ACP-2022-033
PROVISION OF GNSS IAP TO HENSTRIDGE
TO SUPPORT
DORSET & SOMERSET AIR AMBULANCE
CAP1616 (PART 1C) STAGE 2 SUBMISSION

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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. The table below, contains the list of abbreviations, acronyms and terms contained within this document.

Term/Abbreviation	Meaning
ACP	Airspace Change Proposal.
ADV	Aerodrome Control Visual
AFISO	Aerodrome Flight Information Service Officer
AGCS	Air-Ground Communication Service
ADS-B	Automatic Dependent Surveillance-Broadcast. A surveillance technology and form of Electronic Conspicuity in which an aircraft determines its position via satellite navigation or other sensors and periodically broadcasts it, enabling it to be tracked.
AMSL	Above Mean Sea Level.
ANSP	Air Navigation Service Provider.
AOI	Area of Interest
AOR	Area of Responsibility
APDO	(UK CAA-) Approved Procedure Design Organisation
ATC/M	Air Traffic Control/Management.
(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.
CAP2520	UK CAA policy and guidance for the implementation of helicopter point in space operations in the UK. See References.
FATO	Final Approach and Take Off
FIR	Flight Information Region. An airspace of defined dimensions, extending from the surface to a specified upper limit, in which flight information and alerting services are provided.
FL	Flight Level.
GA	General Aviation
IFP	Instrument flight procedure.
IFR	Instrument Flight Rules, i.e. the conduct of the flight without visual references and the pilot is utilising cockpit instrumentation.
km	Kilometre
LARS	Lower Airspace Radar Service
LOA(s)	Letter(s) of Agreement
MOU(s)	Memorandum (Memoranda) of Understanding.
nm	Nautical mile(s).
PinS	Point in Space. IFP designed for helicopter.
RNAS	Royal Naval Air Station
RW	Runway
TLOF	Touch Down and Lift Off
VFR	Visual Flight Rules adhered to by flights outside controlled airspace, where the conduct of the flight is with visual reference to - *inter alia* - terrain and other airspace users.

Table 1 - Glossary of Terms and Abbreviations

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1. INTRODUCTION.

Helicopter Emergency Medical Services (HEMS) are the mainstay of air ambulance operations in the UK and allow specialist medical teams to be despatched rapidly to an incident, or critically ill patient, facilitating the delivery of essential prehospital treatment. Delays in this critical medical intervention before a patient's arrival at hospital could adversely impact patient survival and post-recovery quality of life.

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 airfield can only be undertaken in visual meteorological conditions (VMC).

DSAA, therefore, seeks to introduce Global Navigation Satellite System (GNSS) instrument flight procedures (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.

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

1.1. 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.

> "[…] 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 Visual Flight Rules (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 instrument meteorological conditions (IMC) could put patients' lives at risk.
>
> A major benefit of introducing a Global Navigation Satellite System (GNSS) instrument approach procedure (IAP) is that it will 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. 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 IAPs. […]"

1.2. DSAA Operational Capability Enhancement.

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.[1] Currently, DSAA departures from and recoveries to Henstridge can only be undertaken under VFR in VMC.

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. PURPOSE OF ACP-2022-33.

The purpose of this ACP is to implement GNSS IFPs to enhance DSAA HEMS operational capability at Henstridge; such operational procedures, designed specifically for helicopters, are known as Point-in-Space (PinS) procedures.

The operational feasibility of and safety case for PinS have been proven, and assured PinS procedures supporting the HEMS community have been implemented successfully throughout mainland Europe. SAS, therefore, seeks to introduce PinS procedures to support DSAA HEMS operations at Henstridge, thereby enhancing HEMS capability and increasing the availability of critical care in reduced weather minima.

This capability enhancement is also consistent with the DSAA Charity's ambition to transition the HEMS operation at Henstridge to H24 in the future.

3. CAP1616 PART 1C PROCESS REQUIREMENTS.

CAP1616 states that the introduction of RNP instrument approach procedures (IAPs) without an approach control (WAC) service will be progressed as a scaled Level 1 Airspace Change Proposal.[2]

At Stage 1 of the process, DSAA: completed the corresponding DAP1916 (Statement of Need); attended the required Initial Assessment Meeting with the CAA, to confirm the process steps and requirements, including assessment of the proposed ACP timeline; and published the agreed Initial Assessment Meeting minutes on the ACP-2022-33 Portal.[3] At the Initial Assessment Meeting, the CAA determined that GNSS PinS ACPs (and, therefore, ACP-2022-033) would be subject to the requirements of CAP1616, Part 1c.

Stage 2 of the CAP1616, Part 1c process "ensures [that] the change sponsor assesses all appropriate options that address the Statement of Need".[4]

1. DSAA data for the period Apr 22 to Mar 23, inclusive.
2. CAA (2021), "*CAP1616 [...]*", Page 97 (online), accessed on 31 Jul 23.
3. ACP-2022-033 Portal (online), accessed on Fri 28 Jul 23.
4. CAA (2021), Page 98, (online), accessed on 31 Jul 23.

3.1. CAP1616 Part1c Stage 2 Outputs.

As defined in CAP1616[5], the outputs from Stage 2 are:

- An assessment of each proposed option (a single option is acceptable with supporting justification) with information as to why it is being considered as a potential option. This information should include how the options meet the design principles as well as qualitative statements on the:
  - Impact on safety (guidance in para E50 of CAP 1616).
  - Environmental impact.
  - Economic impact (Relevant parts of Table E2 of CAP 1616).
  - Impacts (positive and negative) on airspace users.
- Confirmation that the ATM Safety Questionnaire has been reviewed.
- Feedback from APDO on design options that are to be included in engagement materials (the design options do not need to have been formally approved at this stage but should be able to provide stakeholders with enough information on the likely track and altitude to enable meaningful feedback).
- A description of any options that have been considered but are not being proposed and the reasons why they are not being proposed.
- Additional environmental assessment, if required.
- Determination from the CAA that the proposal can move to Stage 3

4. CAP2520.

In addition to CAP1616, DSAA is cognisant of CAP2520, which "[…] is applicable to helicopter operators wishing to apply for PinS procedures, as well as airspace consultants and, [*sic*] UK CAA-Approved Procedure Design Organisations (APDOs)".[6]

Given the nature of PinS procedures, the potential complexity of their implementation, their safety implications and the UK context, the CAA has developed a specific PinS implementation strategy. This strategy sets out the CAA's vision for PinS and is fully aligned with the UK Airspace Modernisation Strategy.

The DSAA design option is cognisant of CAP2520 and the CAA PinS strategy.

5. *id*, Page 100 (online), accessed on 21 Aug 23.
6. CAA (2023), "*CAP2520 […]*", Page 11 (online), accessed on 21 Aug 23.

5. LOCATION, AIRSPACE, TASKING AND OPERATIONS CONTEXT

5.1. Henstridge Location and Airspace Context.

Henstridge is a small, unlicenced, general aviation (GA) aerodrome located in East Somerset, between RNAS Yeovilton and Compton Abbas aerodrome, indicated by the red circle in Figure 1, below. Henstridge has no ATZ, resides within Class G airspace and has one non-instrument runway (RW06/24). The flying activity in the vicinity of Henstridge is military and GA.

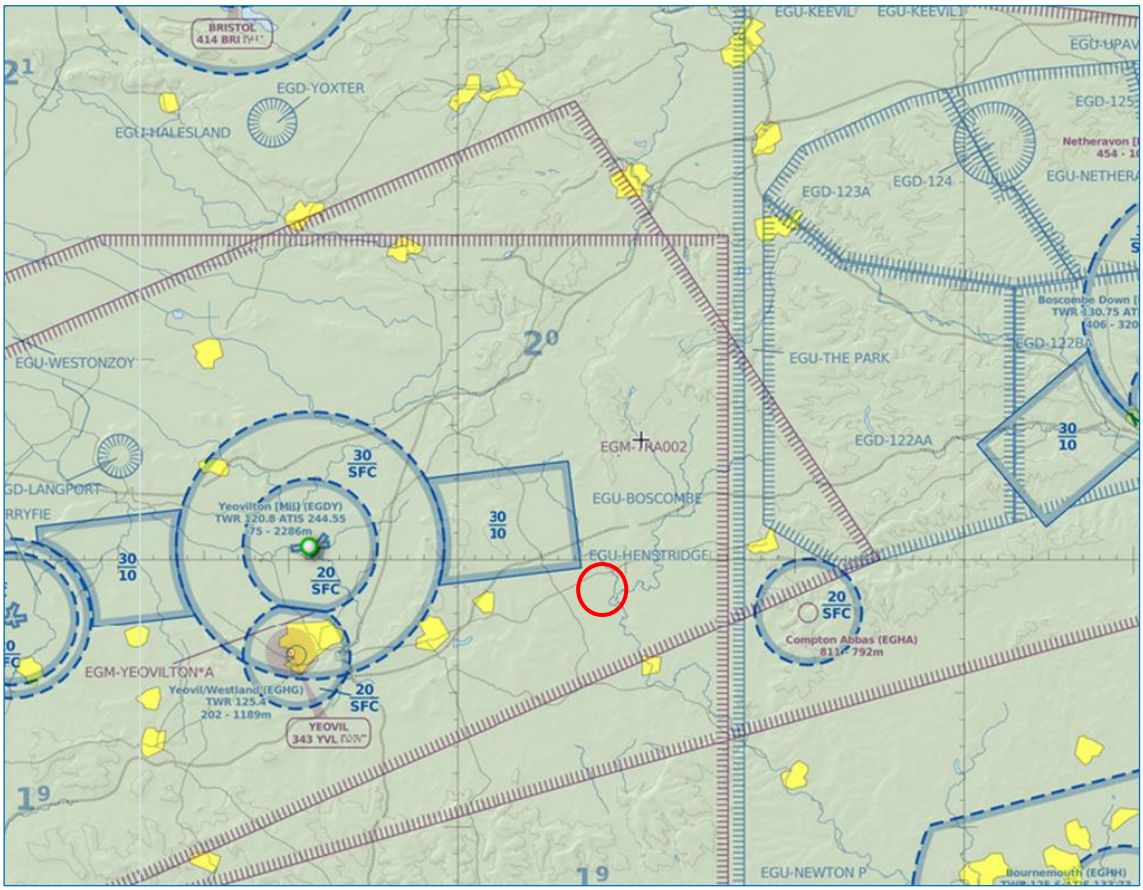

Image Source: SkyVector

Figure 1 - Henstridge Aerodrome Airspace Context

Henstridge has no air traffic services (ADV or AFISO) and an AGCS limited to weekends only. Currently, there are no instrument approaches at Henstridge. The nearest controlled airspace that has a bearing on DSAA HEMS operations is Class D airspace, the Control Zones (CTZs) at Bournemouth and Bristol airports, approximately 15nm SE and 20nm NW, respectively.

During their respective operating hours and subject to the requisite surveillance coverage, DSAA HEMS aircraft may receive an ATS is from RNAS Yeovilton, Bournemouth Airport and Bristol Airport. Where no surveillance-based ATS is available, a Basic Service can be obtained from “London Information”.

5.2. DSAA Tasking.

Figure 2, below, offers a geographical representation of the locations of all the incidents to which the DSAA teams have been mobilised over the period Apr 22 to Mar 23. Colour coding has been applied to differentiate between the team types; HEMS is depicted in yellow and Critical Care Car in blue. The size of the corresponding circles in Figure 2 relates to the number of incidents attended in that area.

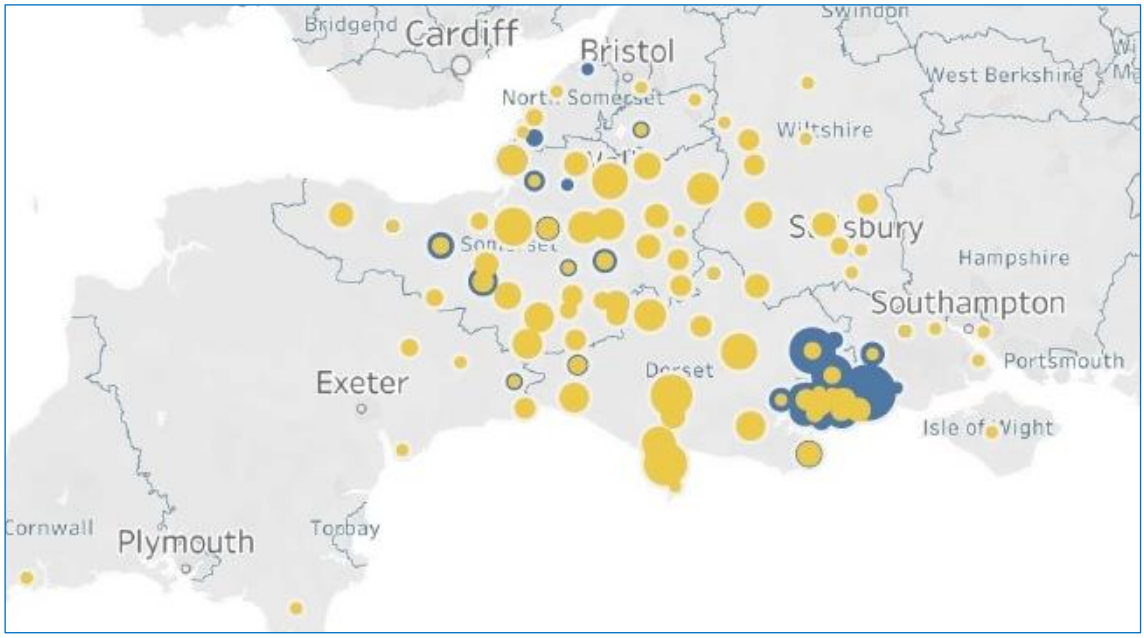

Image: © 2023 Mapbox © OpenStreetMap

Figure 2 - DSAA Tasking Apr 22 to Mar 23

As evidenced in Figure 2, the nature of HEMS operations is such that the DSAA helicopter can be tasked to any location within its area of responsibility (AOR) and beyond. Moreover, the instances where the DSAA helicopter is tasked beyond its immediate AOR reflect the joint and integrated approach to HEMS tasking in the south-west region.[7] Consequently, recovery to Henstridge can be from any direction.

HEMS is very much a demand-led service, consequently, a *typical* year cannot truly be considered as such; Figure 2, however, is broadly representative of the DSAA's annual activities.

7. Neighbouring AAs are Wiltshire, Hants & Isle of Wight, Devon and Great Western.

5.3. Henstridge Aerodrome Flying Operations.

DSAA helicopter operations are to and from their operating area at the north side of the Henstridge runway (highlighted by the red circle in Figure 3, below).

Image Source: Google Earth

Figure 3 - DSAA Operating Location at Henstridge

Once clear of the airfield boundary, DSAA departure and arrival profiles are dependent upon tasking and, as such, are not fixed.

DSAA helicopter and Henstridge visual GA movements are integrated by compliance with simple local flying instructions, supported during weekend day flying ops by a manned A-G radio frequency ("Henstridge Radio"). When Henstridge Radio is unmanned, pilots of aircraft in the visual circuit area make "blind" air-to-air calls to enable situational awareness for all.

DSAA HEMS helicopter arrivals are normally flown to the runway (FATO) followed by a hover transition to the DSAA helipad (TLOF) to land (the reverse for departures). If, however, the visual circuit is busy, or use of the runway is precluded, then approaches can be made directly to the DSAA helipad.

Prior to recovery to the visual circuit area, DSAA helicopter arrivals make a blind call on the Henstridge Radio frequency no later than 5 mins' flying time/10nm from Henstridge.

5.4. Existing DSAA Local (VFR) Approach and Departure Procedures.

In addition to Para 5.3, due to the prevailing Henstridge visual activity, DSAA VFR arrivals are usually from the north east of the aerodrome, avoiding known and publicised noise sensitive areas around local villages. Departures are predominantly to the south west, again avoiding noise sensitive areas, before proceeding on task.

VFR approach and departure routings are depicted in Figure 4, below.

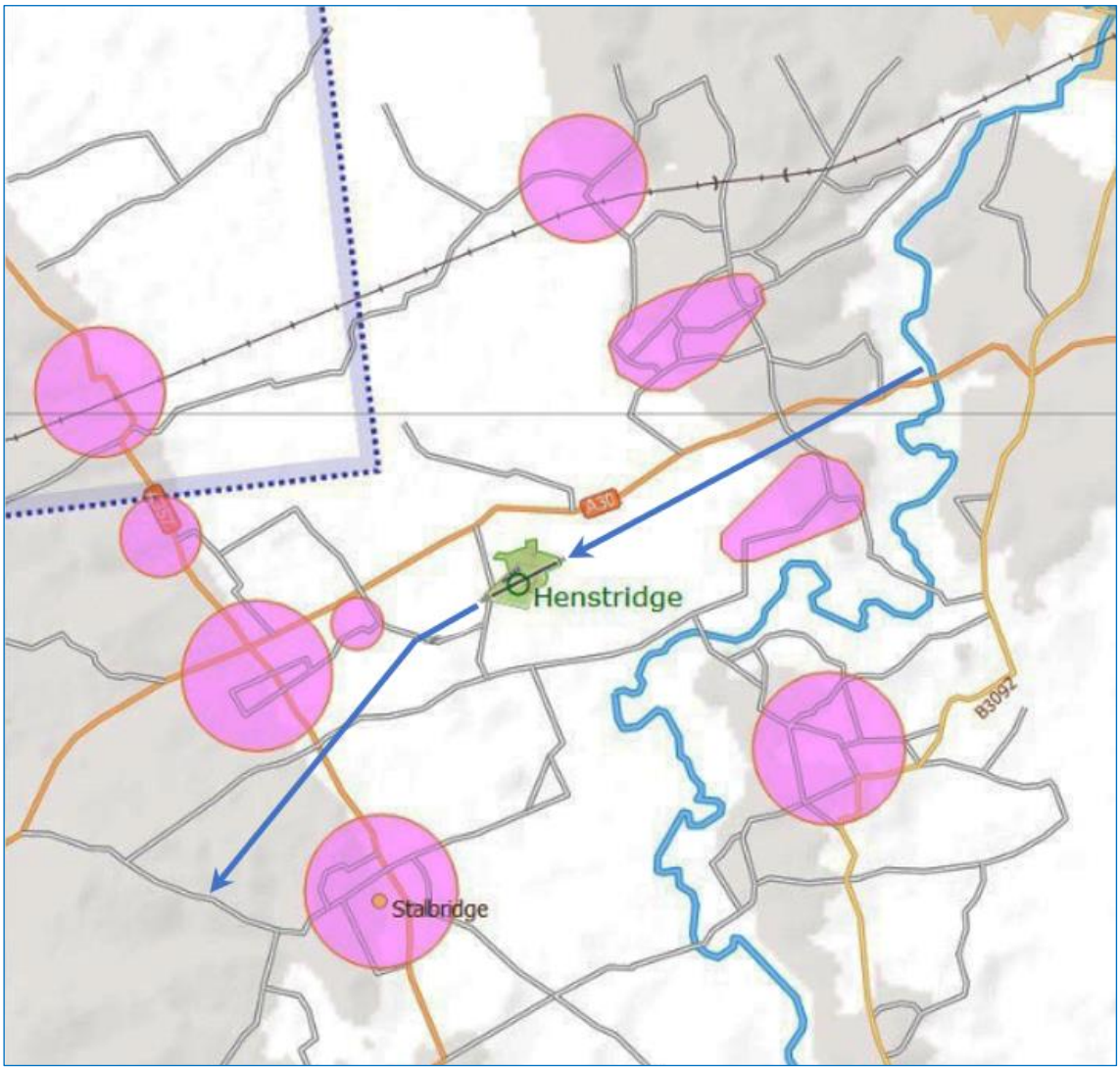

Image source: https://henstridgeairfield.com/forpilots/

Figure 4 - Existing DSAA Local (VFR) Approach and Departure Procedures

6. ACP-2022-033 DESIGN PRINCIPLES

CAP1616 requires change sponsors to produce an assessment of any options considered against the 2 Design Principles (DPs) therein.[8] In addition, CAP1616 suggests that sponsors should also include other design principles that reflect local considerations or impacts to other airspace users so that they are considered as part of the design process.[9]

DSAA have established the following DPs for ACP-2022-033:

DP1. The proposed design must maintain a high level of safety.

DP2. The proposed design should avoid overflight of densely-populated areas, where possible.

DP3. The proposed design should avoid unnecessary complexity.

DP4. The proposed design should have minimal impact on other airspace users.

The Design Principle Evaluation and associated methodology is explained at Section 0, below.

7. ACP-2022-033 PROPOSED DESIGN OPTION

7.1. Baseline.

The DSAA HEMS helicopter operates between the hours of 0700 and 0200 hrs, 7 days a week for 365 days a year. Acknowledging that HEMS is a demand-led service, between Apr 22 and Mar 23, DSAA conducted 1168 AA missions - an average of 3 missions per day.

Currently, DSAA departures from and recoveries to Henstridge are only undertaken in VMC under VFR. 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.

7.2. DSAA Operational Capability Enhancement.

DSAA, therefore, seeks to implement a proposed IFP design that would enhance HEMS operational capability at Henstridge and deliver an additional 72 AA missions, *per annum*, in turn delivering more critical prehospital care for patients in the existing DSAA 19-hour operation.

Consequently, any proposed IFP design must satisfy the DAP1916 and associated Statement of Need (see Para 1.1, above) as well as the application's DPs, which are outlined in Section 6, above.

7.3. "Do Nothing" Option.

A "Do Nothing" option (i.e. maintaining the extant operational *status quo*) neither enhances DSAA HEMS operational capability at Henstridge, nor does it meet the application's DAP1916 and associated Statement of Need (see Para 1.1, above).

Accordingly, a "Do Nothing" option is not being presented.

7.4. Developing the Proposed Design Option.

Extensive discussions between the sponsor and the APDO, including a site visit to Henstridge, have been (and continue to be) undertaken. Current DSAA VFR operations (i.e. Figure 4, above) were articulated to and operational requirements for the proposed IFP were captured by the APDO.

By definition, a PinS procedure is exactly as described (i.e. to a specific *point in space*). As evidenced in Figure 2, above, the nature of HEMS operations is such that the DSAA helicopter is tasked to any location within its area of responsibility (AOR) and beyond; consequently, recovery to Henstridge can be from any direction. At

8. CAA (2021), Page 98-99 (online), accessed on 31 Jul 23.
9. *id*, Page 99 (online), accessed on 31 Jul 23.

this early juncture of PinS development and implementation in the UK, it was considered more amenable from a regulatory perspective to align and design the proposed IFPs to the RW at Henstridge. This overarching tenet informed the approach to the design of the proposed IFPs to support DSAA operations at Henstridge.

The prevailing winds in the Henstridge area are westerly; accordingly, aligning and designing the proposed IFPs to Henstridge's RW24 is preferrable.

Ultimately, this approach to the development of the proposed design enables alignment with the existing DSAA VFR flight profiles, while remaining cognisant of associated flying operations at RNAS Yeovilton, Yeovil (Leonardo), MOD Boscombe Down and Compton Abbas and, therefore, minimising potential impact(s) on local airspace users.

Initial safety considerations and the potential impact(s) of the proposed design on other airspace users are discussed at Section 99.2.

7.5. Proposed Design Option - Design Option 1.

7.5.1. Design Option 1 - Azimuth.

A preliminary azimuth view of the ACP-2022-033 Design Option 1 concept is provided at Figure 5, below, and will be subject to further refinement and amendment.

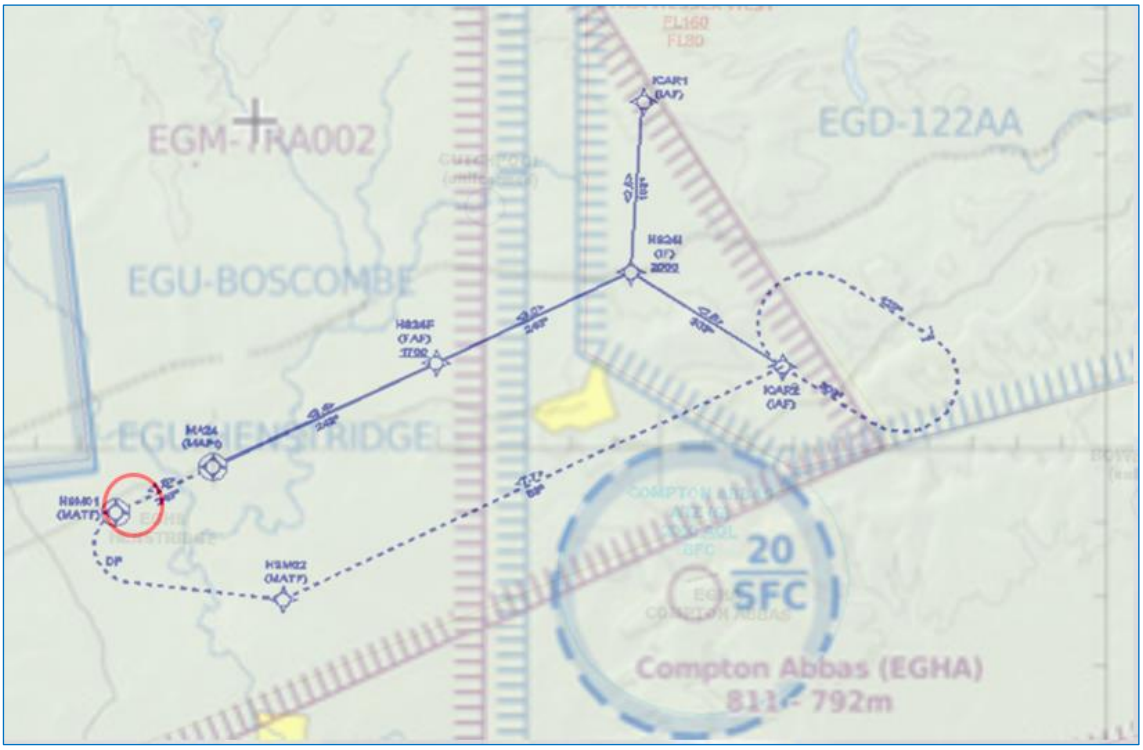

Image Sources: SkyVector & Pildo Wessex

Figure 5 - ACP-2022-033 Design Option 1 Concept - Azimuth

Design Option 1's approach and departure profiles broadly replicate current DSAA HEMS helicopter VFR routings (see, Figure 4, above), thereby avoiding any unnecessary complexity and potential disruption to existing local airspace users.

Design Option 1 would be accessible from the north (i.e. the Bristol area) and the south-east (i.e. the Bournemouth/Southampton area), which is consistent Figure 2 and would ensure that recoveries remained clear of RNAS Yeovilton operations. Recoveries from westerly directions could easily be coordinated with flying

operations at RNAS Yeovilton and Yeovil (Leonardo) during their respective operating hours. In addition, the proposed approach and departure routes continue to avoid overflight of densely-populated areas.

A second missed approach transition fix has been incorporated into the downwind leg to ensure lateral displacement from the Compton Abbas ATZ, if carrying out a second approach following a missed approach.

Departures in reduced weather minima during RNAS Yeovilton operating hours would be pre-notified to "Yeovil Radar", which would include a brief outline of the preferred transit direction and destination.

- Proposed IFP Design Hold. To satisfy PANS-OPS and CAA requirements, Design Option 1 includes the provision of a hold. Currently, DSAA operates only one HEMS aircraft on any one occasion; consequently, there is no current DSAA operational requirement for a hold in the proposed design.

In the event of a missed approach and subject to fuel and weather minima, the DSAA HEMS helicopter captain/pilot in charge may elect to either attempt a subsequent approach to Henstridge, or initiate a diversion to the pre-planned diversion location. Where a subsequent approach to Henstridge is selected, the captain/pilot in charge would initiate the IFP from the IAF and not via the hold.

DSAA acknowledges that, at Stage 5 of the ACP process, CAA would detail the requirements of any post-implementation review (PIR). DSAA would reasonably expect that, as a minimum, a record of the number of instances of DSAA's use of the proposed design (including use of the hold) should be recorded.

Accordingly, the evidence obtained during the PIR could determine the operational requirement for a hold and/or support any revision to the proposed IFP design.

- Additional Design Option 1 Diagrams. Additional Design Option 1 diagrams, providing more definition and detail, are provided at Annex A.

7.5.2. Design Option 1 - Elevation.

A preliminary elevation view of the ACP-2022-033 Design Option 1 concept is provided at Figure 6 below and will be subject to further refinement and amendment.

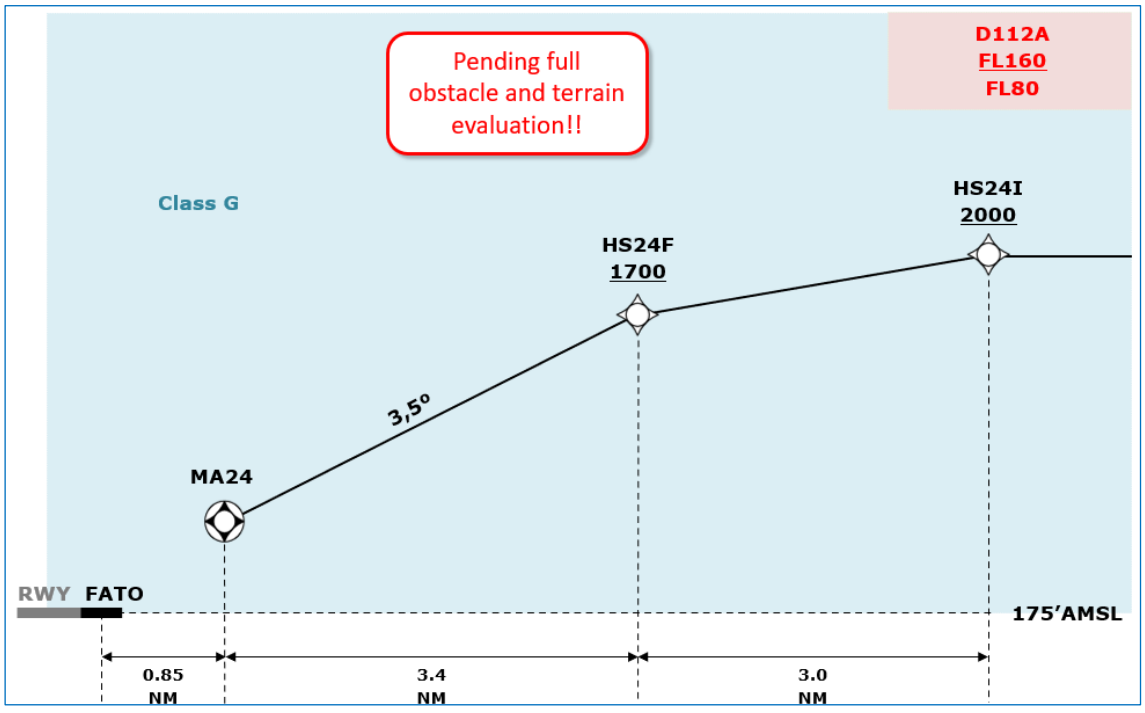

Image Source: Pildo Wessex

Figure 6 - ACP-2022-033 Design Option 1 Concept - Elevation

7.5.3. Design Option 1 - Stage 3 Materials.

Figures 5 and 6, above, will be developed further for Stage 3, and will incorporate sufficient detail to provide all stakeholders with enough information on the likely tracks and altitudes to enable meaningful feedback.

7.6. Additional Options Considered But Not Being Proposed.

7.6.1. Overarching Design Tenet - RW Alignment.

As evidenced in Figure 2, above, the nature of HEMS operations is such that the DSAA helicopter can be tasked to any location within its AOR and beyond. Accordingly, HEMS departure/recovery from/to Henstridge can be from any direction.

As outlined at Para 7.4, however, the overarching tenet was to align and design the proposed IFPs to Henstridge's RW24, following broadly existing DSAA VFR flight profiles (*DP2 and DP3*) and minimising potential impact on local airspace users (*DP4*).

7.6.2. Options Not Being Proposed.

Figure 7, below, offers 3 generic options, which, although viable, were considered but are not being proposed.

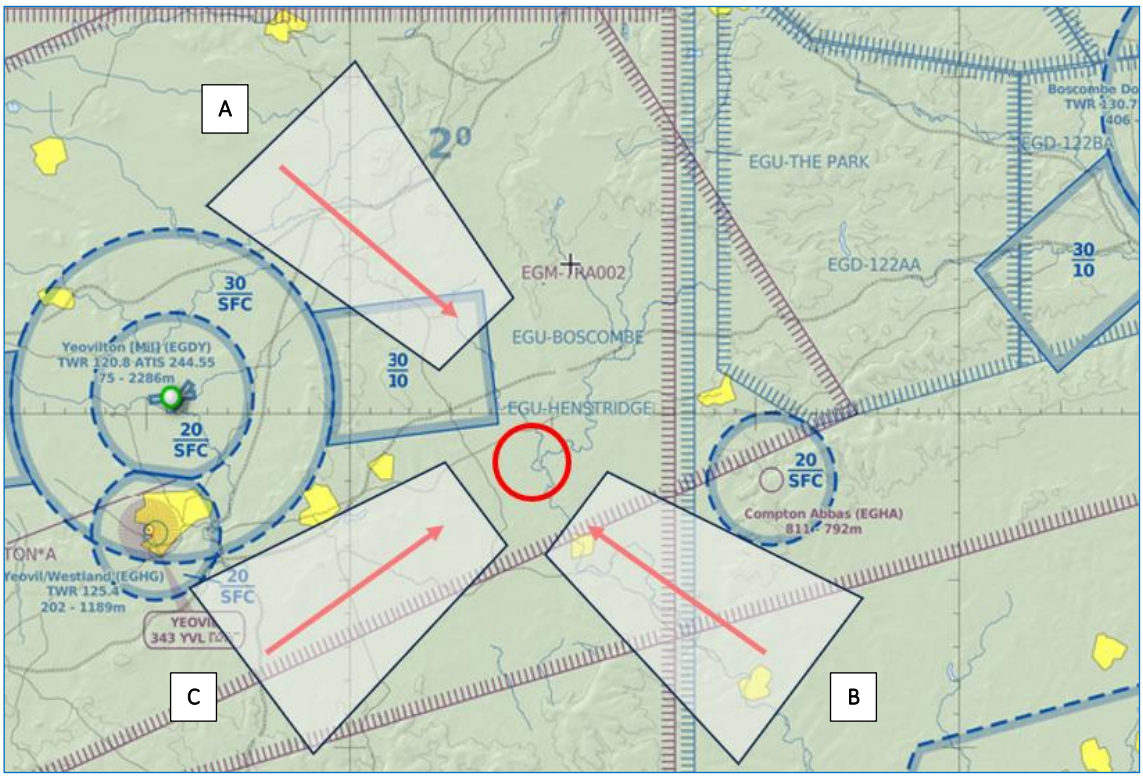

Image Sources: SkyVector

Figure 7 - Additional Options Considered But Not Being Proposed

- Non-RW-aligned Proposed IFPs. Proposed IFPs not aligned with the Henstridge RW (i.e. indicated at serials A and B in Figure 7, above) were considered and subjected to a table-top review. Although potentially viable, non-RW-aligned IFPs were discounted, as the overarching tenet of aligning proposed IFP designs with the Henstridge RW, highlighted at Para 7.4, reduced complexity and risk (*DP3*) and potential impact on local airspace users (*DP4*).

- Proposed IFPs to RW06. Proposed IFPs to RW06 (i.e. indicated at serials C in Figure 7, above) were considered, but discounted as they could add unnecessary complexity to the existing ATM and aerodrome infrastructure at RNAS Yeovilton and Yeovil (Leonardo), in turn adding complexity for DSAA HEMS flights (DP3 and DP4). Additionally, the prevailing winds in the area did not favour RW06 IFPs.

8. DESIGN PRINCIPLE (DP) EVALUATION.

8.1. DP Evaluation Methodology.

The ACP-2022-033 DP evaluation methodology is at Table 2, below.

Design Principle		How the DP is to Be Evaluated	Met	Partially Met	Not Met
			The text contained within the cells below corresponds to the summary qualitative assessment for the relevant DP in Table 2, below.		
DP1	The proposed design must maintain a high level of safety.[10]	The proposed design will be undertaken by a UK CAA-approved procedure design organisation, with extensive and demonstrable IFP design pedigree. Design conducted in IAW PANS-OPS, thereby ensuring a high level of safety and reducing risk to a level that is as low as reasonably practicable ("ALARP").	No safety concerns at this Stage.	Additional work might be required to generate acceptable safety argument(s), but this is believed to be achievable.	Acceptable safety assurances unlikely to be met and, therefore, option must be reconsidered.
DP2	The proposed design should avoid overflight of densely-populated areas, where possible.[7]	The proposed design avoids overflight of densely populated areas and minimises noise and environmental effects associated with the procedures.	The proposed design avoids overflight of densely populated areas.	The proposed design needs tailoring to avoid overflight of densely populated areas.	The proposed design overflies densely populated areas.
DP3	The proposed design should avoid unnecessary complexity.	The proposed design option broadly replicates current DSAA HEMS helicopter operations, thereby avoiding any unnecessary complexity and associated pilot training requirement.	Proposed design avoids unnecessary complexity and associated pilot training requirement.	Proposed design has some complexity and needs further refinement and/or associated pilot training requirement.	Proposed design is unnecessarily complex and could place an undue training burden on pilots.
DP4	The proposed design should have minimal impact on other airspace users.	The proposed design should be sympathetic to adjacent airspace users, particularly flying operations at RNAS Yeovilton, Yeovil (Leonardo), MOD Boscombe Down and Compton Abbas.	Proposed design has minimal impact on other airspace users.	Proposed design could be further refined to reduce impact on other airspace users.	Proposed design has an unacceptable impact on other airspace users and must be reconsidered.

Table 2 - ACP-2022-033 DP Evaluation Methodology

10. DPs 1 and 2 are taken from CAA (2021), Page 99 (online), accessed on 31 Jul 23.

8.2. DP Evaluation.

Design Option 1 - RW24 GNSS IAP				
The proposed IFP design option replicates the existing tracks over the ground to RW24 flown by the DSAA HEMS helicopter under VFR.				
		Met	Partially Met	Not Met
DP1	The proposed design must maintain a high level of safety.	✓		
DP2	The proposed design should avoid overflight of densely-populated areas, where possible.	✓		
DP3	The proposed design should avoid unnecessary complexity.	✓		
DP4	The proposed design should have minimal impact on other airspace users.	✓		

Table 3 - Design Option 1 Evaluation/Assessment

9. ASSESSMENT OF PROPOSED OPTION - DESIGN OPTION 1

9.1. Anticipated Change in Number of DSAA HEMS Movements.

Acknowledging that HEMS is a demand-led service, the introduction of Design Option 1 could deliver an additional 72 AA missions, *per annum*, in the existing DSAA 19-hour operation, which corresponds to a 6.16% increase in DSAA HEMS movements. The nature of HEMS operations is such that an additional 72 missions cannot simply be distilled down to a specific number of sorties per calendar month/week.

The introduction of Design Option 1 would not introduce a corresponding variance in the aircraft types in operation at Henstridge. The additional 72 HEMS missions (i.e. 144 aircraft movements) would correspond to a 1.52% increase in Henstridge Aerodrome movements.

9.2. Initial Safety Considerations.

9.2.1. Safety of the Proposed Procedure Design.

Design Option 1's approach and departure profiles broadly replicate current DSAA HEMS helicopter VFR routings (Figure 4, above) and the development of the design is being undertaken by a UK CAA-approved procedure design organisation with extensive and demonstrable IFP and PinS design pedigree (Pildo Wessex Ltd). The design is being conducted in IAW PANS-OPS, and, at this stage, no safety issues or concerns have been identified or are anticipated.

In progressing the IFP designs, Pildo Wessex is collating and analysing obstacle data and this will influence the final design.

9.2.2. CAP2304-related HAZID and Risk Analyses.

If CAP2304-related HAZID and risk analyses and assessments highlight a need for further operational agreements associated with the implementation of the proposed PinS procedures warrants, DSAA will work with the relevant parties to establish the requisite LOAs/MOUs.

Ultimately, any CAP2304-related HAZID and risk analyses and assessments would dictate the level of discussions, mitigation actions and, where necessary, agreements required between DSAA and the relevant parties.

9.2.3. Local Area Airspace Users and Activities.

- General. Since 2008, over the course of its operation at Henstridge, DSAA has established and continues to maintain strong relationships with its aviation and non-aviation neighbours (i.e. the application's stakeholders), with whom DSAA enjoys regular and cordial dialogue. Accordingly, DSAA is well placed to

conduct its "Stage 3" stakeholder engagement activities and has engaged many of the Application's stakeholders as part of the early stages of the ACP-2022-033 process.

- Stakeholder Engagement. Engagement with aviation stakeholders (including local flying communities (GAT and OAT)) will be undertaken as part of Stage 3 of the ACP process, which will raise awareness and promote discussion and interaction between DSAA and the relevant parties.

Regular dialogue and engagement with local aviation stakeholders will continue after the implementation of the proposed PinS procedure (and thereafter). Relevant aeronautical and locally-produced information distributed and displayed at local flying organisations and air traffic service units (ATSUs) would also be produced.

Additionally, DSAA(SAS) attends a local regional airspace users' working group that meets every 6 months at which this ACP will be discussed; the next meeting of the working group will be in early Sep 23.

- Extant Operational Agreements. Extant arrangements, which include letters of agreement (LOAs) and/or memoranda of understanding (MOUs), with local stakeholders (e.g. RNAS Yeovilton, Yeovil (Leonardo) and Compton Abbas) are being reviewed and, where necessary, corresponding revisions reflecting the addition of proposed PinS procedures at Henstridge proffered to act as the catalyst for the appropriate discussions between DSAA and the relevant parties.

Should a potential issue arise from the proposed airspace change, it will be discussed and, where appropriate, mitigated through engagement with those parties potentially impacted.

9.2.4. Air Traffic Services.

As is currently the case, DSAA will continue to use a surveillance-based ATS (i.e. LARS) to reduce risk, when available from surrounding ATSUs, during their respective operating hours and subject to the requisite surveillance coverage.

9.2.5. Procedure Promulgation on VFR Charts.

Indicating the proposed IFPs (i.e. establishing an approach and departure "feather") on VFR charts will do much to highlight the operation of an approach/departure procedure at Henstridge, thereby raising awareness and, in turn, reducing risk.

9.2.6. Henstridge Operations.

- General. DSAA's current operations and tactical freedom of manoeuvre are accommodated without being impacted by visual circuit activity (and vice versa) at Henstridge aerodrome. For Henstridge visual circuit traffic (including DSAA helicopters) situational awareness is maintained through blind air-to-air on the local "Henstridge Radio" frequency, when Henstridge Radio is unmanned. For recoveries during current VFR operations, DSAA HEMS flights make an inbound call (either blind or otherwise, subject to AGCS manning) at approximately 5 mins' flying time/10 nm from Henstridge.

- Proposed PinS Procedures and Visual Circuit Activity. The visual/VFR segment of the proposed GNSS PinS procedure would interact with the Henstridge visual circuit (i.e. a routine helicopter visual join into an established visual circuit) under VFR and the reverse for DSAA departures. Should, however, the prevailing meteorological conditions be such that they warranted the operational use of the proposed PinS procedures, the conditions would also preclude the use of the visual circuit by local GA.

- Henstridge Local Flying Instructions. DSAA acknowledges that safety assurance could be supported by the development of additional local aerodrome flying instructions to ensure that the aerodrome is unavailable for all other aircraft during any weather conditions in which the PINS approach may be in operation.

Should the proposed PinS procedure be flown in VFR and the visual circuit is active, then the PinS visual segment and visual circuit would integrate as per extant visual circuit/helicopter operations, i.e. a routine visual join to land. Accordingly, the PinS and visual circuit "meeting" is not deemed a risk.

- Restrictions on Use of the Proposed Procedure(s). Use of the proposed PinS procedure(s) would be restricted to DSAA(SAS) aircraft and crews only. In addition, only one DSAA HEMS aircraft operating on any one occasion further reduces risk.

9.2.7. DSAA's Future Aspirations.

Whilst DSAA's future aspiration (i.e. 2-3 years) is for a second airframe, only one would be in operation at any one time. Should the need arise, the operation of the proposed procedures would be revisited during the preparatory stages of the acquisition of the second airframe.

9.3. Environmental & Economic Assessment.

9.3.1. Environmental Impact

The introduction of the proposed PinS to support DSAA operations at Henstridge do not constitute a significant change from the extant DSAA operations at the airfield and, as such, would have minimal environmental impact. Accordingly, undertaking a full/detailed environmental assessment and associated analyses for this Level 1 airspace change, as detailed in CAP1616, is not required.[11]

9.3.2. Justification for No Additional Environmental Assessment Requirement.

As set out in Para 9.1, above, the potential number of aircraft movements resulting from the introduction of the proposed PinS procedures could be in the order of 144 (i.e. 72 HEMS missions), which corresponds to a 1.52% increase in Henstridge Aerodrome movements and, therefore, well below the 10% or more value quoted in CAP1616.[12]

CAP1616 states that "[n]o further environmental assessment will be necessary if:

- the change sponsor can reasonably demonstrate that the introduction of the RNP IAP is not expected to increase the total number of aircraft movements at the aerodrome in the first two years after introduction, by 10% or more (by at least a minimum of 3,650 movements per year), and;
- the proposal does not change the final approach path of aircraft to the runway within 1nm from the runway end.
- the proposal will not change the environmental impact of aircraft utilising other aerodromes"[13]

The DSAA responses to CAP1616 codicils cited above are that the introduction of the proposed IFPs to support DSAA HEMS operations at Henstridge:

- Could correspond to a 1.52% increase in Henstridge Aerodrome movements, which is well below the 10% value quoted in CAP1616.
- Does not change the final approach path of aircraft to the runway within 1nm of the runway end.
- Will not change the environmental impact of aircraft utilising other aerodromes.

Accordingly, the sponsor can demonstrate that undertaking a full/detailed environmental assessment of the proposal is not required.

11. CAA (2021), Page 99 (online), accessed on 31 Jul 23.
12. *ibid*.
13. *ibid*.

9.3.3. Economic Impact.

Given the limited scope of the proposal (potentially an increase of 144 Henstridge Aerodrome movements, i.e. 1.52%) and that the proposed procedure replicates, to a great extent, the current operation, monetising and quantifying the potential impact of the proposed airspace change in line with CAP1616, Table E2, it is neither proportionate, nor possible.

9.3.4. Impacts (Positive and Negative) on Airspace Users.

The introduction of the proposed PinS to support DSAA operations at Henstridge constitutes no significant change from the extant operations at the airfield and, per se, would not result in any positive or negative impacts for other airspace users using Henstridge or the surrounding airspace.

The predominance of flying activity in the vicinity of Henstridge is either military or GA; the latter is undertaken under VFR. Thus, were the need to arise to use the proposed PinS procedure in IMC, then the likelihood of either conflict or displacement of GA is assessed as minimal to zero. Similarly, military flying in the local area would invariably be associated with either RNAS Yeovilton or MOD Boscombe Down and supported by their respective ATSUs, from whom the DSAA already receive an ATS when available.

10. ATM SAFETY QUESTIONNAIRE

The ATM safety questionnaire was reviewed by CAA Safety and Airspace Regulation Group (SARG) on 4 Jul 23 and forwarded to DSAA on 28 Jul 23. DSAA notes the SARG comments within the reviewed questionnaire and provides narrative responses to key SARG themes and commentary in the questionnaire at Section 9, above. These and associated safety-related comments will be expanded upon later in the ACP process.

DSAA has identified a number of key areas within the SARG's comments that require further investigation and clarification from CAA departments; the sponsor stands ready to engage with CAA (SARG *et al*) to resolve these areas, lest the ACP be delayed unnecessarily.

11. SUMMARY.

HEMS are the mainstay of air ambulance operations in the UK and allow specialist medical teams to be despatched rapidly to an incident, or critically ill patient, delivering critical prehospital treatment. DSAA is a key part of the emergency services network in the south west region.

Currently, the DSAA helicopter operates between the hours of 0700 and 0200 and recoveries to the airfield can only be undertaken under VFR in VMC. DSAA, therefore, seeks to introduce GNSS IFPs to enhance its existing HEMS operational capability at Henstridge Aerodrome and, in turn, its delivery of critical patient care within its AOR and beyond. Consequently, recovery to Henstridge can be from any direction.

A number of potential IFP designs were considered and discounted; the varying locations of DSAA HEMS tasking is such that no predominant direction of departure or recovery overtly influences IFP design, *per se*. Accordingly, DSAA has remained cognisant of the surrounding ATM and aerodrome infrastructure and local airspace users and proposes a safe and assured IFP design that avoids unnecessary complexity and has minimal impact on other airspace users, while replicating existing VFR routing and continues to avoid overflight of densely-populated areas.

The proposed design option, Design Option 1, with approach and departure aligned to Henstridge's RW24 meets the application's Statement of Need and DPs and can, therefore, be taken forward to Stage 3.

Annex:

A. Additional ACP-2022-033 Design Option 1 Diagrams.

REFERENCES.

1. (UK) CAA (2021), "*CAP1616, Airspace Change, Guidance on the regulatory process for changing the notified airspace design and planned and permanent redistribution of air traffic, and on providing airspace information*" (online).

2. CAA (2023), "*CAP2520, Policy and Guidance for the implementation of helicopter Point in Space operations in the UK*" (online).

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Annex A to
ACP_2022_033_Stage_2_Submission_V_0_7_DRAFT
Dated 5 Sep 23

ADDITIONAL ACP-2022-033 DESIGN OPTION 1 DIAGRAMS

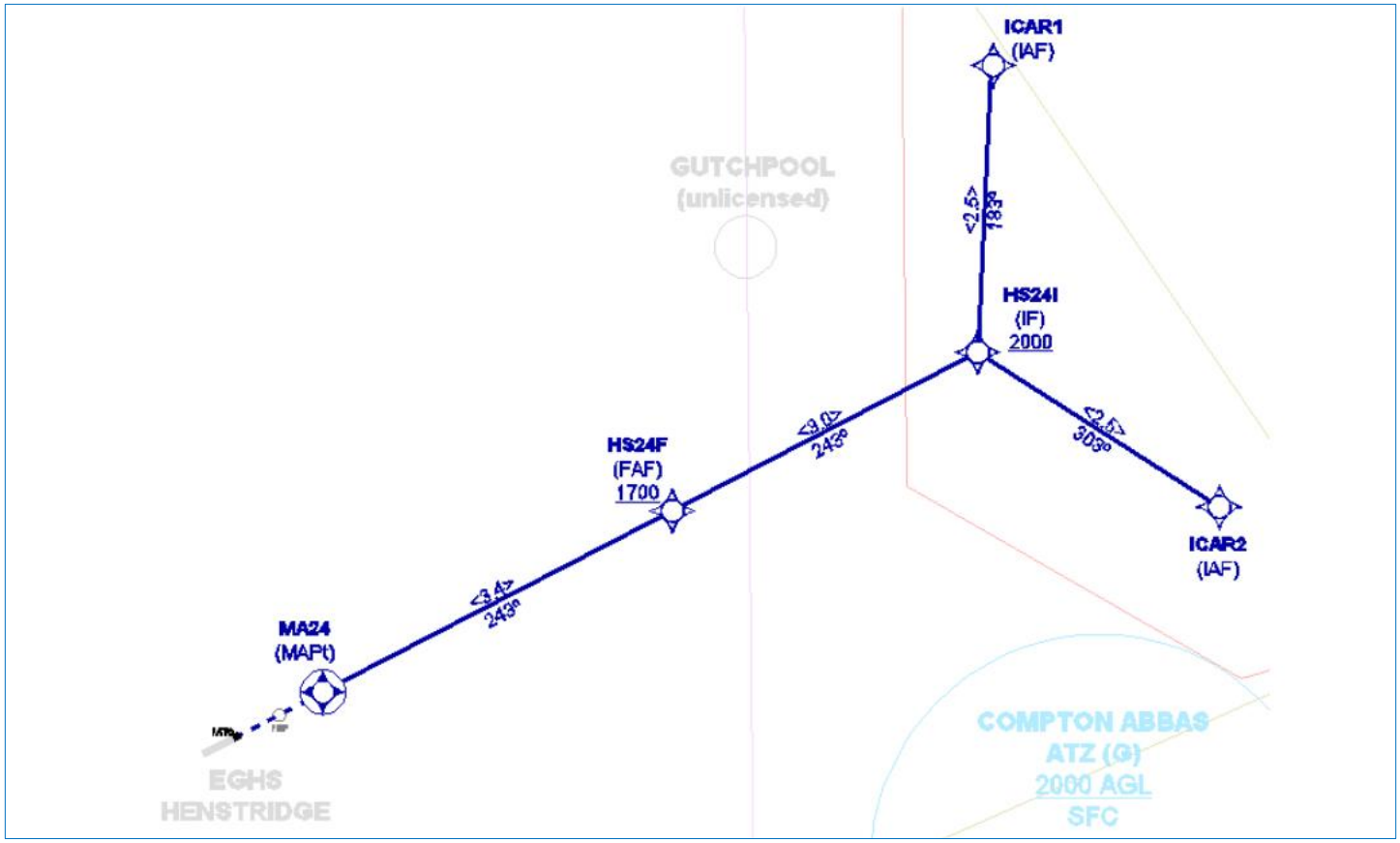

Image Source: Pildo Wessex

Figure 8 - ACP-2022-033 Design Option 1 Approach Layout

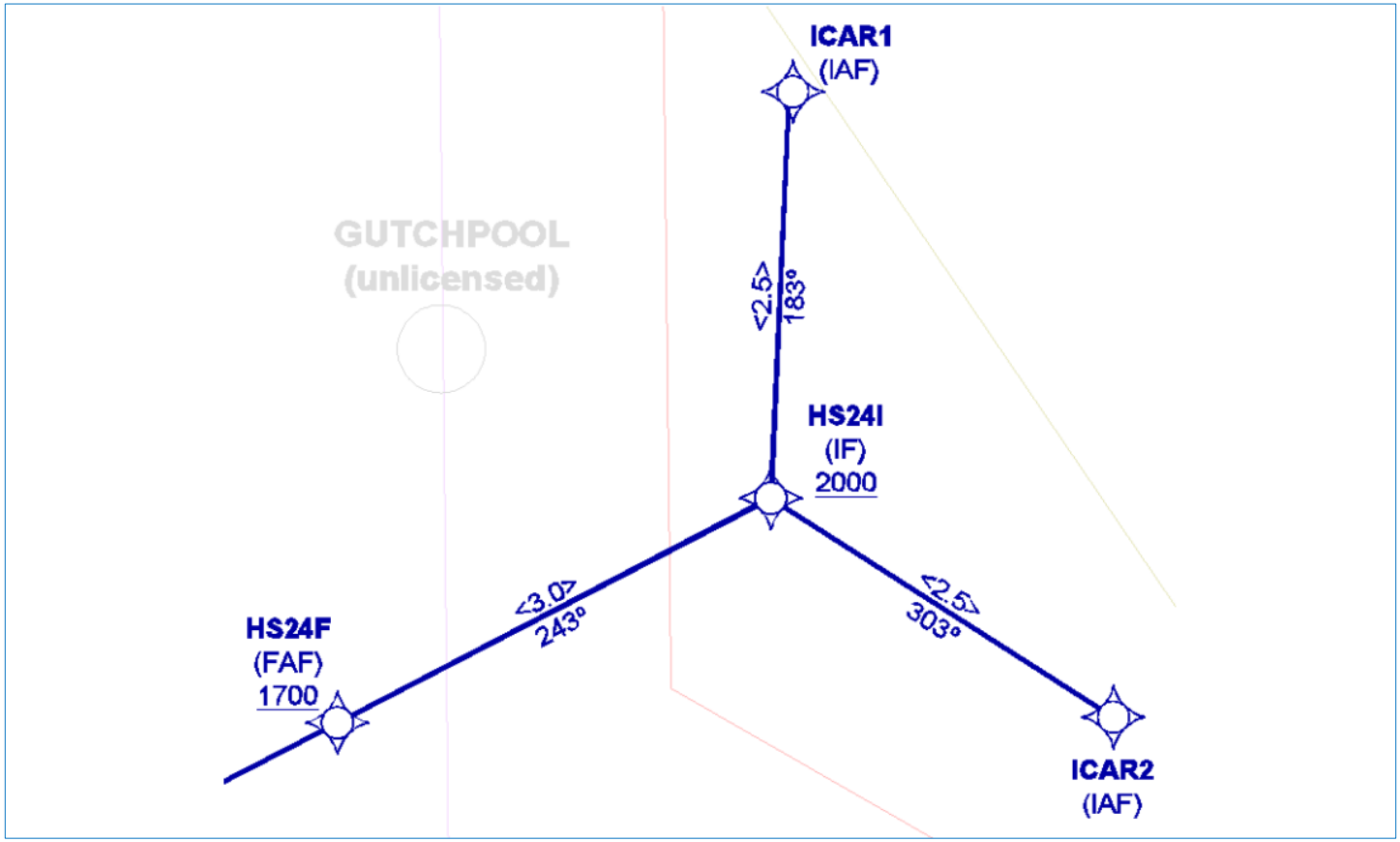

Image Source: Pildo Wessex

Figure 9 - ACP-2022-033 Design Option 1 - Initial and Intermediate Fix (Detail)

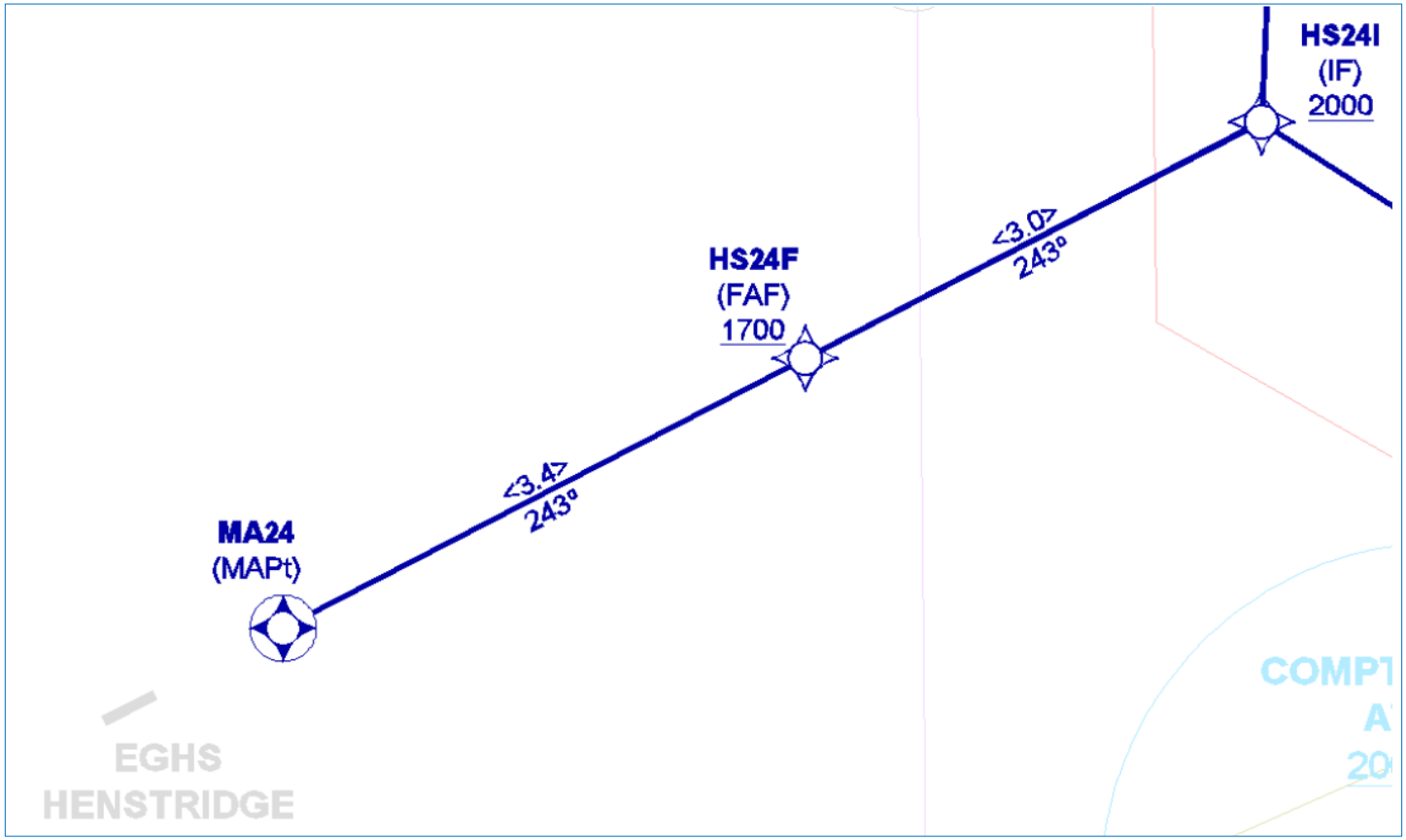

Image Source: Pildo Wessex

Figure 10 - ACP-2022-033 Design Option 1 - Intermediate and Final Fix (Detail)

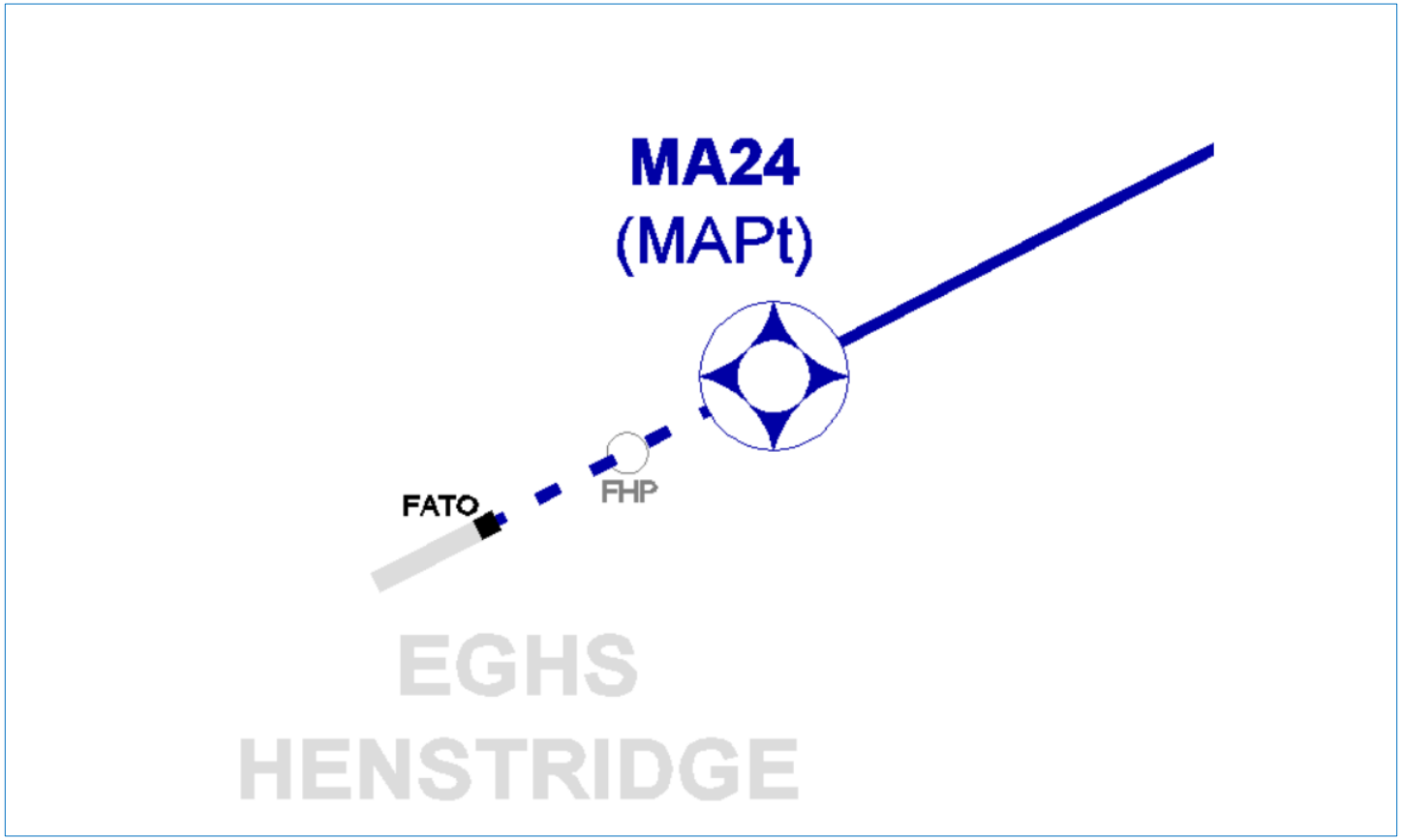

Image Source: Pildo Wessex

Figure 11 - ACP-2022-033 Design Option 1 - Missed Approach Point/Visual Segment (Detail)

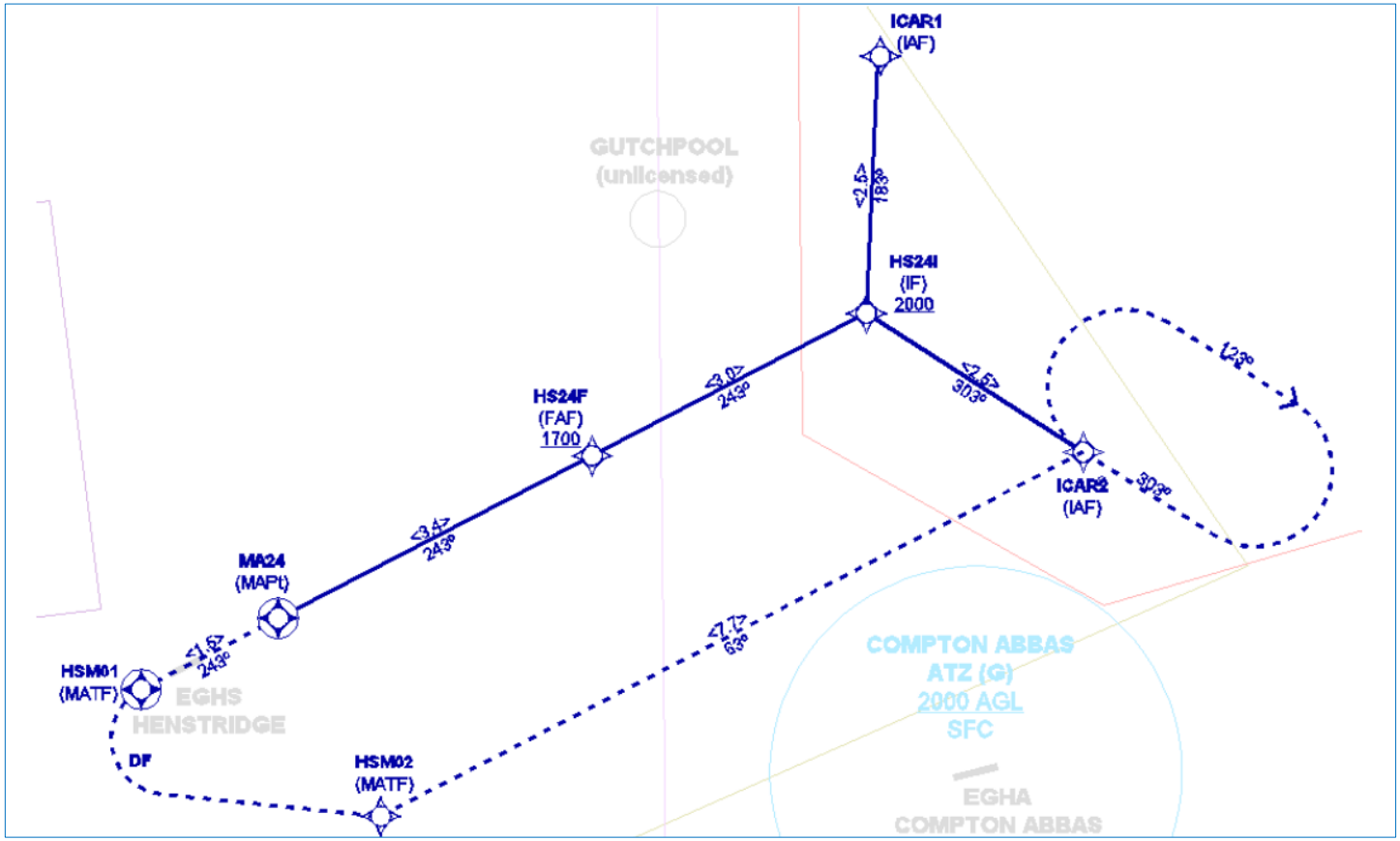

Image Source: Pildo Wessex

Figure 12 - ACP-2022-033 Design Option 1 - IFP and Missed Approach Procedure

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