ground					
<b>Pre-mitigated Risk assessment</b>	<b>Impact/ Severity</b>	Accident (5)	<b>Probability/ Likelihood</b>	Extremely Improbable (1)	<b>Risk Class</b>	<b>Monitor (5)</b>
<b>Possible Control Measures</b>						
a	Removal of IAF at IDPUS overhead Full Sutton					
b	Promulgation of NOTAM until Feathered Arrows are published on the Charts					
c	Full Sutton will be informed of the RNP IAP tracks and altitudes					
d	Known tracks & altitudes published in UK AIP					
e	Slot time procedure limits traffic, in bound to LEA, to 1 aircraft per hour maximum (Slots shared with SAC)					
f	Aircraft must join at 2000ft, circuit height at 1000ft provides a minimum of 1000ft below IAP traffic					
g	When approaches including transiting are conducted at Full Sutton in VMC pilots are required to maintain "see and avoid" as per ANO					
h	In low visibility and low cloud conditions statistically, local GA traffic is extremely low					
i	The use of a discrete SSR Transponder code will assist ATC units to identify IAP traffic					
j	Aerobatic competitions are NOTAM'd					
k	<i>Ad hoc</i> aerobatics may take place up to 2500ft on rare occasions					
l	LEA Pilot Brief recommends no overflight of local airfields and glider sites.					
<b>Control Measures for implementation</b>	a, b, c, e, f, g, h, i, j, k & l.					
<b>Post mitigated Risk Assessment</b>	<b>Impact/ Severity</b>	Accident (5)	<b>Probability/ Likelihood</b>	Extremely Improbable (1)	<b>Risk Class</b>	<b>Monitor (5)</b>



<b>Hazard/Threat 5</b>	Mid Air collision with Emergency Services Aircraft In or out bound Full Sutton and an aircraft conducting an Instrument Approach Procedure to LEA					
<b>Hazard/Threat Consequence</b>	Catastrophic with fatalities in air and possibly on ground					
<b>Pre-mitigated Risk assessment</b>	<b>Impact/ Severity</b>	Accident (5)	<b>Probability/ Likelihood</b>	Extremely Improbable (1)	<b>Risk Class</b>	<b>Monitor (5)</b>
<b>Possible Control Measures</b>						
a	LoA's with Police and Air Ambulance provides SOP's to reduce risk					
b	Removal of IAF at IDPUS overhead Full Sutton					
c	Promulgation of NOTAM until Feathered Arrows are published on the Charts					
d	Known tracks & altitudes published in UK AIP					
e	Slot time procedure limits traffic, in bound to LEA, to 1 aircraft per hour maximum (Slots shared with SAC)					
f	When approaches including transiting are conducted in VMC pilots are required to maintain "see and avoid" as per ANO					
g	In low visibility and low cloud conditions statistically, local traffic is extremely low					
h	Emergency Services Aircraft routing across and/or adjacent to CAS can receive Radar services from adjacent ATC facilities					
i	The use of a standard IFR squawk will assist ATC units to identify IAP traffic					
<b>Control Measures for implementation</b>	a, b, c, e, f, g, & i.					
<b>Post mitigated Risk Assessment</b>	<b>Impact/ Severity</b>	Accident (5)	<b>Probability/ Likelihood</b>	Extremely Improbable (1)	<b>Risk Class</b>	<b>Monitor (5)</b>

Part 3: Action Plan				
Serial Number	Action Required	Action Lead	Due Date	Date Completed
1	Removal of Hold at LEGNU (now VUSFO)	■	01/05/20	01/05/20
2	Issue a NOTAM until Feathered Arrows are published on the Charts	■	When approved	
3	Full Sutton will be informed of the RNP IAP tracks and altitudes and slots.	■	When approved	
4	Apply slot time procedure limits traffic, in bound to LEA, to 1 aircraft per hour	■	When approved	
5	Pilot briefing to include reminder to aircrew that flight in VMC must be conducted in accordance with the "see and avoid" principle as per ANO	■	When approved	
6	Adopt a CAA allocated discrete SSR transponder Code to assist ATC units to identify IAP traffic intending to use the IAPs	■	When approved	
7	<i>Ad hoc</i> aerobatics take place to 2500ft, LEA will request notification.	■	When approved	
8	Post-implementation safety review process to include monitoring the IAP's monthly for conflicts in first 6 months	■	When approved	
9	Post-implementation safety review process to include monitoring of the IAP's 6 monthly for conflicts after first 6 months	■	When approved	

Part 4: Department Manager (SAFO, SAGO, Site manager etc)			
Pre-mitigated risk assessment	Before we act	Post-mitigated Risk Assessment	After we act
ALARP Argument	All possible mitigations in place. And why		
Name/Appt:	Person's name and title here	Date	xx/xx/20xx
Signature			

Part 5: Airport Manager Comments			
May not always be applicable; if the risk is low or AM has compiled the assessment			
Name:		Date	xx/xx/20xx
Signature			

Part 6: Accountable Manager Comments			
May not always be applicable; if the risk is low, may just be, I have read the risk assessment and accept the risk as low as reasonably practicable.			
Name/Appt:	██████████ Makins Limited	Date	xx/xx/20xx
Signature			

Part 7: Closure			
Reason why closed			
Name/Appt	Who closed it and their appointment	Date:	Xx/xx/20x
Signature			

**Appendix 5C: LEA/SAC**

<b>PART 1: Details – LEA/SAC Risk Assessment Form XX/20XX (Dated 23/01/23)</b>	
Details of Risk	A Mid-Air Collision involving two aircraft; one conducting a missed approach during an Instrument Approach Procedure at LEA and the other taking off from SAC or <i>vice versa</i> .
List of compilers	██
Date of Assessment	23/01/23
Date to be reviewed	01 July 2023 and monthly after implementation of IAP procedures

<b>Part 2: Hazard/Threat Analysis</b>						
<b>Hazard/Threat 1</b>	Aircraft conducting a missed approach from an IAP to LEA unaware of another aircraft departing from Sherburn. Or aircraft conducting a missed approach from an IAP to Sherburn unaware of another aircraft departing from LEA.					
<b>Hazard/Threat Consequence</b>	Mid-Air Collision ( <b>MAC</b> ) Loss of life, or serious injury, and damage to property					
<b>Pre-mitigated Risk assessment</b>	<b>Impact/ Severity</b>	Accident (5)	<b>Probability/ Likelihood</b>	Extremely Remote (2)	<b>Risk Class</b>	<b>Moderate (10)</b>
<b>Possible Control Measures (requirements)</b>						
a	Pilot Brief (existing)					
b	Departure Brief (additional)					
c	AIP Entry in AD2.22 Flight Procedures					
d	Each aerodrome informs the other should a Missed Approach occur					
e						
f						
<b>Possible mitigating statement or Recommendation</b>						
1	Rarity (only a very small % of IAPs result in a missed approach)					
2	Where possible departing a/c to monitor other radio frequency on Box 2					
3	Onboard Electronic Conspicuity may offer a warning					
4	Feathered arrows on Charts					
<b>Control Measures for implementation</b>	a, b, c, d, & g The following are existing measures a The following are on the action plan b, c, d, e & f					
<b>Post mitigated Risk Assessment</b>	<b>Impact/ Severity</b>	Accident (5)	<b>Probability/ Likelihood</b>	Extremely Improbable (1)	<b>Risk Class</b>	<b>Review (5)</b>

<b>Part 3: Action Plan</b>				
Serial Number	Action Required	Action Lead	Due Date	Date Completed

1	Create departure brief	■	When approved	TBA
2	Additional words in AIP AD 2.22 Flight Procs	■	When approved	TBA
3		■	When approved	TBA

Part 4: Department Manager (SAFO, SAGO, Site manager etc)			
Pre-mitigated risk assessment	Before we act	Post-mitigated Risk Assessment	After we act
ALARP Argument	All possible mitigations in place. And why		
Name/Appt:	Person's name and title here	Date	xx/xx/20xx
Signature			

Part 5: Airport Manager Comments			
May not always be applicable; if the risk is low or AM has compiled the assessment			
Name:		Date	xx/xx/20xx
Signature			

Part 6: Accountable Manager Comments			
May not always be applicable; if the risk is low, may just be, I have read the risk assessment and accept the risk as low as reasonably practicable.			
Name/Appt:	██████████ Makins Limited	Date	xx/xx/20xx
Signature			

Part 7: Closure			
Reason why closed			
Name/Appt	Who closed it and their appointment	Date:	Xx/xx/20x
Signature			

## Appendix 5D: GA

PART 1: Details – Leeds East Airport Risk Assessment Form XX/20XX (Dated 08/02/2022)	
Details of Risk	Mid Air Collision with GA aircraft operating from Rufforth East, Brighton, Elvington, Sherburn, Garforth and private airstrips or other transiting GA aircraft and an aircraft conducting an Instrument Approach Procedure to LEA
List of compilers	
Date of Assessment	31 Jan 2022
Date to be reviewed	30 April 2022, or 1 month after implementation of IAP procedures, whichever is later

Part 2: Hazard/Threat Analysis						
Hazard/Threat 1	Mid-air collision between an aircraft operating in vicinity of the RNP approaches and an aircraft conducting an Instrument Approach Procedure					
Hazard/Threat Consequence	Catastrophic with fatalities in air and possibly on ground					
Pre-mitigated Risk assessment	Impact/Severity	Accident (5)	Probability/Likelihood	Extremely Remote (2)	Risk Class	Review (10)
<b>Possible Control Measures</b>						
a	Removal of Hold at LEGNU (now VUSFO)					
b	Promulgation of NOTAM until Feathered Arrows are published on the Charts					
c	GA community will be informed of the RNP IAP tracks and altitudes via local seminars and articles in aviation press.					
d	Known tracks & altitudes published in UK AIP					
e	Slot time procedure limits traffic, in bound to LEA, to 1 aircraft per hour maximum (Slots shared with SAC)					
f	When approaches and gliding operations are conducted in VMC pilots are required to maintain “see and avoid” as per ANO					
g	In low visibility and low cloud conditions statistically, local traffic numbers are extremely low					
h	Aircraft transiting LBA CAS may receive an IFR clearance across CAS which will result in aircraft receiving radar services as they approach LEA procedures					
i	Aircraft routing adjacent to LBA CAS may receive a UK Flight Information Service in the vicinity of CAS as they approach LEA. Subject to workload HUY will provide a LARS to a/c approaching from the east southeast					
j	The use of a discrete SSR Transponder code will assist ATC units to identify IAP traffic					
k	Pilot briefing will draw attention to approaches established in Class G airspace and local gliding sites					
l	Pilots encouraged to contact LEA (Fenton Radio) when near tracks					
m	LEA will provide known traffic information to aircraft on Fenton Radio frequency					
Control Measures for implementation	a, b, c, d, e, f, g, j, k, l & m.					

<b>Post mitigated Risk Assessment</b>	<b>Impact/ Severity</b>	<b>Accident (5)</b>	<b>Probability/ Likelihood</b>	<b>Extremely Improbable (1)</b>	<b>Risk Class</b>	<b>Monitor (5)</b>
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<b>Part 3: Action Plan</b>				
<b>Serial Number</b>	<b>Action Required</b>	<b>Action Lead</b>	<b>Due Date</b>	<b>Date Completed</b>
1	Issue a NOTAM until Feathered Arrows are published on the Charts	■	When approved	
2	Inform GA Community of the RNP IAP tracks and altitudes via local seminars and articles in aviation press.	■	When approved	
3	Apply slot time procedure limits traffic, in bound to LEA, to 1 aircraft per hour	■	When approved	
4	Pilot briefing to include reminder to aircrew that flight in VMC must be conducted in accordance with the "see and avoid" principle as per ANO	■	When approved	
5	Adopt a CAA allocated discrete SSR transponder Code to assist ATC units to identify IAP traffic intending to use the IAPs	■	When approved	
6	LEA radio operator to broadcast traffic information on Fenton Radio frequency	■	When approved	
7	Post-implementation safety review process to include monitoring the IAP's monthly for conflicts in first 6 months	■	When approved	
8	Post-implementation safety review process to include monitoring of the IAP's 6 monthly for conflicts after first 6 months	■	When approved	

<b>Part 4: Department Manager (SAFO, SAGO, Site manager etc)</b>			
<b>Pre-mitigated risk assessment</b>	<b>Before we act</b>	<b>Post-mitigated Risk Assessment</b>	<b>After we act</b>
<b>ALARP Argument</b>	All possible mitigations in place. And why		
<b>Name/Appt:</b>	<b>Person's name and title here</b>	<b>Date</b>	xx/xx/20xx
<b>Signature</b>			

<b>Part 5: Airport Manager Comments</b>			
May not always be applicable; if the risk is low or AM has compiled the assessment			
<b>Name:</b>		<b>Date</b>	xx/xx/20xx
<b>Signature</b>			

Part 6: Accountable Manager Comments			
May not always be applicable; if the risk is low, may just be, I have read the risk assessment and accept the risk as low as reasonably practicable.			
<b>Name/Appt:</b>	██████████ Makins Limited	<b>Date</b>	xx/xx/20xx
<b>Signature</b>			

Part 7: Closure			
Reason why closed			
<b>Name/Appt</b>	Who closed it and their appointment	<b>Date:</b>	Xx/xx/20x
<b>Signature</b>			



## Appendix 5E: Gliders

PART 1: Details – Leeds East Airport Risk Assessment Form XX/20XX (Dated 09/02/2022)	
Details of Risk	Mid Air Collision with Gliders operating from Rufforth West, Pocklington and Burn airfields or other Transiting Gliders
List of compilers	████████████████████
Date of Assessment	31 Jan 2022
Date to be reviewed	30 April 2022, or 1 month after implementation of IAP procedures, whichever is later

Part 2: Hazard/Threat Analysis						
Hazard/Threat 1	Mid-air collision between a Glider operating in vicinity of the RNP approaches and an aircraft conducting an Instrument Approach Procedure					
Hazard/Threat Consequence	Catastrophic with fatalities in air and possibly on ground					
Pre-mitigated Risk assessment	Impact/ Severity	Accident (5)	Probability/ Likelihood	Extremely Remote (2)	Risk Class	Review (10)
<b>Possible Control Measures</b>						
a	Removal of Hold at LEGNU (now VUSFO)					
b	Promulgation of NOTAM until Feathered Arrows are published on the Charts					
c	Glider community will be informed of the RNP IAP and tracks and altitudes					
d	Known tracks & altitudes published in UK AIP					
e	Slot time procedure limits traffic, in bound to LEA, to 1 aircraft per hour maximum (Slots shared with SAC)					
f	When approaches and gliding operations are conducted in VMC pilots are required to maintain “see and avoid” as per ANO					
g	In low visibility and low cloud conditions, statistically, local traffic numbers are extremely low					
h	Aircraft transiting LBA CAS may receive an IFR clearance across CAS which will result in aircraft receiving radar services as they approach LEA procedures					
i	Aircraft routing adjacent to LBA CAS may receive a UK Flight Information Service in the vicinity of CAS as they approach LEA. Subject to workload HUY will provide a LARS to a/c approaching from the east southeast					
j	The use of a discrete SSR Transponder code will assist ATC units to identify IAP traffic					
k	Pilot briefing document will draw crew’s attention to IAPs established in Class G airspace and local gliding sites					
l	Local gliding sites will be prenotified of IAP slot movements where possible.					
m	Glider pilots encouraged to listen out or contact LEA (Fenton Radio) when near tracks					
n	LEA broadcast RTF call out on glider frequency to announce IAP traffic, at each stage of approach and MAP					
o	LEA will provide known traffic information to aircraft on Fenton Radio frequency					
Control Measures for implementation	a, b, c, d, e, f, g, j, k, l, m, n & o.					

<b>Post mitigated Risk Assessment</b>	<b>Impact/Severity</b>	Accident (5)	<b>Probability/Likelihood</b>	Extremely Improbable (1)	<b>Risk Class</b>	<b>Monitor (5)</b>
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<b>Hazard/Threat 2</b>	Mid Air collision with Emergency Services Aircraft in or out bound to glider Bases					
<b>Hazard/Threat Consequence</b>	Catastrophic with fatalities in air and possibly on ground					
<b>Pre-mitigated Risk assessment</b>	<b>Impact/Severity</b>	Accident (5)	<b>Probability/Likelihood</b>	Extremely Improbable (1)	<b>Risk Class</b>	<b>Monitor (5)</b>
<b>Possible Control Measures</b>						
a	LoA's with Police and Air Ambulance provides SOP's to reduce risk including communicating with Fenton Radio for ATZ transits					
b	Promulgation of NOTAM until Feathered Arrows are published on the Charts					
c	Known tracks & altitudes published in AIP					
d	Slot time procedure limits traffic, in bound to LEA, to 1 aircraft per hour maximum (Slots shared with SAC)					
e	When approaches and gliding operations are conducted in VMC pilots are required to maintain "see and avoid" as per ANO					
f	In low visibility and low cloud conditions, statistically, local traffic numbers are extremely low					
g	Emergency Services Aircraft routing across and/or adjacent to LBA CAS may receive traffic services from adjacent ATC facilities					
h	The use of a discrete SSR Transponder code will assist ATC units to identify IAP traffic					
i	LEA will provide known traffic information to aircraft on Fenton Radio frequency					
<b>Control Measures for implementation</b>	<b>a, b, c, d, e, f, h, &amp; i.</b>					
<b>Post mitigated Risk Assessment</b>	<b>Impact/Severity</b>	Accident (5)	<b>Probability/Likelihood</b>	Extremely Improbable (1)	<b>Risk Class</b>	<b>Monitor (5)</b>

Part 3: Action Plan				
Serial Number	Action Required	Action Lead	Due Date	Date Completed
1	Issue a NOTAM until Feathered Arrows are published on the Charts	■	When approved	
2	Inform Glider Community of the RNP IAP tracks and altitudes	■	When approved	
3	Apply slot time procedure that limits traffic, in bound to LEA, to 1 aircraft per hour	■	When approved	
4	Pilot briefing to include reminder to aircrew that flight in VMC must be conducted in accordance with the "see and avoid" principle as per ANO	■	When approved	
5	Adopt the CAA allocated discrete SSR transponder code to assist ATC units to identify traffic intending to use the IAPs	■	When approved	
6	LEA radio operator to broadcast traffic information on Fenton Radio frequency	■	When approved	
7	Post-implementation safety review process to include monitoring the IAP's monthly for conflicts in first 6 months	■	When approved	
8	Post-implementation safety review process to include monitoring of the IAP's 6 monthly for conflicts after first 6 months	■	When approved	

Part 4: Department Manager (SAFO, SAGO, Site manager etc)			
Pre-mitigated risk assessment	Before we act	Post-mitigated Risk Assessment	After we act
ALARP Argument	All possible mitigations in place. And why		
Name/Appt:	Person's name and title here	Date	xx/xx/20xx
Signature			

Part 5: Airport Manager Comments			
May not always be applicable; if the risk is low or AM has compiled the assessment			
Name:		Date	xx/xx/20xx
Signature			

Part 6: Accountable Manager Comments			
May not always be applicable; if the risk is low, may just be, I have read the risk assessment and accept the risk as low as reasonably practicable.			
Name/Appt:	██████████ Makins Limited	Date	xx/xx/20xx
Signature			

Part 7: Closure			
Reason why closed			
Name/Appt	Who closed it and their appointment	Date:	Xx/xx/20x
Signature			

## Appendix 6 Acronyms and Abbreviations

AFIS Aerodrome Flight Information Service  
AIP Aeronautical Information Publication  
ANO Air Navigation Order  
AOC Air Operator Certificate  
ATC Air Traffic Control  
ATS Air Traffic Services  
ATSU Air Traffic Service Unit  
ATZ Aerodrome Traffic Zone  
CAA Civil Aviation Authority  
CAP Civil Aviation Publication  
CAT Commercial Air Transport  
CFIT Controlled Flight into Terrain  
CNS Communication, Navigation and Surveillance  
DOC Designated Operational Coverage  
FAF Final Approach Fix  
FL Flight Level  
GA General Aviation  
GNSS Global Navigation Satellite System  
GPS Global Positioning System  
IAF Initial Approach Fix  
IAP Instrument Approach Procedure  
ICAO International Civil Aviation Organisation  
IF Intermediate Fix  
IFR Instrument Flight Rules  
IMC Instrument Meteorological Conditions  
LARS Lower Airspace Radar Service  
LNAV Lateral Navigation  
LOC Loss of control  
LPV Localiser Performance with Vertical guidance  
MAC Mid-air collision  
MAP Missed Approach Procedure  
MAPt Missed Approach Point  
MET Meteorological  
MHz Mega Hertz  
MSA Minimum Sector Altitude  
NM Nautical Mile  
OCA(H) Obstacle Clearance Altitude (Height)  
PANS - OPS Procedures for Air Navigation Services – aircraft operations  
RNP Required Navigation Performance  
PPR Prior Permission Required  
QFE Q-code for atmospheric pressure at Field Elevation  
QNH Q-code for atmospheric pressure at Sea Level  
RCF Radio Communications Failure  
RCOLL Runway COLLision  
RESA Runway End Safety Area  
REXC Runway EXCursion accident  
RWY Runway  
SMS Safety Management System  
SSR Secondary-Surveillance Radar  
UKAIP United Kingdom Aeronautical Information Publication  
VFR Visual Flight Rules  
VMC Visual Meteorological Conditions  
VM(c) Visual Manoeuvring (Circling)  
VR Visual Room