LONDON BIGGIN HILL AIRPORT

Item No.	CAA Comment (Doc 0)	New Y/N	BHAL Response	Evidence Reference	Mitigation	CAA Comment on Response
5	……It was noted that the issues that could not be identified prior to the CAA's IFP regulator's assessment included, but were not limited to, interactions with adjacent ANSPs, obstacle clearance, or infringement of controlled airspace (CAS) by the 'protection areas' of the IAP design.	N	There are no issues with obstacle clearance. If this observation refers to VSS penetrations, then see response in 18g. Additionally, the first design submission to the CAA (V1.0) was in May 2017. Feedback was provided to this design. Therefore, the CAA have always been aware that there have been overlaps between Gatwick CTA and the procedure Primary Protection Areas (which has changed very little since the V1 submission). To suggest this was not identified prior to the CAAs IFP assessment is not correct, as it was discussed extensively during the project.	Minutes of meetings with the CAA. Design document submissions Doc 1 : Response to CAA clarifying questions Jan 2018 ftp://rms.ftp@37.1.99.153/Doc 1 - Response to CAA clarifying Questions 31 Jan 2018.pdf Doc 2 : Informal Pre Framework Briefing Meeting Feb 2015 ftp://rms.ftp@37.1.99.153/Doc 2 - Informal Pre Framework Briefing Meeting Feb 2015.pdf Doc 10 : Safety Case - Haz 07, 09, 10 & 15 ftp://rms.ftp@37.1.99.153/Doc 10 - Safety Case.pdf Doc 12 : Interactions Document V1 ftp://rms.ftp@37.1.99.153/Doc 12 - Interactions Document-V1 EGKB-RNP RWY 03 ACP.pdf Doc 13 : Design Document V3.3 ftp://rms.ftp@37.1.99.153/Doc 13 - Design Document-V3.3 EGKB-RNP RWY 03.pdf	Doc 10 : Safety Case A6 – Heathrow acceptance A7 – Redhill LoA A8 – Kenley LoA A10 – Redhill AIP entry	We agree that these issues were possible to identify before the completion of the detailed IFP assessment. However the impact of them on our assessment and our overriding duty to maintain a high standard of safety could not properly be assessed until the IFP regulators assessment had been concluded.
18	The sponsors APDO responded to the CAA technical report on 24 Sep 2021, submitting V3.3 (Annex A Figure 2). In this the CAA concerns over the complexity and non-standard nature of		The APDO were clearly advised and aware of the nonstandard nature of the design and that the sponsor would not address the nonstandard segment lengths as detailed evidence proves this is not an issue for pilots that have flown the	Minutes of meetings with the CAA. Doc 2 : Informal Pre Framework Briefing Meeting Feb 2015 ftp://rms.ftp@37.1.99.153/Doc 2 - Informal Pre Framework Briefing Meeting Feb 2015.pdf Doc 3 :		The CAA note that the sponsors will not address the non-standard segment lengths. Because the sponsor has not addressed this, these non- standard and/or non-compliant segments remain

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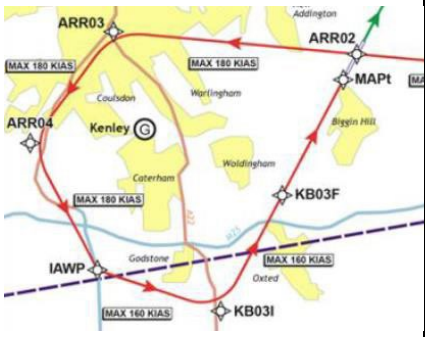
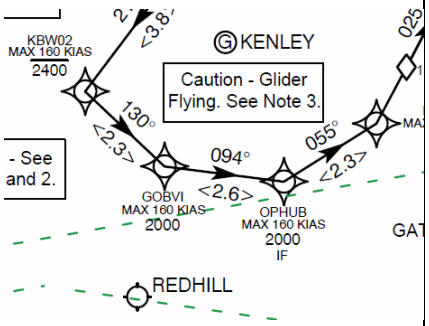
	the proposal, including the request for the noncompliant segment to be redesigned, have not been addressed. The following list summarises the outstanding issues:		approach.	Stage 1 Framework Briefing April 2015 ftp://rms.ftp@37.1.99.153/Doc 3 - Stage 1 Framework Briefing April 2015.pdf		one of the cumulative issues that has contributed to the CAA's conclusion that the design will not maintain a high standard of safety.
18a	The IAP as proposed is non-standard[4] in content. The norm in the UK for an RNP (Required Navigational Performance) IAP is a T-Bar, Y-BAR or straight-in runway aligned IAP, whereas this IAP is presented as a figure of eight (8). This design and its presentation will increase the workload for pilots in ensuring the IAP is understood and flown correctly.	N	From the initial engagement with the CAA it was acknowledged that the subject design was nonstandard, it was agreed that provided that it could be shown that the approach could be safely flown, non- standard (non-PANS OPS compliant) leg lengths did not preclude approval. It was for this express reason that the first two simulator tests were flown – one for the initial scheme and one for the revised scheme. This type of approach (figure of eight) was the original proposal to the CAA right from the start and no objections were raised on initial submission. As far as pilot workload is concerned the CAA's comment "*This design and its presentation will increase the workload for pilots in ensuring the IAP is understood and flown correctly"* is a purely subjective observation and not backed up by any recorded data. All pilots were prebriefed, debriefed and spoke in general terms to all the crews that conducted the human	Email correspondence *with Pam Adams/CAA/Cyrrus* Doc 2 : Informal Pre Framework Briefing Meeting Feb 2015 ftp://rms.ftp@37.1.99.153/Doc 2 - Informal Pre Framework Briefing Meeting Feb 2015.pdf Doc 3 : Stage 1 Framework Briefing April 2015 ftp://rms.ftp@37.1.99.153/Doc 3 - Stage 1 Framework Briefing April 2015.pdf Doc 4 : Global Express Sim Report ftp://rms.ftp@37.1.99.153/Doc 4 - Global Express Sim Report Pages 12-22.pdf Doc 5 : Lear 45 Sim Report ftp://rms.ftp@37.1.99.153/Doc 5 - Lear 45 Sim Report Pages 12- 22.pdf Doc 6 : Aperta Flight Report ftp://rms.ftp@37.1.99.153/Doc 6 - Aperta Flight Report.pdf Doc 7 : Avalon Aero Flight Report ftp://rms.ftp@37.1.99.153/Doc 7 - Avalon Aero Flight Report.pdf Doc 8 : Comments on the Report issued by the CAA		We are not clear when it is said that the CAA agreed the proposition in the first paragraph of the response. It may have been part of the Framework Briefing discussions. The proposals have changed extensively in the intervening 7 years. In any event, the statutory function and duty of the CAA is to assess the proposal now submitted at the date of the decision. We note your view that the CAA has made a subjective observation. The CAA's role as the statutory decision maker is to apply its expertise to the information and data the sponsor has provided and form an expert view taking into account all relevant considerations before making its decision. The CAA disagrees with this statement as after the initial engagement to Addendum submission the proposal has changed significantly. For

			factor trial flights and at no point did any crew member state that high workload was a factor with the proposed approach. The possibility of a T-Bar, Y-Bar, or straight- in runway aligned IAP is not possible due to the Airspace to the South of Biggin Hill. A 3D approach was originally considered, which was *runway aligned from the Intermediate Fix (IF) KB03I to the runway*. However, this design (which was never submitted but went to consultation), had a nominal track which infringed Gatwick CTA and operationally could impact their currently flown procedures.  Following this, all future designs of the Runway 03 procedure incorporated a 30° turn at the Final Approach Fix (FAF) KB03F, which allowed the nominal track (but not the entirety of the protection	on 8 Jan 2018 ftp://rms.ftp@37.1.99.153/Doc 8 - Comments on the Report issued by the CAA on 8 Jan 2018.pdf Doc 10: Safety Case – Haz 15 – Pages 35-36 Haz 16 – Pages 36-37 ftp://rms.ftp@37.1.99.153/Doc 10 - Safety Case.pdf Examples of Approved RNAV Approaches with Non- Standard Approaches and Non-Standard leg lengths. Doc 11 : Madeira RNP Z 05 ftp://rms.ftp@37.1.99.153/Doc 11 - Madeira RNP Z 05.pdf Doc 17 : Palm Springs RNAV IAP ftp://rms.ftp@37.1.99.153/Doc 17 - Palm Springs RNAV IAP.PDF Doc 18 : Grant County RNAV Approach 1 ftp://rms.ftp@37.1.99.153/Doc 18 - Grant County RNAV Approach 1.PDF Doc 19 : Grant County RNAV Approach 2 ftp://rms.ftp@37.1.99.153/Doc 19 - Grant County RNAV Approach 2.PDF		example, the original design proposed 'enhanced airspace' in the form of a Radio Mandatory Zone to offer additional protection to the IAP aircraft as it transited a short area of Class G airspace. This RMZ has been removed from the proposal; the final proposal now leaves Controlled Airspace (CAS) significantly earlier and routes along a popular VFR line feature in some of the busiest Class G airspace in the UK; has shorter segment lengths than originally designed; and rather than a standard straight-in approach the design proposes a 30° offset to the Final Approach Fix which would be the first time this would be used in the UK. It is important to note that it is the number of outstanding issues and their cumulative impact that are of concern and is why after considering all the issues together as a whole the CAA has concluded that the proposed IAP does not maintain a high standard of safety. In a different environment a figure of eight approach being the only non-standard issue

			areas) to stay clear of Gatwick CTA. As a result of the 'turn at the FAF' design (the only way to keep the nominal track clear of Gatwick CTA), a 3D procedure was no longer possible, and the designs going forward were 'LNAV'  'Validation' of the procedure has not been conducted to date; this is expected during the implementation stage of the procedure design process, to prove that the **coded procedure** works from an FMS perspective and that no issues arise with regard to FMS discontinuities/ waypoint bypass etc. 'Flyability' tests of the procedure have taken place on a variety of occasions to prove that the **manually flown** procedure works in a variety of scenarios including extreme wind conditions. All 'flyability' tests have resulted in pilots stating that it is a good procedure with manageable workload. The aircraft had no issues with managing to stick to the			might be acceptable, but in this case this is one of several issues cumulatively leading to the CAA's conclusion that the proposed design will not maintain a high standard of safety. The impact of the airspace constraints surrounding London Biggin Hill Airport on the proposed design are noted and have been taken into account by the CAA in its decision. As we have previously advised, validation of an IAP is conducted prior to the approval stage (and is taken into account as part of our decision,) and not after decision and prior to implementation. The examples shown are noted. The establishment of any GNSS IAP is assessed on its own merits. The example of Madeira has longer RF legs with a 4.7nm IF segment following a 5.7nm FAS. In addition, IAPs in Europe are wholly contained within controlled airspace (CAS) where the pilots will not be subjected to the various

			intended nominal track. There are examples of other non-standard RNAV IAPs approved in Europe. (Doc 11).			interactions that can be expected in the proposed IAP within Class G airspace. The CAA notes the comments regarding the data provided by the two live flights of the proposed routes. CAA's comments regarding the live flight tests are set out in 18(d) and reference is made to those comments in relation to this comment.
18b	The segments lengths from ITSUM are all of a minimum length which means there is no flexibility available should the many variables which can cause a procedure to breakdown occur, e.g., weather conditions, aircraft/flight management system (FMS) issues, pilot actions when correcting FMS discontinuities, waypoint (WP) bypass etc.	N	The observation is true of any approach. However, the leg length is irrelevant as it is the aircraft speed that determines the time it takes for the leg to be flown, as evidenced through simulation and live flight trials Whilst the legs are of non-standard length, the speed has been limited to provide an equivalent leg time. In the event that the pilot is required to break off the approach, the go around procedure will route away from Gatwick airspace, routing through the Biggin Hill overhead, NE Bound. Obviously initial approaches carried out at lower speeds will give more time on any given segment, thereby creating the flexibility to deal with any potential issues. 'Validation' of the procedure has not been conducted to date; this is expected during the implementation	Doc 4 : Global Express Sim Report ftp://rms.ftp@37.1.99.153/Doc 4 - Global Express Sim Report Pages 12-22.pdf Doc 5 : Lear 45 Sim Report - ftp://rms.ftp@37.1.99.153/Doc 5 - Lear 45 Sim Report Pages 12-22.pdf Doc 6 : Aperta Flight Report ftp://rms.ftp@37.1.99.153/Doc 6 - Aperta Flight Report.pdf Doc 7 : Avalon Aero Flight Report ftp://rms.ftp@37.1.99.153/Doc 7 - Avalon Aero Flight Report.pdf Doc 10 : Safety Case - Haz 01/02 ftp://rms.ftp@37.1.99.153/Doc 10 - Safety Case.pdf Doc 14 : Validation Simulator Plan V1 71594-IFP-003-EGKB-RNP RWY 03 ftp://rms.ftp@37.1.99.153/Doc 14 -	Validation Process – Simulation and live flight reports. LBHA and the APDO would welcome feedback to the submitted Validation Plan material submitted 24/09/2021 as part of the V3.3 submission package. Doc 14 : Validation Simulator Plan V1 71594-IFP-003-EGKB-RNP RWY 03 Doc 15 : Validation Flight Plan V1 71594-IFP-004-EGKB-RNP RWY 03 It is desired that a Validation Plan, which satisfies LBHA, the APDO and the CAA is achieved which would include all scenarios the CAA wish to see tested in a simulator. This 'accepted' Validation Plan	As noted above, validation of an IAP is conducted prior to the approval stage (and is taken into account as part of our decision,) and is not conducted post decision and prior to implementation. The CAA note and have taken into account that the segment lengths have been calculated using reduced speeds but are still of minimum length and are likely to be impacted in tailwind conditions. Because the segments lengths from ITSUM are all of a minimum length there is no flexibility available should the many variables which can cause a procedure to breakdown occur, e.g., weather conditions,

			stage of the procedure design process, to prove that the **coded procedure** works from an FMS perspective and that no issues arise with regard to FMS discontinuities/ waypoint bypass etc. This point is proved/disproved during 'Validation' and therefore cannot be used as an argument without 'Validation' taking place. There are a number of other hazards identified in the Safety Case which would cause the segment lengths to be reduced, such as loss or corruption of navigational information, which have been safely mitigated in the Safety Case– Haz 01 & 02.	Validation Simulator Plan V1 - 71594-IFP-003-EGKB-RNP RWY 03.pdf Doc 15: Validation Plan Flight V1 71594-IFP-004-EGKB-RNP RWY 03 ftp://rms.ftp@37.1.99.153/Doc 15 - Validation Plan Flight V1 - 71594-IFP-004-EGKB-RNP RWY 03.pdf	could then be used for Validation activities to prove or disprove these items.	aircraft/flight management system (FMS) issues, pilot actions when correcting FMS discontinuities, waypoint (WP) bypass etc. This factor combined with the other issues highlighted is one of several issues cumulatively leading to the CAA's conclusion that the proposed design will not maintain a high standard of safety. The CAA notes LHBA's proposal that an accepted validation plan and validation process would prove or disprove these items. The CAA does not agree. The CAA's function is to consider the design that has been proposed to it. The CAA has permitted significant amendments to the initial proposal since they were first submitted to the CAA and allowed time for the sponsor to amend their proposals to address the issues. However, as this document illustrates allowing the sponsor time to adjust the proposals further will not address the reasons why the CAA considers

						that the proposal considered as a whole does not maintain a high standard of safety. This document indicates that the sponsor does not agree with the CAA's assessment of safety. This document and the process to date illustrates that the sponsor has elected not to, or cannot, take the steps that would address the issues that the CAA has made clear during this process This has caused the CAA to reach the conclusions which it has. So further time and a validation process will not remedy the inherent issues that cause safety concerns and why the CAA considers that the proposal considered as a whole does not maintain a high standard of safety.
18c	With descent mandated after ITSUM into an area of busy GA traffic the extensive track miles of the procedure, west of Kenley down to and along the M25 while routing east to Biggin Hill, will	N	There are multiple mitigations in place – Thames Radar release with traffic advice, Biggin Hill AUATM, Redhill general broadcast, Biggin general broadcast, EGLF LARS con-ops, overfly Redhill VRPs where VFR traffic at 1,400 ft or below. Additionally aircraft using the 03	Doc 9 : LBHA Supplementary Operating Instruction for Advanced uses of ATM ftp://rms.ftp@37.1.99.153/Doc 9 - LBHA Supplementary Operating Instruction for Advanced uses of ATM.pdf Doc 10: Safety Case - Haz 01/02	During multiple informal conversations with TC Thames Radar regarding this issue we discussed procedures that would possibly be adopted in the event Biggin Hill had the procedure approved. For example, if TC Thames Radar	The CAA notes that the sponsor has reinstated the Advanced use of ATM as part of this final overall proposal. Earlier in the process the sponsor was advised by the CAA that the CAA would be unlikely to be able to conclude

	exacerbate the issues of pilot workload, interactions with other airspace users, and create possible conflicts in Class G.		circle to land approach already use this airspace without the above mitigations. Due to the reduced speed, and the protracted route of the Approach, the pilots have time to maintain an effective lookout. The procedure will be annotated on the VFR Chart to warn GA Pilots. Advanced uses of ATM – pass traffic information. We find this observation contradictory to the CAA's regulation of Class G airspace. Aircraft are permitted to operate just outside Biggin Hill's ATZ (mainly north of the M25) at any altitude up to 2400ft without speaking to any ATC agency while remaining completely legal and the CAA are currently content with this. This includes Biggin Hill traffic carrying out a circling approach to runway 03. At present Biggin Hill ATC (BHATC) do not know how far to the west and southwest a circling aircraft will go or at what altitude. The proposed procedure will address both of these issues for aircraft carrying out the circling approach to runway 03 therefore making it easier to pass relevant traffic information.	ftp://rms.ftp@37.1.99.153/Doc 10 - Safety Case.pdf Doc 16 : Addendum to Safety Case ftp://rms.ftp@37.1.99.153/Doc 16 - Addendum to Safety Case.pdf	identified a potential confliction after an inbound aircraft had passed ITSUM the aircraft would not be given descent and routed to the Biggin Hill overhead to commence a standard missed approach. Aircraft that do not have potential conflicting traffic would be transferred to BHATC (tower) to continue the approach and be monitored using an ATM to landing. BHATC has recently attained advanced uses of the ATM (at great cost to the unit) as this was one of the conditions required to obtain the 03 RNP approach approval. This will enable Biggin Hill ATCO's to monitor the progress of an aircraft carrying out an approach once it has been transferred from TC Thames Radar. BHATC will advise the pilot of any possible conflicting traffic or if the aircraft appeared to be entering controlled airspace using the advanced uses of the ATM. In either case BHATC would be able to advise the pilot and or initiate a go around to a standard missed Approach. With regard to the comments concerning other airspace users the following has been agreed with other local agencies. **Kenley gliding site:**	that the proposal maintained a high standard of safety without Advanced use of the ATM being part of the proposal. The CAA has taken the impact of the inclusion of Advanced use of the ATM into account when considering the proposal as a whole and reaching its conclusions. The CAA disagree that its comment in 18c is contradictory to regulation of Class G airspace. The CAA's comment is in reference to a final proposal which looks to descend an aircraft out of CAS earlier than originally designed (in earlier versions of the proposal), and implement an instrument approach along a protracted route through a funnel of some of the UKs' busiest Class G airspace constrained on all sides and from above by CAS, along a line feature which is often used by general aviation as a navigation feature (i.e. the M25), in particular to remain clear of the Gatwick Zone, all whilst maintaining a prescribed course, speed and descent

					Kenley gliding site will be informed by telephone when runway 03 is in use. The operators at Kenley will then instruct their aircraft to remain within the area bounded north of the M25 and east of the M23 motorways. As the intended approach routes west and south of this area any risk of an encounter with a glider is greatly reduced. In return Kenley will advise BHATC when they commence and cease their operations. This will enable BHATC to advise aircraft on the 03 RNP approach that Kenley is active with gliding. **Redhill Aerodrome:** Redhill ATC will be informed by BHATC that an aircraft is carrying out a 03 RNP approach and is at a range of 20 nm from landing, in addition the aircraft type and transponder code will be passed. This will enable Redhill ATC to pass generic traffic information to any aircraft that may be affected by the Biggin Hill inbound. All the above endorses that the proposed RNP approach to runway 03 is safer procedure in adverse weather conditions than the runway 21 ILS approach and circling to runway 03.	profile yet maintaining this whilst avoiding itinerant aircraft (many of whom, such as gliders, paragliders or hang gliders, have right of way in accordance with the Rules of the Air). The CAA maintain that whilst taking the mitigation stated into consideration, that the proposed design in this specific environment and location will exacerbate the issues of pilot workload, and that interactions with other airspace users could create conflicts in Class G. This is one of several cumulative issues giving rise to safety concerns of the proposal. The CAA note the section of sponsors proposal presentation to Focus Groups in June 2015 entitled 'Protection of IFR Traffic between leaving CAS and entering the ATZ' stating the considerations that there is: 'High – IFR – Cockpit workload' and '"Heads-in" – lookout opportunity reduced'. The CAA note that the sponsor was originally looking to mitigate the approach in Class G airspace by introducing 'enhanced airspace' in the form of a Radio Transponder Zone. The CAA notes that this is no

					The proposed procedure will give Biggin Hill ATC all of this information as aircraft will be following a predictable known track and altitude and thus making it far easier to plan and identify potential conflicting traffic.	longer part of the sponsors overall proposal. The CAA note that for the current circle to land procedure a Cat C aircraft will be within a maximum of 4.2nm from the runway when performing a circling approach, (as evidenced by the track data supplied,) and by its very nature the pilot will keep the runway in sight. The circle to land procedure does not take an aircraft into proximity of RAF Kenley and along the M25 VFR line feature. The CAA notes the discussions and arrangements made with Kenley and Redhill and has taken this into account before reaching its conclusions. Notwithstanding these steps the remaining situation described here as a consequence of this design is one of the several issues cumulatively leading to the CAA's conclusion that the proposed design will not maintain a high standard of safety.
18d	The segment length between KEW02 and GOBVI does not	N	'Flyability' tests of the procedure have been conducted numerous times on	Doc 4 : Global Express Sim Report	Validation Process – Simulation and live flight reports.	The CAA does not consider the live flight tests referred to

	support stabilised flight in all circumstances e.g. a strong tailwind on the downwind section.		different aircraft. The approach has been tested in the simulator with a wind of 80 knots in all directions. No handling issues or aircraft limitations in terms of descent profile or speed were identified. All pilots who have flown the procedure have had no issues in these scenarios and have found the procedure perfectly acceptable.	ftp://rms.ftp@37.1.99.153/Doc 4 - Global Express Sim Report Pages 12-22.pdf Doc 5 : Lear 45 Sim Report ftp://rms.ftp@37.1.99.153/Doc 5 - Lear 45 Sim Report Pages 12- 22.pdf Doc 6 : Aperta Flight Report ftp://rms.ftp@37.1.99.153/Doc 6 - Aperta Flight Report.pdf Doc 7 : Avalon Aero Flight Report ftp://rms.ftp@37.1.99.153/Doc 7 - Avalon Aero Flight Report.pdf Doc 10: Safety Case - Haz 01/02 ftp://rms.ftp@37.1.99.153/Doc 10 - Safety Case.pdf Doc 14: Validation Simulator Plan V1 71594-IFP-003-EGKB-RNP RWY 03 ftp://rms.ftp@37.1.99.153/Doc 14 - Validation Simulator Plan V1 - 71594-IFP-003-EGKB-RNP RWY 03.pdf Doc 15: Validation Flight Plan V1 71594-IFP-004-EGKB-RNP RWY 03 ftp://rms.ftp@37.1.99.153/Doc 15 - Validation Plan Flight V1 - 71594-IFP-004-EGKB-RNP RWY 03.pdf	LBHA and the APDO would welcome feedback to the submitted Validation Plan material submitted 24/09/2021 as part of the V3.3 submission package. Doc 14 : Validation Simulator Plan V1 71594-IFP-003-EGKB-RNP RWY 03 Doc 15 : Validation Flight Plan V1 71594-IFP-004-EGKB-RNP RWY 03 It is desired that a Validation Plan, which satisfies LBHA, the APDO and the CAA is achieved which would include all scenarios the CAA wish to see tested in a simulator. This 'accepted' Validation Plan could then be used for Validation activities to prove or disprove these items.	throughout this document as validation tests or instructive data for the purpose of making its decision. There are a number of issues with these live tests. Firstly, the CAA was not a party to the decision to fly these tests as part of the preparation for data relating to this proposal. The CAA would not have endorsed or supported a test involving programming a non-authorised approach into an FMS. Putting to one side the decision to make live flights in these circumstances, the tests were not controlled tests in a way that data can be drawn from them for the purpose of making this decision. In summary issues include: there is no data on the setting of the aircraft, what speeds were flown, the FMS was not coded correctly with the procedure and there are limitations with manually entering way points into FMS. The normal process is to agree a validation plan with the CAA, test the procedure first in a simulator and then in controlled live flights. This is not what occurred in these

						tests. The issues are described in more detail below. The CAA rejected the Global Express and Lear Jet reports as the procedure was not coded correctly. The sponsor was informed of this in the CAA IFP Technical Report dated March 2021. The CAA note the other reports. The CAA did not endorse these live flights flown at times in IMC. This is a practice no sponsor should undertake owing to the potential safety risks. The CAA note the letter from Aperta Aviation which contains a description of the procedure flown. The final approach segment profile description (point 8 & 9) is not consistent with the proposed RNP AIP meaning there is no clarity on what procedure was being flown. The CAA note the letter from Avalon Aero describing a flight where it was the flight crew's first flight in 3 months where they proceeded to fly sections

						of a non-approved IAP in IMC, and due to the limitations of the aircraft used a "heads down" more frequently than would be the case on an approved IAP. The CAA do not endorse this action and note that the evidence provided shows the proposed RNP IAP was incorrectly set up and the crew misunderstood the profile requirements of various segments to the extent the CAA does not have clarity the proposed IAP was flown correctly in any event. When a validation flight is organised, it is under strict controls, the content of the navigation database will be checked against the chart in use to ensure there are no discrepancies. Whilst acknowledging the limitations of manually entering the waypoints into the aircraft Flight Management System, it appears the aircrew of the simulator and aircraft flight were unaware they needed to change the course deviation indicator sensitivity for the various phases of flight. The CAA note the Avalon aircrew comments that support

						the approach for night or Instrument Meteorological Conditions (IMC) and that they 'can't envisage many circumstances when we would elect to use this procedure in VMC (visual meteorological conditions), preferring instead the circle from a runway 21 approach'.
18e	The intermediate segment (IF) is non-compliant as the length is less than that required to support a stabilised approach by all aircraft.	N	Though it is accepted that the Intermediate Segment is non-compliant (for various reasons), it is not accepted and not proven that a stabilised approach cannot be made by aircraft. The evidence derived from simulator flights does not concur. No problems with the profile were identified. PANS OPS is designed for all aircraft types up to high inertia heavy aircraft. These would not use this approach because the runway will not support them. Speed adjusted to compensate (See response to b). This procedure has been flown live, with manual coding and both pilot reports state there are no concerns with non-compliant segment lengths. 'Validation' of the procedure using a coded database has not yet been	Doc 4 : Global Express Sim Report ftp://rms.ftp@37.1.99.153/Doc 4 - Global Express Sim Report Pages 12-22.pdf Doc 5 : Lear 45 Sim Report ftp://rms.ftp@37.1.99.153/Doc 5 - Lear 45 Sim Report Pages 12- 22.pdf Doc 6 : Aperta Flight Report ftp://rms.ftp@37.1.99.153/Doc 6 - Aperta Flight Report.pdf Doc 7 : Avalon Aero Flight Report ftp://rms.ftp@37.1.99.153/Doc 7 - Avalon Aero Flight Report.pdf Doc 10: Safety Case - Haz 01/02 ftp://rms.ftp@37.1.99.153/Doc 10 - Safety Case.pdf	The Airport believes that the simulation flights and live flights adequately demonstrate that stabilised flight can easily be achieved with non-compliant segment lengths as highlighted within Docs 4, 5, 6 and 7.	The CAA note that the length of the Intermediate Segment has been calculated based on the restricted speed and is still less than required to support a stabilised approach by all aircraft. The CAA refers to our earlier comments that validation occurs before a decision and not after a decision, before implementation. The CAA repeats its points regarding the value of the data from the two flights. The CAA notes the sponsors view that heavy category aircraft are more affected by non-compliance with PANS OPS. However PANS OPS applies to LIGHT and MEDIUM aircraft as well, and its absence nevertheless needs to be

			conducted and therefore, the statement '*…less than that required to support a stabilised approach by all aircraft'* cannot be made until after this has taken place, where this point will be proved/disproved. The aircraft can be slowed and configured in good time to be stabilised for the Final Approach. The charted speeds for the procedure from KBW02 onwards are MAX 160KIAS. Aircraft do not have to fly at this speed. CAT A and B Aircraft have Max. Final Approach Speed Limits of 100KIAS and 130KIAS respectively as defined by Pans- Ops. CAT C Aircraft could reduce speed if necessary in the Intermediate Segment. The allowable range of Final Approach speeds according to Pans-Ops is between 115- 160KIAS, though it is acknowledged that different aircraft have different operating speeds.			mitigated for the CAA to conclude that the proposal will maintain a high standard of safety. For the reasons set out by the CAA the CAA has concluded that this is one of the several issues cumulatively leading to the CAA's conclusion that the proposed design will not maintain a high standard of safety.
18f	The use of a step-down fix (SDF) to achieve a lower procedure minimum adds further complexity to an already complex non-standard IAP.	Y	Concerns over the use of a Step-Down fix (SDF) to support the decision <u>not</u> to progress with acceptance of the procedure, is unwarranted. The SDF is not coded as part of the procedure (it doesn't form part of the coded database or appear in a coding table). If it is seen to be unacceptable to the CAA, then the SDF can be removed from the chart		It is still the view of the sponsor that the inclusion of a SDF is beneficial to the procedure allowing a higher chance of landing when the weather is close to procedure minima, without significant additional workload to the pilots. However, removal of the SDF from	The CAA concur that the SDF is not coded. The CAA's view is that the use of a step-down-fix to achieve a lower procedure minimum adds further complexity to an already complex non-standard IAP. The CAA notes that removing the SDF would reduce airspace

			at any time		the chart, and an increase in procedure minima from 1040/443, to 1270/693 OCA/OCH ft could be offered as mitigation.	design complexity but would also reduce the safety mitigation intended and so does not consider that the suggestion here to remove this from the sponsors final proposal will enable the CAA to conclude that the proposal will maintain a high standard of safety.
18g	The visual segment surface (VSS) penetrations have not been removed. The assessment of an OCS (obstacle clearance surface) does not remove the requirement of the sponsor to remove the VSS penetrations. VSS penetrations would need to be removed to ensure any IAP to runway 03 can be viable in the future.	N	The Airport have a Tree Management Plan and will ensure than any VSS penetrations are removed prior to the procedure being promulgated. This would be done prior to a Survey being conducted onsite to prove that the Trees have been reduced in elevation to an acceptable level, where there are no longer any penetrations of the VSS. This is obviously an on-going process where Trees in and around the approach area of the runway are kept to an acceptably low elevation to prevent future penetrations of the VSS.	Tree Management Plan – Obstruction surveys conducted annually Doc 10: Safety Case Haz 07 ftp://rms.ftp@37.1.99.153/Doc 10 - Safety Case.pdf	Removal of trees is currently underway; it is reasonable for the Sponsor to action now on the understanding that it will be completed prior to implementation.	The CAA note and have taken into account that the Airport have a Tree Management Plan.
18h	Chart clutter is caused by the complex and non-standard nature of the IAP.	Y	This has not been mentioned in previous feedback and seems to be a new issue that has suddenly 'appeared' as part of the argument not to approve the procedure. Perhaps the CAA can provide examples of where they are unable to understand certain parts of the chart. Example chart for LPMA Approved by EASA, more cluttered than the IAP	Doc 4 : Global Express Sim Report ftp://rms.ftp@37.1.99.153/Doc 4 - Global Express Sim Report Pages 12-22.pdf Doc 5 : Lear 45 Sim Report ftp://rms.ftp@37.1.99.153/Doc 5 - Lear 45 Sim Report Pages 12-22.pdf Doc 6 : Aperta Flight Report ftp://rms.ftp@37.1.99.153/Doc 6 -	The final chart would not have all of the waypoint lat/longs listed , they are in the database. Additionally, CTA/CTR boundaries and altitudes are not usually present on RNP IAP charts. LBHA and the APDO would welcome guidance from the CAA on what elements of the chart can be simplified. This could	Chart clutter is a symptom of the complexity of the airspace design proposed not a cause of the complexity. The CAA's view is that the chart is cluttered due to the IAP content and the airspace within which the IAP is proposed. To remove elements from the chart designed to aid situational awareness would

			for 03 RNAV.	Aperta Flight Report.pdf Doc 7 : Avalon Aero Flight Report ftp://rms.ftp@37.1.99.153/Doc 7 - Avalon Aero Flight Report.pdf Doc 10: Safety Case ftp://rms.ftp@37.1.99.153/Doc 10 - Safety Case.pdf Doc 11: Madeira RNP Z 05 ftp://rms.ftp@37.1.99.153/Doc 11 - Madeira RNP Z 05.pdf	potentially include removal of Waypoint Lat/Long box, removal or reduction of the airspace displayed, "zoomed in" view with the nominal track larger on the chart.	introduce different risks instead of removing/reducing risks. This is symptomatic of the several cumulative issues leading to the CAA's conclusion that the proposed IAP design does not maintain a high standard of safety.
18i	Due to the number of issues raised above, the CAA does not accept that the impacts on human factors and pilot workload have been suitability mitigated within this proposal. Additionally, the workload will be increased for pilots arriving from outside of the UK, who are used to flying IAPs which are wholly contained within controlled airspace.	Y	The material provided to the CAA to date includes 'Flyability' tests where pilot workload has not been raised as an issue except for one comment *'removing the "Step down" 2000 to 1800 after KBE01 would improve workflow, even if a slightly steeper approach resulted'.* There have not been any comments of unacceptable workload. This is an opinion that is directly contradicted by every pilot that has flown this approach in both simulators in all wind conditions and in real aircraft.	Doc 4 : Global Express Sim Report ftp://rms.ftp@37.1.99.153/Doc 4 - Global Express Sim Report Pages 12-22.pdf Doc 5 : Lear 45 Sim Report ftp://rms.ftp@37.1.99.153/Doc 5 - Lear 45 Sim Report Pages 12- 22.pdf Doc 6 : Aperta Flight Report ftp://rms.ftp@37.1.99.153/Doc 6 - Aperta Flight Report.pdf Doc 7 : Avalon Aero Flight Report ftp://rms.ftp@37.1.99.153/Doc 7 - Avalon Aero Flight Report.pdf Doc 10: Safety Case ftp://rms.ftp@37.1.99.153/Doc 10 - Safety Case.pdf	18a: Neither flight simulation or live flight of the procedure have reported an increase of pilot workload when flying the procedure. 18b: The speed restriction is a maximum speed not a minimum. Therefore, if the weather is inclement or there is a breakdown in the procedure, the pilots are able to reduce speed or execute a missed approach, which will route the aircraft towards the Biggin Hill overhead. 18c: multiple mitigations in place. 18d: Neither flight simulation or live flight of the procedure have reported an increase of pilot workload when flying the procedure.	The CAA refers to its comments in 18d above regarding the live flights. The CAA did not endorse the live flights. The post flight reports provided indicate that whilst the procedure was manually entered into the aircraft FMS, which is acceptable for an approved validation flight, that as the Course Deviation Indicator (CDI) scale changes were not made during the flights the CDI sensitivity could provide a false sense of a low workload. Whilst considering the content of this document, the CAA maintains that the cumulative impact of the issues raised give rise to safety concerns of the proposal and will not maintain a high standard of safety. In

					18e: the sponsor would consider applying an approach category restriction. The CAA have provided no evidence that the non-compliant segments cause an unstable approach. 18f: removal of the SDF from the chart, and an increase in procedure minima from 1040/443, to 1270/693 OCA/OCH ft. 18g: Tree Management Plan 18h:The final chart will not contain CTR/CTZ information or Waypoints.	the respect of the Air Navigation Order (2016) Article 187(2) 'the CAA must not notify or approve an instrument flight procedure unless it is satisfied that the procedure is safe for use by aircraft'.