# CAA Operational Assessment

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| Title of airspace change proposal | LAMP2 DP1.1 (West) |
| Change sponsor | NATS |
| Project reference | ACP-2017-70 |
| Account Manager | [redacted] |
| *Case study commencement date* | 08/06/2022 |
| *Case study report as at* | 28 October 2022 |

*Instructions*

In providing a response for each question, please ensure that the 'status' column is completed using the following options:

- YES
- NO
- PARTIALLY
- N/A

To aid the SARG Lead it may be useful that each question is also highlighted accordingly to illustrate what is:

resolved YES not resolved PARTIALLY not compliant ....NO....

## Executive Summary

This ACP is sponsored by NATS and proposes the systemisation of lower airspace across the southwest of England and most of Wales. In the proposed design a new systemised route structure has been created between 7000ft and 24,500ft, with Free Route Airspace (FRA) established above 24,500ft (FL245).

The ACP seeks to replace the extant route structure with a systemised PBN route network. The change requires some amendment to the volumes of control airspace (CAS) and special use airspace. This includes introduction of some new areas of CAS, the lowering of some CTA base levels but also release of CAS (c108nm$^3$) through raising of base levels of existing CTAs.

The ATS route spacing is based on CAP1385 route separation guidance assuming a 5nm radar environment in contrast to current 12nm route spacing.

The proposed change does involve changes to SIDs and initial portions of STARS to Bristol and Cardiff as well as some airfields out with the West area. However, none of the proposed changes affect flight profiles below 7000ft.

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| **Detail**:<br>4 new RNAV 1 STARs - EGGD (BAJJA 1B/TOJAQ 1B) & EGFF (BAJJA 1C/TOJAQ 1C)<br>14 revised STARs (includes conversion of 5 RNAV5 to RNAV1)<br>2 revised SIDS - EGGD (new SID designators)<br>1 new hold - EGLL (OCTIZ replaces OKESI)<br>3 revised holds - OCK, CDF, BRI nav specification changed to RNAV1/RNAV5<br>3 holds withdrawn – OKESI replaced by OCTIZ, MERLY replaced by PEWBI en-route hold, PLYMO due redundancy.<br>17 new waypoints following realignment of ATS routes |

| 1. | Justification for change and options analysis (operational/technical) | Status |
|---|---|---|
| 1.1 | Is the explanation of the proposed change clear and understood? | YES |
| | In line with the AMS. | |
| 1.2 | Are the reasons for the change stated and acceptable? | YES |
| | To conform to the CAA's AMS requirements.<br>Introduce increased systemisation between 7000ft and FL245 to increase capacity, reduce ATC/aircraft interaction and reduce complexity.<br>Enable the reduction of CO2e emissions and fuel burn per flight and conform to the Department for Transport's Air Navigation Guidance. | |
| 1.3 | Have all appropriate alternative options been considered, including the 'do nothing' option? | YES |
| | A 'do nothing' option (maintain the current ATS route structure) was progressed to indicate the baseline. The additional following options were progressed to consultation:<br>**Option 4** - Systemisation using PBN routes based on 5nm radar separation environment, with improved connectivity provided by direct routes, interfacing with FRA **above FL305** (FL245 in S09).<br>**Option 6** - Systemisation using PBN routes based on 5nm radar separation, interfacing with Free Route Airspace (FRA) **above FL245** | |
| 1.4 | Is the justification for the selection of the proposed option sound and acceptable? | YES |
| | The main difference between Option 6 (preferred Option) and Option 4 is that the division flight level (DFL) between the systemised airspace/FRA is 6,000ft lower at FL245, and this allows aircraft to begin the free-route portion of the flight earlier. *This is relevant as traffic within the LD1.1 area is principally FL245 and above.* | |

| 2. | Airspace description and operational arrangements | Status |
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| 2.1 | Is the type of proposed airspace design clearly stated and understood? | YES |
| | In the proposed design a new systemised route structure has been created between 7000ft and 24,500ft, with Free Route Airspace (FRA) established above 24,500ft (FL245).<br><br>**Note**: LD1.1 cannot be implemented independent of FRA D2 because there are no routes proposed above FL245. | |
| 2.2 | Are the hours of operation of the airspace and any seasonal variations stated and acceptable? | YES |
| | H24, no change. | |
| 2.3 | Is any interaction with adjacent domestic and international airspace structures stated and acceptable including an explanation of how connectivity is to be achieved? Has the agreement of adjacent States been secured in respect of High Seas airspace changes? | YES |
| | The changes proposed in this ACP affect flights above FL70. The proposed systemisation of the LD1.1 area will necessitate some changes at:<br>• Eastern Interface (LTMA, LUS, LMS)<br>• Northern Interface (MTMA)<br>• Western Interface (Ireland)<br>• Southern Interface (Brest/Channel Islands)<br><br>Consultation feedback from Brest ACC resulted in a revision to the initial design which is incorporated in the ACP. No change to Channel Island SIDs and STARs but route connectivity will change. | |
| 2.4 | Is the supporting statistical evidence relevant and acceptable? | YES |
| | Analysis has been updated to take account of recent changes in fuel prices and the latest traffic forecasts. | |

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| 2.5 | Is the analysis of the impact of the traffic mix on complexity and workload of operations complete and satisfactory? | YES |
| | Validation activities have enabled the Change Sponsor to conclude that the West Airspace Deployment is fit-for-purpose, and in some cases have identified a potential for a reduction in controller workload, although there is an initial expectation of a significant training burden to consider given the scale of change. | |
| 2.6 | Are any draft Letters of Agreement and/or Memoranda of Understanding included and, if so, do they contain the commitments to resolve ATS procedures (ATSD) and airspace management requirements? | PARTIAL |
| | LoA's and MoU's continue to be developed with all parties. Copies of the drafts were attached to the Stage 4 submission but remain work in progress. | |
| 2.7 | Should there be any other aviation activity (low flying, gliding, parachuting, microlight site etc) in the vicinity of the new airspace structure and no suitable operating agreements or ATC Procedures can be devised, what action has the change sponsor carried out to resolve any conflicting interests? | YES |
| | Evidence presented in the Consultation feedback report points towards a good level of consultation between the BGA and GA communities to address specific issues related to the organisations. | |
| 2.8 | Is the evidence that the airspace design is compliant with ICAO SARPs, airspace design & FUA regulations, and Eurocontrol guidance satisfactory? | YES |
| | ATS Route network and FBZs are established in accordance with Eurocontrol design requirements and have been developed through engagement with the Network Manager. Significant waypoints are established/maintained in accordance with ICAO, Eurocontrol and CAA policies (eg ICAO ICARD and ADQ requirements). | |
| 2.9 | Is the proposed airspace classification stated and justification for that classification acceptable? | YES |
| | CAS being handed back (where base levels of CTAs are being raised) will revert to Class G. Classification of existing CTA's will remain unchanged and increased CTA volumes will adopt classification of existing areas. | |
| 2.10 | Within the constraints of safety and efficiency, does the airspace classification permit access to as many classes of user as practicable? | YES |

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| | No change to current arrangements | |
| 2.11 | Is there assurance, as far as practicable, against unauthorised incursions? (This is usually done through the classification and promulgation.) | YES |
| | All changes will be promulgated through an update to the AIP (targeting AIRAC 03/2023) and associated charts will be amended to reflect any changes. CAA comms will publicise if appropriate through Skywise. | |
| 2.12 | Is there a commitment to allow access to all airspace users seeking a transit through controlled airspace as per the classification, or in the event of such a request being denied, a service around the affected area? | YES |
| | No change to current arrangements | |
| 2.13 | Are appropriate arrangements for transiting aircraft in place in accordance with stated commitments? | YES |
| | No change to current arrangements | |
| 2.14 | Are any airspace user group's requirements not met? | NO |
| | No change | |
| 2.15 | Is any delegation of ATS justified and acceptable? (If yes, refer to Delegated ATS Procedure). | |
| | No change to areas where ATS is delegated, however, interface arrangements have been discussed and adjusted as necessary. | |

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| 2.16 | Is the airspace design of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to contain horizontal and vertical flight activity (including holding patterns) and associated protected areas in both radar and non-radar environments? | YES |
| | Designed in collaboration with the Network Manager and subjected to validation activities. | |
| 2.17 | Have all safety buffer requirements (or mitigation of these) been identified and described satisfactorily (to be in accordance with the agreed parameters or show acceptable mitigation)? (Refer to buffer policy letter.) | PARTIAL |
| | The sponsor is seeking dispensation from the extant buffer policy used for SUA. The sponsor has outlined that they have conducted Hazard ID and risk analysis with input from MoD (Section 5.14 of the submission and HAZID – Appendix 32 refers). Explanation of the sponsor hazard id and risk assessment processes was further amplified at a CAA/Sponsor meeting held on 18 October 2022 at which the sponsor provided a fuller explanation of the methodology and outcomes of their SP406 and Bow Tie processes.<br><br>The proposed dispensation is as follows:<br><br>• For airspace reservations where the activity type is annotated as high energy manoeuvres (HEM) a 5nm buffer will be applied as standard. Subject to liaison between the Civil Airspace Manager (CAM) and the Military Airspace Manager (MAM) and on receipt of confirmation that the activity will be positively managed by ATC then the AMC may select a 1nm FBZ in LARA for the specific reservation. (**See Note 1**)<br>• A 1nm buffer for BVLOS operations<br>• Autonomous high energy manoeuvres will require a buffer of 5nm<br>• 2000ft vertical buffer will be applied in all instances<br><br>**Note 1:** The assessment of partial reflects that the CAA wishes to better understand the proposed mechanisms for determining and confirming that HEM activities are to be positively managed prior to any decision to reduce the buffer to 1nm.<br><br>**Note 2:** The MoD supported the proposal to request dispensation from the CAA Buffer Policy but commented in their response that, 'if the CAA do not grant dispensation from the CAA Buffer Policy, then the MOD would wish to discuss with NATS what the extended ASM protocols would involve as any impact on MOD activity would need to be assessed'. | |
| 2.18 | Do ATC procedures ensure the maintenance of prescribed separation between traffic inside a new airspace structure and traffic within existing adjacent or other new airspace structures? | YES |

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| | NATS intends to activate FBZs for each of the SUAs. These are a recognised airspace design feature already employed in the UK and across the European ATS Network where they define the lateral, vertical and temporal limits for validating flight plans when an associated volume of SUA is planned to be activated. This will alleviate the need to apply a buffer between SUAs and CTA as FBZ will make routes unavailable for flight planning in IFPS. | |
| 2.19 | Is the airspace structure designed to ensure that adequate and appropriate terrain clearance can be readily applied within and adjacent to the proposed airspace? | YES |
| | Yes. No change. | |
| 2.20 | If the new structure lies close to another airspace structure or overlaps an associated airspace structure, have appropriate operating arrangements been agreed? | YES |
| | NATS intends to activate FBZs for each of the SUAs. These are a recognised airspace design feature already employed in the UK and across the European ATS Network where they define the lateral, vertical and temporal limits for validating flight plans when an associated volume of SUA is planned to be activated. This will alleviate the need to apply a buffer between SUAs and CTA as FBZ will make routes unavailable for flight planning in IFPS. | |
| 2.21 | Where terminal and en-route structures adjoin, is the effective integration of departure and arrival routes achieved? | YES |
| | Some changes to existing SIDs /STARS have been coordinated with Bristol and Cardiff. SID truncations do not impact below 7000ft. New RNAV 1 STARS introduced for Bristol and some RNAV 5 STARS removed.<br>***NOTE**: Where any subsequent changes to the network are necessary to facilitate connectivity NATS have committed to progressing these through LD1.2*<br><br>2 revised SIDS - EGGD (new SID designators)<br>1 new hold - EGLL (OCTIZ replaces OKESI)<br>3 revised holds - OCK, CDF, BRI nav specification changed to RNAV1/RNAV5<br>3 holds withdrawn – OKESI replaced by OCTIZ, MERLY replaced by PEWBI en-route hold, PLYMO due redundancy. | |

| 3. | Supporting resources and communications, navigation and surveillance (CNS) infrastructure | Status |
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| 3.1 | Is the evidence of supporting CNS infrastructure together with availability and contingency procedures complete and acceptable? The following are to be satisfied: | |
| | • **Communication:** Is the evidence of communications infrastructure including RT coverage together with availability and contingency procedures complete and acceptable? Has this frequency been agreed with AAA Infrastructure? | YES |
| | No change | |
| | • **Navigation:** Is there sufficient accurate navigational guidance based on in-line VOR or NDB or by approved RNAV-derived sources, to contain the aircraft within the route to the published RNP value in accordance with ICAO/ Eurocontrol standards? For example, for navaids, has coverage assessment been made, such as a DEMETER report, and if so, is it satisfactory? | YES |
| | *A DEMETER report has been produced which does highlight those areas where there is some reduced DME coverage and captures the impact of the reduced coverage as follows:*<br>The report concludes that there is sufficient DME/DME coverage and redundancy for all STARs at 12,000ft and above with this coverage and redundancy extends to 8000ft for all but two STARs. The BAJJA 1B and 1C STARs are duly notified for their gaps beyond FANFE below FL100. Areas of limited redundancy on the ELREW 1B / 1C and TOJAQ 1B / 1C STARs require the publication of critical navaids on their charts.<br>While the BRI hold has coverage and redundancy down to its base level of 3000ft, the CDF hold loses coverage below 6000ft, and will be notified as such on the chart for DME/DME only RNAV aircraft. A proposed, but currently unapproved, new network will be set up to fill in the gaps described here and permit the notes to be removed from charts in time. Draft charts in this package will be based on the current DME/DME network. | |
| | • **Surveillance:** Radar provision – have radar diagrams been provided, and do they show that the ATS route/airspace structure can be supported? | YES |
| | No change | |

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| 3.2 | Where appropriate, are there any indications of the resources to be applied, or a commitment to provide them, in line with current forecast traffic growth acceptable? | N/A |
| | The Change Sponsor considers that the introduction of LD1.1 and the improvements proposed may contribute to an improvement in network resilience and a consequential increase in controller capacity. | |

| 4. | Maps/charts/diagrams | Status |
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| 4.1 | Is a diagram of the proposed airspace included in the proposal, clearly showing the dimensions and WGS84 co-ordinates?<br><br>(We would expect sponsors to include clear maps and diagrams of the proposed airspace structure(s) – they do not have to accord with aeronautical cartographical standards (see airspace change guidance), rather they should be clear and unambiguous and reflect precisely the narrative descriptions of the proposals.) | YES |
| | V1.1 of the proposal includes improved charts which better illustrate specific areas of the proposed route structure in terms of geographical locations but detail in some of the Tables could have been better presented as outlined below.<br><br>**Note**:<br>• *Main document does not make any reference to CTA name change from NITON to PEPZE. Table 4 (p17) refers to NITON CTAs as does Figure 5. Detail of the proposed change is captured in the AIP Changes document, but it should have been clearer.*<br>• *The Stage 4 Final submission (Tables 4, 5 and 6) does not adopt a consistent format with respect to reporting of base level changes – this adds to requirement to dig deeper into other documents to confirm levels* | |
| 4.2 | Do the charts clearly indicate the proposed airspace change? | YES |
| | Updated as part of version 1.1 work to present improved overview of the proposed changes. | |
| 4.3 | Has the change sponsor identified AIP pages affected by the change proposal and provided a draft amendment? | YES |
| | APPENDIX 1: Draft AIP Changes for FRA D2 & LD1.1 ACP submissions refers | |

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| 4.4 | Has the change sponsor completed the WGS84 spreadsheet and submitted to the CAA for approval? | PARTIAL |
| | WGS84 was submitted to the CAA and this has been updated as the ACP has progressed. Several points required clarification and amendment, and this remains ongoing work. | |

| 5. | Operational impact | Status |
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| 5.1 | Is the change sponsor's analysis of the impact of the change on all airspace users, airfields and traffic levels, and evidence of mitigation of the effects of the change on any of these, complete and satisfactory?<br>Consideration should be given to: | |
| | a) Impact on IFR General Aviation traffic, on Operational air traffic or on VFR General Aviation traffic flow in or through the area. | YES |
| | Some impact on VFR GA traffic is a possibility as a consequence of the proposed increased lateral limits of some CTA's. However, some mitigation will be delivered through the raising of CAS base levels where lateral limits have been increased. | |
| | b) Impact on VFR Routes. | YES |
| | Relevant stakeholders have been consulted. | |
| | c) Consequential effects on procedures and capacity, i.e. on SIDs, STARs, holds. Details of existing or planned routes and holds. | YES |
| | The proposal makes clear that the intent is to replace the extant route structure with a systemised PBN route network from FL70 to FL245. Details of the interfaces with adjoining airspace structures are contained in Sect 5.<br><br>The proposed systemisation of the LD1.1 area will necessitate some changes at:<br>• Eastern Interface (LTMA, LUS, LMS)<br>• Northern Interface (MTMA)<br>• Western Interface (Ireland)<br>Full details are contained in Sect 5 of the submission. | |

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| | d) Impact on airfields and other specific activities within or adjacent to the proposed airspace. | YES |
| | The proposal requires some changes to Bristol and Cardiff STARS (realignment) and truncation of 2 Bristol SIDs and 1 Cardiff SID. Proposed changes do not affect below FL70 and have been coordinated with the airports. Where there are changes to holds, reporting points or nav specification – these have been coordinated with the appropriate airport.<br><br>**Exeter**: Arrival and departure flight profiles remain unchanged.<br>**D201:** New segment of D201 (max upper level FL145) created to facilitate improved Dublin – Swanwick interface.<br><br>2 revised SIDS - EGGD (new SID designators)<br>1 new hold - EGLL (OCTIZ replaces OKESI)<br>3 revised holds - OCK, CDF, BRI nav specification changed to RNAV1/RNAV5<br>3 holds withdrawn – OKESI replaced by OCTIZ, MERLY replaced by PEWBI en-route hold, PLYMO due redundancy. | |
| | e) Any flight planning restrictions and/ or route requirements. | YES |
| | Details of all the proposed route changes are detailed in Appendix 1.<br><br>NATS intends to activate FBZs are for each of the SUAs. These are a recognised airspace design feature already employed in the UK and across the European ATS Network where they define the lateral, vertical and temporal limits for validating flight plans when an associated volume of SUA is planned to be activated. This will alleviate the need to apply a buffer between SUAs and CTA as FBZ will make routes unavailable for flight planning in IFPS. | |
| 5.2 | Does the change sponsor consultation material reflect the likely operational impact of the change? | YES |
| | Fully captured in Sect 6 of the submission. NATS has worked closely with impacted stakeholders, particularly airports, as part of LD1.1. | |

| **Case study conclusions – to be completed by Airspace Regulator (Technical)** | **Yes/No** |
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| Has the change sponsor met the SARG airspace change proposal requirements and airspace regulatory requirements above? | YES |

The ACP has been progressed over an extended period and after some amendment to the initially proposed scope (under LAMP Deployment 1) has progressed satisfactorily through all stages of the process demonstrating that engagement, consultation, and development of the final design for this deployment. The final submission was subject to an extended period of review due to numerous points/areas requiring clarification.

The final set of documents is comprehensive and covers all areas of the change proposal. All documents have been uploaded to the airspace change portal to provide transparency to stakeholders.

| **RECOMMENDATIONS/CONDITIONS/PIR DATA REQUIREMENTS** | **Yes/No** |
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| Are there any Recommendations which the change sponsor **should try** to address either before or after implementation (if approved)? If yes, please list them below. | NO |

***GUIDANCE NOTE:*** *Recommendations are something that the change sponsor **should try** to address either before or after implementation, if indeed the airspace change proposal is approved. They may relate to an area in which the change sponsor is reliant upon a third party to actually come to an agreement and consequently they do not carry the same 'weight' as a Condition.*

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| Are there any Condition(s) which the change sponsor **must fulfil** either before or after implementation (if approved)? If yes, please list them below. | YES |

***GUIDANCE NOTE:*** *Conditions are something that the change sponsor **must fulfil** either before or after implementation, if indeed the airspace change proposal is approved. If their proposal is approved, change sponsors **must observe** any condition(s) contained within the regulatory decision; failure to do so **will usually** result in the approval being revoked. Conditions should specify the consequence of failing to meet that condition, whether that be revoking the ACP or some alternative.*

- The Change Sponsor is to provide further clarity on the proposed protocols for determining whether a reduced buffer for HEM activities which are positively managed by ATC to 1nm is acceptable including detail of the management decision processes. Without this information the CAA is unable to confirm acceptance of dispensation to the SUA Safety Buffer Policy for HEM activities positively managed by ATC to be reduced to 1nm. (Section 70 responsibilities as outlined at *Interests of National Security 70(2)(f))*
- Detail of the solution which would allow faster climbing aircraft departing RAF Fairford to avoid potential level offs to be incorporated in the Letter of Agreement with RAF Brize Norton.

- The Change Sponsor is to address all remaining minor amendments to the aerodata spreadsheets to the satisfaction of the CAA prior to submission of the Change Request to AIS.
- Draft LoAs shall be finalised and signed before implementation. Confirmation of this action is to be provided to the CAA. Where this is not achieved extant LoAs would still apply, thereby requiring analysis of any safety or operational implications.

| Are there any specific requirements in terms of the data to be collected by the change sponsor for the Post Implementation Review (if approved)? If yes, please list them below. | YES |
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***GUIDANCE NOTE:*** *PIR data requirements concerns any specific data which the change sponsor* ***must*** *collate post-implementation, if indeed the airspace change proposal is approved. Please use this section to list any such requirements so that they can be captured in the regulatory decision accordingly.*

- To monitor the volume of traffic and types of aircraft using the airspace compared with the forecast.
- To monitor the preferred trajectories of aircraft and airline operators that are most frequently operating within the airspace.
- To monitor the fuel savings achieved by the aircraft and airline operators that are most frequently operating within the airspace.

## General summary

The proposed changes will introduce increased systemisation across a large geographical area which includes full redesign and modernisation of the ATS route network within. The extant route structure will be replaced by PBN route network which interfaces with the FRA D2 ACP and has been developed through consultation with the region's airports, which include Bristol, Cardiff and Exeter. The ACP will reduce the complexity of the ATS route network and thereby the need for ATC interaction. The proposed changes are consistent with the AMS.

Overall, the ACP will reduce the volume of CAS by in excess of 100NM$^3$ and the increased systemisation and revised network waypoints are forecast to deliver a reduction in average per flight greenhouse gas emissions of 11 kgCO2e.

## Comments and observations

The CAA will monitor progress of the ACP through to implementation.
The CAA will issue an ICAO High Seas notification letter prior to implementation of the changes in accordance with normal practice.

**Level 2A ACP**

| Operational assessment sign-off | Name | Signature | Date |
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| Operational assessment completed by Airspace Regulator (Technical) | [redacted] | [redacted] | 20/10/2022 |
| Operational assessment approved by Manager Airspace Regulation | [redacted] | | 21/10/2022 |

Manager Airspace Regulation Comments:

This proposal has been developed in line with the requirements of CAP1616. The changes proposed support an overall reduction in CAS, whilst thought the adoption of systemisation and PBN techniques this could realise a per flight CO2 saving. This prioritisation of CO2 is consistent with the altitude based prioritise and thus provides a logical focus for the ACP. Significantly, this proposal seeks to increase the available capacity of the airspace in the first place and thus aligns with the goals of the AMS and the intent of this ACP in the first instance.

This ACP covers a significant geographic area and thus has a multitude of interactions that have both been addressed through proposed updates of LOAs and a request for dispensation against the CAA Buffer Policy. This dispensation has been subject to extensive discussion and follow up meetings to understand fully the nature of the ask and critically how the proposal was developed and will be applied. Whilst content in principle for the dispensation, there remains a question as to how the procedure required to facilities this dispensation will work in practice; therfore subject to the conditions noted above I would agree with this assessment.

| Head AAA | Name | Signature | Date |
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| Operational assessment conclusions approved by Head AAA | [redacted] | [redacted] | | *26/10/2022* |
| Head AAA Comments:<br>This is a large and important change that will systemise lower-level controlled airspace across Western UK airspace. Reducing emissions and freeing up capacity whilst overall reducing volumes of controlled airspace. | | | | |