

2 Dec 20

EGBP CAP 1616 Proposal Submission – Rationale and Assessment of Minor Amendments to the Runway 26 Missed Approach Route.

1. Introduction

1.1 This document presents the assessment of a minor amendment to the missed approach route for the proposed Instrument Approach Procedures (IAP) to Runway 26. It results from iterative amendments after consultation at the time of submission of the proposal to the Civil Aviation Authority (CAA). An oversight meant that this was not included in the main submission, albeit, the diagrams were included at Annex C – the Approved Procedure Design Organisation (APDO) designed Instrument Approach Procedure ‘plates’, but without reference to the changes in the main document.

1.2 Although the assessment in this document and more widely throughout the CAP1616 process has identified benefits and disbenefits of a runway 26 missed approach procedural design for all types of ICAO Aircraft Approach Category (CAT) aircraft, this must be viewed through the lens of both operational context and the scope of the ACP. For Kemble’s CAT aircraft in scope for the IAP, the bulk are CAT A and B, business jets on private flights whose climb performance easily exceeds the minimum gradient as set out in international design requirements. The smaller number of CAT C and D aircraft generally only arrive on ferry permits for end of life recycling or EASA Part 145 maintenance during title handovers. In total, this is around 1% of annual movements of which an even smaller number are likely to execute a missed approach.

2. Background

2.1 Operations involving CAT A to D aircraft at Kemble have been conducted safely for at least the past 10 years. Despite not having a defined approach routing (using crew defined own Visual Flight Rules (VFR) navigation), on only a very small percentage of arrivals have the crew cancelled the approach and placed the aircraft into a missed approach routing of their own making to recommence another approach. On these few occasions, this was due to marginal, but improving, weather conditions, which an IAP would remediate due to the lower weather minima of Instrument Flight Rules (IFR).

2.2 In the case of airliner delivery operations these are also pre-planned and not subject to commercial flight timing pressures. For all in scope arrivals, this allows the benefit of increased dialogue between operator/crew and Kemble, from initial quote request to negotiating a slot which best fits both parties. This results in the aircraft crew confirming all operational conditions, including runway availability and weather is, to the best of their knowledge, satisfactory to complete the approach and landing prior to take off.

3. What has Changed

3.1 Since both the consultation and during submission of the formal proposal to the CAA for decision, a minor design change has occurred due to iterative design fine tuning. This only affects the [planned] infrequently used missed approach route, should one need to be flown following an unsuccessful landing approach to Runway 26 to allow the pilot to fly the aircraft back to restart the approach. There are no changes to the approach routes for either runway, or the missed approach return route for Runway 08.

3.2 The change increases the initial climb route distance by 2.7Nm before making the first 90-degree left turn (BPM04). This in turn shifts the entire 2nd segment (crosswind leg BPM04 to BPM05) westwards by 2.7Nm, shifting it from overhead Tetbury and the Restricted Area over Highgrove House (R105) to overhead open countryside, thus avoiding R105 (shown in Fig 2.0). By consequence, this also adds 2.7Nm to the reciprocal leg taking the aircraft back to the IAF.

3.3 This is shown in Fig 1.0, on a ground map, where the red dotted line shows the original proposed missed approach route and the blue line the amended route. The blue dotted line is the most likely actual route flown by aircraft on a missed approach, as the waypoints are fly-by, rather than fly-over.

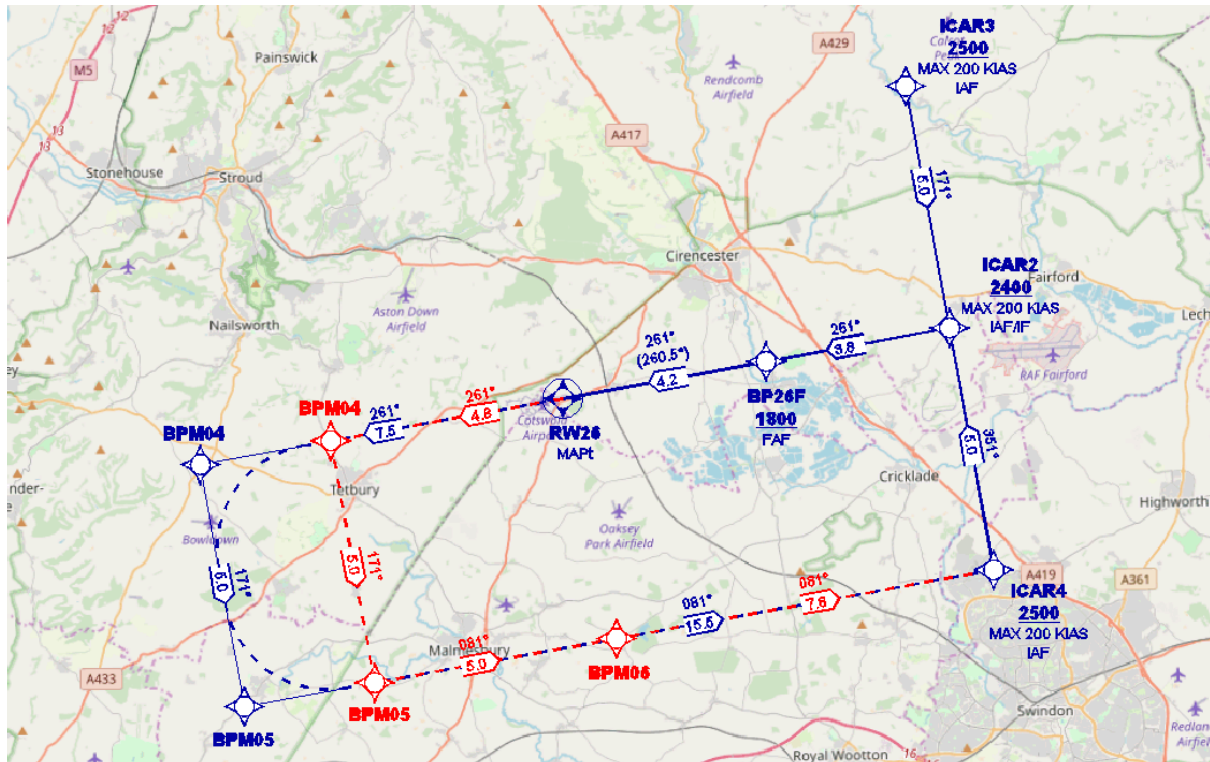


Fig 1.0 – Minor Amendment to the Missed Approach Route for Runway 26.

4. Why Has It Changed? - The Design Amendments

4.1 **How This Change Occurred.** This is a result of continued iterative technical design approval work, post consultation and around the time of submission of the final proposal submission to the CAA to prepare the technical aspect of the approach for publication.

4.2 **When the Change Happened.** These occurred during submission stage of the proposal to the CAA and during their decision stage; this is after the consultation, final options assessment, and submission of the formal proposal. Unnoticed by the change sponsor, this amendment was included in the final submission at Annex C, but not included in the main document text.

4.3 During detailed technical regulatory approval work for submission and iterative ‘fine-tuning’ by the APDO, the presence of Restricted Area R105, 6nm south west of Cotswold Airport, surrounding the Royal residence at Highgrove House has necessitated an extension of the climb path on runway heading before commencing the first of two 90 degree left turns back to the IAF (ICAR4). Although the climb performance of the bulk of the in-scope aircraft would enable these aircraft to climb above the R105 Restricted Area (above 6% non-

standard climb gradient), a very small number of the largest airliner aircraft may not, thus infringing this restricted area.

4.4 The infrequent use of this part of the procedure, combined with airliners flying with minimal weight (with no passenger load and minimum fuel) and thus increasing their climb performance was not assessed as an issue previously by the change sponsor. However, ICAO procedure design standards use aircraft performance at maximum landing weight. Moreover, the current lowest height at which the pilot can select to fly a missed approach is 500ft. If this was lowered in the future to the designed safe calculated height 263ft, then the climb angle required would exceed the climb performance of the aircraft, irrespective of weight.

4.5 The extension of the missed approach leg, moves the aircraft away from R105, allowing the aircraft to continue its climb to the north of the R105 area, completely avoiding this Restricted Area, meaning even with poor climb performance, there is no potential for infringement, See Fig 2.0, shown on a pilot's (VFR) chart.

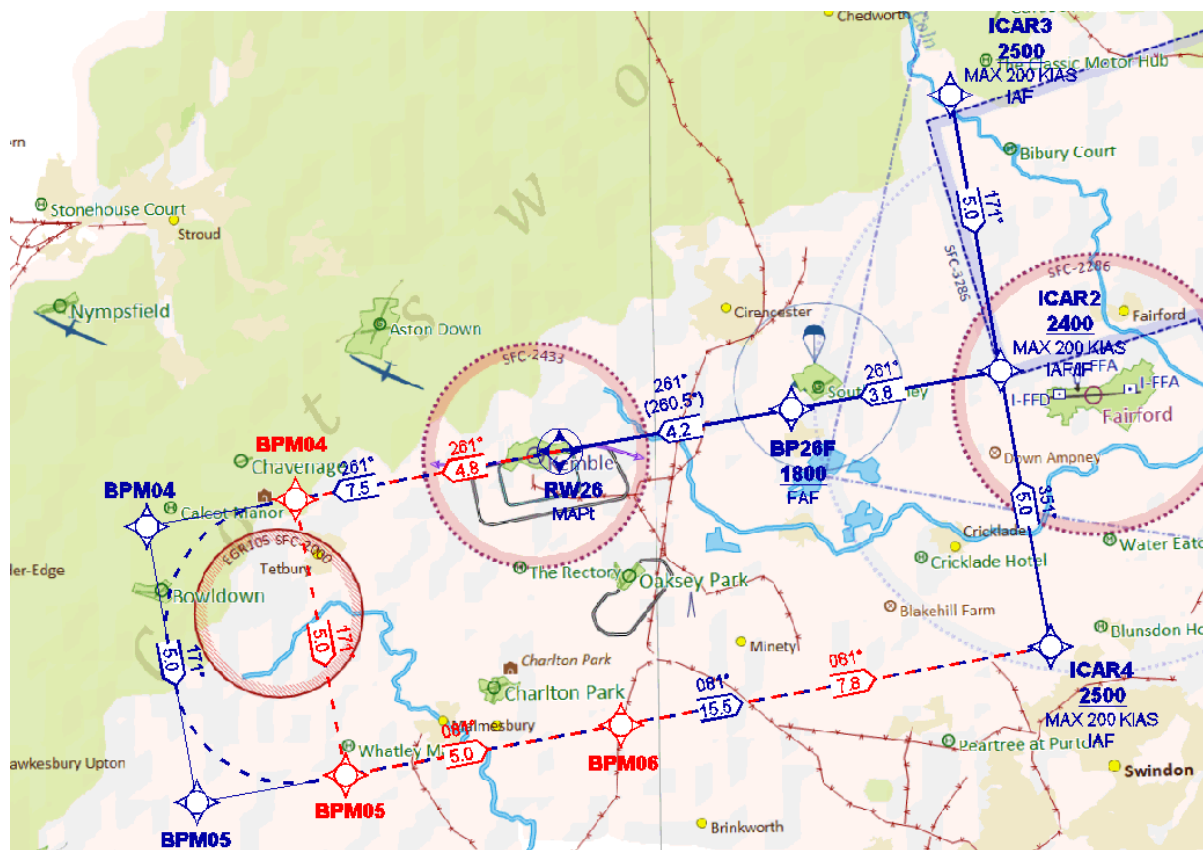


Fig 2.0 Changes on a VFR Chart

5. What is the Effect - Impact Appraisal

5.1 To understand the impact of this change, the change sponsors reviewed the Consultation Document (Stage 3), Categorisation and Review of Consultation Responses (Step 3d), the Final Options Appraisal (Step 4a) and the Formal Proposal Submission (Step 4b) to assess any effect on the assessment of this proposal and the validity and transparency of the process to date.

5.2 Using the data from the Formal Proposal (Para 2.3), this equates to 396 movements per year, less than 1.1 approaches per day on average. Furthermore, this 396 is divided between approaches to Runway 08 (45%) and Runway 26 (55%); flying the approach to

Runway 26 could result in flying this adjusted missed approach route. With an annual average of just over 1 expected instrument approaches per day, to either runway, the likelihood of flying this amended Runway 26 missed approach is very unlikely (218 approaches per year to Runway 26 (55%). Using planning data of an average of 10% of these approaches would necessitate flying the missed approach back to restart the instrument approach. To scale this change, this is therefore not a daily activity, but a procedure that might need to be flown once every week.

5.3 The Consultation and Stage 4 documents mainly concentrate the reader's attention on the approach routing. In the consultation document (para 28), the missed approach is only mentioned once; it is the change sponsors belief that this does not change the consultation:

The dotted line is the route an aircraft would follow in the event that the aircraft cannot land and will fly what is known as a 'missed approach' to restart the approach procedure, back at the Initial Approach Fix.

5.4 **Aviation Stakeholders.** The approach plate for this was included at Annex C to the Formal Submission by the APDO.. This change increases the track mileage of an aircraft flying a missed approach by a total of 5.4Nm. Using 180kts as an average airspeed, this equates to just under 2 mins of additional flying time on the missed approach.

5.5 Based on the number of in-scope aircraft flying the approach, the infrequency of executing a missed approach and assessed against the total number of other aircraft, both operating from Cotswold Airport and elsewhere, the change sponsor does not believe this creates any additional effect on other airspace users, as defined in the Formal Proposal Submission. The extension of the climb leg to BPM04, follows the same track routing (until the 90-degree turn) as the approach route for Runway 08; a routing designed through engagement with both GA and local gliding clubs, therefore the change sponsor does not believe this affects the assessment of effect of the gliding or GA community.

5.6 **Ground Stakeholders.** A consequence is that this removes the routing of aircraft over Tetbury and instead, moves this leg 2.7Nm to the west and over open countryside. It also means the aircraft will be higher after the initial 90 degree turn towards BPM05. The following is extracted from the Formal Proposal Submission, paragraph 7.7.2.

This proposal will not result in a change to aircraft types and is exclusively for in-scope aircraft (0.7% of Cotswold Airport's current annual movements). Within the areas under the proposed approach routing, no significant villages would be overflown within the segments of this proposed IAP, until the aircraft reaches either Kemble and Ewan villages (for RW26 and 3 -4 Nm from the threshold) and Culkerton for RW08 (2 NM away). In both cases, at this close range and with aircraft established on its final approach, the impact of this proposal is assessed as negligible against the current level of activity for these in-scope arrivals.

5.7 Although the Cotswold AONB did not formally respond to the Consultation, assessment of their management plan, allowed appraisal in the Final Appraisal Document and Formal Proposal Submission. Based on the comparatively very low numbers of local aircraft in-scope to fly the approach and the frequency of those aircraft requiring to fly a missed approach, the change sponsor does not believe this changes the assessment and proposal already submitted.

5.8 **Environmental.** Despite a very small increase in fuel burn and thus CO2 against the original submission, the effect of this on Tranquillity, Overflight, Noise and CO2 emissions is assessed as negligible; in assessment against scope, this proposal was originally assessed as negligible against the current baseline; this amendment is not assessed to change that.

6. A Missed Approach – and Steps Taken to Reduce it.

6.1 There are a few reasons why an aircraft might fly a missed approach such as an emergency with another aircraft or an unexpected event such as a vehicle runway incursion. Nevertheless, the risk of an aircraft flying the missed approach has been minimised through:

- Runway equipped with high intensity runway lighting services.
- Runway inspection carried out prior to slot arrival.
- Met observing competencies will match CAP746
- Circuit procedures imposed with aircraft of ground held and visual circuit unavailable
- Feathered arrows added to chart to highlight IAPs to aircraft flying in the vicinity.
- No other PPR arrivals accepted during blocked PPR approach slot.
- PPR timed separation assured by limiting to 5 per day.

5.2 These measures contribute to the likelihood of an aircraft executing a missed approach being significantly reduced.

6. Summary

6.1 This minor amendment is an output from fine tuning the designs during and post submission, had this happened sooner, it would have been included into the formal submission document. The change sponsor believes there is no change to aviation stakeholders or those on the ground, given the sparsely populated area and the likely infrequency of an aircraft flying the missed approach to runway 26. Any increase in fuel burn and therefore CO2 emissions is also negligible, due to both the scope of the overall ACP and the infrequent nature of the use of the missed approach.

6.2 Based on both the level of engagement and support throughout consultation, combined with the scale of this proposal, the infrequency of flying a missed approach, the change sponsor does not believe this has any measurable effect on stakeholders and thus, does not affect the outcome of the consultation and final submission, nor the approval. We will ensure that stakeholders are made aware of the change.