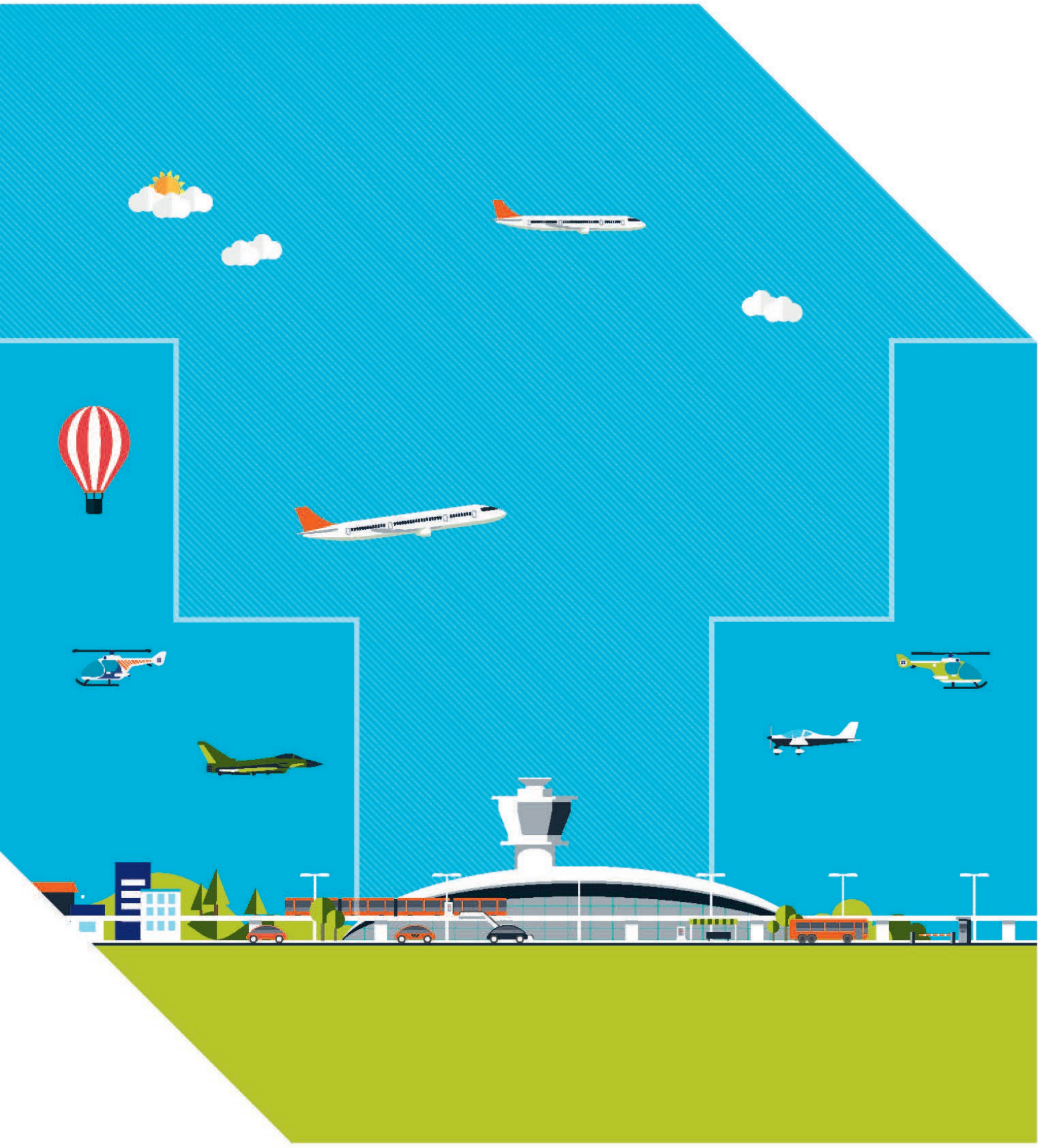
Airspace Change Masterplan Iteration 2:

Co-sponsor assessment and CAA acceptance decision

CAP 2312a



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Executive summary

1. The Department for Transport and CAA are co-sponsors of airspace modernisation. In 2018, we commissioned NATS (En Route) plc (NERL) to create an airspace change masterplan. NERL was required to set up a separate and impartial unit, the Airspace Change Organising Group (ACOG), to develop the masterplan (as required by condition 10a of NERL's Air Traffic Services Licence).

2. The purpose of the masterplan as defined by the co-sponsor commission is to set out a single coordinated implementation plan to deliver the objectives of airspace modernisation. It will identify which UK airspace design changes need to be developed in coordination to achieve the range of benefits that modernisation can deliver, and when.

3. The purpose of assessing the masterplan (or assessing work in progress towards the masterplan) is to give the co-sponsors confidence that the masterplan commission is being delivered. Based on that assessment, and before the masterplan can be implemented, the CAA must decide whether to formally accept the masterplan into its Airspace Modernisation Strategy (AMS), having consulted the Secretary of State.

4. ACOG has proposed an iterative approach to the development of the masterplan, which recognises that different information and levels of detail will be available at different points as the plan develops. Each iteration must be accepted separately, except Iteration 1, which has already been assessed and published. Once the masterplan is accepted into the AMS, together with the CAA's general duties in section 70 of the Transport Act 2000, the masterplan will form the basis against which individual airspace change decisions are made by the CAA.

5. **The purpose of this document is to set out:**

   - **the co-sponsors' assessment of Iteration 2 of the masterplan**
   - **the CAA's decision as to whether it has been accepted into the AMS.**

6. **Based on the assessment as described in this document, the co-sponsors have concluded that ACOG has provided the content required of Iteration 2 of the masterplan.** The co-sponsors are satisfied that Iteration 2 meets the masterplan commission, NERL licence condition 10a and the Government's policy objectives, and that NERL (the licensee) through ACOG has provided sufficient evidence against the relevant requirements of the Masterplan

Acceptance Criteria (CAP 2156a)[1] in relation to Iteration 2. Iteration 2 represents an important step towards the wholesale redesign of UK airspace in accordance with the initiatives of the AMS. Given the iterative approach of the masterplan, more information will be provided as further iterations are prepared and sponsors further develop their airspace change proposals (ACPs).

7. **After considering our statutory functions and duties, the CAA's decision, having consulted the Secretary of State, is to accept Iteration 2 of the masterplan into the AMS.** Notwithstanding acceptance, in this document the co-sponsors provide feedback to ACOG on the proposed 'cluster' approach that will need to be resolved before an Iteration 3 of the masterplan is submitted to the co-sponsors for assessment.

8. The CAA's decision to accept Iteration 2 of the masterplan means that sponsors of constituent ACPs can proceed to the Stage 2 gateway assessment of the CAP 1616 process now that potential conflicts and interdependencies between airspace changes are represented in an accepted Iteration 2 of the masterplan.

[1] Airspace Change Masterplan – CAA Acceptance Criteria (CAP 2156a), CAA August 2021.

Chapter 1

Introduction

1.1 The Department for Transport and the CAA are co-sponsors of airspace modernisation, which means we are working together to deliver the shared objective for the modernisation of UK airspace as set out in the CAA's AMS.[2]

Deliver quicker, quieter and cleaner journeys and more capacity for the benefit of those who use and are affected by UK airspace.

1.2 A crucial element of airspace modernisation and one of the most complex and challenging initiatives in the AMS is the need for airspace to be redesigned, which requires coordination among independent airspace change sponsors to manage complex interactions between airspace changes.

1.3 In 2018, the co-sponsors commissioned NATS (En Route) plc (NERL) to create a single coordinated implementation plan for airspace changes in the UK, known as the airspace change masterplan (or masterplan). Given the large number of parties involved in the development of the masterplan, including many airports and NERL itself, the co-sponsors required NERL to set up a separate and impartial unit, ACOG, to develop the masterplan.

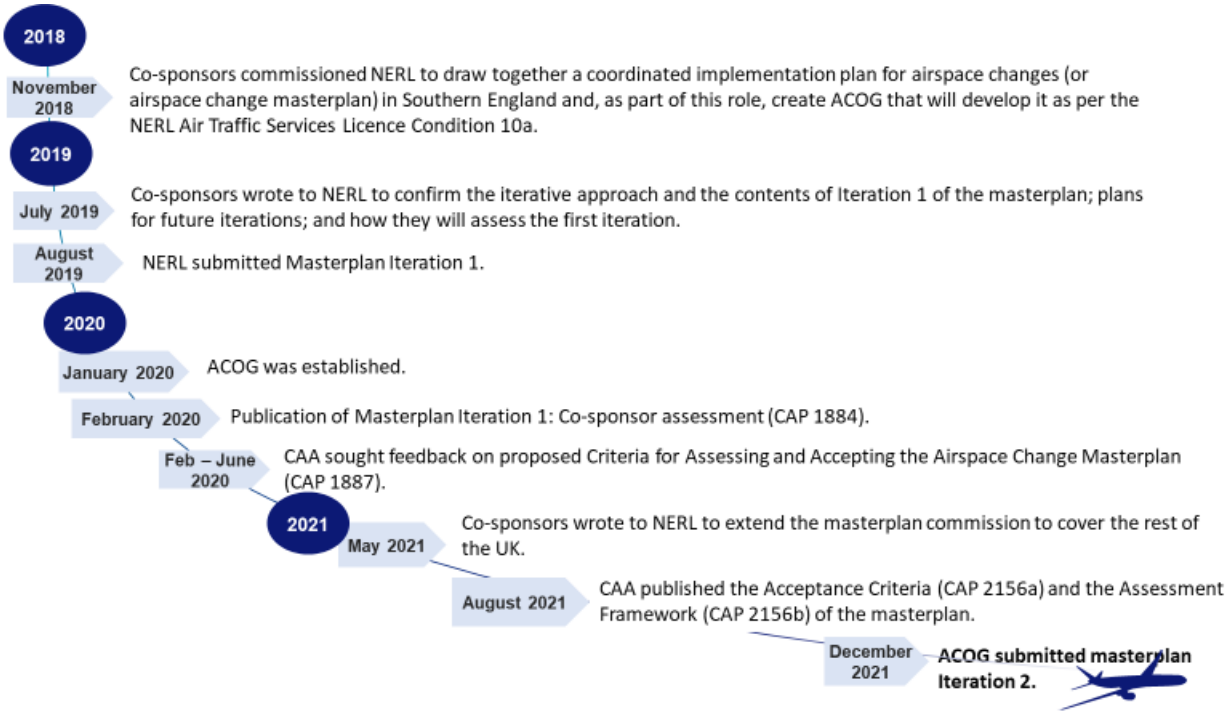
1.4 The CAA has given legal force to these requirements through condition 10a of NERL's licence.[3] The strategic objectives of the masterplan are set out in a series of commissioning letters from the co-sponsors to NERL.[4] A high-level chronology of the masterplan commission is presented in Figure 1 below.

[2] Airspace Modernisation Strategy (CAP 1711), CAA December 2018.

[3] Air Traffic Services Licence for NATS (En Route) PLC (CAP 2111), CAA October 2021.

[4] The commissioning letters of 2 November 2018, 30 July 2019 and 12 May 2021 are published as Appendix A to the Airspace Change Masterplan – CAA Acceptance Criteria (CAP 2156a), CAA August 2021.

Figure 1: Chronology of the masterplan commission to date



1.5 The masterplan will identify which UK airspace design changes need to be developed in coordination to achieve the range of benefits that modernisation can deliver (i.e. the objectives of the co-sponsors' commissioning letters), and when. Initially the masterplan commission was in respect of airspace in Southern England, but in May 2021 the commission was extended to cover all of the UK. More information on the background of the masterplan and ACOG's role can be found on ACOG's website.

1.6 The co-sponsors assess ACOG's progress to confirm that the masterplan is consistent with the masterplan commission, NERL licence condition 10a, government policy, and the CAA's own statutory airspace functions. The co-sponsors achieve this on a continual basis and through a process of formal checkpoints once each iteration of the masterplan has been submitted by ACOG to the co-sponsors. Based on that assessment, and before the masterplan can be implemented, the CAA must decide to formally accept the masterplan into its AMS, having consulted the Secretary of State.

1.7 The co-sponsors may offer feedback on areas in which we would expect to see more detail, or in which we believe further work will be necessary before the CAA can 'accept' that version of that iteration or future iterations of the masterplan.

1.8 Each individual ACP must follow the CAA's regulatory process for changing airspace design, known as CAP 1616.[5] Once the ACP is formally submitted for a decision, the CAA is required to consider whether the proposal is in accordance with the AMS.[6] Once the masterplan is accepted into the CAA's AMS, 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.

1.9 ACOG has proposed an iterative approach to the development of the masterplan, which recognises that different information and levels of detail will be available at different points as the plan develops. Each iteration must be accepted separately, except Iteration 1.[7]

1.10 This document sets out the CAA's assessment of Iteration 2 of the masterplan, as well as the CAA's decision as to whether it has been accepted into the AMS. Iteration 2 of the masterplan, which was submitted by ACOG on 6 December 2021, has been published alongside this document (see CAP 2312b).

1.11 The considerations and process that the co-sponsors follow when assessing each iteration of the masterplan are set out in **CAP 2156b[8] – referred to as the Masterplan Assessment Framework**. The criteria against which the CAA decides whether to accept an iteration of the masterplan into the AMS are set out in **CAP 2156a[9] – referred to as the Masterplan Acceptance Criteria.** The CAA published those documents in August 2021.

1.12 The assessment methodology and expectations for Iteration 2 are provided in chapter 2. The co-sponsors' assessment against the masterplan commission and the Masterplan Acceptance Criteria can be found in Appendix A. Based on that assessment, the CAA must decide whether to formally accept Iteration 2 into the AMS, having consulted the Secretary of State. The CAA's decision and next steps can be found in chapter 3.

1.13 Although this document provides an assessment against the acceptance criteria for Iteration 2 specifically, the requirements for acceptance of the masterplan into the AMS are ongoing and apply to all future iterations.

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[5] Airspace Change: Guidance on the regulatory process for changing the notified airspace design and planned and permanent redistribution of air traffic, and on providing airspace information (CAP 1616), CAA March 2021.

[6] See Civil Aviation Authority (Air Navigation) Directions 2017 (as amended), direction 5(1).

[7] Iteration 1 has already been assessed and published. It was submitted by NERL in 2019 and was considered a high level plan.

[8] Airspace Change Masterplan – Assessment Framework (CAP 2156b), CAA August 2021.

[9] Airspace Change Masterplan – CAA Acceptance Criteria (CAP 2156a), CAA August 2021.

1.14 Airspace modernisation is a long and complex programme. Therefore, as stated in CAP 2156a and b, the CAA will need to update the Masterplan Acceptance Criteria over the lifetime of the masterplan as iterations are developed, which may consequently affect how the CAA carries out its assessment of future iterations.

Chapter 2

Purpose of a masterplan assessment

2.1 The co-sponsors assess ACOG's progress in developing the masterplan to give us confidence that our masterplan commission will be delivered. Specifically, the purpose of the co-sponsors' assessment is to confirm:

- that the masterplan meets the Masterplan Acceptance Criteria (CAP 2156a)
- that the masterplan meets the strategic objectives of the commissioning letters and complies with NERL licence condition 10a
- whether the Government's policy objectives are being delivered
- whether the masterplan is consistent with the CAA's statutory airspace functions.

2.2 The co-sponsors' focus will be on the outcomes described above and, with assistance from the ACOG Steering Committee, whether ACOG has achieved them impartially in the way it said (and told stakeholders) it would, including appropriate engagement with all impacted stakeholders.

2.3 Once the masterplan is accepted into the CAA's AMS, 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.

2.4 In this regard, the Air Navigation Directions[10] state that the CAA must make airspace design change decisions in accordance with its published strategy for airspace modernisation. This means that the CAA must ensure that its decisions on ACPs as part of CAP 1616 are made in accordance with the AMS, including any iterations of the masterplan that have been accepted into it. Further information on the legal framework for acceptance can be found below.

Assessment methodology

2.5 In assessing the masterplan, the co-sponsors have reviewed all the information provided by ACOG to demonstrate compliance with the masterplan commission, NERL licence condition 10a and the Masterplan Acceptance Criteria. The co-sponsors have also checked whether the content and analysis in Iteration 2 accords with relevant government policy.

[10] Visit this webpage on the legislative framework to airspace change for more information on the Air Navigation Directions.

2.6 The co-sponsors have looked for evidence that Iteration 2 is the product of the outputs of each ACP forming part of this modernisation programme, referred to as constituent ACPs,[11] contains the descriptions of the options, potential interdependencies, possible solutions and, where relevant, example assessments, and that ACOG has collaborated with the individual sponsors in finalising Iteration 2.

2.7 The assessment process has been dynamic, taking the form of formal evaluation (as documented in this publication), as well as written feedback on the work ACOG has shared with the CAA throughout its development of Iteration 2 of the masterplan. The co-sponsors and CAA oversight team have also been present at various meetings with ACOG as the masterplan work has been ongoing to understand the approach being taken along the way, where necessary.

2.8 The CAA has assessed supporting technical and operational details included in Iteration 2 of the masterplan. For example, the programme of interdependent airspace changes needed for modernisation and the identification of potential interdependences and solutions between proposals. This activity has included engagement with technical experts in the CAA's Airspace Regulation team. Whether the designs of the individual constituent ACPs are technically feasible will ultimately be a regulatory decision made by the CAA's Airspace Regulation team in line with the CAP 1616 process, and not the CAA or DfT in their capacity as co-sponsors for airspace modernisation.

2.9 Each iteration must include a plan for the content of subsequent iterations, which has been assessed as part of the CAA's acceptance decision for Iteration 2.

2.10 ACOG may wish to make a case to the co-sponsors during the ongoing assessment process that a particular element in the criteria should be moved between iterations, or omitted where it is no longer considered relevant or proportionate to the required outcome.

2.11 Where relevant, the co-sponsors have indicated in the assessment contained in Appendix A where further work in support of certain requirements needs to be undertaken in future iterations.

[11] For additional context, constituent ACPs include those identified by NERL's Feasibility Study (confirmed by ACOG in Iteration 2 of the masterplan) as necessary to coordinate in order to deliver the objectives of the masterplan commission. NERL's Feasibility Study (2018) can be found here.

Expected content of Iteration 2

2.12 The final masterplan will, in particular:

- identify where and when airspace changes are required to support delivery of the objectives of the AMS
- identify potential interdependencies[12] between ACPs and the coordination of those proposals
- identify potential conflicts[13] between individual ACPs
- determine trade-offs[14] proposed by ACOG to resolve those conflicts.

2.13 The masterplan does not include the detail of individual airspace designs. The masterplan is a separate regulatory decision-making process to the CAP 1616 process applied by the CAA for individual airspace change decisions.

2.14 The purpose of Iteration 2 is to provide a system-wide view of the scope of the constituent ACPs and their sponsors and identify the potential interdependencies between the proposals, as well as whether other ACPs may be needed to deliver the masterplan commission. The content of Iteration 2 has been developed in parallel with the constituent ACPs and derives from the work conducted by sponsors during Stages 1 and 2 of the CAP 1616 process where applicable.[15]

2.15 Sponsors will be unable to progress to a CAP 1616 Stage 2 gateway assessment until potential conflicts and interdependencies between airspace changes are represented in an accepted Iteration 2 of the masterplan.

2.16 The Masterplan Acceptance Criteria sets out the content that ACOG is expected to produce in Iteration 2, which is also summarised below in Figure 2.

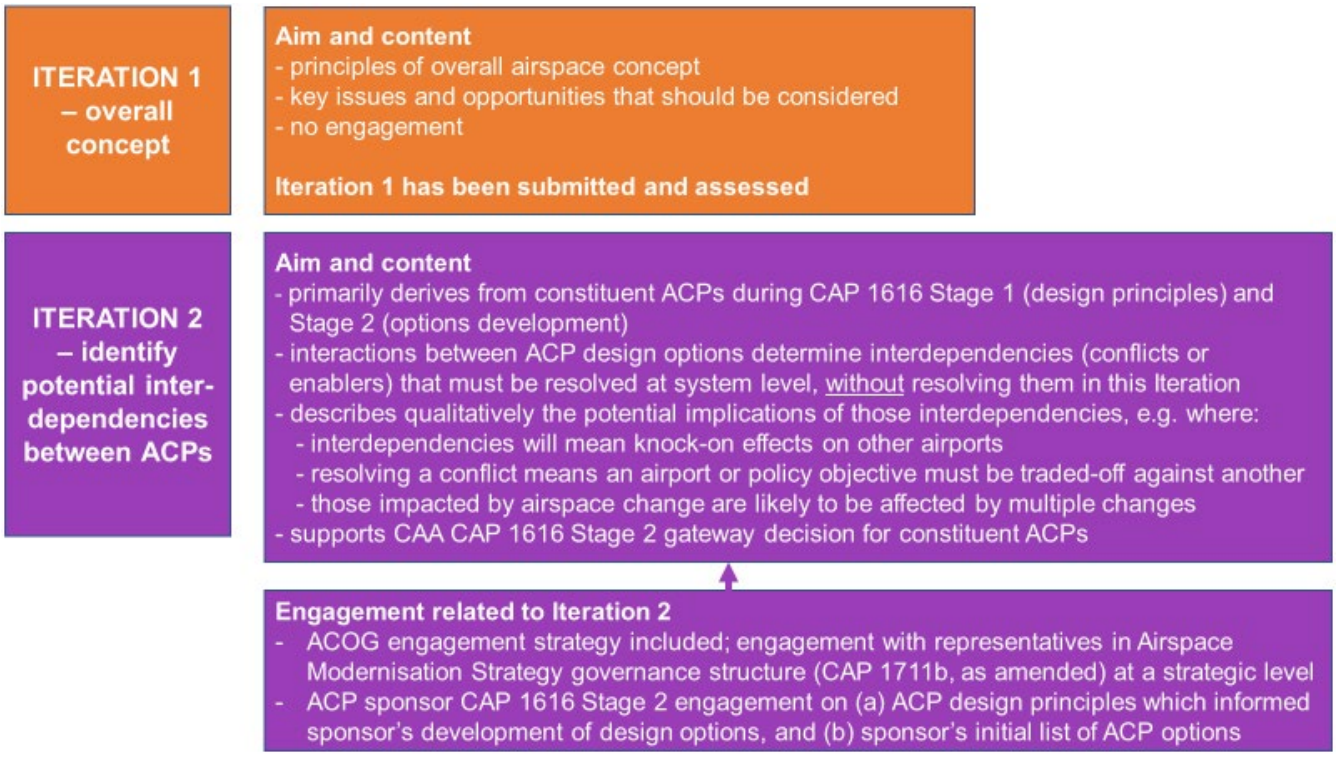
[12] An interdependency can be described as two or more airspace change proposals that are linked together either because there is a potential conflict in their design options that must be solved, they enable each other at a system level, or there is a potential cumulative impact on stakeholders on the ground, or a combination of these.

[13] A conflict can be described as two or more airspace change proposals that cannot both proceed in their proposed form (for example, they intersect with one another in a way which is not technically possible for both to proceed).

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

[15] That is, Stage 1 (Statement of Need and development of design principles) and Stage 2 (options development in line with Stage 1 outputs and taking feedback from potentially impacted stakeholders, followed by the first 'initial' phase of options appraisal creating a qualitatively defined shortlist of options).

Figure 2: Summary of expected content of Iteration 1 and 2



2.17 Due to its strategic and system-wide nature, any conflicts between interdependent ACPs will not be resolved in Iteration 2, but where possible will be described qualitatively. Iteration 2 must therefore summarise the nature of potential interdependencies (enablers or conflicts) between airspace design options being developed in each constituent ACP and the potential implications of those interdependencies, and therefore the potential conflicts that may need to be resolved.

2.18 Although the co-sponsors recognise that there will be a limit to how much detail can be included in the description of the interdependencies, we expect Iteration 2 of the masterplan to at least rank the interdependencies in terms of how challenging a solution is likely to be, and to illustrate how effective trade-off decisions between options can be made by providing example case-study assessments of the potential implications of deploying different solutions to manage conflicts.

2.19 To ensure that improved access benefits for different airspace users are integrated into the modernisation programme, Iteration 2 must include an assessment of the potential positive benefits or negative impacts on airspace usability.

Legal framework for assessment and acceptance

2.21 The CAA exercises its air navigation functions within the legal and policy framework set by Government. This relevant framework forms the basis of the CAA's AMS which is kept under constant review.

2.22 When assessing Iteration 2 and deciding whether to accept it into the AMS, the CAA is carrying out an air navigation function given to it by the Secretary of State under the Air Navigation Directions, which are made pursuant to section 66 of the Transport Act 2000.

2.23 The CAA's statutory duties when carrying out its air navigation functions are laid down in section 70 of the Transport Act 2000. Section 70 places the CAA under a general duty in relation to its air navigation functions to exercise those functions so as to maintain a high standard of safety in the provision of air traffic services. That duty is to have priority over the CAA's other duties in this area of work.

2.24 Noting that priority, the CAA's duties in relation to air navigation are to exercise its functions in the manner it thinks best so that:

- it secures the most efficient use of airspace consistent with the safe operation of aircraft and the expeditious flow of air traffic
- it satisfies the requirements of operators and owners of all classes of aircraft
- it takes account of the interests of any person (other than an operator or owner) in relation to the use of any particular airspace or the use of airspace generally
- it takes account of any guidance on environmental objectives given to the CAA by the Secretary of State[16]
- it facilitates the integrated operation of air traffic services provided by or on behalf of the armed forces and other air traffic services
- it takes account of the interests of national security
- it takes account of any international obligations of the UK notified to the CAA by the Secretary of State.

2.25 If in a particular case there is a conflict in the application of the material factors in section 70, then taking account of the priority of safety mentioned in 2.23 above, the CAA must apply those factors in the manner it thinks is reasonable having

[16] Currently, that guidance is the Air Navigation Guidance 2017: Guidance to the CAA on its environmental objectives when carrying out its air navigation functions, and to the CAA and wider industry on airspace and noise management, DfT October 2017.

regard to them as a whole. The CAA must also exercise its air navigation functions so as to impose on providers of air traffic services the minimum restrictions which are consistent with the exercise of those functions.

2.26 For more information on how the CAA interprets its statutory duties under section 70, see Appendix G of CAP 1616.

2.27 The current AMS sets out the ends, ways and means of modernising airspace through 15 initiatives that will upgrade the design, technology and operations of airspace, initially focusing on the period until the end of 2024. More about the AMS, including the latest news, is available on our website.[17] The CAA is also currently consulting on a refreshed strategy.[18]

2.28 In exercising its functions to assess and deciding whether to accept the masterplan into the AMS, the CAA ensures that each iteration of the masterplan is consistent with the core objectives and initiatives of the AMS. This is to ensure that airspace redesign is consistent with national and international obligations, government policy and new operational concepts and technologies, such as the integration of new airspace users.

[17] See relevant webpages on the CAA Airspace Modernisation Strategy.

[18] Consultation on the Draft Airspace Modernisation Strategy 2022–2040.

Chapter 3

Assessment and acceptance decision

3.1 This chapter summarises the co-sponsors' assessment of Iteration 2 of the masterplan and provides the CAA's decision as to whether to accept that iteration of the masterplan into the AMS. Finally, the co-sponsors set out key next steps.

Co-sponsors' assessment

3.2 The co-sponsors' assessment is set out in Appendix A and has been described under the same categories of criteria in the Masterplan Acceptance Criteria:

A: Where, when and why airspace changes are needed, and in what sequence
B: Information on the airspace changes needed
C: Other considerations.

3.3 The co-sponsors have included feedback in Appendix A and identified certain areas where more detail is needed, as described in this chapter under 'Next Steps'. After consultation with the Secretary of State, the CAA has decided that these matters must be addressed in future iterations of the masterplan (under paragraph 5 of licence condition 10a) and their absence need not preclude the acceptance of Iteration 2 into the AMS at this stage.

3.4 The CAA is satisfied that NERL (the licensee) through ACOG has provided the information and evidence required to meet the relevant criteria for Iteration 2 of the masterplan given the status of the constituent ACPs and the level of detail currently possible.

Assessment against the CAA's statutory duties

3.5 In line with its statutory duties in section 70 of the Transport Act 2000, the CAA has considered each of the following factors material to our decision of whether to accept Iteration 2 of the masterplan into the AMS.

3.6 The assessment is limited to material factors as they apply to airspace interactions at the system level. This is because the purpose of the masterplan is to describe a system-wide view of the areas where airspace design trade-offs that affect interdependent ACPs are likely to arise, as well as summarising the nature of the specific design trade-offs and considering the potential solutions available to sponsors to resolve them. The CAA will assess the material factors as they apply to individual ACPs, in line with its statutory duties, when deciding whether to grant approval to a proposal under the CAP 1616 process.

Conclusions in respect of safety

3.7 The CAA's primary duty is to maintain a high standard of safety in the provision of air traffic services, and this takes priority over all other duties.[19]

3.8 The AMS explains how airspace modernisation can unlock a range of benefits.[20] In section 1.1. of Iteration 2, ACOG has identified how, in addition to the need to increase airspace capacity, the changes to the existing system proposed in Iteration 2 are required to increase environmental efficiency, continue to enhance safety, limit and where possible reduce the impacts of overflight, release controlled airspace, improve access, strengthen resilience, and introduce new technology.

3.9 Section 1.1.3. of Iteration 2 describes how the features of the existing airspace system are limiting the aviation sector's ability to further enhance the UK's excellent safety record and how airspace changes can unlock safety benefits.

3.10 Section 3.4. describes how safety is paramount in the course of making trade-off decisions to optimise the system-wide airspace design. Iteration 3 will provide more detail on the Integrated Approach to Safety Assurance that the Programme will develop to systematically reduce and where possible remove safety risk factors as part of airspace modernisation.

3.11 At this early stage of the programme, it is not possible to conclude the system-wide impact of the masterplan on maintaining a high level of safety. However, the CAA is satisfied that Iteration 2 has sufficiently described the overriding priority of maintaining a high level of safety in the application of trade-off decisions and overall airspace design under the masterplan, consistent with our statutory duty in section 70(1) of the Transport Act 2000.

Conclusions in respect of securing the most efficient use of airspace

3.12 The CAA has a duty to secure the most efficient use of airspace consistent with the safe operation of aircraft and the expeditious flow of air traffic.[21]

3.13 As explained in Appendix G of CAP 1616, the CAA uses the following overall definition of "the most efficient use of airspace": The most aircraft movements through a given volume of airspace over a period of time in order to make the best use of the limited resource of UK airspace from a whole system perspective. It is concerned with the operation of the airspace system as a whole.

[19] Transport Act 2000, Section 70(1).

[20] Airspace Modernisation Strategy (CAP 1711). See Chapter 1 for the context on airspace modernisation.

[21] Transport Act 2000, Section 70(2)(a).

3.14 The CAA uses the following definition of "expeditious flow": The shortest amount of time that an aircraft spends from gate to gate, from the perspective of an individual aircraft, rather than the wider air traffic system.

3.15 Sections 1.1.1. and 1.1.2. of Iteration 2 describe the capacity issues, traffic bottlenecks, sub-optimal flight profiles and consequent passenger delays faced by the current airspace system. Section 1.1.6. explains how the capacity constraints in the existing airspace system have led to degradation in the resilience of the operation against bad weather and unexpected events.

3.16 Section 2.1.1. describes where and when bottlenecks in the existing system are expected to increase because of airspace capacity constraints as traffic levels grow. Section 2.1.2. describes how and where environmental inefficiency in the existing system is intrinsically linked to the demand and capacity bottlenecks, where traffic is routinely directed on to longer, less efficient flight paths to avoid areas of airspace that are reaching maximum capacity. More information is expected as the programme matures, sponsors further develop their ACPs and further iterations of the masterplan are prepared.

3.17 At this early stage of the programme, it is not possible to conclude the system-wide impact of the masterplan on securing the most efficient use of airspace consistent with the safe operation of aircraft and the expeditious flow of air traffic. However, the CAA is satisfied that Iteration 2 has sufficiently described the importance of airspace systemisation in enabling more aircraft to use the airspace, reducing track miles, improving flight profiles, minimising bottlenecks, reducing delays and strengthening operational resilience, consistent with our statutory duty in section 70(2)(a) of the Transport Act 2000.

Conclusions in respect of taking account of the Secretary of State's guidance to the CAA on environmental objectives

3.18 The CAA has a duty to take account of any guidance on environmental objectives given to the CAA by the Secretary of State, namely the Air Navigation Guidance 2017.

3.19 In that guidance, the Government has set environmental objectives with respect to air navigation. These environmental objectives are "designed to minimise the environmental impact of aviation within the context of supporting a strong and sustainable aviation sector. The objectives are to:

- Limit and, where possible, reduce the number of people in the UK significantly affected by adverse impacts from aircraft noise
- Ensure that the aviation sector makes a significant and cost-effective contribution towards reducing global emissions
- Minimise local air quality emissions and in particular ensure that the UK complies with its international obligations on air quality."

3.20 Section 1.1.2. of Iteration 2 identifies the importance of enabling the airspace changes that are necessary to ensure emissions savings are realised. Section 1.1.3. describes the problems associated with extended flight paths and inefficient aircraft climb and descent profiles in terms of excess emissions and noise. It also identifies that without significant changes to the airspace system, increased congestion, vectoring and arrival holding will lead to a further degradation in environmental efficiency as traffic levels grow. Section 1.1.4. explains that as traffic levels recover, the growth in air transport must be accompanied by opportunities to limit and where possible reduce the environmental impacts of over flight at lower altitudes, in terms of noise, air quality, tranquillity and biodiversity.

3.21 Section 2.1.2. describes how and where environmental inefficiency in the existing system helps to determine the regional clusters of airspace change required in the terminal airspace. Section 2.1.9. describes the opportunities for airport-led airspace changes at lower altitudes to limit (and where possible, reduce) the total adverse effects of noise. ACOG states that overall, airspace modernisation is expected to see a reduction in average noise levels per flight, but the redistribution of noise impacts between different areas may lead to disruption for communities living under flight paths. More information will be included in Iteration 3 when the constituent ACP sponsors have completed appraisals of the noise impacts of their shortlist of preferred airspace design options.

3.22 At this early stage of the programme, it is not possible to conclude the system-wide impact of the masterplan in terms of achieving the environmental objectives of the Air Navigation Guidance. However, the CAA is satisfied that Iteration 2 has sufficiently described the potential for the masterplan to drive improvements in environmental impacts, as well as the need for those improvements to be delivered in conjunction with growth in air transport, consistent with our statutory duty in section 70(2)(d) of the Transport Act 2000.

Conclusions in respect of aircraft operators and owners

3.23 The CAA has a duty to satisfy the requirements of operators and owners of all classes of aircraft.[22]

3.24 ACOG has set out the drivers for airspace modernisation in section 1.1. of Iteration 2. The coordinated approach to the optimisation of the overall airspace system in each cluster is expected to unlock significant benefits for the operators and owners of aircraft, including greater access for other users and strengthening operational resilience. ACOG identifies in section 1.1.5. that over time, without a coherent approach to the modernisation of the existing system, users outside controlled airspace risk becoming squeezed into smaller regions

[22] Transport Act 2000, Section 70(2)(b).

with associated safety risks and potential consequences for the sustainability and growth of many General Aviation operators, aerodromes and novel airspace users.

3.25 Section 3.7. of Iteration 2 describes how airspace changes can improve access for other airspace users by reducing the net volume of controlled airspace and enabling integration, in conjunction with the widespread adoption of electronic conspicuity technology. More information is expected as the programme matures, sponsors further develop their ACPs and further iterations of the masterplan are prepared.

3.26 At this early stage of the programme, it is not possible to conclude the system-wide impact of the masterplan on satisfying the requirements of operators and owners of all classes of aircraft. However, the CAA is satisfied that Iteration 2 has sufficiently described the benefits of airspace modernisation for operators and owners of aircraft with regard to increased capacity, utilisation and resilience, improved access and integration and fuel efficiency, consistent with our statutory duty in section 70(2)(b) of the Transport Act 2000.

Conclusions in respect of the interests of any other person

3.27 The CAA has a duty to take account of the interests of any person (other than an owner or operator of an aircraft) in relation to the use of any particular airspace or the use of airspace generally.

3.28 The CAA considers the words “any person (other than an operator or owner of an aircraft)” to include airport operators, air navigation service providers, people or businesses on the ground who may be affected by aviation noise or other environmental impacts, passengers on aircraft, owners of cargo being transported by air, and anyone else affected by an ACP.

3.29 ACOG has examined a number of anticipated impacts on these persons, as outlined in Section 1.1., resulting from the configuration of the current airspace system. These include impacts on airport operators, air navigation service providers, passengers and owners of cargo caused by capacity issues, traffic bottlenecks, a degradation in operational resilience and reliance on out-dated infrastructure.

3.30 Section 1.1.4. describes the environmental impacts of over flight at lower altitudes. ACOG recognises that while airspace modernisation may bring noise benefits for many people, including opportunities to better avoid noise sensitive areas, new routes can also create increased noise for others. Similarly, where the overall level of noise may be reduced by changes to the existing system, the effects may become more concentrated, increasing the impacts in specific areas. For this reason, it is essential that airspace modernisation at lower altitudes incorporates as many routes as possible within a coherent process to examine

the cumulative impacts of the proposed changes to balance the impacts appropriately.

3.31 Section 2.1.1. describes where and when bottlenecks in the existing system are expected to increase because of airspace capacity constraints as traffic levels grow. Section 2.1.9. describes the opportunities for airport-led airspace changes at lower altitudes to limit the total adverse effects of noise, for example, through the deployment of more precise routes to avoid noise sensitive areas or the use of multiple route options to distribute the impacts more equitably. More information will be included in Iteration 3 when the constituent ACP sponsors have completed appraisals of the noise impacts of their shortlist of preferred airspace design options.

3.32 ACOG has also estimated the population impacted by noise currently at different airports in Tables 5 to 8. Although comparable data is not readily available, ACOG show that there are potentially significant opportunities to limit the adverse effects of noise across the regions of the UK when considering the 'size' or scope of the ACP and the population impacted by noise.

3.33 Section 3.4. describes how safety is paramount in the course of making trade-off decisions to optimise the system-wide airspace design. Iteration 3 will provide more detail on the Integrated Approach to Safety Assurance that the Programme will develop to systematically reduce and where possible remove safety risk factors as part of airspace modernisation, including third-party safety risks.

3.34 At this early stage in the programme, it is not possible to conclude the system-wide impact of the masterplan on "any person (other than an operator or owner of an aircraft)" and we understand that more detail will be provided in the next Iteration when assessments of preferred options have been undertaken. However, the CAA is satisfied that sufficient work has been undertaken in Iteration 2 to address the impact of the masterplan on these persons and how the masterplan can manage impacts on third parties through an optimised network design, consistent with our statutory duty in section 70(2)(c) of the Transport Act 2000.

Conclusions in respect of integrated operation of ATS

3.35 The CAA has a duty to facilitate the integrated operation of air traffic services provided by or on behalf of the armed forces of the Crown and other air traffic services.[23]

3.36 Section 3.7.6. of Iteration 2 identifies that a wide range of defence aerodromes and airspace utilised by defence in support of Government tasking, are located adjacent to, or in the vicinity of, major and minor UK airports that have been included in the masterplan. As defence evolves, inventories are updated and UK

[23] Transport Act 2000, Section 70(2)(e).

regulatory requirements are finessed, there will be a need to ensure that operating bases are permitted to continue in a safe, efficient and regulatory compliant manner. ACOG describes that a joint and fully integrated approach will be critical to cohering the evolution of defence requirements with the masterplan.

3.37 At this early stage in the programme, it is not possible to conclude the system-wide impact of the masterplan on integrated operation of air traffic services provided by or on behalf of the armed forces of the Crown and other air traffic services. However, the CAA is satisfied that Iteration 2 has sufficiently described the requirements of segregated airspace for military airspace users, consistent with our statutory duty in section 70(2)(e) of the Transport Act 2000.

Conclusions in respect of the interests of national security

3.38 The CAA has a duty to take account of the interests of national security.[24]

3.39 Section 3.7.6. of Iteration 2 describes the military requirements for suitably sized, sited and available airspace to train, exercise, trial and evaluate extant, and new generation aircraft systems, weapon systems and emerging technologies.

3.40 ACOG has described that much of the current Special Use Airspace was developed to support now defunct tactics, equipment and retired aircraft and is not optimal for current mission sets or emerging requirements/technological advances. Therefore, a Defence Airspace Suitability Review has been initiated by the MoD to review military airspace use requirements. The review will inform the Defence Airspace Strategic Plan out to 2035 and beyond. The Defence Airspace Suitability Review and Defence Airspace Strategic Plan will therefore only be available to inform the masterplan in future iterations.

3.41 At this early stage in the programme, it is not possible to conclude the system-wide impact of the masterplan on national security interests. However, the CAA is satisfied that Iteration 2 has sufficiently described the requirements of maintaining or improving national security, as well as tactical freedom and military training, consistent with our statutory duty in section 70(2)(f) of the Transport Act 2000.

Conclusions in respect of any international obligations

3.42 The CAA has a duty to take into account any international obligations entered into by the UK and notified by the Secretary of State.[25]

3.43 ICAO is a specialised agency of the United Nations which acts as a global forum of States for international civil aviation. As an ICAO contracting state, the UK has

[24] Transport Act 2000, Section 70(2)(f).

[25] Transport Act 2000, Section 70(2)(g).

obligations concerning airspace modernisation under the ICAO Global Air Navigation Plan (GANP).

3.44 The UK's roadmap to meet its ICAO obligations in relation to the GANP is the AMS. The wholesale redesign of the UK's airspace is one of the key components of the AMS. The co-sponsors are confident that Iteration 2 provides an appropriate framework for delivering this outcome by providing a system-wide view of the scope of the constituent ACPs and identifying the potential interdependencies between proposals.

3.45 The CAA is satisfied that Iteration 2 is compatible with the UK's international obligations, consistent with our statutory duty in section 70(2)(g) of the Transport Act 2000.

The CAA's regulatory decision

3.46 Based on the co-sponsors' assessment as described in this document, the co-sponsors have concluded that ACOG has provided the content required of Iteration 2 of the masterplan. The co-sponsors are satisfied that Iteration 2 meets the masterplan commission, NERL's obligations under condition 10a of its licence and the Government's policy objectives, and that ACOG has provided sufficient evidence against the relevant requirements of the Masterplan Acceptance Criteria in relation to Iteration 2. The co-sponsors recognise that Iteration 2 represents an important step towards the wholesale redesign of UK airspace in accordance with one of the key initiatives of the AMS. Given the iterative approach of the masterplan, more information will be provided as further iterations of the masterplan are prepared and sponsors further develop their ACPs.

3.47 **After considering our statutory functions and duties, the CAA's decision is to accept Iteration 2 of the masterplan into the AMS.** Notwithstanding acceptance, the co-sponsors have provided feedback below on the proposed 'cluster' approach that will need to be resolved before an Iteration 3 of the masterplan is submitted to the co-sponsors for assessment.

3.48 Each individual ACP must follow the CAA's regulatory process for changing airspace design, known as CAP 1616.[26] Once proposed, the CAA is required to consider whether the proposal is in accordance with the CAA's AMS.[27] Once the masterplan is accepted into the CAA's AMS, together with the CAA's general

[26] Airspace Change: Guidance on the regulatory process for changing the notified airspace design and planned and permanent redistribution of air traffic, and on providing airspace information (CAP 1616), CAA March 2021.

[27] Airspace Modernisation Strategy (CAP 1711), CAA December 2018.

duties in section 70 of the Transport Act 2000, the masterplan will form the basis against which individual airspace change decisions are made by the CAA.

3.49 Sponsors of constituent ACPs can proceed to the Stage 2 gateway assessment of the CAP 1616 process now that potential conflicts and interdependencies between airspace changes are represented in an accepted Iteration 2 of the masterplan.

Next steps

3.50 Despite the impact of the COVID-19 pandemic on the aviation industry and air traffic levels, ACOG and the relevant airspace change sponsors have made tangible progress in the development of Iteration 2 of the masterplan and the constituent ACPs.

3.51 Iteration 2 of the masterplan has now been published by the CAA alongside this decision document. However, the masterplan remains the responsibility of NERL (the licensee) through ACOG. Therefore, the co-sponsors will now expect ACOG to engage with relevant stakeholders and the public to ensure that the purpose and content of Iteration 2 is explained and understood.

3.52 The co-sponsors look forward to working with ACOG on three matters which are explained in more detail below:

- the co-sponsors' concerns regarding the proposed 'cluster' approach will need to be resolved before an Iteration 3 of the masterplan is submitted to the co-sponsors for assessment.
- the environmental assessment requirements for the masterplan, which will be developed in collaboration with ACOG as the masterplan evolves.
- the types of technological operational and design enhancements described by ACOG, and the practical limits on the extent to which these enhancements can be deployed.

ACOG's proposed 'cluster' approach

3.53 The co-sponsors recognise that some flexibility may be needed in order to progress the modernisation programme most efficiently and unlock the early benefits of airspace modernisation in certain regions. We also recognise that the implementation of a significant number of airspace changes at the same time may not be possible due to a number of regulatory and operational constraints. For these reasons, ACOG has proposed dividing the masterplan into separate 'clusters' with different timelines, each cluster comprising a set of interdependent ACPs.

3.54 The co-sponsors have considered ACOG's advice on this. ACOG has identified four regional clusters that need to be developed in collaboration to optimise the overall airspace system in each cluster and mitigate the negative impacts of

aviation effectively. ACOG has labelled the four regional clusters as the West Terminal Airspace (WTA), Manchester terminal Manoeuvring Area (MTMA), Scottish Terminal Manoeuvring Area (STMA) and London Terminal Manoeuvring Area (LTMA).[28]

3.55 In addition to the independences that are shared by ACPs within the identified clusters, ACOG has also identified that the geographical dimensions of some of the regional clusters overlap with others at a network level. As a result, ACOG states that minor changes may be required in one region, to facilitate changes in another. ACOG do not anticipate these changes to have a material effect on the airspace design. NERL anticipates this 'change on change' to occur throughout the network as the process of airspace modernisation evolves.

3.56 The Masterplan Acceptance Criteria requires that the formal consultation stage of the CAP 1616 process (Stage 3) will need to be coordinated for the interdependent ACPs identified within each cluster in order for stakeholders to understand and comment on the potential cumulative impacts and trade-off decisions. ACOG will need to consider how any network interdependencies between regional clusters can be managed appropriately.

3.57 **While the co-sponsors are prepared to accept in principle the proposed clustering approach to the development of the masterplan, ACOG will need to demonstrate to the satisfaction of the co-sponsors that potential interdependencies between clusters can be identified and managed appropriately before an Iteration 3 of the masterplan can be submitted to the co-sponsors for assessment.** We will require ACOG's formal assessment showing how they have identified potential interdependencies and characterised their significance, as well as a formal proposal regarding how these will be managed given the misalignment of timelines between regional clusters. This is to ensure that changes proposed in one regional cluster do not constrain or cause issues for adjacent regional clusters that may follow later.

3.58 If ACOG cannot show that the potential interdependencies between clusters can be identified and managed appropriately, in the interests of achieving optimised design from a whole system perspective, it may prove necessary to abandon the clustering approach and require all constituent ACPs to be developed in coordination, regardless of which cluster they are situated in.

Strategic Environmental Assessment and Habitats Regulations Assessment

3.59 To ensure that environmental and sustainability impacts are integrated into the modernisation programme, a Strategic Environmental Assessment (SEA) and a

[28] These labels are to identify the regions and do not necessarily mean that all airspace within those regions is terminal airspace or a terminal manoeuvring area.

Habitats Regulations Assessment (HRA) are a fundamental part of, and therefore must inform, the development of the masterplan. This is enshrined in requirement B2 of the Masterplan Acceptance Criteria. The CAA is legally responsible for ensuring that these assessments are carried out in respect of the masterplan. This is a matter that needs to be further developed by the CAA, in collaboration with ACOG, as the masterplan evolves.

3.60 A HRA refers to the several distinct stages of assessment which must be undertaken in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) to determine if a plan or project may affect the protected features of a habitats site[29] before deciding whether to agree to it. The competent authority, in this case the CAA, may agree to the plan or project only after having ruled out adverse effects on the integrity of a habitats site. Where an adverse effect on the site's integrity cannot be ruled out, and where there are no alternative solutions, the plan or project can only proceed if there are imperative reasons of over-riding public interest and if the necessary compensatory measures can be secured.

3.61 The first stage of the HRA process is a Stage 1 screening assessment. It will identify the likely impacts of the masterplan on habitats sites, either alone or in combination with other plans and projects, and whether the impacts are likely to be significant. If they are, an appropriate assessment will be required. An appropriate assessment is more detailed and thorough than the screening check. It assesses the likely significant effects of a proposal on the integrity of habitats sites and their conservation objectives and considers ways to mitigate any potential for an adverse effect on the integrity of those sites.

3.62 The Stage 1 screening assessment is expected to be carried out following the acceptance of Iteration 2 of the masterplan into the AMS. This is because the purpose of Iteration 2 is to provide a system-wide view of the scope of the constituent ACPs and identify the potential airspace interactions between the proposals.

3.63 If an appropriate assessment is required (as determined by the Stage 1 HRA screening assessment), an SEA will also be required. The SEA will identify, describe and evaluate the likely significant effects on the environment of implementing a plan or programme and any reasonable alternatives, taking into account the objectives and the geographical scope of the plan or programme. The applicable legislation is the Environmental Assessment of Plans and Programmes Regulations 2004 (as amended).

[29] Habitats sites include: Special Protection Areas, Special Areas of Conservation, Sites of Community Importance and candidate Special Areas of Conservation. As a matter of Government policy, potential Special Protection Areas and RAMSAR sites are treated as habitats sites.

3.64 The SEA assesses environmental impacts at the strategic level. It is an 'upstream' assessment which identifies the best environmental options at an early stage when plans or programmes are being drawn up. The SEA is designed to complement the 'downstream' Environmental Impact Assessment which is carried out for individual projects (equating to the environmental assessments forming part of Stage 5 of the CAP 1616 process for the constituent ACPs).

Current and near-term technology

3.65 The co-sponsors agree that current and near-term aviation technology does enable the types of operational and design enhancements described by ACOG in section 2.1.9 of Iteration 2, and the ambition is welcomed. However, it is the co-sponsors understanding that there will likely be some technical and operational realities that will result in some practical limits on the extent to which these enhancements can be deployed. The co-sponsors will look to ACOG, working with the FASI airspace change proposal sponsors, to ensure that all stakeholders understand these limitations as this programme progresses.

Appendix A

Co-sponsors' assessment of evidence provided

A1 The Assessment Criteria are categorised as Categories A, B, and C for ease of reference. Category A are requirements concerning **where, when and why airspace changes are needed, and in what sequence** and are reflected in paragraphs 6 and 7 of the commissioning letter from the co-sponsors to NERL of 2 November 2018, as amended by subsequent commissioning letters of 30 July 2019 and 12 May 2021, in accordance with NERL's economic licence condition 10a (paragraph 3b). The commissioning letters, which are consistent with the objectives of the AMS, are reproduced at Appendix A of CAP 2156a.

A2 Category B covers **information on the airspace changes needed** and Category C comprises **other considerations** that the CAA will take into account when assessing the masterplan. ACOG has given evidence against the requirements of the Masterplan Acceptance Criteria that the co-sponsors must assess in order for the CAA to make an informed decision as to whether we can accept this iteration of the masterplan into the AMS. This has been summarised by ACOG in Section 1.2.5 of Iteration 2. See *Table 3: Iteration 2 compliance with the Masterplan Acceptance Criteria and co-sponsor commission.*

A3 Below we set out the co-sponsors' assessment for each requirement.

Category A: Where, when and why airspace changes are needed, and in what sequence	
Purpose	**ACOG's statement in Iteration 2**
Identify opportunities to improve airspace design that will deliver a wider set of benefits, not just to increase capacity. **(November 2018 commissioning letter, paragraph 5)**	**Section 1.1.** identifies how, in addition to the need to increase airspace capacity, the changes to the existing system proposed in Iteration 2 are required to increase environmental efficiency, continue to enhance safety, limit and where possible reduce the impacts of overflight, release controlled airspace, improve access, strengthen resilience, and introduce new technology.

Co-sponsor assessment

This paragraph of the commissioning letter is not a requirement but an overall purpose of the masterplan.

The co-sponsors have agreed an iterative approach to the development of the masterplan in our commissioning letter of July 2019.

ACOG has usefully set out the drivers of the current strategically important airspace changes in section 1.1.

The coordinated approach to the optimisation of the overall airspace system in each cluster is expected to unlock significant benefits at lower altitudes including reducing track miles, improving flight profiles, limiting and potentially reducing the environmental impacts of overflight, enabling greater access for other users and strengthening operational resilience. More detail is expected through ACOG's co-ordination role as sponsors develop their ACPs.

ACOG will be undertaking an engagement exercise in the next iteration to seek views on where there are further opportunities to deliver a wider set of benefits, including, for example, whether they have adequately captured all the airspace changes needed to deliver the airspace modernisation as set out in the co-sponsors commission.

Outcome: The co-sponsors are content that Iteration 2 is consistent with the stated purpose of the masterplan referred to above, as far as could reasonably be expected at this stage.

Category A: Where, when and why airspace changes are needed, and in what sequence	
Requirement	**ACOG's statement in Iteration 2**
A1: In light of forecast growth in demand and airspace bottlenecks, where delays could be alleviated by the introduction of additional airspace capacity. (November 2018 commission letter, paragraph 6a)	**Section 2.1.1.** describes where and when bottlenecks in the existing system are expected to increase because of airspace capacity constraints as traffic levels grow. **Sections 2.1.3. – 2.1.6.** describe where airspace changes are needed in regional clusters across the country based on the current performance of the system and identify the interdependencies between the ACPs.
Co-sponsor assessment	
ACOG has provided evidence, based on analysis by NERL, showing that airspace changes that deliver additional airspace capacity will be most needed initially in the South of the UK as traffic recovers back to 2019 levels by the forecast of 2025. The analysis shows that demands for airspace in the South East at lower altitudes (Figure 3), and in the South of the UK at higher altitudes (Figure 4), will be above capacity again on the return to pre-pandemic levels by the forecast 2025. Figure 5 shows that airspace at higher altitudes in the North of England and Scotland will also be above capacity by 2040.Sections 2.1.3 - 2.1.6 set out where airspace changes are needed in clusters to deliver a wider set of benefits. The London Terminal Manoeuvring Area (LTMA) cluster has the largest forecast growth in traffic (Figure 11) compared with other regional clusters. **Outcome:** The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan. The co-sponsors recommend that future iterations illustrate the level of capacity provided in the different phases of deployment, with expected traffic forecasts, describing where constraints may still be present.	

Category A: Where, when and why airspace changes are needed, and in what sequence	
Requirement	**ACOG's statement in Iteration 2**
A2: Areas where planned developments on the ground require new airspace designs. (November 2018 commission letter, paragraph 6a)	**Section 2.1.8.** describes the relationship between the forecast growth in traffic levels, planned airport developments on the ground and the constituent airport-led ACPs.
Co-sponsor assessment	
ACOG has articulated the uncertainty regarding planned developments on the ground in section 2.1.8, and how these are commercial decisions by the relevant airport operator. ACOG has explained how Heathrow is currently intending to prioritise its recovery from the pandemic and approach airspace modernisation with the introduction of a two-runway ACP, with the potential to take forward it's currently paused three runway ACP in the future. This uncertainty is also set out in Appendix C of Iteration 2, which includes the key risks to the successful delivery of the masterplan. **Outcome:** The co-sponsors are content with ACOG's approach to monitor planned developments and remain flexible in order to facilitate the Government's current aviation policies, as contained in the 'Beyond the horizon: The future of UK aviation - Making best use of existing runways' policy (June 2018) and the Airports National Policy Statement (June 2018). The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan.	

Category A: Where, when and why airspace changes are needed, and in what sequence	
Requirement	**ACOG's statement in Iteration 2**
A3: Areas where more direct routes are possible. (November 2018 commission letter, paragraph 6a)	**Section 2.1.2.** describes how and where environmental inefficiency in the existing system helps to determine the regional clusters of airspace change required in the terminal airspace.
Co-sponsor assessment	
ACOG has clearly set out its analysis of the environmental inefficiencies in each regional cluster of ACPs based on analysis undertaken by NERL using its '3Di' tool. This compares the actual flight paths of each aircraft against a theoretical optimum (i.e. the shortest distance and most efficient profile). This analysis shows that the greatest environmental inefficiencies are currently in the LTMA, where the demand was above capacity before the pandemic. ACOG indicate that flight inefficiency is intrinsically linked to the demand and capacity bottlenecks explained above, where traffic is routinely directed on to longer, less efficient flight paths to avoid sectors that are reaching maximum capacity. This illustrates the potential to deliver environmental efficiency improvements through co-ordination and development of the constituent ACPs. More detail will be available as the programme matures, sponsors develop their ACPs further in co-ordination through ACOG and further iterations of the masterplan are prepared. The co-sponsors will require ACOG, in its planned engagement exercises, to seek views from stakeholders on any potential gaps in or productive additions to the masterplan, including whether there are further opportunities to deliver more direct routes, for example through the introduction of additional ACPs. The engagement activity must also signal to stakeholders where they should go to provide views on potential trade-off decisions that may affect them as part of the planned consultations on the constituent ACPs that will be taking place under the CAP 1616 process. **Outcome:** The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan. The co-sponsors recommend that future iterations illustrate the level of efficiency improvements provided for the different phases of deployment, describing where constraints may still be present.	

Category A: Where, when and why airspace changes are needed, and in what sequence	
Requirement	**ACOG's statement in Iteration 2**
A4: Areas where ACPs are needed to deliver a safety benefit. (November 2018 commission letter, paragraph 6b, i)	**Section 1.1.3.** describes how the features of the existing airspace system are limiting the aviation sector's ability to further enhance the UK's excellent safety record and how airspace changes can unlock safety benefits. **Section 3.4.** describes how safety is paramount in the course of making trade-off decisions to optimise the system-wide airspace design. Iteration 3 will provide more detail on the Integrated Approach to Safety Assurance that the programme will develop to systematically reduce and where possible remove safety risk factors as part of airspace modernisation.
Co-sponsor assessment	
ACOG has illustrated the potential to reduce controller workload in order to deliver safety benefits, in all areas of the UK, but particularly in the busiest and most complex areas of airspace in the South of the UK. We welcome ACOGs suggested integrated approach to safety assurance to reduce and where possible remove safety risks at a system level. This will be an important system wide consideration when the CAA makes individual airspace decisions and illustrates the added potential to make improvements through co-ordination and development of the constituent ACPs. The co-sponsors will require ACOG, in its planned engagement exercises, to seek views from stakeholders on any potential gaps in or productive additions to the masterplan, including whether there are further opportunities to deliver safety benefits, for example through the introduction of additional ACPs. The engagement activity must also signal to stakeholders where they should go to provide views on potential trade-off decisions that may affect them as part of the planned consultations on the constituent ACPs that will be taking place under the CAP 1616 process. The co-sponsors note that safety must be prioritised over all other material factors in any future trade-off decisions, consistent with it's the CAA's statutory duty in section 70 of the transport Act 2000. **Outcome:** The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan.	

Category A: Where, when and why airspace changes are needed, and in what sequence	
Requirement	**ACOG's statement in Iteration 2**
A5: Areas where ACPs can limit the total adverse effects of noise. (November 2018 commission letter, paragraph 6b, ii)	**Section 2.1.9.** describes the opportunities for airport-led airspace changes at lower altitudes to limit (and where possible, reduce) the total adverse effects of noise. ACOG states that overall, airspace modernisation is expected to see a reduction in average noise levels per flight, but the redistribution of noise impacts between different areas may lead to disruption for communities living under flight paths. More information will be included in Iteration 3 when the constituent ACPs have completed appraisals of the noise impacts of their shortlist of preferred airspace design options.

Co-sponsor assessment

ACOG has set out the opportunities that constituent ACPs may exploit in order to limit (and where possible, reduce) the total adverse effects of noise. Estimates of population impacted by noise currently at different airports are shown in Tables 5-8. Although comparable data is not readily available, the tables show that there are potentially significant opportunities through the deployment of various noise management and distribution measures to limit (and where possible, reduce) the adverse effects of noise across the regions of the UK when considering the 'size' or scope of the ACP and the population impacted by noise (based on the 2016 population exposed to an average of more than 55 decibels over 24 hours). For example, ACOG has set out in section 2.1.9. that, in order of population affected by noise, Heathrow has a 'very large' ACP in the LTMA with c683,700 people affected by noise. Manchester has a 'large' ACP in the MTMA cluster with c102,000 people affected by noise. London City has a 'large' ACP with c75,200 people affected by noise. Glasgow's ACP in the STMA is considered 'large' with c47,000 affected by noise.

ACOG expects that the technology which enables reduced angles of divergence on departures will be incorporated into all masterplan ACPs to increase the potential for respite arrangements and multiple track configurations for outbound traffic that may be used to distribute noise and share impacts, depending on the local circumstances. The co-sponsors understand that more detail will be provided in the next Iteration when assessments of preferred options have been undertaken.

The co-sponsors agree that current and near-term aviation technology does enable the types of operational and design enhancements described by ACOG in section 2.1.9 of Iteration 2, and the ambition is welcomed. However, it is the co-sponsors understanding that there will likely be some technical and operational realities that will result in some practical limits on the extent to which these enhancements can be deployed. The co-sponsors will look to ACOG, working with the FASI airspace change proposal sponsors, to ensure that all stakeholders understand these limitations as this programme progresses.

The co-sponsors will also require ACOG, in its planned engagement exercises, to seek views from stakeholders on any potential gaps in or productive additions to the masterplan, including whether there are further opportunities to limit (and where possible, reduce) noise, for example through the introduction of additional ACPs. The engagement activity must also signal to stakeholders where they should go to provide views on potential trade-off decisions that may affect them as part of the planned consultations on the constituent ACPs that will be taking place under the CAP 1616 process.

Outcome: The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan.

Category A: Where, when and why airspace changes are needed, and in what sequence	
Requirement	**ACOG's statement in Iteration 2**
A6: Areas where ACPs can deliver air quality or fuel efficiency benefits. (November 2018 commission letter, paragraph 6b, iii)	**Section 2.1.2.** describes how and where environmental inefficiency in the existing system helps to determine the regional clusters of airspace change required in the terminal airspace.

Co-sponsor assessment

ACOG has set out its analysis of the environmental inefficiencies in each regional cluster of ACPs based on NERL's 3Di analysis. This compares the actual flight paths of each aircraft against a theoretical optimum (i.e. the shortest distance and most efficient profile). This analysis shows that the greatest environmental inefficiencies are currently in the LTMA, where the demand was above capacity before the pandemic. ACOG indicate that the issue of flight inefficiency is intrinsically linked to the demand and capacity bottlenecks explained above, where traffic is routinely directed on to longer, less efficient flight paths to avoid sectors that are reaching maximum capacity. This illustrates the potential to deliver environmental efficiency improvements through co-ordination and development of the constituent ACPs.

Outcome: The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan.

Category A: Where, when and why airspace changes are needed, and in what sequence	
Requirement	**ACOG's statement in Iteration 2**
A7: Areas where ACPs are needed to improve access to airspace. (November 2018 commission letter, paragraph 6b, iv)	**Section 3.7.** describes how airspace changes can improve access for other airspace users by reducing the net volume of controlled airspace and enabling integration, in conjunction with the widespread adoption of electronic conspicuity technology.
Co-sponsor assessment	
ACOG has described the potential opportunities for a coherent approach to improving access to airspace through co-ordination and development of the constituent ACPs. We understand that more detail will be provided in the next iteration when assessments of preferred options have been undertaken. We welcome ACOGs proposal to develop an assessment framework in the next iteration that is aligned with the CAA's current review of its Airspace Modernisation Strategy and which will include the coordination of engagement with other airspace users, the use of data to measure impacts, the approach to reducing the net volumes of controlled airspace and the deployment of concepts to encourage greater access and integration. The co-sponsors will expect ACOG, in its planned engagement activities, to seek available evidence from stakeholders to support the proposed framework. The co-sponsors will also require ACOG to seek views on any potential gaps in or productive additions to the masterplan, including whether there are further opportunities to improve access to airspace, for example through the introduction of additional ACPs. The engagement activity must also signal to stakeholders where they should go to provide views on potential trade-off decisions that may affect them as part of the planned consultations on the constituent ACPs that will be taking place under the CAP 1616 process. **Outcome:** The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan.	

Category A: Where, when and why airspace changes are needed, and in what sequence	
Requirement	**ACOG's statement in Iteration 2**
A8: Areas where ACPs are needed to enable military access to airspace for training and national security. (November 2018 commission letter, paragraph 6b, v)	**Section 3.7.6**. describes the military requirements for suitably sized, sited and available airspace to train, exercise, trial and evaluate extant and new generation aircraft systems, weapon systems and emerging technologies.
Co-sponsor assessment	
ACOG has described how much of the current Special Use Airspace was developed to support now defunct tactics, equipment and retired aircraft and is not optimal for current mission sets or emerging requirements/technological advances. Therefore, a Defence Airspace Suitability Review has been initiated to review military airspace use requirements. The review will inform the Defence Airspace Strategic Plan out to 2035 and beyond. The Defence Airspace Suitability Review and Defence Airspace Strategic Plan will therefore only be available to inform the masterplan in future iterations. ACOG will need to include the outcomes of this review in the masterplan in due course. ACOG's engagement with the Ministry of Defence (MoD) is set out in Iteration 2 - Appendix B. The MoD are sponsors of an airspace change at RAF Northolt which forms part of the LTMA cluster. ACOG states that it will continue to engage with MoD Defence Airspace and Air Traffic Management (DAATM) through the development of successive iterations of the masterplan to capture and consider the interdependencies associated with military operations and airspace use. The co-sponsors expect ACOG to proactively engage and share appropriate information with DAATM to monitor the risk of interdependencies arising, which may impact development of the constituent ACPs. **Outcome:** The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan.	

Category A: Where, when and why airspace changes are needed, and in what sequence	
Requirement	**ACOG's statement in Iteration 2**
A9: Where ACPs are needed to introduce new technology. (November 2018 commission letter, paragraph 6b, vi)	**Section 1.1.8.** describes how the constituent ACPs will lead to the widespread introduction of Performance Based Navigation (PBN) arrival and departure routes at lower altitudes. The airspace design criteria associated with PBN creates the opportunity to reduce the separation distance between routes and minimise the containment areas of controlled airspace that are required to protect commercial air transport operations. The widespread adoption of PBN routes in the busy terminal airspace offers the potential to release controlled airspace at lower altitudes, increase access for other airspace users and achieve an overall more efficient allocation of airspace at a system-wide level. **Section 2.1.10.** describes the requirement for the constituent ACPs to introduce routes designed and operated using PBN standards, as a technological cornerstone of airspace modernisation.
Co-sponsor assessment	
ACOG has confirmed that the widespread deployment of new routes designed and operated to more advanced PBN standards is a technological cornerstone of the constituent ACPs. ACOG expect that the PBN technology, which enables reduced angles of divergence on departure, will be incorporated into all current constituent ACPs to increase the potential for respite arrangements and multiple track configurations for outbound traffic that may be used to distribute noise and share impacts, depending on the local circumstances. However, ACOG also suggest that due to current aircraft fleet capabilities, the choice of PBN standard may be different, providing different levels of design flexibility. The co-sponsors will require ACOG, in its planned engagement activities, to seek views from stakeholders on any potential gaps in or productive additions to the masterplan, including whether further ACPs are needed to introduce new technology, potentially unlocking further environmental and efficiency benefits. **Outcome:** The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan.	

Category A: Where, when and why airspace changes are needed, and in what sequence	
Requirement	**ACOG's statement in Iteration 2**
A10: Identify the operational concepts required to deliver the airspace changes (November 2018 commission letter, paragraph c)	**Section 2.1.11.** describes the four main operational concepts and supporting technology enablers required for airspace modernisation.

Co-sponsor assessment

NERL originally developed a concept of designing fully separated 3D 'tubes in the sky' through which aircraft would climb and descend continuously, thereby eliminating interactions and reducing controller workload. Iteration 1 of the masterplan explained that a phased delivery would be required due to the reliance on aircraft capability. ACOG has now reviewed and updated the information provided in Iteration 1 in Section 2.1.11., covering:

- The introduction of new air traffic systems that improve flight information and automate controller tasks.
- The use of air traffic tools and procedures to manage arrival delays.
- The use of air traffic tools and procedures that enable time-based operations for the sequencing and spacing of traffic.
- The evolution of aircraft airframes, avionics and flight management systems (FMS).

ACOG addresses the limitations of the 'tubes in the sky' concept in the earlier phases of deployment taking into account current aircraft capabilities, with a suggestion that controller intervention would reduce over time as technology develops. ACOG state that when the airspace changes are first deployed, the new PBN routes designed as part of the constituent ACPs must meet certain criteria that ensure all aircraft required to use them can do so in all scenarios. It is unclear at this stage whether sponsors will be expected to 'design in' the potential to move towards a fully contained 3D tube in the future or whether this may require further airspace changes to be introduced in the future.

The co-sponsors expect that future iterations of the masterplan will include an assessment of the extent to which individual sponsors can move from the 2D to 3D concept, including details of any risks mitigation strategies if these are unachievable. The implications for Transition Altitude should also be described.

Outcome: The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan.

Category A: Where, when and why airspace changes are needed, and in what sequence	
Requirement	**ACOG's statement in Iteration 2**
A11: Key assumptions and risks: 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. (November 2018 commissioning letter, paragraph 6c)	**Appendix D:** provides a record of the key assumptions that the content of Iteration 2 is based on. **Appendix C:** examines the key risks associated with the masterplan at Iteration 2.
Co-sponsor assessment	
ACOG has provided strategic risks associated with the delivery of the masterplan in Appendix C and key assumptions in Appendix D of Iteration 2. It is expected that these will be monitored and updated as necessary in future iterations, including any emerging risks associated with the Defence Airspace Suitability Review initiated to review military airspace use requirements. It is noted that in Appendix D there is an assumption (#7) that "there may be some network interdependencies between regional clusters". The co-sponsors will require a credible plan for how these can be identified and managed, should they arise, given that ACOG's proposed cluster deployment is sequential. This could have implications for ACOG's proposed clustered approach, and plan for Iteration 3 (see, in particular, criteria B1 and B8). The "Next Steps" section in Chapter 3 above outlines the key issues that will need to be addressed and resolved before an Iteration 3 of the masterplan can be submitted to the co-sponsors for assessment. Assumption #14 also states that "the CAA Airspace Regulation department has sufficient resources to handle the multiple, interdependent regulatory assessments required". At present, the CAA Airspace Regulation department operates on a first-come, first-served basis, subject to requirements in the Air Navigation Directions to prioritise certain ACPs over others. We note that the proposed timeline in Appendix A (for planning purposes) involves clusters of ACPs having demands for CAP 1616 gateway assessments in distinct blocks and therefore the co-sponsors will consider whether the current prioritisation approach may need to be changed in order to help facilitate this. **Outcome:** The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan.	

Category A: Where, when and why airspace changes are needed, and in what sequence	
Requirement	**ACOG's statement in Iteration 2**
A12: Commitment of the ACP Sponsors: the party responsible for taking each individual airspace change forward and the degree of commitment offered by each individual party. (November 2018 commissioning letter, paragraph 6c)	**Appendix E** sets out the degree of commitment from each ACP sponsor to progress their respective proposals and contribute to the masterplan.
Co-sponsor assessment	
ACOG has provided a status update demonstrating the degree of commitment from each ACP sponsor at the present time. This shows that significant progress has been made to remobilise the programme following the Government funding support announcement in early 2021. The co-sponsors will work with ACOG and Liverpool Airport to determine how best to integrate its proposal into the wider programme given their current position. **Outcome:** The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan. It is expected that the commitment of ACP sponsors will be monitored in conjunction with the CAA oversight team and updated as necessary in future iterations.	

Category A: Where, when and why airspace changes are needed, and in what sequence	
Requirement	**ACOG's statement in Iteration 2**
A13: Recommended coherent sequence of individual or modules of changes against the evaluated alternatives and the preferred timescale for their adherence against each step of the CAA's CAP 1616 process and subsequent implementation. (November 2018 commissioning letter, paragraph 6c)	**Section 3.1**. describes the planned timescales for each regional cluster of airspace changes against each step of the CAA's CAP 1616 process and the current sequence of ACP deployments by regional cluster. **Section 3.6** describes the iterative development of the masterplan and the expectation that Iteration 3 will be presented to the CAA for acceptance in several versions that address the inherent misalignment in timelines across the clusters. **Appendix A** sets out the Indicative programme plan by regional cluster.
Co-sponsor assessment	
ACOG's analysis shows the potential interdependencies between the individual airspace changes presented. The analysis sets out a rationale for a clustered approach to deliver benefits in stages rather than all at once. It is clear that the proposed sequencing is driven by interdependencies and the fact that sponsors are currently at different stages in the airspace change process i.e. that some clusters may need to come later than others to achieve effective co-ordination. The co-sponsors recognise that some flexibility may be needed in order to progress the modernisation programme most efficiently and unlock the early benefits of airspace modernisation in certain regions. We also recognise that the implementation of a significant number of airspace changes at the same time may not be possible due to a number of regulatory and operational constraints. For these reasons, ACOG has proposed dividing the masterplan into separate 'clusters' with different timelines, each cluster comprising a set of interdependent ACPs. The co-sponsors have considered ACOG's advice on this. ACOG has identified four regional clusters that need to be developed in collaboration to optimise the overall airspace system in each cluster and mitigate the negative impacts of aviation effectively. The four regional clusters as labelled by ACOG are the WTA, MTMA, STMA and LTMA.[30]	

[30] These labels are to identify the regions and do not necessarily mean that all airspace within those regions is terminal airspace or the terminal manoeuvring area.

Outcome: While the co-sponsors are prepared to accept in principle the proposed clustering approach to the development of the masterplan, ACOG will need to demonstrate to the satisfaction of the co-sponsors that potential interdependencies between clusters can be identified and managed appropriately before submitting an Iteration 3 of the masterplan. This is to ensure that changes proposed in one regional cluster do not constrain or cause issues for adjacent regional clusters that may follow later.

See the "Next Steps" section in Chapter 3 above which outlines the key issues that will need to be addressed and resolved before an Iteration 3 of the masterplan can be submitted to the co-sponsors for assessment.

Category B: Information about the airspace changes needed (CAP 2156a, pages 9 to 11, Criteria B1 to B9)	
Requirement	**ACOG's statement in Iteration 2**
B1: A credible and implementable plan for the necessary airspace changes.	**Section 3.1**. describes the planned timescales for each regional cluster of airspace changes against each step of the CAA's CAP 1616 process and the current sequence of ACP deployments by regional cluster. **Appendix A** sets out the Indicative programme plan by regional cluster.
Co-sponsor assessment	
ACOG's analysis shows the potential interdependencies between the individual airspace changes at this stage with the information available. The analysis sets out a rationale for a clustered approach to deliver benefits in stages rather than all at once. It is clear that the proposed sequencing is driven by interdependencies and the fact that sponsors are currently at different stages in the airspace change process i.e. that some clusters may need to come later than others to achieve effective co-ordination. However, in order for the proposed clustered approach to be acceptable ACOG will need to demonstrate to the satisfaction of the co-sponsors whether there are any interdependencies arising between clusters (as referenced in assumption #7 of Appendix D) and if so, a credible plan on how these are proposed to be managed where clusters are on different development timelines. See the "Next Steps" section in Chapter 3 above which outlines the key issues that will need to be addressed and resolved before an Iteration 3 of the masterplan can be submitted to the co-sponsors for assessment.	

The co-sponsors note that the preferred sequence is provisional (i.e. detail may be subject to change) and needs to be agreed with the CAA Airspace Regulation team who are responsible for assessing ACPs at CAP 1616 gateways. This assessment considers if the ACPs have followed the process for airspace changes in accordance with CAP 1616 correctly. Airspace Regulations sign-off at a gateway provides the CAA's approval that the sponsor has met the relevant process requirements up to that stage and can move to the next stage of the process. This does not predetermine the CAA's final decision on whether to accept the ACP. The co-sponsors also note that the indicative timeline in Appendix A (for planning purposes) involves clusters of ACPs, meaning demands for gateways in distinct blocks. This has implications for Airspace Regulation resources, and therefore the co-sponsors will consider whether the current approach (ACPs are considered on a first-come, first served basis, subject to prioritisation of certain ACPs required by the Air Navigation Directions) is fit for purpose.

The co-sponsors acknowledge that it is too early for ACOG to show how the large LTMA cluster maybe deployed in smaller manageable phases, but note that this could mean added complexity, particularly for stakeholders involved in the process.

Outcome: The co-sponsors are content with this indicative programme plan in principle, noting that the timing of detailed gateways are subject to agreement with the Airspace Regulation team. However, in order for the proposed clustered approach to be acceptable, ACOG will need to demonstrate whether there are any interdependencies arising between clusters (as referenced in assumption #7 of Appendix D) and if so, a credible plan for how these are proposed to be managed. As set out in the Masterplan Acceptance Criteria (CAP 2156a), sponsors will be unable to progress constituent ACPs through the Stage 3 gateway of the CAP 1616 process until the system-wide airspace design of the proposed options, and the cumulative impacts of those options, are represented in an accepted Iteration 3 of the masterplan.

Category B: Information about the airspace changes needed (CAP 2156a, pages 9 to 11, Criteria B1 to B9)	
Requirement	**ACOG's statement in Iteration 2**
B2: A strategic environmental assessment (SEA) and a Habitats Regulations assessment (HRA) are a fundamental part of, and therefore must inform, development of the masterplan.	In Appendix C (masterplan risk assessment at Iteration 2), ACOG identifies that an SEA is required as part of the masterplan acceptance process and that the SEA would need to be timed to inform the masterplan such that any changes necessitated by the assessment could be made coherently.
Co-sponsor assessment	
As set out in the Masterplan Acceptance Criteria (CAP 2156a), ACOG was not expected to include details of the HRA and SEA in Iteration 2. The co-sponsors have summarised the initial SEA and HRA requirements in respect of the masterplan in the "Next Steps" section in Chapter 3 above. This includes detail on the initial screening and scoping stages which will inform the manner in which these environmental assessments will be carried out. The CAA will, in due course, provide further information on the HRA and SEA processes, including relevant reporting and public consultation requirements following the initial screening and scoping stages.	

Category B: Information about the airspace changes needed (CAP 2156a, pages 9 to 11, Criteria B1 to B9)	
Requirement	**ACOG's statement in Iteration 2**
B3: Potential Interdependencies between the constituent ACPs.	**Section 3.2.** identifies the areas of overlap between the interdependent airport-led ACPs and examines the potential for design conflicts and enablers to arise in each area.
Co-sponsor assessment	
ACOG's analysis shows the potential interdependencies between the individual airspace changes presented. The analysis helps set out a rationale for a clustered approach to deliver benefits in stages rather than all at once. However, while the co-sponsors recognise that there are benefits in adopting a clustered approach, in order for this to be acceptable, ACOG will need to demonstrate to the satisfaction of the co-sponsors whether there are any interdependencies arising between clusters (as referenced in assumption #7 of Appendix D) and if so, a credible plan on how these are proposed to be managed where clusters are on different development timelines. See the "Next Steps" section in Chapter 3 above which outlines the key issues that will need to be addressed and resolved before an Iteration 3 of the masterplan can be submitted to the co-sponsors for assessment. ACOG has provided a simplistic methodology to describe potential interdependencies between the airport led constituent ACPs, and examples of potential network interdependencies. ACOG has then provided an assessment of how likely the potential interdependencies are expected to be between airport ACPs and at the network level in Tables 18-21, based on knowledge and experience of aircraft operations. The masterplan does not and cannot include individual airspace designs. **Outcome:** The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan, and that the size and nature of the potential interdependencies will be refined during Iteration 3 as the airspace design options for each ACP in each cluster are further developed. ACOG should provide further details of the relevant network level ACPs including their reference IDs so that stakeholders understand where relevant information about those proposals can be found.	

Category B: Information about the airspace changes needed (CAP 2156a, pages 9 to 11, Criteria B1 to B9)	
Requirement	**ACOG's statement in Iteration 2**
B4: Potential solutions to interdependencies.	**Section 3.3**. sets out the likelihood that airspace design conflicts or enablers may arise in each regional cluster, along with a description of the possible nature of the interdependencies and the implications for solutions developed as part of Iteration 3.
Co-sponsor assessment	
ACOG has provided a simplistic methodology to determine potential interdependencies between the airport-led constituent ACPs, and examples of potential network interdependencies within each cluster. ACOG has then provided an assessment of potential solutions to interdependencies in Tables 18-21, based on knowledge and experience of aircraft operations. The masterplan does not and cannot include individual airspace designs. **Outcome:** The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan, and that the potential solutions to interdependencies will be refined during Iteration 3 as the airspace design options for each ACP in each cluster are further developed.	

Category B: Information about the airspace changes needed (CAP 2156a, pages 9 to 11, Criteria B1 to B9)	
Requirement	**ACOG's statement in Iteration 2**
B5: Trade-off decisions to resolve interdependencies.	**Section 3.4.** considers the framework for trade-off decisions required to resolve interdependencies.
Co-sponsor assessment	
ACOG has illustrated how effective trade-off decisions between options may be made by providing example case-study assessments of the potential implications of deploying different solutions to manage interdependencies. Actual trade-off decisions between two or more sponsors of separate airspace changes are unlikely to be needed until sponsors have co-ordinated and consulted on options with stakeholders. ACOG proposes to develop an analytical framework to assist in these future trade-off decisions and the case studies presented in Section 3.4 are intended to illustrate the types of issues that the analytical framework will be required to address. Later iterations of the masterplan will be developed in greater detail about the cumulative impacts of different design choices and the methods used to calculate them. These will culminate in a final iteration consisting of a coordinated plan showing how effective trade-off decisions, derived from the various options for a modernised airspace design, will together deliver the Government's policy objectives. **Outcome:** The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan. The co-sponsors will work with ACOG to ensure that the analytical framework is consistent with Government policy.	

Category B: Information about the airspace changes needed (CAP 2156a, pages 9 to 11, Criteria B1 to B9)	
Requirement	**ACOG's statement in Iteration 2**
B6: At a system level, potential implications for government policy objectives of the proposed solutions.	The potential implications of proposed solutions for government policy objectives will be considered as part of the development of Iteration 3. **Section 3.4.** of Iteration 2 provides some illustrations of how effective trade-off decisions between options can be made in the form of example case studies.
Co-sponsor assessment	
ACOG has illustrated how effective trade-off decisions between options may be made by providing example case-study assessments of the potential implications of deploying different solutions to manage interdependencies. This is what was required of Iteration 2. Actual trade-off decisions between two or more sponsors of separate airspace changes, and therefore the implications for Government policy, are unlikely to be needed until sponsors have co-ordinated and consulted on options with stakeholders. ACOG proposes to develop an analytical framework to assist in these future trade-off decisions and the case studies presented in Section 3.4 are intended to illustrate the types of issues that the analytical framework will be required to address. Later iterations of the masterplan will be developed in greater detail with more information about the cumulative impacts of different design choices and the methods used to calculate them. These will culminate in a final iteration consisting of a coordinated plan showing how effective trade-off decisions derived from the various options for a modernised airspace design will together deliver the Government's policy objectives. **Outcome:** The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan. The co-sponsors will work with ACOG to ensure that the analytical framework is consistent with Government policy.	

Category B: Information about the airspace changes needed (CAP 2156a, pages 9 to 11, Criteria B1 to B9)	
Requirement	**ACOG's statement in Iteration 2**
B7: Stakeholder engagement strategy, including: • Evidence of engagement with the sponsors of the constituent ACPs. • Evidence of engagement with the AMS stakeholder representatives.	**Section 3.5.** provides an overview of the masterplan stakeholder engagement strategy and sets out the programme of stakeholder engagement conducted to support the development of Iteration 2. **Appendix B** provides a record of stakeholders' feedback during the development of Iteration 2.
Co-sponsor assessment	
ACOG has set out the AMS stakeholder representatives engaged during the development of Iteration 2 in Table 22, which was high level and qualitative in nature. ACOG has set out in section 3.5.3 how it has engaged with sponsors of constituent ACPs. ACOG has provided a summary of stakeholder feedback in Appendix B, not attributed to an individual organisation. The co-sponsors are satisfied with ACOG's high level stakeholder engagement strategy for the next stage, in particular the principles, which are consistent with the CAP 1616 process of being open, fair, transparent and effective. The strategy is also aligned to the engagement methodology set out in CAP 1616, covering the audience, approach, materials and length associated with the activities. Similar to the CAP 1616 process, masterplan engagement begins with representative stakeholders and moves to a broader audience as the impacts of the system-wide changes are better understood. However, the masterplan engagement strategy and the engagement requirements of CAP 1616 are separate processes covering different issues and serving different purposes. Table 23 usefully provides a summary of how stakeholders will be able to provide feedback. The co-sponsors welcome the development of the 'Masterplan Resource Centre' on ACOG's website to enhance the information available to stakeholders. It is noted that ACOG will periodically review and update the masterplan engagement strategy, working in collaboration with the co-sponsors, as the programme progresses and more information about the constituent ACPs becomes available. **Outcome:** The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan. When developing the detailed approach for Iteration 3, the co-sponsors are keen to ensure, particularly in light of a clustered approach, that those potentially affected are able to easily identify how they should respond to co-ordinated consultations given they may wish to raise issues at a masterplan- wide level, at a cluster level, or at an individual ACP level.	

Category B: Information about the airspace changes needed (CAP 2156a, pages 9 to 11, Criteria B1 to B9)	
Requirement	**ACOG's statement in Iteration 2**
B8: Iterative development of the Masterplan	**Section 3.6.** summarises the plan for the development of Iteration 3 of the masterplan.
Co-sponsor assessment	
Each iteration must include a plan for the content of subsequent iterations, which will also be considered as part of the CAA's acceptance decision. This is provided in Section 3.6 and sets out how Iteration 3 is proposed to be submitted covering the different clusters at different times. While the co-sponsors recognise that there are benefits to adopting a clustered approach, in order for this to be acceptable, ACOG will need to demonstrate to the satisfaction of the co-sponsors whether there are any interdependencies arising between clusters (as referenced in assumption #7 of Appendix D) and if so, a credible plan for how these are proposed to be managed. See the "Next Steps" section in Chapter 3 above which outlines the key issues that will need to be addressed and resolved before an Iteration 3 of the masterplan can be submitted to the co-sponsors for assessment. ACOG note that sponsors will be unable to progress through the Stage 3 gateway of the CAP 1616 process until the system-wide airspace design of the proposed options, and the cumulative impacts of those options, are represented in an accepted Iteration 3 of the masterplan (as per the requirements in the Masterplan Acceptance Criteria (CAP 2156a)). **Outcome:** The co-sponsors note that ACOG proposes to use example material from actual ACPs to seek feedback on the way in which airspace change design trade-offs are described in interdependent ACPs and the potential solutions. In doing so ACOG will need to ensure that the information presented does not undermine or constrain the information that will follow when the sponsors submit material for the subsequent gateway assessments as part of the CAP 1616 process.	

Category B: Information about the airspace changes needed (CAP 2156a, pages 9 to 11, Criteria B1 to B9)	
Requirement	**ACOG's statement in Iteration 2**
B9: General Aviation Impact Assessment.	**Section 3.7.** provides a high-level and largely qualitative assessment of the impact of the masterplan on other airspace users including general and business aviation, military aviation and Unmanned Aerial System and Advanced Air Mobility (AAM) operators.
Co-sponsor assessment	
ACOG has described the potential opportunities for a coherent approach through co-ordination and development of the constituent ACPs. We understand that more detail will be provided in the next Iteration when assessments of preferred options have been undertaken. We welcome ACOG's proposal to develop an assessment framework in the next iteration that is aligned with the CAA's current review of its Airspace Modernisation Strategy and which will include the coordination of engagement with other airspace users, the use of data to measure impacts, the approach to reducing the net volumes of controlled airspace and the deployment of concepts to encourage greater access and integration. The CAA will require ACOG, in its planned engagement activities, to seek available evidence from stakeholders to support the proposed framework and views on whether there are further opportunities to improve access to airspace, for example through the introduction of additional ACPs. **Outcome:** The co-sponsors are content that ACOG has met this requirement at this stage in respect of Iteration 2 of the masterplan.	

Category C: Other considerations
Consideration
C1: Sponsors will be unable to progress through the Stage 2 gateway of the CAP 1616 process until potential conflicts and interdependencies between airspace changes are represented in an accepted Iteration 2 of the masterplan.
Co-sponsor assessment
In *Table 2: Scope, purpose and engagement associated with each Masterplan iteration*, ACOG explains that sponsors will be unable to pass through the Stage 2 gateway of the CAP 1616 process until the potential design interdependencies and conflicts are represented in an accepted Iteration 2. This point is also reiterated in paragraph 1.2.4.

Category C: Other considerations
Consideration
C2: Sponsors will be unable to progress through the Stage 3 gateway of the CAP 1616 process until the system-wide airspace design of the proposed options, and the cumulative impacts of those options, are represented in an accepted Iteration 3 of the masterplan.
Co-sponsor assessment
In Section 3.6.2 ACOG recognises that sponsors will be unable to progress through the Stage 3 gateway of the CAP 1616 process until the system-wide airspace design of the proposed options, and the cumulative impacts of those options, are represented in an accepted version of Iteration 3. In *Table 2: Scope, purpose and engagement associated with each Masterplan iteration*, ACOG also states that ACPs will be unable to proceed to public consultation on proposed option(s) for the ACP until a system-wide airspace design of the proposed options and their cumulative impacts are represented in an accepted Iteration 3.

Category C: Other considerations
Consideration
C3: Where ACP timelines are unavoidably misaligned, for example because of their differing levels of complexity, the co-sponsors recognise that some flexibility may be needed in order to progress the modernisation programme most efficiently.
Co-sponsor assessment
The co-sponsors recognise that some flexibility may be needed in order to progress the modernisation programme most efficiently and unlock the early benefits of airspace modernisation in certain regions. We also recognise that the implementation of a significant number of airspace changes at the same time may not be possible due to a number of regulatory and operational constraints. For these reasons, ACOG has proposed dividing the masterplan into separate 'clusters' with different timelines, each cluster comprising a set of interdependent ACPs. The co-sponsors have considered ACOG's advice on this. ACOG has identified four regional clusters that need to be developed in collaboration to optimise the overall airspace system in each cluster and mitigate the negative impacts of aviation effectively. The four regional clusters are labelled by ACOG as the WTA, MTMA, STMA and LTMA.[31] While the co-sponsors are prepared to accept in principle the proposed clustering approach to the development of the masterplan, ACOG will need to demonstrate to the satisfaction of the co-sponsors that potential interdependencies between clusters can be identified and managed appropriately before submitting an Iteration 3 of the masterplan. This is to ensure that changes proposed in one regional cluster do not constrain or cause issues for adjacent regional clusters that may follow later. See the "Next Steps" section in Chapter 3 above which outlines the key issues that will need to be addressed and resolved before an Iteration 3 of the masterplan can be submitted to the co-sponsors for assessment.

[31] These labels are to identify the regions and do not necessarily mean that all airspace within those regions is terminal airspace or the terminal manoeuvring area.

Category C: Other considerations
Consideration
C4: ACOG will submit a final iteration of the masterplan with the full proposed system-wide solution of the airspace structure of the masterplan to the co-sponsors for assessment and subsequent acceptance by the CAA into the Airspace Modernisation Strategy, once feedback from the individual interdependent ACP consultations as part of the CAP 1616 process has been analysed and taken into account by sponsors and ACOG.
Co-sponsor assessment
ACOG envisages a minimum of four iterations of the masterplan. The co-sponsors will formally assess each iteration of the masterplan. At this stage, ACOG has submitted Iteration 2, so this not a relevant consideration at present.

Category C: Other considerations
Consideration
C5: 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.
Co-sponsor assessment
ACOG has provided a status update demonstrating the degree of commitment from each ACP sponsor at the present time in Appendix E. This shows the significant progress has been made to remobilise the programme following the Government funding support announcement in early 2021. ACOG are working with Liverpool Airport and the co-sponsors to determine how best to integrate its proposal into the wider programme given its current position. In Appendix C, ACOG sets out the key risks to the successful delivery of the programme and states that, despite the remobilisation of the programme following the provision of DfT grant funding, the airport ACP sponsors continue to operate under significant financial constraints that may limit their ability to invest in airspace developments in the near term.

Category C: Other considerations
Consideration
C6: 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.
Co-sponsor assessment
The co-sponsors are content that the way ACOG has presented the information allows us to properly conduct our assessment against the relevant criteria.