ACP-2022-033
PROVISION OF GNSS IFPS TO HENSTRIDGE
TO SUPPORT
DORSET & SOMERSET AIR AMBULANCE

STAGE 4- SAFETY CASE

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DOCUMENT CONTROLS

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GLOSSARY OF TERMS AND ABBREVIATIONS

DSAA's convention is to introduce abbreviations at first use within any document. Table 1, below, contains the list of abbreviations, acronyms and terms contained within this document.

Term/Abbreviation	Meaning
ACP	Airspace change proposal.
ADS-B	Automatic dependent surveillance- broadcast.
AGCS	Air-to-ground communications service.
AGL	Above ground (surface) level.
AMSL	Above mean sea level.
ANSP	Air navigation service provider
APDO	Approved procedure design organisation
APV	Approach procedure with vertical (guidance).
ATM	Air traffic management
ATS	Air traffic service(s); may be provided with or without the support of surveillance systems (i.e. radar).
(UK) CAA	(UK) Civil Aviation Authority (i.e. the UK's aviation regulatory body).
(UK CAA) CAP1616	UK CAA publication proffering guidance on the regulatory process(es) for changing the notified airspace design (*et al*). See References and Bibliography.
DA(H)	Decision altitude (height)
DME	Distance measuring equipment
DVOF	Digital vertical obstructions file (MOD)
EC	Electronic conspicuity.
EGHS	ICAO (i.e. aeronautical) designator for Henstridge Aerodrome.
FAF	Final approach fix.
FATO	Final approach and take-off (area).
FMS	Flight management system
GA	General Aviation
GNSS	Global Navigation Satellite Systems. Generic term for all satellite navigation systems.
GPS	Global Positioning System
IAP	Instrument approach procedure
ICAO	International Civil Aviation Organisation
ILS	Instrument landing system
IMC	Instrument meteorological conditions
IFR	Instrument flight rules
IR	Instrument rating
km	Kilometre

Term/Abbreviation	Meaning
LNAV	Lateral navigation
LNAV/VNAV	Lateral Navigation with Barometric Vertical Navigation
LOA(s)	Letter(s) of agreement.
LPV	Localiser precision with vertical guidance
MDA(H)	Minimum descent altitude or minimum descent height. The lowest altitude, in feet AMSL (or height in feet AGL), to which descent is authorised on final approach during a non-precision instrument landing (i.e. where no glideslope guidance is given) without visual reference to the runway.
MSA	Minimum sector altitude
MOC	Minimum obstacle clearance
MOU(s)	Memorandum(a) of understanding.
NAVAID	Navigation Aid. NAVAID infrastructure refers to space-based and or ground-based NAVAIDs available to meet the requirements in the navigation specification.
nm	Nautical mile(s).
MAP	Missed approach procedure.
MAPt	Missed approach point.
OCA(H)	Obstacle clearance altitude (OCA) or obstacle clearance height (OCH). The lowest altitude or the lowest height above the elevation of the relevant runway threshold or the aerodrome elevation, as applicable, used in establishing compliance with appropriate obstacle clearance criteria.
PCL	Pilot-controlled lighting.
PinS	Point-in-Space. GNSS IFPs designed for helicopters.
PSR	Primary surveillance radar
RAIM	Receiver autonomous integrity monitoring
RNAS	Royal Naval Air Station
RNAV	Area Navigation. A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground or space-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these. Note: Area navigation includes performance-based navigation (PBN) as well as other RNAV operations that do not meet the definition of performance-based navigation.
RNAV Specification	A navigation specification based on area navigation that does not include the requirement for on-board performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1.
RNP	Required Navigation Performance
RNP Specification	A navigation specification based on area navigation that includes the requirement for on-board performance monitoring and alerting, designated by the prefix RNP, e.g. RNP 4, RNP APCH.
RW	Runway.
SMM	Safety Management Manual.
SMS	Safety Management System.
SSR	Secondary surveillance radar.

Term/Abbreviation	Meaning
TLOF	Touch-down and lift-off (area).
UK AIP	United Kingdom Aeronautical Information Publication
VFR	Visual flight rules.
VMC	Visual meteorological conditions

Table 1 - List of Abbreviations.

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1. INTRODUCTION

1.1. Background.

Dorset and Somerset Air Ambulance (DSAA) is a key part of the emergency services network in the south west region and, since 2008, has been based at Henstridge Aerodrome, situated on the Dorset/Somerset border in Class G airspace and operates without approach control (WAC) services. Currently, the DSAA helicopter operates between the hours of 0700 and 0200 and recoveries to the aerodrome can only be undertaken under visual flight rules (VFR) in visual meteorological conditions (VMC).

DSAA, therefore, seeks to introduce Global Navigation Satellite System (GNSS) instrument flight procedures (IFPs) to enhance its Helicopter Emergency Medical Services (HEMS) operational capability at Henstridge Aerodrome during DSAA's existing operating hours and, in turn, its delivery of critical patient care.

The DSAA helicopter is operated under the AOC of Specialist Aviation Services Ltd (SAS), the sponsor of this ACP. [1]

1.2. ACP-2022-033 DAP1916 Statement of Need.

Originally, DSAA submitted the ACP-2022-033 DAP1916 (including a corresponding Statement of Need) on 22 May 22. DSAA submitted a subsequent DAP1916 on 1 May 23, to meet the GNSS Roll-out Programme requirements; DSAA amended this latter DAP1916 on 16 May 23.[2]

1.3. DSAA Operational Capability Enhancement.

Henstridge is a small unlicenced aerodrome without an ATZ, at which the extant operation is VFR only and predominantly GA and produces IRO 9,500 movements *per annum*. The DSAA HEMS helicopter operates between the hours of 0700 and 0200 hrs, 7 days a week for 365 days a year; this equates to 1168 AA missions, an average of 3 missions per day.[3] With the exception of DSAA HEMS helicopter movements, there are no night flying operations permitted at Henstridge.

Currently, DSAA departures from and recoveries to Henstridge can only be undertaken under visual flight rules (VFR) in VMC. There is no ADV or AFISO, and, currently, only a limited (weekend only) AGCS; therefore, there is no instrument flight rules (IFR)/VFR aircraft integration. Visiting aircraft to Henstridge Aerodrome are strictly by "prior permission required (PPR)" only.

Between Apr 22 and Mar 23, the DSAA helicopter was declared offline for 449 hours due to weather constraints. This equated to 24 operating days, which could be seen to equate to 72 life-saving AA missions, acknowledging that HEMS is a demand-led service.

Accordingly, the introduction of GNSS IFPs to enhance DSAA HEMS operational capability at Henstridge could deliver an additional 72 AA missions, *per annum*, in turn delivering more critical prehospital care for patients in the existing DSAA 19-hour operation.

2. AIM

The aim of this document is to demonstrate the ACP-2022-033 proposed IFP design can be operated by DSAA at Henstridge Aerodrome with an acceptable degree of safety with risks reduced to as low as reasonably practicable (ALARP).

DSAA judge that any residual risks (i.e. post-mitigation actions) are tolerable and cannot be reduced further without unsustainable cost. Moreover, DSAA seeks to show that its proposed solutions can be used in combination with other risk-based measures to provide an acceptable and demonstratable degree of safety.

1. Gama Aviation is in the process of acquiring SAS; at the time of document approval, the ACP sponsor was SAS. DSAA understands that sponsorship will transfer to Gama Aviation with the transfer of AOC. This was confirmed in a meeting between DSAA (Avigation) and CAA (Airspace Change Account Manager) held on MS Teams on 14 Feb 24.
2. CAA, ACP-2022-033 portal (online), accessed on 12 Nov 23.
3. DSAA data for the period Apr 22 to Mar 23, inclusive.

In addition to any CAA post-implementation review requirements, DSAA will continue to monitor any residual risks under its air ambulance service provider's Safety Management System (SMS).

3. SAFETY ARGUMENTS

3.1. Safety Benefits of the Proposed IFP Design.

During inclement weather, most UK aviation operations are supported by surveillance-based air traffic services (i.e. radar), during which appropriately qualified pilots may fly under instrument flight rules. Given the nature of the HEMS task and locations, however, this surveillance capability is not always available to HEMS crews, who are appropriately qualified, and their ability to operate in adverse weather conditions can be unduly constrained. Critically, a HEMS crew being unable to either depart from or return to their operating base due to weather constraints impacts the availability of the service.

A DSAA HEMS mission can last more than three hours and, having departed Henstridge in VMC, the weather can (and does) often deteriorate, regularly precipitating a recovery in marginal weather conditions. If weather conditions fall below those required for a VFR recovery, this would result in the DSAA helicopter being unable to return Henstridge; in turn, this would mean that this important critical care asset would remain offline until it could be recovered (often the following day). If the aircraft had been left on a hospital helipad, then the helipad would not be available to other HEMS aircraft. Thus, being unable to recover the DSAA helicopter to Henstridge under IMC could put patients' lives at risk.

DSAA's primary driver for applying for GNSS IFPs under CAP1616[4] to support the HEMS operations at Henstridge Aerodrome is that it would allow the operation of the DSAA helicopter (particularly its recovery) under IMC, offering significant safety benefits over VFR flight in marginal VMC conditions, in turn, delivering vital continuity of this critical care service.

DSAA's ACP-2022-033 application is, therefore, considered a safety and operational enhancement.

An additional benefit could also be that the implementation of GNSS IFPs at Henstridge could lead to future operations in IMC to hospitals with their own GNSS IFPs; however, this future aspiration sits outside the scope of this safety case.

3.2. Acceptable Level of Risk.

DSAA acknowledges that there could be new risks associated with introducing the proposed IFP design to support HEMS operations at Henstridge, which must be mitigated and managed. The overall acceptable level of risk associated with operating the proposed IFP design should be compared with the extant level of risk for the current VFR operations. Additionally, it is neither realistic nor practicable to assert that IFR operations to support HEMS operations at Henstridge would be as safe as those in an environment with a readily available ATS and an instrument runway- neither or which is available at Henstridge.

DSAA is confident that new risks associated with the introduction and operation of the proposed IFP design have been reduced to ALARP and, as such, can be deemed acceptable, given the local operating environment, its scale and limitations. DSAA judges any residual risks to be tolerable and cannot be reduced further without disproportionate cost. Moreover, DSAA seeks to show that its proposed solutions can be used in combination with other risk-based measures to provide an acceptable and demonstrable degree of safety.

In addition to any CAA post-implementation review requirements, DSAA will continue to monitor any residual risk(s) under its air ambulance service provider's safety management system (SMS) and that of DSAA's approved procedure design organisation (APDO), Pildo Wessex Ltd.

3.3. SAS (Gama Aviation) Safety Management Principles.

The management of change is a fundamental aspect of the SAS (Gama Aviation) safety management process. The associated processes and procedures for managing change within the SAS (Gama Aviation) operation are

4. CAA (2021), "*CAP1616*", Part 1c, (online) accessed 12 Nov 23.

articulated in the SAS (Gama Aviation) Safety Management Manual (SMM). The corresponding extracts from the SAS (Gama Aviation) SMM, pertaining to the Management of Change and the SAS (Gama Aviation) Risk Assessment/Tolerability Matrices, are provided at Annex C.

Annex C seeks not to reproduce the SAS (Gama Aviation) SMM, merely evidence the processes into which the potential hazards and associated risks identified within this safety case will be brought into the corresponding SAS (Gama Aviation) safety-related standard operating procedures (SOP).

The purpose of the SAS (Gama Aviation) SMM's Management of Change SOP is to identify hazards that could arise from bringing in a change to the business/operation (i.e. the introduction and operation of the proposed IFP design) and assessing the associated risk(s) so that the appropriate controls (i.e. mitigations) can be identified, articulated and, where appropriate, implemented to ensure that such risk(s) are reduced to a level that is demonstrably ALARP.

SAS (Gama Aviation) will conduct these and other safety-related related activities in parallel with - and external to - the CAA's ACP-2022-033 Stage 5 process(es) in readiness for Stage 6 of the ACP.

4. ASSUMPTIONS AND CONSTRAINTS

In progressing this application and associated safety case, DSAA identified no constraints and has made the following assumptions:

4.1. Proposed IFP Design Utilisation.

The proposed IFP design shall only be utilised by one HEMS helicopter at any one time.

4.2. ACP-2022-033 and CAP2520 Applicable Scope.

[redacted]

5. METHODOLOGY

5.1. Context.

The use of conventional IFPs at aerodromes has traditionally been limited by the associated need for ground-based navigation system infrastructure; however, the availability of satellite-based navigation systems means that IFPs serving smaller and less well-equipped aerodromes is now possible.

5. CAA (May 2023), "*CAP2520 […]*" (online), accessed on 21 Mar 24.
6. ACP-2023-033 Initial Assessment Meeting minutes, Para 25 (online), accessed on 25 Mar 24.

The ability to provide an IAP into a smaller aerodrome without an approach control service and/or with a non-instrument runway may contribute to improvements in the overall safety of operations at the aerodrome along with supporting the viability of the aerodrome.

The introduction of the proposed IFP design to support DSAA HEMS operations at Henstridge could deliver approximately 72 AA missions *per annum,* thereby enhancing DSAA HEMS operational capability safely. These 72 missions would continue to take place in Class G airspace in a relatively benign aviation environment. A number of DSAA missions are conducted at night when GA operations at Henstridge Aerodrome are not permitted.

During their respective operating hours and subject to ATSU capacity and the requisite surveillance coverage, DSAA HEMS aircraft may receive an ATS from Royal Naval Air Station (RNAS) Yeovilton, Ministry of Defence (MOD) Boscombe Down and/or Bournemouth and Bristol Airports. Where no surveillance-based ATS is available, a Basic Service can be obtained from "London Information".

5.2. DSAA's Approach.

CAP2304 provides policy, guidance and acceptable means of compliance to assist those aerodromes to apply for the implementation of an RNP approach using a risk-based approach to mitigate the deficiencies in runway and/or service provision.

At Stage 1, DSAA completed the CAA's ATM Safety Questionnaire. DSAA then reviewed and analysed the Safety and Airspace Regulation Group (SARG) responses, comments and recommendations. DSAA has used the latter (supported by other analyses) to explore and develop the corresponding risk-based mitigation actions set out in DSAA's responses in Section 8, below.

CAP2304 offers exemplar safety arguments ("Candidate Alternative Safety Arguments")[7] providing alternative solutions to be used in combination with other risk-based measures to provide an acceptable degree of safety. DSAA has based the ACP-202-033 Safety Case on these candidate safety arguments, proffering alternative solutions and risk-based mitigation actions and measures.

In addition, Appendix B to CAP2304[8] offers:

Runway Environment.

"Arguments for the establishment of this type of IAP may be appropriate in circumstances where an aerodrome runway is classed as a non-instrument runway and where it would not be reasonably practicable to make the changes required to the runway environment at this location in order to meet the instrument runway standards. This type of IAP would provide operational benefit to aerodrome Instrument Rating (IR)/Instrument Rating Restricted (IRR) users/operators in circumstances where lower cloud bases and, to a lesser extent, poorer visibility would limit VFR operations."

Airspace/ATS Environment.

"At other locations it would be necessary to demonstrate that the aerodrome operator has procedures in place which would provide an effective means of deconflicting operations between aircraft using the aerodrome traffic circuit under VFR and those operating using the IAP including the associated missed approach procedure. This would mean having a process to effectively close the aerodrome traffic circuit whenever the IAP was in use and vice versa."

7. CAA (March 2022), Page 23 (online), accessed 15 Mar 24.
8. *id*, Appendix B (online), accessed 15 Feb 24.

In responding to the various Candidate Alternative Safety Arguments at Section 8, DSAA draws significantly on the guidance offered in the CAP2304 Appendix B principles above.

6. CANDIDATE ALTERNATIVE SAFETY ARGUMENTS

6.1. CAP2304 Candidate Alternative Safety Arguments.

CAP2304 provides an alternative top-level strategy and goals to assist ACP sponsors with the development of their corresponding safety-related documentation (e.g. safety case), which are reproduced at Figure 1, below.[9]

Argument that alternative solutions will be used in combination with other risk-based measures to provide 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. (INTRO)
Goal 1.7	The risk of an accident during the through-life operation of an IAP at this aerodrome is acceptably low. (THRULIFE)

Figure 1 - CAP2304 Alternative Top-level Strategy and Goals.

7. ACP-2022-033 CANDIDATE ALTERNATIVE SAFETY ARGUMENTS ANALYSES AND PROPOSED MITIGATIONS

7.1. Goal 1.1. "The Risk of Controlled Flight into Terrain (CFIT)".

The CAP2304 Candidate Alternative Safety Arguments and DSAA's associated responses for ACP-2022-033 for CFIT are at Table 3, below.

DSAA has identified no further risk(s) associated with Goal 1.1 CFIT.

7.2. Goal 1.2. "The Risk of Runway Excursion (REXC)".

The CAP2304 Candidate Alternative Safety Arguments and DSAA's associated responses for ACP-2022-033 for REXC are at Table 4, below.

DSAA has identified no further risk(s) associated with Goal 1.2 REXC.

7.3. Goal 1.2. "The Risk of Runway Collision (RCOLL)".

The CAP2304 Candidate Alternative Safety Arguments and DSAA's associated responses for ACP-2022-033 for RCOLL are at Table 5, below.

DSAA has identified no further risk(s) associated with Goal 1.2 RCOLL.

7.4. Goal 1.4- "The Risk of a Mid-air Collision Accident is Acceptably Low" (MAC).

The CAP2304 Candidate Alternative Safety Arguments and DSAA's associated responses for ACP-2022-033 for MAC are at Table 6, below.

DSAA's MAC risk identification, assessment and proposed mitigation actions are at Table 7.

9. CAA (March 2022), Page 23 (online), accessed on 20 Mar 24.

7.4.1. ACP-2023-033 ATM Safety Questionnaire.

[redacted]

7.4.2. Proposed Goal 1.4 MAC Mitigations Actions.

[redacted]

7.4.3. Analysis of Proposed IFP Design Approach Potentially Conflicting with VFR/IFR Activity Outside the Henstridge Visual Circuit Area.

<u>Local Airspace/Aviation Context</u>

Henstridge Aerodrome is located in a relatively benign aviation and airspace environment.

GA flying activity is mainly confined to Henstridge-based operators with minimal GA transiting through the area. Military flying activity mainly emanates from RNAS Yeovilton and MOD Boscombe Down. In addition, Henstridge is located within the MOD Low-flying Area 2. Furthermore, these is a small amount of helicopter traffic associated with Yeovil (Westland).

[redacted]

[redacted]

7.4.4. Analysis Results.

[redacted]

[redacted]

7.4.5. *Goal 1.4 MAC Conclusion.*

[redacted]

7.4.6. *Publication of IFP Design.*

Subject to flight validation and CAA approval, DSAA anticipated that the approved IFP design would be depicted as an "approach and departure feather" on UK VFR charts. Promulgating the existence and position of the IFP in such a manner promotes awareness for other airspace users, thereby enabling non-participating traffic operating in the area to avoid the IFP, in turn, reducing the risk of MAC between the HEMS flight and non-participating.

Conversely, CAA has determined that a redacted version of the IFP will be published in the UK AIP. DSAA's preference is to promulgate a VFR approach/departure feather only, and not the redacted IFP. Current CAA guidance, however, favours the latter, *vice* the former, course of action.

There is a risk that an unredacted IFP plate could promote unauthorised use of the procedure by non-participating aircraft, which, in turn, could increase the risk of MAC between participating and non-participating aircraft.

Whilst cognisant of CAP2520, Paras 5.9 and 6.3, DSAA maintains that there is a risk that a publicised, well defined (albeit redacted) IFP could encourage unauthorised use of the IFP, in turn, increasing the risk of MAC between participating and non-participating aircraft.

This risk is articulated in Table 7 (and, again, in Table 11 and Table 13) in Section 8, below.

DSAA would welcome sight of the CAA's corresponding risk assessment for their preferred course of action.

7.5. Goal 1.5- "The Risk of a Loss of Control Accident is Acceptably Low" (LOC).

The CAP2304 Candidate Alternative Safety Arguments and DSAA's associated responses for ACP-2022-033 for LOC are at Table 8, below.

DSAA's LOC risk identification, assessment and proposed mitigation actions are at Table 9

7.6. Goal 1.6- "The Risk of an Accident During the Introduction to Service of a New IAP at this Aerodrome is Acceptably Low" (INTRO).

The CAP2304 Candidate Alternative Safety Arguments and DSAA's associated responses for ACP-2022-033 for INTRO are at Table 10, below.

DSAA's INTRO risk identification, assessment and proposed mitigation actions are at Table 11.

7.7. Goal 1.7- "The Risk of an Accident During the Through-life Operation of an IAP at this Aerodrome is Acceptably Low" (THRULIFE).

The CAP2304 Candidate Alternative Safety Arguments and DSAA's associated responses for ACP-2022-033 for THRULIFE are at Table 12, below.

DSAA's THRULIFE risk identification, assessment and proposed mitigation actions are at Table 13.

8. ACP-2022-033 BASELINE SAFETY GOAL AND CANDIDATE ALTERNATIVE SAFETY ARGUMENTS

In developing the safety case for the introduction of an IAP, under circumstances where the runway does not meet instrument runway criteria and/or an approach control service is not to be provided, sponsors may be guided by CAP760[10] and CAP1059[11].

The CAA ATM Safety Questionnaire has been developed for ACP sponsors and shall be the starting point of the process. The questionnaire shall also be used by those who have started to develop their safety arguments. Sponsors who have started to develop their safety arguments and those who have already prepared a safety case must still complete the ATM Safety Questionnaire as part of the process outlined in this document.

This section is intended to assist with the process and the sponsor's subsequent development of the safety assessment documentation (e.g. safety case) which must be submitted in support of an application.

10. CAA (2010), "*CAP760*" (online), accessed on 13 Nov 23.
11. CAA (2013), "*CAP1059*" (online), accessed on 13 Nov 23.

8.1. ACP-2022-033 Alternative Top-level Strategy and Baseline Safety Goals.

Goal 1. The IFP at Henstridge will be operated with an acceptable degree of safety.		
Ser	Strategy 1. Argument that alternative solutions will be used in combination with other risk-based measures to provide an acceptable degree of safety	
1	Goal 1.1- CFIT	The risk of a controlled flight into terrain (CFIT) accident is acceptably low.
2	Goal 1.2- REXC	The risk of a runway excursion (REXC) accident is acceptably low.
3	Goal 1.3- RCOLL	The risk of a runway collision (RCOLL) accident is acceptably low.
4	Goal 1.4- MAC	The risk of a mid-air collision (MAC) accident is acceptably low.
5	Goal 1.5- LOC	The risk of a loss of control (LOC) accident is acceptably low.
6	Goal 1.6- INTRO	The risk of an accident during the introduction to service of a new IFP (INTRO) at Henstridge is acceptably low.
7	Goal 1.7- THRULIFE	The risk of an accident during the through-life operation of an IFP (THRULIFE) at this Henstridge is acceptably low.

Table 2 - Alternative Top-level Strategy and Baseline Safety Goals.

8.2. ACP-2022-033 Candidate Alternative Safety Arguments.

8.2.1. *Risk of Controlled Flight Into Terrain (CFIT).*

Goal 1.1- CFIT. The risk of a CFIT accident is acceptably low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
CFIT 1. CAP168 instrument runway standards are met.		
1	CFIT 1.1 CAP168 compliant runway strip reduces the risk of a CFIT accident by an inaccurately positioned aircraft in the immediate aerodrome environment through provision of an area free from infrangible obstacles.	CFIT 1.1.1 Runway Strip- Higher Minima. *An argument for a reduction in the size of the runway strip provided could be made on the basis of the aircraft categories approved for the IAP.* DSAA Response. This argument is not applicable to the proposed IFP design and application. [redacted]
2		CFIT 1.1.2 Runway Strip- Restrictions on Use. *An argument could be made that safety mitigation could be claimed for a reduced runway strip on the basis that use of the IAP is managed by some form of PPR requiring specific briefing on these local limitations. Where this is the case, evidence should be available that operators have been consulted and that the operation of specific a/c categories, or by pilots with particular qualifications and experience provides the necessary safety mitigation.* DSAA Response. This argument is not applicable to the proposed IFP design and application. [redacted]

Goal 1.1- CFIT. The risk of a CFIT accident is acceptably low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
3	CFIT 1.2 Instrument runway marking and lighting assists crews in visually acquiring the runway by day and night and subsequently following an appropriate approach path to touchdown which will keep them clear of terrain and obstacles. In particular AGL provides flight crew with location, orientation and alignment information in adverse visibility conditions and at night.	CFIT 1.2.1 Aerodrome Lighting – Day Use Only. *An argument could be made for a lower standard of lighting to be provided on the basis that the IAP will be promulgated for use during day operations only and published as such in the UK AIP and associated approach plate. Arguments would need to focus upon the types of operations to be supported and the potential for new technology lighting to be considered where appropriate. This type of argument could be used to justify the absence of an aerodrome beacon or provision of a less sophisticated type of aerodrome beacon. It also recognises that low intensity lighting is of only limited use in daylight although arguments would need to reflect the value of lighting in poor visibility conditions. Arguments could also be constructed around the use of visual approach slope indicators which can aid visual perception of the approach path to the runway.* DSAA Response. This argument is not applicable to the proposed IFP design and application. [redacted]

Goal 1.1- CFIT. The risk of a CFIT accident is acceptably low.		
Ser	**Safety Baseline**	**Candidate Alternative Safety Arguments**
4		CFIT 1.2.2 Aerodrome Lighting- Higher Minima. *An argument could be made for a reduction in the scale of aerodrome lighting on the basis of an associated increase in IAP OCA(H).* DSAA Response. This argument is not applicable to the proposed IFP design and application. [redacted]
5		CFIT 1.2.3 Runway Marking- Higher Minima. *Arguments for a reduction in the scale of runway marking could be made on the basis of an associated increase in procedure OCA(H). This may be particularly applicable to runways with grass or natural surfaces. Arguments could, for example, also be made here for the permanent use of suitable black & white boards for use where threshold is not conspicuous as described in CAP168 Chapter 7.* DSAA Response. This argument is not applicable to the proposed IFP design and application. [redacted]

Goal 1.1- CFIT. The risk of a CFIT accident is acceptably low.

Ser	Safety Baseline	Candidate Alternative Safety Arguments
6		CFIT 1.2.4 Runway Marking and Lighting Standards- Variations. *Arguments could be constructed for variations from the standard of runway marking and lighting required for 'precision' and 'non-precision' operations by CAP168. Such arguments could be constructed around the specific benefits of the aerodrome and procedure. Such arguments would be strengthened by proposed deployment of lighting installations such as Abbreviated Precision Approach Path Indicators ((A) PAPI) which can provide specific additional benefit in visually acquiring the aerodrome. Arguments which included the deployment of visual approach aids and an associated survey/checking regime would carry additional weight.* DSAA Response. This argument is not applicable to the proposed IFP design and application.
7		CFIT 1.2.5 Runway Lighting and Marking Standards. *Arguments could be made for provision of a reduced form of aerodrome lighting and/or runway marking on the basis that the IAP would be some form of 'IAP with Higher Minima' procedure as described at Appendix C. Such arguments could be used to support the use of a non-instrument runway with lighting appropriate to its purely visual day use (or no lighting). Where this type of IAP is used an argument could be made for use at night using AGL which conformed to CAP168 standards for night VFR operations. Arguments which included the deployment of visual approach aids and an associated survey/checking regime would carry additional weight. However, much higher minima would be required and the utility of the IAP in poor visibility and/or low cloud conditions would be more limited operationally than for other types of IAP.* DSAA Response. This argument is not applicable to the proposed IFP design and application.

Goal 1.1- CFIT. The risk of a CFIT accident is acceptably low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
8		CFIT 1.2.6 Runway Lighting and Marking- Restrictions on Use. *An argument could be made that safety mitigation could be claimed for a reduced form of runway marking and/or lighting on the basis that use of the IAP is managed by specific briefing on these local limitations. This type of argument would be more applicable to the small privately-owned aerodrome or airstrip with only a single operator or small number of users.* *Note 1. A particular consideration with the evaluation of all the above arguments in the context of the CFIT risk would be the local topography.* *Note 2. In each case, safety arguments for variations from the CAP168 standard would need to be much more strongly justified where Public Transport operations are contemplated.* DSAA Response. This argument is not applicable to the proposed IFP design and application.

Goal 1.1- CFIT. The risk of a CFIT accident is acceptably low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
CFIT 2. ANO Art 183 requirement for approach control is met.		
9	CFIT 2.1	CFIT 2.1.1 Altimeter Setting- *Where an ANSP with certification that includes Meteorological provision is not established at the aerodrome an alternative argument could be made if the QNH passed to an aircraft is provided by observers that meet the Basic Observer Competence standard specified in CAP746 Appendix H and the equipment used to establish the QNH is installed, maintained and calibrated in accordance with CAP746, Chapters 6 & 7.* DSAA Response. [redacted]
10	CFIT 2.2	CFIT 2.2.1 Weather Reporting. *Where an ANSP with certification that includes Meteorological provision is not established at the aerodrome an alternative argument could be made if unofficial meteorological observations passed to an aircraft are provided by observers that meet the Basic Observer Competence standard specified in CAP746 Appendix H and the equipment used to obtain meteorological data is installed, maintained and calibrated in accordance with CAP746, Chapters 6 & 7 where appropriate.* DSAA Response. [redacted]

Goal 1.1- CFIT. The risk of a CFIT accident is acceptably low.		
Ser	**Safety Baseline**	**Candidate Alternative Safety Arguments**
11	CFIT 2.3 Provision of Approach Control with surveillance reduces the risk of CFIT as the Approach Controller assumes some responsibility for terrain safety.	CFIT 2.3.1 Requirement for Monitoring of Lateral and Vertical Flight Path- Type of Operation. *A safety argument should be presented that ensures the pilot is aware of the applicable terrain safe levels. Further safety arguments related to surveillance display systems based on Primary Surveillance Radar (PSR)/Secondary Surveillance Radar (SSR)/Automatic Dependent Surveillance - Broadcast (ADS-B)/Other may be submitted.* DSAA Response.

CFIT 3. The Aerodrome operator provides and maintains aerodrome terrain and obstacle data		
12	CFIT 3.1 All aerodromes in the scope of CAP1616, Pt 1c are also in the scope of CAP1732 and CAP738 both of which reduce the risk of CFIT by providing and maintaining aerodrome terrain and obstacle data.	CFIT 3.1.1 Aerodrome Surveys- Data from other Sources. *The obstacle data required for the design of the IAP is used by the APDO. The sponsor will need to ensure they have IAP safeguarding and 5-year periodic review processes in place with their APDO to ensure the IAP remains safe.* DSAA Response.

Goal 1.1- CFIT. The risk of a CFIT accident is acceptably low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
CFIT 4. The IAP design has been developed iaw PANS-OPS and additional design criteria described in [CAP2304] Appendix C and the associated coding data in the UK AIP is used as the source data by DAT providers for creating the navigation databases.		
13	CFIT 4.1 Use of PANS-OPS IAP design criteria reduces 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 4.1.1 Use of IAP. *An argument could be made by an [sic] sponsor for an IAP with Higher Minima to be designed and make use of more conservative OCA(H). The CAA will consider safety arguments from an APDO for construction of an IAP with higher minima using the process described at Appendix B. An adequate means of periodic review of continued accuracy of the IAP and associated aerodrome data would need to be developed and provided by the sponsor in support of such arguments.* DSAA Response. [redacted]
14	CFIT 4.2 The established procedures for designing and approving IAP designs provide participating aircraft with a flightpath which, if followed in flight, will keep them clear of terrain and obstacles.	CFIT 4.2.1 Use of IAP- Aircraft Category Limitation. *A safety argument will need to be provided that details why the IAP minima is appropriate for the types of aircraft expected to use the approach.* DSAA Response. [redacted] The proposed IFP design will be approved and validated in accordance with the applicable regulations and requirements.

Goal 1.1- CFIT. The risk of a CFIT accident is acceptably low.		
Ser	**Safety Baseline**	**Candidate Alternative Safety Arguments**
CFIT 5. The integrity and accuracy of the navigation aids used for the instrument approach meet the required standards.		
15	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.	CFIT 5.1.1 The integrity of navigation aids is a measure of the reliance that can be put on the aid in radiating a correct signal. The integrity depends on the ability of the aid to radiate an in-tolerance signal and of the inbuilt monitoring systems to recognise when the signal is out of tolerance and shutdown the faulty system. The integrity of ground-based navigation aids is assessed when the aid is first approved for use, with manufacturers' evidence of reliability of all parts of the system being taken into account. The ongoing reliability of those parts of the system will give confidence that the integrity requirements continue to be met. CAP670 provides further guidance on Communications, Navigation & Surveillance equipment. DSAA Response. The proposed IFP design is a GNSS based procedure designed to RNP0.3 standards. The DSAA HEMS helicopter, an AW169, has Receiver Autonomous Integrity Monitoring (RAIM) capability, and crews will be alerted to any GNSS degradation or failure, at which point the approach will have to be discontinued.
16		CFIT 5.1.2 Cross checking of Other Sources of Information by Aircraft Commander. *As a mitigation for integrity failures, when systems radiate incorrect information, Pilots will cross check other systems to give confidence that all is as it should be or to alert them that there is a problem with the guidance being used. For example, a pilot making an ILS approach will check the height of the aircraft at a certain DME range to be sure the glide path information is correct.* DSAA Response. The proposed IFP design is a GNSS based procedure designed to RNP0.3 standards. The DSAA HEMS helicopter (an AW169) has RAIM capability, and crews will be alerted to any GNSS degradation or failure, at which point the approach will have to be discontinued.

Goal 1.1- CFIT. The risk of a CFIT accident is acceptably low.		
Ser	**Safety Baseline**	**Candidate Alternative Safety Arguments**
17		CFIT 5.1.3 GPS has no internal monitoring system to give timely warning of incorrect guidance being transmitted, instead Integrity monitoring relies on augmentations such as the use of receivers equipped with RAIM (Receiver Autonomous Integrity Monitoring). *In lieu of manufacturers evidence to support the approval of an approach using GPS guidance, the CAA makes available historical monitoring data to allow the assessment of the integrity in conjunction with the certified integrity of the airborne receiver and the availability of RAIM and Fault Detection and Exclusion (FDE) algorithms.* DSAA Response. The proposed IFP design is a GNSS based procedure designed to RNP0.3 standards. The DSAA HEMS helicopter (an AW169) has RAIM capability, and crews will be alerted to any GNSS degradation or failure, at which point the approach will have to be discontinued. [redacted]
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.		
18	CFIT 6.1 The flight crew training and qualification standards which must be met are sufficient to provide for IAPs to be flown safely and accurately, remaining clear of terrain and obstacles.	*No alternative safety argument is considered appropriate for this baseline safety solution.* DSAA Response. [redacted]

Goal 1.1- CFIT. The risk of a CFIT accident is acceptably low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
CFIT 7. The integrity and accuracy of the meteorological information provided by Approach and/or Aerodrome Control meets the required standards.		
19	CFIT 7.1 The integrity and accuracy of the meteorological information provided are such that they will provide the crew of participating aircraft with sufficiently reliable and accurate information to enable them to make safe decisions when considering whether to commence the approach, and to anticipate whether a missed approach may be possible.	CFIT 7.1.1 Meteorological information- provided by an ANSP with certification that includes Meteorological provision. At aerodromes where meteorological information is provided by a certificated ANSP an argument could be made that information is made available in accordance with the requirements contained in CAP746 and as such is of an appropriate quality. ANSPs that are certificated to provide Local Routine Reports only may need to provide additional assurance that staff providing meteorological information have and maintain basic meteorological observing competency. DSAA Response. [redacted]

Goal 1.1- CFIT. The risk of a CFIT accident is acceptably low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
21		CFIT 7.1.2 Meteorological information - provided by aerodromes without an ANSP with certification that includes Meteorological provision. At aerodromes where there is no ANSP with certification that includes Meteorological provision, assurance would need to be provided that meteorological equipment (as a minimum sensors for wind, pressure, temperature) is installed in accordance with the manufacturer's or supplier's instructions and there is a routine care and maintenance schedule which ensures that equipment continues to operate effectively, and that staff providing meteorological information have and maintain basic meteorological observing competency. An argument could be made that the aerodrome complies with the applicable requirements as contained in CAP746. At aerodromes where there is no ANSP with certification that includes Meteorological provision all meteorological information provided must be clearly identified as "unofficial" and prefixed as such when being passed to aircraft. Additional mitigation may be needed in the form of the use of higher minima for an IAP. Where an IAP, as described at Appendix B, is to be used, an argument could be made that the use of an unofficial weather observation could be acceptable on the basis that with this type of approach more conservative aerodrome operating minima would be applied which would leave an adequate safety margin. DSAA Response. [redacted]

Table 3 - ACP-2022-033 Goal 1.1 CFIT.

8.2.2. *Identified Risk(s) Goal 1.1 CFIT.*

DSAA has identified no further risk(s) associated with Goal 1.1 CFIT.

8.2.3. *Risk of a Runway Excursion (REXC).*

Ser	Safety baseline	Candidate alternative safety arguments
Goal 1.2- REXC. The risk of a runway excursion is acceptably low.		
REXC 1. CAP168 instrument runway standards are met.		
1	REXC 1.1 CAP168 compliant runway dimensions, markings, and lighting 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.	REXC 1.1.1 Use Of IAP. *Arguments could be made for provision of a reduced form of aerodrome lighting and/or runway marking on the basis that an IAP as described at Appendix B is used which would terminate at an altitude and distance from the aerodrome using suitably OCA(H) which would allow more time for visual acquisition of the local runway environment. Arguments which included the deployment of visual approach aids and an associated survey/checking regime would carry additional weight.* DSAA Response. This argument is not applicable to the proposed IFP design and application. [redacted]
REXC 2. ANO 183 requirement for approach control is met.		
2	REXC 2.1 Approach control provides crew with information on runway condition which will assist in reducing the risk of a runway excursion accident.	REXC 2.1.1 Runway Condition- Aerodrome ATS or Aerodrome Flight Information Service (AFIS). *Where an aerodrome ATS or AFIS is provided, in the absence of Approach Control, an argument could be made that the runway condition/ information could still be provided by the controller or Aerodrome Flight Information Service Officer (AFISO). The basis of such an argument could be that this provides an equivalent level of risk (to that provided at aerodromes where the duties of approach and aerodrome controller are periodically discharged by a single individual.* DSAA Response. This argument is not applicable to the proposed IFP design and application, as there is no aerodrome ATS or AFIS at Henstridge Aerodrome. See response at RCOLL 3.3.2, below.

Goal 1.2- REXC. The risk of a runway excursion is acceptably low.

Ser	Safety baseline	Candidate alternative safety arguments
3	REXC 2.2 An ANSP with certification that includes Meteorological provision reduces the risk of REXC by enabling Approach controller to provide accurate surface wind information which will assist in reducing the risk of a runway excursion accident.	REXC 2.2.1 Surface Wind information- provided by an ANSP with certification that includes Meteorological provision. *At aerodromes where meteorological information is provided by an ANSP with certification that includes Meteorological provision an argument could be made that surface wind information is made available in accordance with the requirements contained in CAP746 and as such is of an appropriate quality. ANSPs that are certificated to provide Local Routine Reports only may need to provide additional assurance that staff providing meteorological information have and maintain basic meteorological observing competency.* DSAA Response. This argument is not applicable to the proposed IFP design and application. [redacted]
4	REXC 2.2 An ANSP with certification that includes Meteorological provision reduces the risk of REXC by enabling Approach controller to provide accurate surface wind information which will assist in reducing the risk of a runway excursion accident.	REXC 2.2.2 Surface Wind information - provided by aerodromes without an ANSP with certification that includes Meteorological provision. *At aerodromes where there is no ANSP with certification that includes Meteorological provision assurance would need to be provided that Surface Wind sensors are installed in accordance with the manufacturer's or supplier's instructions and there is a routine care and maintenance schedule which ensures that equipment continues to operate effectively, and that staff providing meteorological information have and maintain basic meteorological observing competency. An argument could be made that the aerodrome complies with the applicable requirements as contained in CAP746. At aerodromes where there is no ANSP with certification that includes Meteorological provision all meteorological information, including surface wind, provided must be clearly identified as "unofficial" and prefixed as such when being passed to aircraft.* DSAA Response. [redacted]

Goal 1.2- REXC. The risk of a runway excursion is acceptably low.		
Ser	Safety baseline	Candidate alternative safety arguments
REXC 3. The IAP design has been developed iaw PANS-OPS and additional design criteria described in Appendix C of this document and the procedure notified in the UK AIP which is used as the source data by DAT providers for creating the commercially coded navigation databases and brings the required degree of data integrity.		
5	REXC 3.1 Use of PANS-OPS IAP design criteria reduces 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 3.1.1 Use of IAP Design Methodology- Aircraft Category Limitation. *An argument for the use of an IAP design approach as explained in more detail at Appendix C could be enhanced by limiting use of the procedure to aircraft within the lower speed categories A, B or H, under additional limiting conditions such as those outlined at Appendix C.* DSAA Response. The proposed IFP design has been designed by a CAA-approved APDO and is for the sole use of a single HEMS helicopter under PPR with suitably qualified crews.
REXC 4. The integrity and accuracy of the navigation aids used for the instrument approach meet the required standards.		
6	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 4.1.1 Integrity of Ground Based Navigation Aids. *The integrity of navigation aids is a measure of the reliance that can be put on the aid in radiating a correct signal. The integrity depends on the ability of the aid to radiate an in-tolerance signal and of the inbuilt monitoring systems to recognise when the signal is out of tolerance and shutdown the faulty system. The integrity of ground-based navigation aids is assessed when the aid is first approved for use, with manufacturers evidence of reliability of all parts of the system being taken into account. The ongoing reliability of those parts of the system will give confidence that the integrity requirements continue to be met. Ground based nav aids will require to be flight inspected for IAP introduction in addition to the IAP validation requirements.* DSAA Response. This argument is not applicable to the proposed IFP design and application; this is application is for a GNSS IFP and is not dependent on ground-based navigation aids.

Goal 1.2- REXC. The risk of a runway excursion is acceptably low.		
Ser	**Safety baseline**	**Candidate alternative safety arguments**
7		REXC 4.1.2 Cross checking of Other Sources of Information by Aircraft Commander. *As a mitigation for rare integrity failures, when systems radiate incorrect information, Pilots will cross check other systems to give confidence that all is as it should be or to alert them that there is a problem with the guidance being used. For example, a pilot making an Instrument Landing System (ILS) approach will check the height of the aircraft at a certain Distance Measuring Equipment (DME) range to be sure the glide path information is correct.* DSAA Response. The proposed IFP design is a GNSS based procedure designed to RNP0.3 standards. The DSAA HEMS helicopter (an AW169) has RAIM capability, and crews will be alerted to any GNSS degradation or failure, at which point the approach will have to be discontinued.
8		REXC 4.1.3 GPS has no internal monitoring system to give timely warning of incorrect guidance being transmitted, instead Integrity monitoring relies on augmentations such as the use of receivers equipped with RAIM. *In lieu of manufacturers evidence to support the approval of an approach using GPS guidance, CAA makes available historical monitoring data to allow the assessment of the integrity in conjunction with the certified reliability of the RAIM algorithm.* DSAA Response. The proposed IFP design is a GNSS based procedure designed to RNP0.3 standards. The DSAA HEMS helicopter (an AW169) has RAIM capability, and crews will be alerted to any GNSS degradation or failure, at which point the approach will have to be discontinued.

Goal 1.2- REXC. The risk of a runway excursion is acceptably low.		
Ser	Safety baseline	Candidate alternative safety arguments
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.		
9	REXC 5.1 The flight crew training and qualification standards which must be met are sufficient to provide for IAPs to be flown safely and accurately, to a position in space from which a safe landing can be made on the runway or a missed approach can be executed safely.	*No alternative safety argument is considered appropriate for this baseline safety solution; however, the design of the IAP should be standard and straight forward.* DSAA Response.

Table 4 - ACP-2022-033 Goal 1.2 REXC

8.2.4. *Identified Risk(s) Goal 1.2 REXC.*

DSAA has identified no further risk(s) associated with Goal 1.2 REXC.

8.2.5. *Risk of a Runway Collision Accident (RCOLL).*

Goal 1.3- RCOLL. The risk of a runway collision accident is acceptably low. No alternative safety argument is considered appropriate for this baseline safety solution; however, the design of the IAP should be standard and straight forward.		
Ser	**Safety Baseline**	**Candidate Alternative Safety Arguments**
1	RCOLL 1. ANO 183 Requirement for approach control is met.	
2	RCOLL 1.1 Approach control provides sequencing of Instrument Approach traffic to reduce the risk of runway collision between participating instrument traffic.	RCOLL 1.1.1 Management of IAP Use. *In the absence of approach control, arguments would need to be made concerning the management of use of the IAP using some form of PPR and slot times with suitable arrangements for dealing with slippages/delays etc.* *It is essential that only one aircraft be allowed to conduct the approach at one time, the interval between approaches is key and should take into consideration early arrival, the approach, possible go-around and commence another approach and/or enough time to divert/leave the area. It will be specific to each unit but is likely to be in the order of 60 - 90 minutes* *It MUST be recognised and accepted that there will inevitably be a significant impact on airfield operations and movements during these slot periods. The slots need to ensure pilots have sufficient time to fly the IAP without being rushed which could lead to an unstable approach or an approach being continued when a MAPt would be the safest option.* *Radio failure must also be considered in terms* of management, procedures and training. *This will need to be documented in the AD 2 section of the UK AIP.* DSAA Response.
RCOLL 2. CAP168 instrument runway standards are met.		
3	RCOLL 2.1 CAP168 compliant signage, runway 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.	RCOLL 2.1.1 Management of IAP. Arguments regarding mitigation of this risk at minor aerodromes, particularly those with a public right of way may need to include the use of enhanced markings and signage particularly as the lower Category aerodromes normally have a lower scale of signage and markings. Arguments could, for example, consider the benefits of AGL in reducing the risk of such incursions. DSAA Response. This argument is not applicable to the proposed IFP design and application.

Ser	Safety Baseline	Candidate Alternative Safety Arguments
Goal 1.3- RCOLL. The risk of a runway collision accident is acceptably low. No alternative safety argument is considered appropriate for this baseline safety solution; however, the design of the IAP should be standard and straight forward.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
RCOLL 3. Aerodrome ATS is provided.		
4	RCOLL 3.1 Provision of an aerodrome ATS reduces risk of runway collision between instrument and visual traffic.	RCOLL 3.1.1 Aerodrome ATS. Where an aerodrome ATS is provided, this baseline mitigation would continue to apply. Similarly, where information is provided by an AFISO an argument could be made that traffic information regarding runway occupancy provided by the AFISO provides mitigation of this risk. DSAA Response. This argument is not applicable to the proposed IFP design and application. An aerodrome ATS is not available at Henstridge Aerodrome; see RCOLL 3.1.2, below.

Goal 1.3- RCOLL. The risk of a runway collision accident is acceptably low. No alternative safety argument is considered appropriate for this baseline safety solution; however, the design of the IAP should be standard and straight forward.

Ser	Safety Baseline	Candidate Alternative Safety Arguments
5	RCOLL 3.1 Provision of an aerodrome ATS reduces risk of runway collision between instrument and visual traffic.	RCOLL 3.1.2 Without Aerodrome ATS. *Where Air Ground Communication Service (AGCS) is provided mitigation of this risk may be limited to the ability of the aircraft commanders to detect conflicting runway traffic visually and could be less effective. A managed system of IAP slot times (PPR) under such circumstances would provide further strength to such arguments. Documented weather minima for circuit operations may be necessary to support such an argument, as could be the ability of the AGCS operator to observe the runway during IAPs.* DSAA Response. [redacted]

Goal 1.3- RCOLL. The risk of a runway collision accident is acceptably low. No alternative safety argument is considered appropriate for this baseline safety solution; however, the design of the IAP should be standard and straight forward.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
6	RCOLL 3.2 Provision of an aerodrome ATS reduces risk of runway collision between instrument traffic and vehicles/towed aircraft etc.	RCOLL 3.2.1 Aerodrome ATS. *Where an aerodrome ATS is provided, this baseline mitigation would continue to apply. Similarly, where information is provided by an AFISO an argument could be made that traffic information regarding runway occupancy provided by the AFISO provides mitigation of this risk. Documented weather minima for circuit operations may be necessary to support such an argument.* DSAA Response. [redacted]

Goal 1.3- RCOLL. The risk of a runway collision accident is acceptably low. No alternative safety argument is considered appropriate for this baseline safety solution; however, the design of the IAP should be standard and straight forward.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
7	RCOLL 3.2 Provision of an aerodrome ATS reduces risk of runway collision between instrument traffic and vehicles/towed aircraft etc.	RCOLL 3.2.2 Without Aerodrome ATS. *Where AGCS is provided, mitigation of this risk maybe limited to the ability of the aircraft commanders to detect conflicting runway traffic visually and could be less effective. A managed system of IAP slot times (PPR) under such circumstances would provide further strength to such arguments. Documented weather minima for circuit operations may be necessary to support such an argument, as could be the ability of the AGCS operator to observe the runway during IAPs.* DSAA Response. [redacted]
8	RCOLL 3.3 Provision of an aerodrome ATS and associated runway inspection regime reduces the risk of runway collision between aircraft and foreign objects including wildlife.	RCOLL 3.3.1 Aerodrome ATS. *Where an aerodrome ATS is provided, this baseline mitigation would continue to apply. Similarly, where information is provided by an AFISO an argument could be made that traffic information regarding runway occupancy provided by the AFISO provides mitigation of this risk.* DSAA Response. This argument is not applicable to the proposed IFP design and application, as there is no aerodrome ATS at Henstridge Aerodrome. [redacted]

Goal 1.3- RCOLL. The risk of a runway collision accident is acceptably low. No alternative safety argument is considered appropriate for this baseline safety solution; however, the design of the IAP should be standard and straight forward.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
9	RCOLL 3.3 Provision of an aerodrome ATS and associated runway inspection regime reduces the risk of runway collision between aircraft and foreign objects including wildlife.	RCOLL 3.3.2 Runway Inspections by AGCS Operator. *In the absence of ATS, safety arguments could be developed around the introduction of runway inspections by other staff such as AGCS operators prior to arrivals by aircraft using the IAP. In addition, the ability of the AGCS operator to observe the runway during IAPs could strength the safety argument.* DSAA Response. This argument is not applicable to the proposed IFP design and application.
10		RCOLL 3.3.3 Aerodrome Security, Types of Operations and Risk Exposure. *Effective arguments against this risk at minor aerodromes would be more difficult to develop and would need to centre upon aerodrome security arrangements, access gates, fencing etc and the vulnerability of the type of aircraft operations envisaged to the consequences of such collisions. Such arguments would be harder to justify in the case of night operations although this may be possible in the case of non-public transport operations using low inertia light aircraft where the effectiveness of landing lights may be argued. In this context risk exposure arguments could be developed relating the exposure of certain types of aircraft operators using the aerodrome in comparison with similar risks (collision with foreign objects, wildlife etc) as, for example, a road user*. DSAA Response. See RCOLL 3.3.2, above.

Goal 1.3- RCOLL. The risk of a runway collision accident is acceptably low. No alternative safety argument is considered appropriate for this baseline safety solution; however, the design of the IAP should be standard and straight forward.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
11	RCOLL 3.3 Provision of an aerodrome ATS and associated runway inspection regime reduces the risk of runway collision between aircraft and foreign objects including wildlife.	RCOLL 3.3.4 Helicopter Operations. *An argument could be made about the lower risk posed to helicopter operations, particularly when a PinS approach is to be used.* DSAA Response. [redacted]
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.		
12	RCOLL 4.1 The flight crew training and qualification standards which must be met are sufficient to provide for aircraft operations in the vicinity of the runway, including the IAPs, to be conducted safely and minimise the risk of collisions with other aircraft, vehicles, personnel, wildlife or other foreign objects.	*No alternative safety argument is considered appropriate for this baseline safety solution; however, the design of the IAP should be standard and straight forward* DSAA Response. [redacted]

Table 5 - ACP-2022-033 Goal 1.3 RCOLL

8.2.6. *Identified Risk(s) Goal 1.3 RCOLL.*

DSAA has identified no further risk(s) associated with Goal 1.3 RCOLL.

8.2.7. *Risk of a Mid-air Collision (MAC).*

Goal 1.4- MAC. The risk of a mid-air collision accident is acceptably Low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
MAC 1. ANO 183 Requirement for Approach Control is met.		
1	MAC 1.1 Approach control reduces the risk of mid-air collision between participating instrument traffic by providing separation.[12]	MAC 1.1.1 Deconfliction of Participants- ATC/AFIS/AGCS *In the absence of Approach Control an argument could be centred around a local formal agreement whereby aircraft intending to use the IAP make initial contact and receive a suitable form of ATS from an adjacent Air Traffic Service Unit (ATSU) which would ensure initial deconfliction between users. Such arrangements would need to be reflected in Manual of ATS (MATS) Pt 2/Manual of AFIS (MAFIS)/Local Instructions and supported by formal agreements such as Letters of Agreement (LOAs) or Memoranda of Understanding (MOU). Modifications to controller qualifications, local training arrangements, local competency schemes, SMS and LOAs shall be considered. Local procedures (associated with LOAs etc.) would need to involve direct communication between the ATSU and the aerodrome and would need to make adequate arrangements for dealing with potential conflicts between aircraft holding, making an approach, following the missed approach procedure and requiring priority handling. Further safety arguments related to surveillance display systems based on PSR/SSR/ADSB/Other may be submitted.* DSAA Response. [redacted]

12 This statement describes the mitigation provided by an approach control service as currently mandated by ANO Art 183 and which is provided without the use of data from surveillance sensors, known as 'Approach Control Procedural'.

Goal 1.4- MAC. The risk of a mid-air collision accident is acceptably Low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
2		MAC 1.1.2 Deconfliction of Participants under Aerodrome ATC- Management of IAP use by Participating Aircraft Commanders. *Where aerodrome ATC is provided, in the absence of an agreement with a local ATSU, an argument could be made that the operation of the IAP could be managed by aircraft commanders using some form of PPR and slot times with suitable arrangements for dealing with slippages/delays etc. such that users of the IAP are deconflicted in time. Such arguments would be strengthened by the provision of traffic information on IAP users by aerodrome ATC which would allow other participants to delay commencement of the IAP in the event of slippages, delays and missed approaches etc. Such arrangements would need to be promulgated on the approach charts and the associated UK AIP entry as a restriction in use.* *There will be a workload associated with "arranging" the approach and "managing" any traffic which may have been displaced, the unit should consider & assess the impact of this workload and include within their safety argument.* *It is essential that only one aircraft be allowed to conduct the approach at one time, the interval between approaches is key and should take into consideration early arrival, the approach, possible go-around and enough time for another approach and/or to divert/leave the area. It will be specific to each unit but likely to be in the order of 60 - 90 mins.* *It MUST be recognised and accepted that there will inevitably be a significant impact on airfield operations and movements during these slot periods.* *Further safety arguments related to surveillance display systems based on PSR/SSR/ADSB/Other may be submitted.* DSAA Response. This argument is not applicable to the proposed IFP design and application.

Goal 1.4- MAC. The risk of a mid-air collision accident is acceptably Low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
3	MAC1.1 (contd)	MAC 1.1.3 Deconfliction of Participants under AFIS- Management of IAP use by Participating Aircraft Commanders. *Where aerodrome FIS is provided, in the absence of an agreement with a local ATSU, an argument could be made that the operation of the IAP could be managed using some form of PPR and slot times with suitable arrangements for dealing with slippages/delays etc. such that only one user of the IAP is permitted at any given time. Such arguments would be strengthened by the provision of traffic information on IAP users by the AFISO which would allow other participants to delay commencement of the IAP in the event of slippages, delays and missed approaches etc. Such arrangements would need to be promulgated on the approach plates and the associated UK AIP entry as a restriction in use.* *There will be a workload associated with "arranging" the approach and "managing" any traffic which may have been displaced, the unit should consider & assess the impact of this workload and include within their safety argument.* *It is essential that only one aircraft be allowed to conduct the approach at one time, the interval between approaches is key and should take into consideration early arrival, the approach, possible go-around and enough time for another approach and/or to divert/leave the area. It will be specific to each unit but likely to be in the order of 60 - 90 mins.* *It MUST be recognised and accepted that there will inevitably be a significant impact on airfield operations and movements during these slot periods.* *Further safety arguments related to surveillance display systems based on PSR/SSR/ADSB/Other may be submitted.* DSAA Response.

Goal 1.4- MAC. The risk of a mid-air collision accident is acceptably Low.		
Ser	**Safety Baseline**	**Candidate Alternative Safety Arguments**
4	MAC1.1 (contd)	MAC 1.1.4 Deconfliction of Participants without ATS- Management of IAP use by Participating Aircraft Commanders. *Where it is proposed to introduce an IAP at an aerodrome where no ATS is provided in the absence of an agreement with a local ATSU, an argument could be made that the operation of the IAP could be managed using some form of PPR and slot times with suitable arrangements for dealing with slippages/delays etc. such that only one user of the IAP is permitted at any given time. Such arguments would be strengthened by the provision of traffic information on IAP users by the AGCS operator which would allow other participants to delay commencement of the IAP in the event of slippages, delays and missed approaches etc. Such arrangements would need to be promulgated on the approach charts and the associated UK AIP entry/other similar document as a restriction in use.* *There will be a workload associated with "arranging" the approach and "managing" any traffic which may have been displaced, the unit should consider & assess the impact of this workload and include within their safety argument.* *It is essential that only one aircraft be allowed to conduct the approach at one time, the interval between approaches is key and should take into consideration early arrival, the approach, possible go-around and enough time to divert/leave the area. It will be specific to each unit but likely to be in the order of 60 - 90 mins.* *It MUST be recognised and accepted that there will inevitably be a significant impact on airfield operations and movements during these slot periods.* *Further safety arguments related to surveillance display systems based on PSR/SSR/ADSB/Other may be submitted.* DSAA Response.

Goal 1.4- MAC. The risk of a mid-air collision accident is acceptably Low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
5		MAC 1.1.5 Deconfliction of Participants General- Management of IAP use by Participating Aircraft Commanders. *The use of mitigation guidance within this annex may contribute significantly to reducing the risk of IMC flight without surveillance/visual reference. Pilots shall however be reminded, via briefing documentation, that flight in IMC introduces inherent risk that is owned by the flight crew/pilot and to an extent, the aerodrome. Where safety arguments are dependent on technology these shall recognise the differing requirements in different classes of airspace for systems such as communications and/or Airborne Collision Avoidance System (ACAS) carriage.* DSAA Response. This argument is not applicable to the proposed IFP design and application.

Goal 1.4- MAC. The risk of a mid-air collision accident is acceptably Low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
6	MAC 1.2 Where the nature and level of traffic requires it, provision of surveillance data allows approach controllers to further reduce the risk of midair collision, both between participating traffic and against non-participating traffic.	MAC 1.2.1 Non-Participating Aircraft Conflict Risk- ATSU- Aerodrome ATC. *In the absence of an Approach Control service using surveillance, an argument could be centred around a local agreement whereby aircraft intending to use the IAP make initial contact and receive a suitable form of ATS (such as an UK FIS Deconfliction Service) from an adjacent ATSU. However, unless this extended to a formal agreement for the adjacent unit to provide an Approach Control service with all the associated requirements for unit procedures, training, and regulation pertinent to such a service, such an arrangement would not include the sequencing and integration of multiple aircraft using the instrument approach. However, traffic information and/or deconfliction advice appropriate to the level of UK FIS could be provided on conflicting aircraft. This would therefore extend the argument beyond initial integration of users and provide increased mitigation against conflict with detected non-participating traffic. Local procedures may need to involve direct communication between the ATSU and the aerodrome as identified through the SMS process of the adjacent ATSU. The relative merits of such arguments would be dependent upon the extent of surveillance coverage provided in the vicinity of the aerodrome at the altitudes in question. Aerodromes located in environs that cannot satisfactorily demonstrate their remoteness shall strongly consider the provision of surveillance within their safety arguments. Further safety arguments related to surveillance display systems based on PSR/SSR/ADSB/Other may be submitted.* DSAA Response. [redacted]

Goal 1.4- MAC. The risk of a mid-air collision accident is acceptably Low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
7		MAC 1.2.2 Non-Participating Aircraft Conflict Risk - ATSU - AFIS. *In the absence of an Approach Control service using surveillance, an argument could be centred around a local agreement whereby aircraft intending to use the IAP make initial contact and receive a suitable form of ATS (such as and UK FIS Deconfliction Service) from an adjacent ATSU. However, unless this extended to a formal agreement for the adjacent unit to provide an Approach Control service with all the associated requirements for unit procedures, training, and regulation pertinent to such a service. Such an arrangement would not include the sequencing and integration of multiple aircraft using the instrument approach. However, traffic information and/or deconfliction advice appropriate to the level of UK FIS could be provided on conflicting aircraft. This would therefore extend the argument beyond initial integration between users and provide increased mitigation against conflict with detected non-participating traffic. Local procedures may need to involve direct communication between the ATSU and the aerodrome as identified through the SMS process of the adjacent ATSU. The relative merits of such arguments would be dependent upon the extent of surveillance coverage provided in the vicinity of the aerodrome at the altitudes in question. Aerodromes located in environs that cannot satisfactorily demonstrate their remoteness shall strongly consider the provision of surveillance within their safety arguments. Further safety arguments related to surveillance display systems based on PSR/SSR/ADSB/Other may be submitted.* DSAA Response. See MAC 1.2.1.

Goal 1.4- MAC. The risk of a mid-air collision accident is acceptably Low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
8	MAC1.2 (contd)	MAC 1.2.3 Non-Participating Aircraft Conflict Risk - without ATS. *In the absence of an approach control service using surveillance, an argument could be centred around a local agreement whereby aircraft intending to use the IAP make initial contact and receive a suitable form of ATS (such as an UK FIS Deconfliction Service) from an adjacent ATSU. However, unless this extended to a formal agreement for the adjacent unit to provide an Approach Control service with all the associated requirements for unit procedures, training, and regulation pertinent to such a service, such an arrangement would not include the sequencing and integration of multiple aircraft using the instrument approach. However, traffic information and/or deconfliction advice appropriate to the level of UK-FIS could be provided on conflicting aircraft. This would therefore extend the argument beyond initial integration of users and provide increased mitigation against conflict with detected non-participating traffic. Local procedures may need to involve direct communication between the ATSU and the aerodrome as identified through the SMS process of the adjacent ATSU. The relative merits of such arguments would be dependent upon the extent of surveillance coverage provided in the vicinity of the aerodrome at the altitudes in question. Aerodromes located in environs that cannot satisfactorily demonstrate their remoteness shall strongly consider the provision of surveillance within their safety arguments. Further safety arguments related to surveillance display systems based on PSR/SSR/ADSB/Other may be submitted.* DSAA Response. See MAC 1.2.1. Additionally, see Section 5 ("Methodology" and "Approach") and Section 7.1 (Goal 1.4 MAC "Analysis"), above. [redacted] As such, this satisfies Goal 1.4 MAC, ***"The risk of a mid-air collision accident is acceptably Low".***

Goal 1.4- MAC. The risk of a mid-air collision accident is acceptably Low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
MAC 2. An aerodrome ATS is provided.		
9	MAC 2.1 Aerodrome ATC (ADI) reduces the risk of collision between Instrument Traffic and other known traffic in the aerodrome environment - i.e. by sequencing visual circuit traffic, and providing traffic information on both transiting traffic and infringing traffic which is detected visually or by other means.	MAC 2.1.1 Managed Use of IAP and Benign Traffic Environment- ATSU- Aerodrome ATC *Where traffic levels are low and the IAP is to be used infrequently, it may be possible to make an argument that an aerodrome ATCO (who would need to hold an Aerodrome Control Instrument (ADI) rating in order to comply with the requirements of Regulation (EC) 2015/340 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018) could be used to issue deconfliction instructions to visual traffic as required in order to provide spacing for traffic using the IAP.* DSAA Response. This argument is not applicable to the proposed IFP design and application.

10	MAC2.1 (contd)	MAC 2.1.2 Managed Use of IAP and Benign Traffic Environment- ATSU- AFIS. *Where ATS is provided by an AFISO it is not possible for mandatory instructions to be issued from the ground which would provide spacing between visual and instrument traffic. An argument would therefore need to be made around managed use of some form of PPR/slot times as a promulgated condition of use and a benign airspace environment in which no visual circuit traffic is simultaneously present.* *Arguments, without mitigation, based upon an assertion that the risk of conflict with non-participating traffic is very low are only likely to be accepted at aerodromes in remote areas of the UK.* *At other locations it would be necessary to demonstrate that the aerodrome operator has procedures in place which would provide an effective means of deconflicting operations at the aerodrome between aircraft using the aerodrome traffic circuit under VFR and those operating under IFR using the IAP, including the associated missed approach procedure. This would require the aerodrome operator to have an effective process in place to close the aerodrome traffic circuit by instructing the AFISO/AGCS Operator to include within the aerodrome information which is broadcast to aircraft, information that the aerodrome traffic circuit was closed whenever the IAP was in use and vice versa. Such arguments would be strengthened by the associated use of other airspace design measures such as the use of an ATZ and Radio Mandatory Zone (RMZ) or Transponder Mandatory Zone (TMZ) (as indicated below). It is, however, considered very unlikely that a cogent safety argument could be made for an IAP to be established which would introduce instrument traffic at a busy aerodrome with an active visual traffic pattern without provision of Air Traffic Control.* *It is essential that only one aircraft be allowed to conduct the approach at one time, the interval between approaches is key and should take into consideration early arrival, the approach, possible go-around and enough time for another approach and/or to divert/leave the area. It will be specific to each unit but likely to be in the order of 60 - 90 mins.* *It MUST be recognised and accepted that there will inevitably be a significant impact on airfield operations and movements during these slot periods.* DSAA Response. This argument is not applicable to the proposed IFP design and application.

Goal 1.4- MAC. The risk of a mid-air collision accident is acceptably Low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
11	MAC2.1 (contd)	MAC 2.1.3 Managed Use of IAP and Benign Traffic Environment Without ATS. *AGCS Operators are not permitted to pass mandatory instructions which would provide spacing between visual and instrument traffic. An argument would therefore need to be made around managed use of an IAP using some form of PPR/slot times as a promulgated condition of use and a benign airspace environment in which no visual circuit traffic is simultaneously present.* *Arguments, without mitigation, based upon an assertion that the risk of conflict with non-participating traffic is very low are only likely to be accepted at aerodromes in remote areas of the UK.* *At other locations it would be necessary to demonstrate that the aerodrome operator has procedures in place which would provide an effective means of deconflicting operations at the aerodrome between aircraft using the aerodrome traffic circuit under VFR and those operating under IFR using the IAP, including the associated missed approach procedure. This would require the aerodrome operator to have an effective process in place to close the aerodrome traffic circuit by instructing the AGCS Operators to include within the aerodrome information which is broadcast to aircraft, information that the aerodrome traffic circuit was closed whenever the IAP was in use and vice versa. Such arguments would be strengthened by the associated use of other airspace design measures such as the use of ATZ and RMZ/TMZ (as indicated below).* *It is essential that only one aircraft be allowed to conduct the approach at one time, the interval between approaches is key and should take into consideration early arrival, the approach, possible go-around and enough time for another approach and/or to divert/leave the area. It will be specific to each unit but likely to be in the order of 60 - 90 mins.*

Goal 1.4- MAC. The risk of a mid-air collision accident is acceptably Low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
12		MAC 2.1.3 Managed Use of IAP and Benign Traffic Environment without ATS (Contd). *It <u>MUST</u> be recognised and accepted that there will inevitably be a significant impact on airfield operations and movements during these slot periods.* *Further safety arguments related to surveillance display systems based on PSR/SSR/ADSB/Other may be submitted. The ability of the AGCS operator to observe the approach during IAPs is essential.* DSAA Response. [redacted]
MAC 3. Airspace design measures are in place in the vicinity of the aerodrome.		
13	MAC 3.1 Where the nature and level of traffic requires it, Controlled Airspace (CAS) or other airspace management processes such as TMZ further reduce the risk of collision between instrument traffic and nonparticipating visual traffic by providing a known, controlled local air traffic environment which extends further beyond the ATZ.	MAC 3.1.1 Presence of existing CAS and suitable ATS. *An argument could be made in support of the introduction of such an IAP where the aerodrome location lies beneath or immediately adjacent to existing CAS and an effective working arrangement can be established with the controlling unit for the provision of a suitable form of ATS which whilst not constituting a dedicated 'Approach Control Service' would nonetheless, when properly established through a suitable vehicle such as an MoU, serve to reduce the risk of collision and airspace infringement. Where such proximity to CAS exists and formal arrangements do not exist, a safety argument shall be necessary that demonstrate that the risk of airspace infringement is sufficiently managed, and procedures are agreed with the airspace owner should an infringement occur.* *Attention and mitigation should be afforded to IAP designs that overlay or are proximate to Visual Reference Points (VRPs). Further safety arguments related to surveillance display systems based on PSR/SSR/ADSB/Other may be submitted.* DSAA Response. This argument is not applicable to the proposed IFP design and application.

Goal 1.4- MAC. The risk of a mid-air collision accident is acceptably Low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
14		MAC 3.1.2 Use of TMZ/RMZ. *An argument could be made for the creation of TMZ and/or RMZ in support of such an IAP and which could be used to provide a known traffic environment. The process for establishing an airspace structure such as a TMZ or RMZ is detailed in CAP1616. Sponsors considering their use should contact CAA Airspace Regulation[13] for additional advice and guidance. There could be no guarantee that such an application would be successful.* DSAA Response.
MAC 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.		
15	MAC 4.1 Marking the Aerodrome and instrument approach paths (feathered arrows) on aviation charts assists pilots of nonparticipating aircraft in avoiding these areas, thereby reducing the risk of mid-air collisions with non-participating traffic.	MAC 4.1.1 Marking of IAP Locations on Aeronautical Charts. *In the same way as some safety mitigation is provided for existing IAPs through making other airspace users aware of the presence of instrument approach paths so they can be avoided, such action could also be used to strengthen arguments for the introduction of a new IAP under the policy outlined in this document. The safety benefit of this measure would need to be argued in the context of the parallel need to reduce the associated risk of map clutter. A threshold value would probably need to be established, centred around anticipated numbers of movements, which would trigger the creation of appropriate symbology.* DSAA Response.

13. airspace.policy@caa.co.uk

Goal 1.4- MAC. The risk of a mid-air collision accident is acceptably Low.		
Ser	**Safety Baseline**	**Candidate Alternative Safety Arguments**
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.		
16	MAC 5.1 During 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.	MAC 5.1.1 *See and avoid is only a mitigation where those parts of the IAP are flown in VMC. This mitigation can only be deployed by the flight crew/pilot and cannot be assumed by the sponsor, but references to flight in VMC and use of the see and avoid principles should be included in flight briefing documentation.* DSAA Response.

Table 6 - ACP-2022-033 Goal 1.4 MAC

8.2.8. *Identified Risk(s) Goal 1.4 MAC.*

DSAA has identified and assessed the following risks associated with Goal 1.4 MAC:

Goal 1.4- MAC Risks						
Ser	Primary Risk Area	Title		Description		Risk Owner
1	Operational	Absence of approach control service.		There is a risk of mid-air collision between participating instrument traffic due to the absence of an approach control service providing separation.		DSAA
	Pre-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		L	1	MH	4	4
	Mitigation Action	Mitigation Action Plan/Activity				Mitigation Action Owner
	Treat	[redacted]				DSAA
	Post-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		L	1	L	1	1

Goal 1.4- MAC Risks						
2	Primary Risk Area	Title		Description		Risk Owner
	Operational	Lack of provision of surveillance-based ATS at Henstridge.		There could be an increased risk of mid-air collision, both between participating traffic and against non-participating traffic, due to the lack of provision of surveillance-based air traffic services at Henstridge.		DSAA
	Pre-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		M	3	H	5	15
	Mitigation Action	Mitigation Action Plan/Activity				Mitigation Action Owner
	Treat	[redacted]				DSAA
	Post-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		ML	2	M	3	6

Goal 1.4- MAC Risks						
3	Primary Risk Area	Title		Description		Risk Owner
	Operational	Absence of an ADI.		There is a risk that the absence of an ADI increases the risk of mid-air collision between instrument traffic and other known traffic in the aerodrome environment at Henstridge.		DSAA
	Pre-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		ML	2	MH	4	8
	Mitigation Action	Mitigation Action Plan/Activity				Mitigation Action Owner
	Treat	[redacted]				DSAA
	Post-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		L	1	L	1	1

Goal 1.4- MAC Risks						
4	Primary Risk Area	Title		Description		Risk Owner
	Operational	Map/Chart clutter.		There is a risk that associated instrument procedure paths (i.e. feathered arrows) could add undue "map clutter" on aeronautical charts, thereby reducing the ability of non-participating aircraft avoiding these areas.		DSAA
	Pre-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		L	1	L	1	1
	Mitigation Action	Mitigation Action Plan/Activity				Mitigation Action Owner
	Tolerate/Monitor					DSAA
	Post-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		L	1	L	1	1

Goal 1.4- MAC Risks						
5	Primary Risk Area	Title		Description		Risk Owner
	Operational	Unredacted plate in AIP, *vice* chart "approach feather" only.		There is a risk that an unredacted IFP plate could promote unauthorised use of the procedure by non-participating aircraft, which, in turn, could increase the risk of MAC between participating and non-participating aircraft. Whilst cognisant of CAP2520, Paras 5.9 and 6.3, DSAA maintains that there is a risk that a publicised, well defined (albeit redacted) IFP could encourage unauthorised use of the IFP, in turn, increasing the risk of MAC between participating and non-participating aircraft.		DSAA/CAA
	Pre-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		M	3	H	5	15
	Mitigation Action	Mitigation Action Plan/Activity				Mitigation Action Owner
	Transfer	- DSAA's preference is to promulgate a VFR chart "approach feather" only, and not a redacted IFP. Current CAA guidance, however, favours the latter, *vice* the former course of action. Accordingly, DSAA would welcome sight of the CAA's corresponding risk assessment for their preferred course of action.				CAA
	Post-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		TBC	*TBC*	*TBC*	*TBC*	*TBC*

Table 7 - ACP-2022-033 Identified Risk(s) Goal 1.4 MAC.

8.2.9. *Risk of a Loss of Control (LOC).*

Goal 1.5- LOC. The risk of a loss of control accident is acceptably low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
LOC 1. ANO 183 Requirement for Approach Control is met.		
1	LOC 1.1 Approach control reduces the risk of a loss of control accident arising from Wake Turbulence by sequencing participating instrument approach traffic.	LOC 1.1.1 Managed use of IAP. *An argument could be made here on the basis of the use of a form of PPR/slot-time system to mitigate this risk in the absence of an Approach Control service. Such arguments would be strengthened where use of the approach is limited to certain categories of aircraft (typically, A, B and H) which would also reduce the risk from wake turbulence encounters. This mitigation combined with a PPR/slot time system would also provide mitigation against this risk where no ATS is provided.* DSAA Response.
LOC 2. An aerodrome ATS is provided.		
2	LOC 2.1 Aerodrome ATC reduces the risk of a loss of control accident arising from Wake Turbulence by sequencing and issuing warnings to visual landing traffic and participating instrument approach traffic.	LOC 2.1.1 Managed use of IAP and ATC Instructions. *At aerodromes where ATC is provided, arguments based on the use of the PPR/slot-time system to mitigate the wake vortex turbulence risk and MATS Part 1 & 2 & CAP413[14] procedures shall be considered.*
3	LOC2.1 (contd)	LOC 2.1.2 Managed use of IAP and AFISO- *At aerodromes where ATS is provided, arguments based on the use of a form of PPR/slot-time system to mitigate the wake vortex turbulence risk & CAP797[15] & CAP413 together with closure of the aerodrome traffic circuit shall be considered.*
4		LOC 2.1.3 Managed use of IAP without ATS- *At aerodromes where AGCS is provided, arguments based on the use of a form of PPR/slot-time system to mitigate the wake vortex turbulence risk together with closure of the aerodrome traffic circuit shall be considered.*

14. CAP413 Radiotelephony Manual.
15. CAP797 Flight Information Service Officer Manual.

Goal 1.5- LOC. The risk of a loss of control accident is acceptably low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
ACP-2022-033 Response to LOC 2.1.		
	LOC2.1.1	This argument is not applicable to the proposed IFP design and application. Henstridge Aerodrome has no ATS. See LOC2.1.3, below.
	LOC2.1.2	This argument is not applicable to the proposed IFP design and application. Henstridge Aerodrome has no ATS. See LOC2.1.3, below.
	LOC2.1.3	
LOC 3. The crew members of aircraft participating in the IAP are suitably qualified and proficient to fly the IAP safely and under control.		
5	LOC 3.1 The flight crew training and qualification standards which must be met are sufficient to provide for IAPs to be flown safely and accurately, with appropriate training/awareness of wake turbulence considerations.	*No alternative safety argument is considered appropriate for this baseline safety solution; however, the design of the IAP should be standard and straightforward.*
ACP-2022-033 Response to LOC 3.1.		

Table 8 - ACP-2022-033 Goal 1.5 LOC

8.2.10. *Identified Risk(s) Goal 1.5 LOC.*

DSAA has identified and assessed the following risks associated with Goal 1.5 LOC:

Goal 1.5- LOC Risks						
Ser	Primary Risk Area	Title		Description		Risk Owner
1	Operational	Wake turbulence in absence of approach control.		There is a risk that the absence of approach control increases a LOC accident as result of wake turbulence resulting from a lack of sequencing of instrument approach traffic.		DSAA
	Pre-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		L	1	L	1	1
	Mitigation Action	Mitigation Action Plan/Activity				Mitigation Action Owner
	Treat					DSAA
	Post-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		L	1	L	1	1
2	Primary Risk Area	Title		Description		Risk Owner
	Operational	Flight crews' wake turbulence training and awareness.		There is a risk of LOC if the flight crew training and qualification standards which must be met are not sufficient to provide for IAPs to be flown safely and accurately, with appropriate training/awareness of wake turbulence considerations.		DSAA
	Pre-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		L	1	L	1	1
	Mitigation Action	Mitigation Action Plan/Activity				Mitigation Action Owner
	Monitor					DSAA
	Post-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		L	1	L	1	1

Table 9 - ACP-2022-033 Identified Risk(s) Goal 1.5 LOC.

8.2.11. *Risk of an Accident During New IFP Introduction to Service (INTRO).*

Goal 1.6- INTRO. The risk of an accident during the introduction to service of a new IAP at this aerodrome is acceptably low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
1	INTRO1	
2	An argument that the introduction to service of the IAP together with all the required safety mitigations and notifications to airspace users and other stakeholders will be conducted in a structured and carefully managed way. Such arguments should be suitably comprehensive, and include as a minimum, arrangements for the safe introduction of the IAP in the context of training, testing and validation of: - The people who will be involved or affected by the introduction of the IAP, their training and any associated communication activities for awareness purposes. - The procedures which are to be followed by aerodrome personnel or participating flight crews and any associated organisational arrangements which need to be put in place before the IAP can be put into use. - Equipment which will be associated with the operation of the IAP, its suitability, fitness for purpose and availability. - Unit procedures should also be included for a post-implementation safety review of the IAP and its associated safety arguments. The expectation is that the aerodrome operator's SMS will be fully applied, with records being retained and made available for review as required by the CAA.	
ACP-2022-033 Response to INTRO1.		

Table 10 - ACP-2022-033 Goal 1.6 INTRO.

8.2.12. *Identified Risk(s) Goal 1.6 INTRO.*

DSAA has identified and assessed the following risks associated with Goal 1.6 INTRO:

<table>
<tr><th>Ser</th><th colspan="6">Goal 1.6- INTRO Risks</th></tr>
<tr><td rowspan="7">1</td><td>Primary Risk Area</td><td colspan="2">Title</td><td colspan="2">Description</td><td>Risk Owner</td></tr>
<tr><td>Operational</td><td colspan="2">Unredacted plate in AIP, vice chart approach feather only.</td><td colspan="2">There is a risk that an unredacted IFP plate could promote unauthorised use of the procedure by non-participating aircraft, which, in turn, could increase the risk of MAC between participating and non-participating aircraft.
Whilst cognisant of CAP2520, Paras 5.9 and 6.3, DSAA maintains that there is a risk that a publicised, well defined (albeit redacted) IFP could encourage unauthorised use of the IFP, in turn, increasing the risk of MAC between participating and non-participating aircraft.</td><td>DSAA/CAA</td></tr>
<tr><td rowspan="2">Pre-mitigation Action Score</td><td>Likelihood</td><td>Score</td><td>Impact</td><td>Score</td><td>Overall Score</td></tr>
<tr><td>M</td><td>3</td><td>H</td><td>5</td><td>15</td></tr>
<tr><td>Mitigation Action</td><td colspan="4">Mitigation Action Plan/Activity</td><td>Mitigation Action Owner</td></tr>
<tr><td>Transfer</td><td colspan="4">- DSAA's preference is to promulgate a VFR chart “approach feather” only, and not a redacted IFP. Current CAA guidance, however, favours the latter, vice the former course of action.
Accordingly, DSAA would welcome sight of the CAA's corresponding risk assessment for their preferred course of action.</td><td>CAA</td></tr>
<tr><td>Post-mitigation Action Score</td><td>Likelihood
TBC</td><td>Score
TBC</td><td>Impact
TBC</td><td>Score
TBC</td><td>Overall Score
TBC</td></tr>
</table>

Table 11 - ACP-2022-033 Identified Risk(s) Goal 1.6 INTRO.

8.2.13. *Risk of an Accident During IFP Through-life Operation (THRULIFE).*

Goal 1.7- THRULIFE. The risk of an accident during the through-life operation of an IAP at this aerodrome is acceptably low.		
Ser	Safety Baseline	Candidate Alternative Safety Arguments
1	THRULIFE 1	
2	*An argument that the aerodrome operator's SMS will be used to ensure that safety monitoring and feedback regarding the operation of the IAP will be obtained and used to monitor the continued validity of the alternative safety arguments and provide a trigger for additional safety management activity if new hazards are discovered or the level of risk is deemed to have changed.* *All incidents relating to the IAP regardless of whether an MOR is raised or not will be recorded.* *An IAP safeguarding and periodic reviews to be completed by an APDO will be actioned to ensure the continued safety of the AIP published in the IAP (CAP 785) and aerodrome safeguarding periodically conducted.* *The expectation is that the aerodrome operator's SMS will be fully applied, with records being retained and made available for review as required by the CAA, which may include ongoing oversight.*	
ACP-2022-033 Response to THRULIFE1.		

Table 12 - ACP-2022-033 Goal 1.7 THRULIFE.

8.2.14. *Identified Risk(s) Goal 1.7 THRULIFE.*

Goal 1.7- THRULIFE Risks						
1	Primary Risk Area	Title		Description		Risk Owner
	Operational	Unredacted plate in AIP, *vice* chart approach feather only.		There is a risk that an unredacted IFP plate could promote unauthorised use of the procedure by non-participating aircraft, which, in turn, could increase the risk of MAC between participating and non-participating aircraft. Whilst cognisant of CAP2520, Paras 5.9 and 6.3, DSAA maintains that there is a risk that a publicised, well defined (albeit redacted) IFP could encourage unauthorised use of the IFP, in turn, increasing the risk of MAC between participating and non-participating aircraft.		DSAA/CAA
	Pre-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		M	3	H	5	15
	Mitigation Action	Mitigation Action Plan/Activity				Mitigation Action Owner
	Transfer	- DSAA's preference is to promulgate a VFR chart "approach feather" only, and not a redacted IFP. Current CAA guidance, however, favours the latter, *vice* the former course of action. Accordingly, DSAA would welcome sight of the CAA's corresponding risk assessment for their preferred course of action.				CAA
	Post-mitigation Action Score	Likelihood	Score	Impact	Score	Overall Score
		TBC	*TBC*	*TBC*	*TBC*	*TBC*

Table 13 - ACP-2022-033 Identified Risk(s) Goal 1.7 THRULIFE

9. SUMMARY

DSAA seeks to introduce GNSS IFPs to enhance its HEMS operational capability at Henstridge Aerodrome during DSAA's existing operating hours and, in turn, its delivery of critical patient care. DSAA's operating base, Henstridge, is a small unlicenced aerodrome, at which the extant operation is "day VFR only" and non-DSAA aerodrome movements are predominantly GA.

[redacted]

Thus, DSAA contends that through its data and traffic analyses, assessment of the appropriate risk areas and development of the corresponding mitigations solutions, the risks associated with the implementation, introduction and through-life operation of the proposed IFP design to support HEMS operations at Henstridge Aerodrome are acceptable and- demonstrably- *as low as reasonably practicable* (ALARP), given the generally benign aviation environment around Henstridge and the limited times the procedure will be used.

ATTACHMENT

1. ACP-2022-033 ATM Safety Questionnaire (not ACP Portal version).

REFERENCES AND BIBLIOGRAPHY

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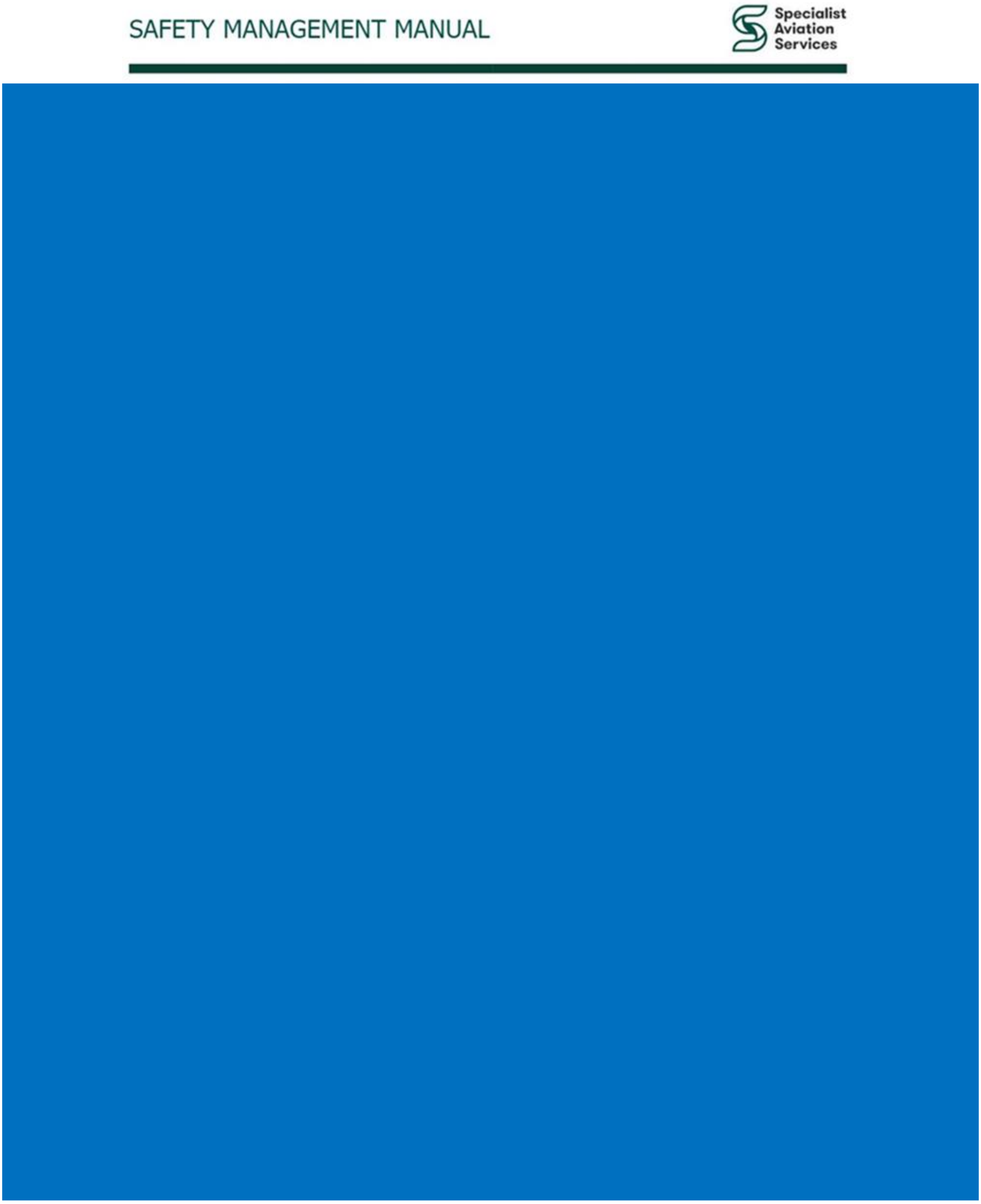
CAA (November 2023), "*CAP1616h, Guidance on Airspace Change Process for Level 3 and Pre-Scaled Airspace Change Proposals*" (online).

[redacted]

Annex C to
ACP_2022_033_Safety_Case_V2_0_FINAL
Dated 9 May 24

EXTRACTS FROM SAS (GAMA AVIATION) SAFETY MANAGEMENT MANUAL (SMM)

1. SAS (Gama Aviation) SMM Extract- Management of Change.



2. SAS SMM Extract- Management of Change Standard Operating Procedure (SOP).

Management of Change

Specialist Aviation Services

3. SAS SMM Extract- SAS Assessment/Tolerability Matrix.

RISK ASSESSMENT FORM

Specialist Aviation Services

Risk Matrix

SMM 2.4.F1 Date: 09/05/2024 V7 1 of 2

RISK ASSESSMENT FORM

SMM 2.4.F1 Date: 09/05/2024 V7 2 of 2

Figure 6 - SAS (Gama Aviation) Risk Assessment/Tolerability Matrix

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