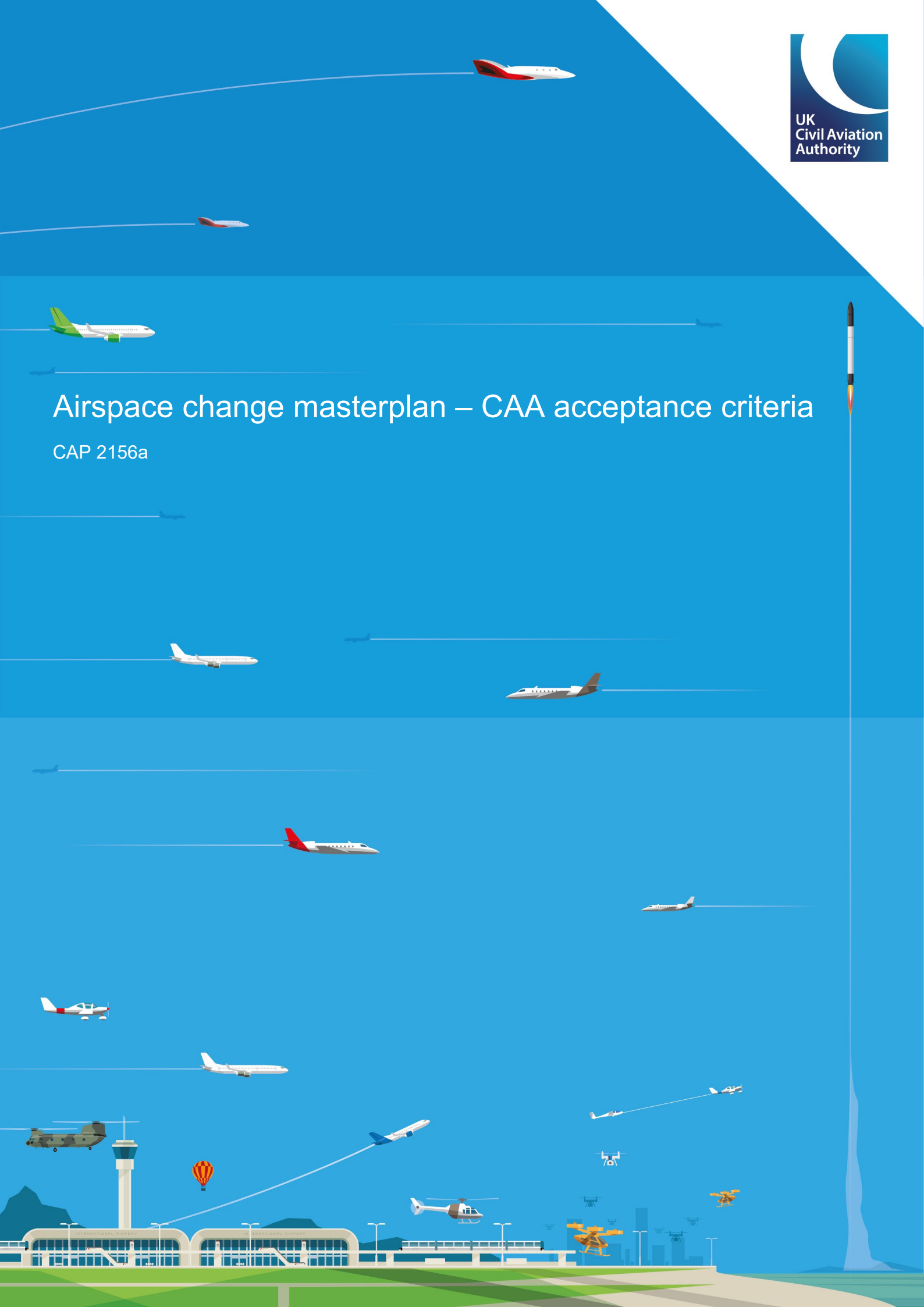


Airspace change masterplan – CAA acceptance criteria

CAP 2156a



Published by the Civil Aviation Authority, December 2022

Civil Aviation Authority
Aviation House
Beehive Ring Road
Crawley
West Sussex
RH6 0YR

You can copy and use this text, but please ensure you always use the most up to date version, use it in context so as not to be misleading, and credit the CAA.

First edition published August 2021.

This is the second edition, published December 2022.

Enquiries regarding the content of this publication should be addressed to:

airspace.modernisation@caa.co.uk

The latest version of this document is available in electronic format at: www.caa.co.uk/CAP2156a

Contents

Revision history	4
Purpose of this document	5
Criteria for accepting the masterplan – overview	7
Overall aim and purpose of the masterplan	8
Interaction with the CAP 1616 airspace change process	9
Criteria for the content of the masterplan overall	11
A: Where, when and why airspace changes may be developed or needed	11
B: Information on the airspace changes needed	13
Expected content by iteration	18
Iteration 1 – overall concept (complete)	19
Iteration 2 – identify airspace change proposals needed and potential interdependencies (complete)	19
Iteration 3 – collective plan of airspace change proposals pre-consultation	21
Iteration 4 – collective plan incorporating feedback from CAP 1616 consultations	23
Appendix A: Co-sponsor masterplan commissions	25
Co-sponsor letter to NERL dated 2 November 2018	25
Co-sponsor letter to NERL dated 30 July 2019	30
Co-sponsor letter to NERL dated 12 May 2021	35

Revision history

In addition to editorial improvements, the table below summarises the changes made in this second edition. The changes have been designed to clarify, simplify and rationalise the acceptance criteria, as well as to reflect the evolving nature of the airspace modernisation programme.

Section	Change
Overall aim and purpose of the masterplan	Updated to incorporate a masterplan 'mission statement', as agreed between the CAA and Department for Transport (as co-sponsors) and ACOG. The mission statement summarises the overall aim and purpose of the masterplan as drawn from the masterplan commissioning letters (Appendix A).
Interaction with the CAP 1616 process	Clarified that before an airspace change proposal can progress to a Stage 5 Decision, the CAA must have accepted an Iteration 4 of the masterplan covering that airspace change proposal. This procedure is necessary to ensure that all airspace change proposals within a cluster or deployment are decided in accordance with the associated masterplan.
Criteria for the content of the masterplan overall	Clarified the criteria derived from the requirements of the masterplan commissioning letters (Appendix A).
	Added a Safety Strategy requirement (B10).
	Simplified the wording of the criteria, and reduced duplication throughout the document.
Expected content by iteration	Updated sections on Iterations 3 and 4.

Purpose of this document

The purpose of this document is to set out the criteria against which the CAA will make the decision whether to accept the airspace change masterplan into the Airspace Modernisation Strategy

1. This document is published pursuant to Direction 4 of the Civil Aviation Authority (Air Navigation) Directions.
2. The **airspace change masterplan** (or masterplan) is a single coordinated implementation plan for airspace changes in the UK to cover the period to 2040. The masterplan must be consistent with the delivery of airspace modernisation as described in the Airspace Modernisation Strategy.
3. The CAA and Department for Transport, as **co-sponsors** of airspace modernisation in the UK, commissioned NATS (En Route) plc (NERL) to create the masterplan. The co-sponsors required NERL to set up a separate and impartial body the **Airspace Change Organising Group (ACOG)** to coordinate the airspace change proposals needed to deliver airspace modernisation. The CAA has specified these requirements in the form of a condition on NERL's economic licence.¹
4. The co-sponsors assess the masterplan **to confirm that it is consistent with the criteria in this document, government policy and the CAA's own statutory airspace functions**. Based on that assessment, and before the masterplan can be implemented, the CAA must decide to formally **accept** the masterplan into its **Airspace Modernisation Strategy**, having consulted the Secretary of State.
5. Once the masterplan is accepted into the Airspace Modernisation Strategy, the masterplan, together with the CAA's general duties in [section 70](#) of the Transport Act 2000, will form the basis against which individual airspace change decisions are made by the CAA. This means that the CAA's decisions on airspace change

¹ NERL licence condition 10a www.caa.co.uk/CAP2111.

proposals must not be inconsistent with the masterplan.

6. **The masterplan does not include all the detail of individual airspace change proposals.** The masterplan is a separate regulatory decision-making process to the [CAP 1616](#) process applied by the CAA for individual airspace change decisions. The interaction between these two processes is explained later in this document. **Sponsors are required to follow the process in this document and CAP 1616.**
7. Each future iteration of the masterplan will continue to be assessed and accepted separately. The iterations broadly align with certain gateways of the CAP 1616 process that each airspace change proposal which is currently being taken forward as part of the modernisation programme (referred to here as 'constituent airspace change proposals') will follow.

Criteria for accepting the masterplan – overview

For the CAA to accept a masterplan iteration into the Airspace Modernisation Strategy, we need to be satisfied, having consulted the Secretary of State, that the criteria set out in this document have been met

8. **This document covers:**
- overall aim and purpose of the masterplan
 - evolution of the masterplan so far
 - interaction with the CAP 1616 airspace change process
 - criteria for the content of the masterplan
 - expected content by iteration.
9. The criteria in this document are derived from the requirements set out in the masterplan commissioning letters from the co-sponsors to NERL of 2 November 2018, 30 July 2019 and 12 May 2021. The commissioning letters are reproduced at Appendix A for reference.
10. In assessing the masterplan, we will use as our reference point:
- the criteria set out in this document
 - the assessment framework set out in the accompanying document, [CAP 2156b Airspace Change Masterplan – assessment framework](#)
11. The co-sponsors will assess and, if satisfied, the CAA will accept an iteration of the masterplan into the Airspace Modernisation Strategy.
12. Airspace modernisation is a long and complex programme. We expect the masterplan to be flexible and sufficiently agile to accommodate the evolving context for airspace modernisation, such as any additional co-sponsor commissions to produce elements of the masterplan, or unanticipated external events. The CAA will therefore continue to review this document over the lifetime of the masterplan, as future iterations are developed.
- the requirements of any future commissions from the CAA and Department for Transport as co-sponsors.

Overall aim and purpose of the masterplan

The purpose of the masterplan is to set out a single coordinated implementation plan for airspace changes in the UK up to 2040 to upgrade the UK's airspace and deliver the objectives of airspace modernisation at a system level

13. In doing so, the masterplan will, in particular:

- identify where and when **airspace change proposals** need to be developed in coordination to support delivery of the objectives of the CAA's [Airspace Modernisation Strategy](#)
- describe how individual airspace change proposals relate to each other (i.e. **interdependencies**) and where there are potential **conflicts** in their proposed designs
- explain how **trade-off** decisions to resolve those conflicts have been made
- set out the proposed **timelines** for implementation of the individual airspace changes
- demonstrate the anticipated **cumulative impact** of the airspace change proposals.

14. Iteration 4 of the masterplan will describe, for each cluster or deployment, the proposed airspace structure and the final proposed trade-offs between interdependent ACPs, taking account of the outputs of the coordinated consultations. This will act as a framework for airspace change proposals, which must be consistent with it.

An **interdependency** can be described as two or more airspace change proposals that are linked together in some way. For example, there is a potential conflict in their design options or there is a potential cumulative impact on stakeholders on the ground.

A **conflict** can be described as two or more airspace change proposals that cannot both proceed in their proposed form.

A **trade-off** is the choice or decision to resolve a conflict and could be between two or more sponsors of separate airspace changes, or between two or more objectives (such as achieving noise reduction and achieving fuel efficiency).

Interaction with the CAP 1616 airspace change process

In order for a constituent airspace change proposal (ACP) to progress to assessment at the gateways at Stages 2, 3 and 5 of CAP 1616, the co-sponsors must have accepted an iteration 2, 3 and 4 of the masterplan, respectively, for the relevant cluster or deployment

15. At each gateway, the CAA will assess each ACP against a set of indicators to check the submission is consistent with each iteration of the masterplan. The indicators will be shared with ACOG (who in turn should provide these to sponsors) and published on the airspace change portal against the respective ACP.

Stage 2 ('Develop & Assess') gateway

16. An ACP at a **Stage 2 gateway in the CAP 1616 process** should specify any interdependencies with other changes identified in iteration 2 of the masterplan. This should be reflected in sponsors' Stage 2 materials, and the masterplan will help us identify these airspace interactions at the system level.
17. In January 2022, the co-sponsors accepted iteration 2 of the masterplan. Iteration 2 set out potential conflicts and interdependencies between constituent ACPs. **The acceptance of iteration 2 enables sponsors to continue to develop their proposals for assessment at the Stage 2 Gateway of CAP 1616.**

Stage 3 ('Consult') gateway

18. When an ACP forming part of the masterplan reaches the **Stage 3 gateway of CAP 1616**, the co-sponsors require assurance that the designs the ACP sponsors will consult on reflect the iteration 3 content of the masterplan for that cluster or deployment. They will also work together to deliver a modernised system.
19. The co-sponsors expect the ACP's consultations at Stage 3 of the CAP 1616 process to enable stakeholders to understand and comment on the potential cumulative impacts.
20. **Sponsors will be unable to submit their proposal at the Stage 3 gateway of CAP 1616 until the cluster-wide airspace design of the proposed options, and the cumulative impacts of those options, are represented in an accepted iteration 3 of the masterplan.**

Stage 5 ('Decision') gateway

21. In order to be approved, individual ACPs will need to pass through the **Stage 5 gateway of CAP 1616** after an Iteration 4 of the masterplan for the associated cluster or deployment has been accepted.
22. Iteration 4 of the masterplan will act as a framework for the constituent ACPs, which must be consistent with it. It will describe the final proposed trade-offs between interdependent ACPs, taking account of the outputs of the coordinated consultations. Where such trade-off decisions affect an ACP, the sponsor will need to demonstrate that their proposal does not conflict with those trade-off decisions.
23. Notwithstanding the impact of the masterplan process on a sponsor's final design selection, accepting masterplan Iteration 4 content into the Airspace Modernisation Strategy will not pre-determine the outcome of any individual airspace change decisions made by the CAA.
24. **Sponsors will be unable to submit their proposal at Step 4b for CAA regulatory decision until the detail of the final solutions and trade-offs for interdependent ACPs, and the expected cumulative impacts, are represented in an accepted Iteration 4 of the masterplan.**

Criteria for the content of the masterplan overall

25. This section sets out the criteria that the masterplan overall (considering all iterations) must meet. The level of detail of the information for each criterion will vary in each iteration.
26. ACOG may make a case to the co-sponsors during the ongoing assessment process that a particular criterion is not applicable to a particular iteration. For transparency, the reasoning should be presented in the relevant iteration of the masterplan for assessment.

A: Where, when and why airspace changes may be developed or needed

In order for the masterplan iteration to be accepted into the Airspace Modernisation Strategy by the CAA, it will identify:

ID	Criteria (ACP = airspace change proposal)	Commission Reference	Additional Notes
A1	Areas where, in light of forecast growth in demand and airspace bottlenecks, ACPs could be developed to accommodate that growth and alleviate delays by the introduction of additional airspace capacity.	Nov 2018 Para 6c	For example, by reducing route interactions.
A2	Areas where ACPs could be developed in light of planned developments on the ground which will require new airspace designs.	Nov 2018 Para 6a	ACOG are expected to monitor planned developments and remain flexible.

A3	Areas where ACPs could be developed to allow for more direct routes.	Nov 2018 Para 6a	Such routes may enable reductions in controlled airspace and environmental inefficiencies.
A4	Areas where ACPs are needed to deliver a safety benefit.	Nov 2018 Para 6b, i	For example, changes that remove risk factors in the current system.
A5	Areas where ACPs can limit the total adverse effects of noise.	Nov 2018 Para 6b, ii	For example, by enabling continuous climb and/or descent operations.
A6	Areas where ACPs can deliver air quality or fuel efficiency benefits.	Nov 2018 Para 6b, iii	
A7	Areas where ACPs are needed to improve access to airspace for all users.	Nov 2018 Para 6b, iv	For example, by reducing the volume of controlled airspace.
A8	Areas where ACPs are needed to enable military access to airspace for training and national security.	Nov 2018 Para 6b, v	ACOG are expected to liaise with the Ministry of Defence on future requirements.
A9	Where ACPs are needed to introduce new technology.	Nov 2018 Para 6b, vi	For example, Performance-based Navigation (PBN).

B: Information on the airspace changes needed

To be accepted by the co-sponsors, the masterplan will:

ID	Criteria	Reference	Additional Notes
B1a	Constitute a credible and implementable plan for the necessary airspace changes.	Nov 2018 Para 6c	To include: <ul style="list-style-type: none"> ▪ a list of airspace changes with identified sponsors in specific volumes (or clusters) of airspace ▪ a coherent sequence of individual changes or deployments of changes against the evaluated alternatives ▪ preferred timescales (including delivery assumptions) for their adherence against each step of the CAA's CAP 1616 process and subsequent implementation ▪ a clearly identified critical path of delivery.
B1b	Identify key assumptions and risks.	Nov 2018 Para 6c	To include: <ul style="list-style-type: none"> ▪ assumptions on which the proposed changes are based and are dependent ▪ risks associated with delivering the plan and how they could be mitigated.
B1c	Provide an assessment of the degree of commitment offered by each of the ACP Sponsors.	Nov 2018 Para 6c	ACOG must be mindful of the effect of an airspace change sponsor deciding to withdraw from (or significantly delay its contribution to) the modernisation programme.

B2	Demonstrate how the Strategic Environmental Assessment (SEA) and Habitats Regulations Assessment (HRA) interact with – and inform the development of – the masterplan.	May 2021 Para 8	<p>To ensure that environmental impacts are integrated into the modernisation programme, an SEA and HRA are a fundamental part of, and therefore must inform, the development of the masterplan. The masterplan should explain how those environmental assessments have been taken into account during the masterplan process.</p> <p>More information is in CAP 2156b Airspace Change Masterplan – assessment framework.</p>
B3	Identify potential interdependencies between the constituent ACPs.	<p>Nov 2018 Paras 3 & 6c</p> <p>Jul 2019 Paras 7 & 12</p>	<p>The masterplan will enable the CAA to understand how individual airspace change proposals relate to each other and therefore take better informed decisions by identifying the interdependencies, conflicts and trade-offs between individual changes.</p> <p>The masterplan may require sponsors to work together to:</p> <ul style="list-style-type: none"> ▪ solve a conflict between two or more of their potential designs, or ▪ improve the current airspace structure, for example by removing bottlenecks or holds. <p>In doing so, any proposed trade-offs are to be made transparently with the coordination of ACOG (and assessed by the co-sponsors) and not via private bilateral agreements between airports².</p>

² Impacted stakeholders will be consulted on proposed designs – and therefore solutions to conflicts – when airspace change sponsors consult on each airspace change proposal through the CAP 1616 airspace change process.

B4	Identify potential solutions to interdependencies.	Nov 2018 Paras 3 & 6c Jul 2019 Paras 7 & 12	<p>These might include design interdependencies due to the objectives of one sponsor and another, and potential solutions such as:</p> <ul style="list-style-type: none"> ▪ the sequencing of proposed changes ▪ moving routes vertically, laterally or the time/day they are used, to resolve a conflict ▪ a sponsor proposing to no longer pursue one of its designs to resolve a conflict ▪ other potential solutions identified by ACOG and sponsors.
B5	Set out proposed trade-offs to resolve interdependencies.	Nov 2018 Paras 3 & 6c Jul 2019 Paras 7 & 12	<p>Trade-offs might arise between:</p> <ul style="list-style-type: none"> ▪ the objectives of different airspace change proposals, for example, where two airports want to make use of the same volume of airspace ▪ the objectives of an airspace change proposal and its impact on existing airspace or procedures.
B6	Explain the potential implications for government policy objectives of the proposed solutions.	Nov 2018 Paras 3 & 6c Jul 2019 Paras 7 & 12	<p>The masterplan should demonstrate the cumulative impacts of trade-off decisions and proposed designs.</p> <p>For example, where interdependencies will lead one or more changes to have knock-on effects on other airports/airfields or other airspace users, including users of uncontrolled airspace.</p>

B7	<p>Report on engagement carried out since the previous iteration, and present an ongoing engagement strategy with:</p> <ul style="list-style-type: none"> ▪ the sponsors of the constituent ACPs, and ▪ relevant stakeholders. 	<p>Nov 2018 Paras 3 & 6c</p> <p>Jul 2019 Paras 7 & 12</p>	<p>‘Engagement’ is the catch-all term we use to mean developing relationships with stakeholders. Stakeholders should be told how they can best engage with ACOG in order to provide feedback that ACOG can take into account at the appropriate point. More information on engagement principles is in CAP 2156b Airspace Change Masterplan – assessment framework.</p> <p>We expect ACOG to run a public engagement exercise prior to the submission of Iteration 3 to the co-sponsors. Through this engagement, ACOG should make stakeholders aware of the CAP 1616 consultations on airspace change proposals, how they are linked together, and how stakeholders can feed back on trade-off decisions that will have to be made that may affect them. The approach to be taken by ACOG will be agreed through regular assessment by the co-sponsors.</p>
B8	<p>Include a plan for the content of subsequent iterations of the masterplan.</p>	<p>N/A</p>	<p>The co-sponsors may also offer additional feedback during the ongoing assessment of the masterplan, requiring further work or more detail in the next iteration, which must be taken into account.</p>
B9	<p>Include an assessment of the impacts on airspace accessibility, including on the General Aviation sector overall.</p>	<p>Commitment made by govt. during passage of ATMUA Act³</p>	<p>Each iteration of the masterplan must include an assessment of the potential positive benefits or negative impacts on airspace accessibility.</p>

³ Air Traffic Management and Unmanned Aircraft Act 2021.

B10	Include a safety strategy.	Commitment made by ACOG in Iteration 2	<p>The safety strategy will:</p> <ul style="list-style-type: none"> ▪ set out roles and responsibilities for safety assurance ▪ ensure that the sponsors of constituent ACPs develop the safety cases for their individual proposals in a coordinated manner ▪ ensure the co-sponsors will have the necessary information to assess the safety of the system-wide design. <p>ACOG will not be responsible for assuring the safety of any masterplan ACP. Responsibility for the adequacy of the risk assessment and mitigation rests with the sponsor of the individual ACP(s) or designated controlling authority, as owners of the safety arguments, who must comply with all relevant legal and regulatory requirements.</p>
B11	Identify the operational concepts required to deliver the airspace changes and their level of maturity.	Nov 2018 Para 6c	Where changes to operational concepts are enabled by new technologies, the masterplan will need to explain the maturity of the relevant air traffic management and aircraft systems. It should also explain how these capabilities may evolve from the point of deployment out to 2040.
B12	Be written in a way that can be understood by all stakeholders and published simultaneously in an accessible format.	N/A	ACOG may determine the format of the information presented to the co-sponsors for assessment and acceptance of the masterplan, providing it allows the CAA to determine whether the criteria in this document have been met and allows the CAA to carry out its statutory functions.

Expected content by iteration

Figure 1: Summary of content of Iterations 1 and 2

ITERATION 1 – overall concept	Aim and content <ul style="list-style-type: none">- principles of overall airspace concept- key issues and opportunities that should be considered- no engagement Iteration 1 has been submitted and assessed
ITERATION 2 – identify potential inter- dependencies between ACPs	Aim and content <ul style="list-style-type: none">- high-level description of options under consideration- system-wide view of interdependencies and potential conflicts between ACPs- includes an engagement strategy Iteration 2 has been submitted and accepted into the Airspace Modernisation Strategy

Note: ACP = airspace change proposal

Iteration 1

– overall concept (complete)

Purpose

27. The purpose of Iteration 1 of the masterplan was to provide a high-level programme plan identifying airspace changes in the south of England (known as the Future Airspace Strategy Implementation (FASI)-South programme). The aim was to describe the principles of the overall airspace concept and key issues and opportunities that should be considered. Iteration 1 was broadly aligned with the material necessary for the sponsor of an individual ACP to pass through the first gateway of the CAP 1616 airspace change process.

Submission to the co-sponsors

28. Because it is only a high-level plan, the co-sponsors decided that it was not necessary to formally accept Iteration 1 into the Airspace Modernisation Strategy.
29. Following a delay caused by the COVID-19 pandemic, we published [our assessment of Iteration 1](#) in February 2021.

Iteration 2

– identify airspace change proposals needed and potential interdependencies (complete)

Purpose

30. The purpose of Iteration 2 of the masterplan was to provide a high-level description of the options under consideration in each constituent airspace change proposal, with the geographical scope now extended to the whole UK. It also presented a system-wide view of interdependencies and potential conflicts between those ACPs, enabling sponsors to progress through the Stage 2 gateway of the CAP 1616 process.

Submission to the co-sponsors

31. The co-sponsors assessed Iteration 2 and the CAA formally [accepted it into the Airspace Modernisation Strategy](#) in January 2022.
32. We published an [addendum to CAP 2312A](#) accepting the ‘cluster’ approach proposed in Iteration 2 in October 2022.

Stakeholder engagement

33. As part of the acceptance of Iteration 2, the co-sponsors required that ACOG engage with relevant stakeholders and the public to ensure that the purpose and content of Iteration 2 is explained and understood.

Figure 2: Summary of expected content of Iterations 3 and 4

<p>ITERATION 3 – collective plan of airspace change proposals pre-consultation</p>	<p>Engagement prior to Iteration 3</p> <ul style="list-style-type: none"> - ACOG public engagement exercise on overall description of design - explains methods to calculate cumulative impacts and demonstrate tradeoffs - seeks feedback on possible gaps in, or improvements to, the masterplan- e.g. other ACPs needed to deliver airspace modernisation - informs stakeholders of upcoming Iteration 3 and CAP 1616 consultations 	
<p>ITERATION 4 – collective plan incorporating feedback from ACP consultations</p>	<p>Aim and content</p> <ul style="list-style-type: none"> - description of proposed airspace structure and route network - more detail on design trade-offs between interdependent ACPs and how they might be resolved, before ACP's CAP 1616 consultations - methodology for calculating cumulative impacts, and cumulative assessment of design choices (for each cluster or deployment) - does <u>not</u> include all the detailed options from the ACPs 	
	<p>Aim and content</p> <ul style="list-style-type: none"> - updated description of proposed airspace structure and route network for the cluster or deployment - describes final proposed solutions and tradeoffs - does <u>not</u> include all the detail of the ACPs - acts as a framework that ACPs must be consistent with 	<p>Co-sponsors' assessment reviews the process followed to propose these trade-offs and ensures they deliver government policy</p>

Notes:

ACP = airspace change proposal

Iterations are expected to be submitted for each ACP 'cluster' or deployment according to their respective development timelines.

Iteration 3

– collective plan of airspace change proposals pre-consultation

Purpose

34. Iteration 3 of the masterplan will provide a description of the proposed airspace structure and route network envisaged by the airspace change proposals when viewed as a collective, but **without** the detailed designs of all the routes. It will describe the specific airspace design trade-offs between interdependent airspace change proposals in greater detail than Iteration 2, with more information about the cumulative impacts of different design choices and the methods used to calculate them.

Submission to the co-sponsors

35. Following the acceptance of the ‘clustering’ approach (see [Addendum to CAP 2312A](#)), ACOG has informed the co-sponsors that Iteration 3 content is expected to be submitted for assessment according to the development timelines for each cluster or deployment.

Expected content

36. ACOG will create Iteration 3 by working with the sponsors of the constituent airspace change proposals to incorporate the outputs that are available from the ‘initial’ options appraisal at Step 2B and the ‘full’

options appraisal at Step 3A of the CAP 1616 process. The ‘full’ options appraisal is a more rigorous quantitative analysis of the options in the ‘initial’ options appraisal. It is used by the airspace change sponsor to determine, in a transparent way, which option(s) to take forward to public consultation.

37. For each interdependency, ACOG will coordinate input from the sponsors concerned as to what types of solutions could potentially be deployed in the masterplan to resolve any conflicts between their collective airspace change proposals for them to work as a system.

38. Iteration 3 will describe the intended approach to coordinating the CAP 1616 consultations within the relevant cluster or deployment. It will include the high-level consultation plans of constituent airspace change proposals and ensure stakeholders understand how they will be able to respond.

39. ACOG will need to show how the SEA and HRA have been taken into account as Iteration 3 matures and later iterations are developed.

Stakeholder engagement

40. Prior to the submission of Iteration 3, ACOG is required to run a public engagement exercise to gather the views of individual stakeholders on the development of the masterplan at a strategic level. This engagement exercise supplements the CAP 1616 consultations for each airspace change proposal.
41. Before the CAA will consider accepting Iteration 3 of the masterplan into the Airspace Modernisation Strategy, we will want evidence that ACOG has conducted a public engagement exercise that will:
- provide an overall description of the system-wide design based on the information available
 - seek input on gaps or improvements, for example whether ACOG has identified strategically important airspace changes needed to deliver the airspace modernisation
 - explain how airspace change proposals have been grouped into clusters or deployments
 - demonstrate where trade-offs have been proposed between the sponsors of interdependent airspace change proposals to create their respective designs, ensuring transparency throughout the process
 - provide more information about the cumulative impacts of different design choices and the methods used to calculate them
42. ACOG must collate feedback on the engagement exercise and demonstrate how they have taken it into account in producing the content for Iteration 3 submission(s).
- ensure stakeholders are aware of how they can be notified of the CAP 1616 consultations, enabling them to comment on trade-off decisions that will affect them.

Iteration 4 – collective plan incorporating feedback from CAP 1616 consultations

Purpose

43. Iteration 4 of the masterplan for each cluster or deployment will act as a framework for the constituent ACPs, which must be consistent with it. **It will describe the final proposed trade-offs between interdependent ACPs**, taking account of the outputs of the coordinated consultations. It will provide a description of the proposed airspace structure and route network when viewed as a collective, but **without** the detailed designs of all the routes.

Submission to the co-sponsors

44. Following the acceptance of the ‘clustering’ approach (see [Addendum to CAP 2312A](#)), ACOG has informed the co-sponsors that Iteration 4 content is expected to be submitted for assessment according to the development timelines for each cluster or deployment. Depending on these timelines, assessment of the Iteration 4 content for one (or more) cluster(s) may take place prior to the assessment of Iteration 3 content for the other cluster(s).

Expected content

45. ACOG will create Iteration 4 content once feedback from the individual interdependent airspace change

proposal consultations as part of the CAP 1616 process has been analysed and taken into account by sponsors and ACOG.

46. Building on previous iterations, Iteration 4 will include:
- an updated description of the proposed airspace structure and route network envisaged by the airspace change proposals when viewed as a collective
 - evidence of how ACOG has facilitated alignment between the sponsors of interdependent airspace change proposals
 - the detail of the final proposed solutions and trade-offs, and the expected cumulative impacts, so the CAA can ensure that the outcomes deliver government policy.
47. As noted above, the co-sponsors have agreed to ACOG dividing the masterplan into separate ‘clusters’ with different timelines, each with a set of interdependent airspace change proposals, in order to progress the programme most efficiently. We may therefore have subsets of masterplan iterations, but each will remain subject to the uniform acceptance criteria set out in this document and subsequent revisions.

48. Iteration 4 must show how it has taken account of the SEA and HRA for the masterplan, including any additional information available compared with earlier iterations of the masterplan.

Stakeholder engagement

49. ACOG will need to inform relevant stakeholders of the publication of Iteration 4 and what the next steps are for the constituent airspace change proposals.

Appendix A

Co-sponsor masterplan commissions

Co-sponsor letter to NERL dated 2 November 2018

See next page.



Department
for Transport



David Curtis
NATS (En Route) PLC
4000 Parkway
Whiteley
Fareham
Hants
PO15 7FL

02 November

UK Airspace Modernisation: commission to NERL lead a programme to create a coordinated implementation plan for airspace changes in Southern England.

1. As co-sponsor organisations of airspace modernisation in the UK, we are writing to NATS (En Route) PLC – NERL – to commission and set out our expectations of the work of the Airspace Modernisation Oversight Group (AMOG) in relation to FASI South.

Context:

2. The Government published in 2017 a Strategic Rationale for Upgrading UK airspace, setting out the rationale for a wholesale redesign of the UK's airspace to meet future demands on this finite piece of infrastructure. Delivering this outcome will be one of the key components of the CAA's Airspace Modernisation Strategy (AMS) for the UK. This strategy pulls together the relevant government policies that airspace modernisation must deliver, and how they should be delivered, including setting out the need for relevant industry bodies to have clear deployment plans in place.
3. As set out in CAA's letter to NERL of 25th September 2018, we think NERL is best placed to be responsible for drawing together a UK-wide coordinated implementation plan for airspace changes (or airspace change masterplan) between the start of RP3 and 2040. In developing this plan, NERL shall engage effectively with relevant organisations, such the airports using the airspace in question and will be the sponsors of airspace change. In addition to developing this masterplan, we expect NERL to sponsor a number of individual airspace design changes set out in the plan. The CAA proposes to enshrine this new strategic airspace role for NERL, in its economic licence.

Civil Aviation Authority

CAA House 45-59 Kingsway London WC2B 6TE www.caa.co.uk
Telephone 020 7453 6203 tim.johnson@caa.co.uk

4. As part of this role, we expect NERL at the earliest possible opportunity to create an Airspace Modernisation Oversight Group (AMOG) that will, as a matter of urgency, lead the FASI South Programme to create a single coordinated implementation plan for airspace changes in Southern England (a south east airspace change masterplan, or masterplan for short).
5. The FASI-S masterplan is required for the following reasons:
 - i. To create a single plan that aligns the airspace delivery aspirations of NERL and the 14 airports within the FASI-S programme and to give the DfT and CAA, as co-sponsors of airspace modernisation, confidence that a credible and implementable plan exists and that the sponsors understand what is required of them to deliver this change.
 - ii. To enable CAA to understand how individual airspace change proposals relate to each other and therefore take better informed decisions
 - iii. To inform the use of potential new legislative powers to compel airspace change to happen, where required. Our assumption is that being included in the masterplan would be one of the triggers for the use of these powers
 - iv. To identify opportunities to improve airspace design that will deliver a wider set of benefits, not just to increase capacity.

Commission:

6. Within the context described above and noting that the programme will have a number of stages of development, we require that the AMOG, under NERL's leadership and programme management, prepares a south east masterplan that meets the following criteria:
 - a) Identifies where airspace changes could be developed in Southern England in light of:
 - Forecast growth in demand for aviation across all sectors and the required airspace capacity to accommodate that growth;
 - airspace bottlenecks where delays to consumers could be alleviated by capacity;
 - areas where planned development on the ground such as new runways will require new airspace designs;
 - areas where more direct routes are possible that could, for example, reduce controlled airspace.
 - b) Identifies other changes that may be required deliver one or more of the following benefits:
 - i. where airspace changes are needed to deliver a safety benefit, for example, changes that ensure route separation
 - ii. where airspace changes can reduce noise (more specifically, reduce the total adverse effects of noise, as set out in the Air Navigation Guidance 2017)
 - iii. where airspace changes can deliver air quality or fuel efficiency benefits

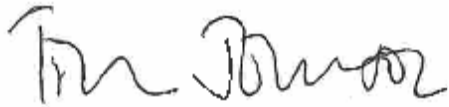
- iv. where airspace changes are needed to allow improved access to airspace for all users, for example where the existence of controlled airspace is no longer justified
- v. where airspace changes are needed to enable the military to fulfil their training requirements and national security functions
- vi. where airspace changes are needed to introduce new technology, for example the introduction of performance-based navigation

c) Identifies:

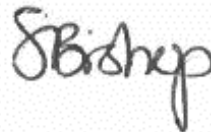
- the operational concepts required to deliver these changes and their level of maturity
- the set of assumptions on which the proposed changes are based and are dependent
- the key risks associated with delivering the plan and how they could be mitigated
- the recommended coherent sequence of individual or modules of changes against the evaluated alternatives
- the preferred timescale for their adherence against each step of the CAA's CAP1616 process and subsequent implementation
- the party responsible for taking each individual airspace change forward
- the interdependencies between individual changes
- the degree of commitment offered by each individual party

7. We would also like to know the minimum number of changes that are necessary to ensure that major airspace projects (e.g. to accommodate new runway capacity) are viable.
8. We recognise that some of the work to create the FASI-S masterplan is already underway, for example through the NERL Feasibility Assessment, the LTMA Working Group and work by individual airports on potential airspace changes. We would expect the further work on each of these projects to be reflected in the output of this commission.
9. In establishing the AMOG, we require to NERL to provide to the DfT and the CAA by end November its formal proposals that address the following:
 - a. how they will ensure that the AMOG working group contains the necessary skills and capabilities drawn from a blend of its own, qualified third party and airport resources;
 - b. the governance arrangements that will give all stakeholders confidence of equal access to this process;
 - c. how they will assure the independence of their role in this process (e.g. via non-executive membership on the governance group), and how NSL's commercial relationship with some stakeholders would not confer any additional status or influence to any particular stakeholder in the process.
10. We expect NERL to deliver a fully developed FASI-S masterplan by end June 2019. We expect NERL to report monthly to the AMS Delivery Monitoring and Oversight (DMO) team (currently being set up in the CAA) on the progress with the development of the masterplan and its subsequent implementation. The format of this reporting will be agreed separately.

11. Recognising the need to build and maintain momentum on this essential programme, we expect NERL to work with airspace users – as the key beneficiaries of airspace modernisation – to put in place the necessary arrangements to begin this work now. We understand NERL is already engaging with airspace users to agree financial support through the FAS Facilitation Fund and would urge NERL and airspace users to conclude this discussion as a matter of priority. We have also written to the FAS Investment Board to set out our support for the use of the FAS Facilitation Fund for this purpose, subject to the conditions set out in paragraph 9. Continuing the principle that the key beneficiaries pay, we understand NERL intends to include provision for efficiently incurred costs of the AMOG programme management function over 2020 to 2024, in its RP3 Business Plan.
12. As noted at the start of this letter, the Airspace Modernisation Strategy requires a concerted industry effort to deliver airspace modernisation. This letter commissions work necessary to deliver one of the initiatives in the Airspace Modernisation Strategy. Further commissions will be prepared in due course, including a commission for further work from NERL to build on their Feasibility Assessment and the new airspace design concept they set out in that report, which will inform the airspace changes in the FAS-S programme.



Tim Johnson
CAA Director of Policy



Sarah Bishop
DfT Deputy Director

Co-sponsor letter to NERL dated 30 July 2019

See next page.



David Curtis
NATS (En Route) PLC
4000 Parkway
Whiteley
Fareham
Hants
PO15 7FL

30 July 2019

Southern Airspace Masterplan – first iteration and assessment

1. On 2 November 2018, as co-sponsor organisations of airspace modernisation in the UK, we wrote to NATS (En Route) PLC – NERL – to commission and set out our expectations of the work of the Airspace Change Organising Group (then called the Airspace Modernisation Oversight Group). We asked NERL to set up the group to, as a matter of urgency, lead the FASI South Programme of airspace modernisation to create a single coordinated implementation plan for airspace changes in Southern England (a south east airspace change masterplan, or masterplan for short).
2. The expectations for the masterplan (paragraphs 5, 6 and 7 of the letter) were replicated in Chapter 6 of the CAA's Airspace Modernisation Strategy, which was published on 18 December 2018.
3. NERL is due to share the first iteration of the masterplan with the co-sponsors in July 2019. The documentation we will see is well described as iteration 1 of phase 1 (the southern UK phase) of a national airspace masterplan. It is not the full solution.
4. We are now writing to confirm the contents of this iteration of the masterplan; plans for future iterations; and how we will assess the first iteration.

Content of first iteration:

5. The first iteration of southern masterplan is a high level airspace change plan with preliminary milestones of the 17 airspace change proposals (ACPs) required for the programme referred to as FASI-S, and supporting analysis including operational concepts. (Some of this analysis will be developed in future iterations by ACOG; some will continue to be owned by NERL. This distinction will be clearer in future documents, once ACOG is fully up and running.)

6. We understand that the iteration we receive in 2019 will include the following:
 - forecast growth and bottlenecks in airspace (bottleneck meaning features of the airspace design or operation that have the potential to restrict the flow of aircraft and thereby reduce the capacity of the airspace system as a whole);
 - operational and technical concepts to deliver the southern masterplan ACPs (also referred to as FASI-S ACPs);
 - a preliminary ACP plan based on this analysis that has been derived from submissions from all of the ACP sponsors involved. The plan will include preliminary milestones for individual ACPs and their progress through the CAP 1616 airspace change process, and the critical path. It will not at this stage include the interdependencies between those ACPs.
7. The first iteration may not include detail on conflicts and interdependencies covered in the 2 November 2018 letter, but a more mature version of the masterplan will need to. The more mature version will also need to include the co-ordinated sequencing of airspace change proposals, their progression through the CAP 1616 processes (including timing of CAA decisions) and implementation of any approved changes.
8. This iteration may not include potential ACPs identified by NERL that are driven primarily by the potential to reduce noise or reduce controlled airspace (or the other factors listed in the commission letter), but will help to inform ACP sponsors on opportunities that may be included in their designs aimed at accommodating additional runway capacity and/or making best use of existing runway capacity. Once published, it may also give wider stakeholders an opportunity to engage on whether and where such opportunities may exist.
9. The 17 FASI-S ACPs were identified through NERL's assessment of airport growth plans, analysis of forecasts and bottlenecks. Through the ACP design process, the need to consider good outcomes for noise, general aviation, military requirements, and other factors will be built into the design.¹ If there are volumes of airspace not covered by those 17 ACPs, further analysis before the next iteration of the masterplan will identify opportunities for new ACPs in those areas (driven, for example, by an opportunity to reduce the health impacts of noise or reduce the volume of controlled airspace).
10. In anticipation of this work, this iteration of the masterplan will include some initial, top down analysis that could help to identify those additional ACPs:
 - all controlled airspace in the south east of the UK below 10,000 ft will be reviewed and visualisations of the airspace created, indicating areas where controlled airspace is being used less intensively. This will highlight any geographical areas within the current operation where controlled airspace could be reduced through an ACP, though any decision to do so would require a full ACP process including a safety analysis. This analysis will be updated when ACP designs below 10,000 ft are at a mature stage.
 - heat maps of aircraft noise below 7,000 ft for the airports involved in the masterplan will be provided. This will highlight areas subject to two or more traffic routes that could potentially be alleviated through ACPs identified in the masterplan.

¹ These factors were covered in paragraph 6 of the commission letter and broadly reflect the factors identified in Section 70 of the Transport Act 2000.

11. We confirm support for this content as reflected in paragraphs 5-10 above as a first step towards producing a comprehensive airspace masterplan set out in full in our 2 November 2018 letter.

Content of future iterations

12. Based on the current FASI-S preliminary airspace change programme plan of the Southern UK in the first iteration of the masterplan, we understand it is NERL's view that all ACPs are due to progress through the CAP 1616 airspace change process to stage 2B and the 'develop and assess' gateway by July 2020. NERL suggests that at this time there will be more clarity as to the design options for those ACPs and NERL will then be in a position to²:

- identify the requirements for expanding capacity in the SE of England (including to enable the operation of the proposed NW Runway at Heathrow and enable more intensive use of the existing runways, whilst maintaining the UK's hub status) – meaning the masterplan should identify the minimum number of changes that are necessary to ensure that major airspace projects (e.g. to accommodate new runway capacity) are viable;
- identify the best sequence for proceeding with the ACPs;
- have a clear view of all interdependencies and the trade-offs that will be required to ensure a safe design is submitted to the CAA for all FASI-S sponsors;
- map out volumes of airspace not covered by those existing ACPs and their options;
- use their analysis of i) volumes of controlled airspace and ii) noise to consider additional ACPs that may be undertaken in those remaining volumes of airspace to deliver GA and noise benefits;
- engage relevant stakeholders listed in the airspace modernisation governance structure (including representative groups but not individual communities or organisations) to identify further potential ACPs.

13. NERL has suggested that at this stage it is not possible for the airports in the FASI-S programme to provide clarity as to whether they will consider all arrival and departure procedures as part of the design process. Once this information is clear we would also, at an appropriate stage, expect to see further detail on how noise is being considered. It would be useful for ACOG to establish a mechanism for stakeholders and airports to look at how potential opportunities for environmental improvements, including noise improvements, can be considered. This may result in additional airspace changes. Stakeholders engaged may include:

- the airport/ANSP in question,
- neighbouring airports/ANSPs who use adjacent volumes of airspace,
- community representatives impacted by the current airspace arrangements,
- the Independent Commission on Civil Aviation Noise (ICCAN).

14. We therefore expect to see those details in the future iteration of the masterplan. We expect this future iteration to offer an ACP programme plan based on analysis of forecasts, bottlenecks, use of controlled airspace, noise, and other analysis as required by the factors listed in paragraphs 6 and 7 of our

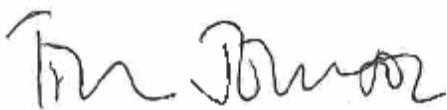
² The CAA is developing guidance as to how this stage of the CAP 1616 process should be enhanced to consider masterplan (i.e. interrelated) ACPs.

commission letter. The programme plan is expected to include milestones for individual ACPs and their progress through the ACP process, and the critical path. It will also include the trade-offs that will be required through the design processes and consultation interdependencies between those ACPs, with suggested modules of those ACPs that are necessarily interlinked.

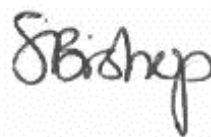
15. We expect ACOG to work with all ACP sponsors to try to solve these trade-offs, and to publish their approach for doing so, including through developing a mediation mechanism. We expect to agree this mediation mechanism with NERL and ACOG. The trade-offs must be solved in accordance with UK government policy and the CAA policy and strategy; the co-sponsors are developing additional process requirements and guidance on how the masterplan must address policy and strategy and we will engage with NERL and other stakeholders in due course.

Assessing the masterplan

16. When the co-sponsors receive the first iteration of the masterplan, we will read the document in detail and offer feedback on it. Once we have assessed it, this iteration and a summary of our feedback will be published.
17. The co-sponsors are preparing more detailed guidance on how we will assess and the basis for accepting future iterations of the masterplan. This will include requirements on the co-ordination process necessary for the masterplan work. Iteration one will not be considered for acceptance. Our guidance will be published ahead of our assessment and acceptance of future iterations of the masterplan.
18. The DfT is currently considering bringing forward legislation that would enable the SofS to be able to direct that an Airspace Change is prepared and submitted to the CAA. The government's intention is to use the proposed powers for ACPs that will deliver the CAA's strategy and plan under Air Navigation Direction 3(e) (i.e. the Airspace Modernisation Strategy as updated from time to time). Initially, the way that the government plans to do this, is through only using the prospective powers, if required, in respect of ACPs that have been identified as part of the airspace change masterplan. The potential legislation would only be used in relation to an accepted masterplan.
19. As noted in our commission letter, the Airspace Modernisation Strategy requires a concerted industry effort to deliver airspace modernisation. This letter commissions work necessary to deliver one of the initiatives in the Airspace Modernisation Strategy. Further commissions will be prepared in due course.



Tim Johnson
CAA Director of Policy



Sarah Bishop
DfT Deputy Director

Co-sponsor letter to NERL dated 12 May 2021

See next page.



Department
for Transport



[REDACTED]
NATS (En Route) PLC
4000 Parkway
Whiteley
Fareham
Hants
PO15 7FL

12th May 2021

Dear [REDACTED]

UK Airspace Modernisation: Masterplan Commission Update

1. As co-sponsor organisations of airspace modernisation in the UK, we are writing to NATS (En Route) PLC – NERL – to update the masterplan commission, which the Airspace Change Organising Group (ACOG) was established to implement, in accordance with NERL Air Traffic Services Licence Condition 10a.

Scope of the Masterplan Commission

2. The Department for Transport's FASI Programme Support Grant, which enables the remobilisation of airspace change proposals and their progression through Stage 2 of the Airspace Change Process (CAP1616), covers both the FASI-S and FASI-N programmes. As a result, the CAA and DfT, as co-sponsors of airspace modernisation, now commission and require NERL to extend the scope of the original masterplan commission, dated 2nd November 2018, to cover all of the UK. This is envisaged by the terms of NERL's Licence Condition 10a (2). The co-sponsors require ACOG to deliver the next iteration of the Masterplan, covering the revised scope, by the end of 2021.
3. Considering the revised scope of the commission, we understand, as a consequence of ACOG's work with current change sponsors, that Manchester, Liverpool, East Midlands, Leeds-Bradford, Glasgow, Edinburgh, Aberdeen and some of NERL's airspace change proposals have been identified as proposals that should be developed in coordination, under the Masterplan process. We note that is subject to being confirmed in Iteration 2. We also understand that the work ACOG will carry out to prepare Iteration 2, may also identify other change proposals that could be considered strategically important and therefore should be coordinated.

Objectives of the Commission

4. Delivering the Masterplan is one of the key components of the CAA's Airspace Modernisation Strategy (AMS). This strategy pulls together relevant government policies that airspace modernisation must deliver, and how they should be delivered, including setting out the need for relevant industry bodies to have clear deployment plans in place. The CAA will undertake a periodic review of its AMS during 2021, noting there have been several contextual changes since it was first published including:
 - Impact of the Covid-19 pandemic.
 - Increasing prominence of environmental issues on the government's agenda.
 - An acceleration of new users in uncontrolled airspace.
5. The Government is in the process of revising transport policy across all modes to meet the challenge of the 2050 net-zero emissions target. The Government intends to publish a transport decarbonisation plan and an aviation strategy (including a net-zero aviation strategy). The Government is also developing a strategic framework for the longer-term recovery of the sector, which will focus on building back better and ensuring a successful UK aviation sector for the future. This will be published later this year.
6. At present, it would be premature to review whether the objectives of the commission should fully take account a revised transport policy, but we intend to do so as soon as practicable. We note however that ACOG agreed with the DfT and CAA to adopt an iterative approach to the development of the Masterplan, so that any developments in aviation policy, can be better managed from an airspace design perspective.
7. The CAA will soon publish the criteria by which we will assess and accept, or otherwise, future masterplan iterations, following the engagement exercise carried out last year (CAP 1887). This will set out the components to the process of assessing and accepting the Masterplan, including the objectives included in the original co-sponsor commission which, as explained above may develop in the future.
8. The CAA is required to meet its obligations under the Environmental Assessment of Plans and Programmes Regulations 2004 before accepting the Masterplan. ACOG's role in that, as part of the Masterplan process, will be reflected in the Masterplan acceptance criteria to be published shortly.
9. Recognising the need to build and maintain momentum on this essential programme, we expect NERL to work with airspace users – as the key beneficiaries of airspace modernisation – to put in place the necessary arrangements to continue this work in its future NR23 Business Plan.
10. The Airspace Modernisation Strategy requires a concerted industry effort to deliver airspace modernisation, and this letter extends the commissioning of work necessary to deliver two of the initiatives in the Airspace Modernisation Strategy, and further commissions may be prepared in the future.

Yours Sincerely,



Stuart Lindsey
Head of Airspace Modernisation



Ian Elston
DfT Deputy Director

Cc Mark Swan, Head of ACOG