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ACP 2020-026

GATEWAY DOCUMENTATION:

STAGE 2 Develop and Assess

STEP 2a(i) Options Development

Contents

References

1. CAP 1616 Airspace Change Process

2. All published documentation related to this airspace change proposal is available on the CAA Airspace Change portal: https://airspacechange.caa.co.uk/PublicProposalArea?pID=257

3. CAP 1430 UK ATM Vocabulary

4. ACP-2020-042 https://airspacechange.caa.co.uk/PublicProposalArea?pID=253

Introduction

The Ministry of Defence, and specifically 11 Group Training Enablers, is the change sponsor for this proposal. The proposal seeks to secure Future Combat Airspace (FCA) for the use by UK and multi-national partners during occasional large scale, highly complex, multi-domain collective training exercises that are used to prepare aircrews for operational service.

This document forms part of the Airspace Change Proposal process as defined in CAP 1616. For ease of reading the Statement of Need and Design Principles are re-iterated before the document outlines the various options considered to meet the Statement of Need.

Where are we in the Airspace Design Process?

We have completed Stage 1 Define, where we established the need for an airspace change and the design principles underpinning it. We are now in Stage 2; Develop and Assess and this document is part of Step 2A

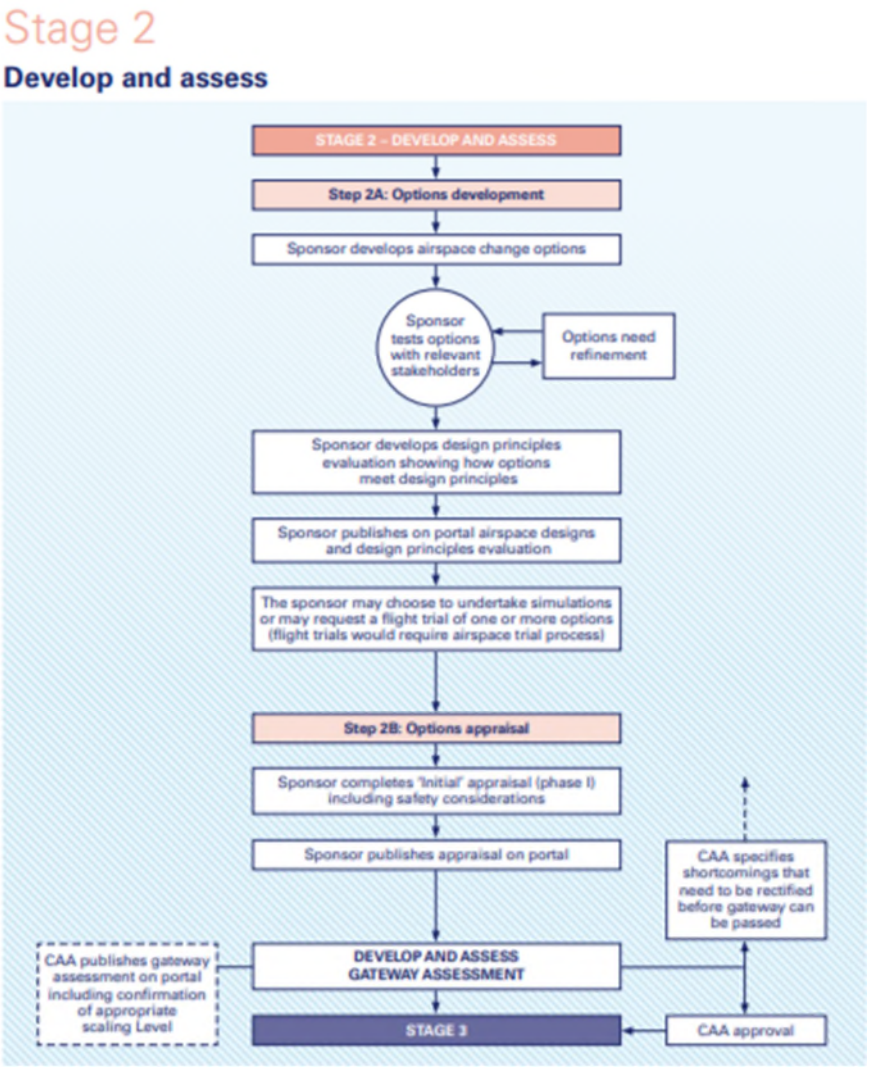

Figure 1. CAP1616 Airspace Change Process Stage 2

Why is the change needed?

With the introduction of 5th generation aircraft into the RAF inventory, larger, rectangular portions of airspace are needed so that crews can participate in realistic training, employing tactics which would be used in a hostile environment. The existing D323 and D613 complexes are suitable for routine flying training, but lack the space required for a full simulated Combat Air Operation involving participants from our NATO allies. These existing areas also lack the overland areas required on which to place targets.

What was the statement of need for this proposal?

Air Command, on behalf of the Ministry of Defence, has an obligation to provide relevant tactical collective training to its combat and combat support forces to ensure UK Forces are correctly prepared to defend UK interests in line with the UK Defence Strategy. An appropriate airspace that can safely facilitate exercising large forces of modern and future air platforms, in an efficient and representative combat environment is required to meet this need.

Core military requirements:

Minimising the risk of MAC to the maximum extent whilst enabling;

- Full tactical employment of aircraft and weapons capability
- Supersonic flight and rapid height changes
- Overflight and loiter of rural overland (target) areas
- Use high and low altitude activity concurrently
- Representative employment ranges of simulated air-air and air-surface weapons
- Representative operational numbers
- Ability to oppose from ground and air simultaneously
- Contested in electromagnetic environment.

Changing external circumstances make current solutions untenable to deliver the required needs of Defence. Alternate airspace would diminish required training objectives for Defence and increase the risk to all air users to an unpalatable level. This change request will be, in part, informed by the associated trial data received through ACP-2020-042.

Design principles

The design principles were set following engagement with representative stakeholder groups as part of CAP1616 Stage 1. The design principles and their relative priorities are shown below. These will be used to evaluate the design options to determine which will be discarded and which will be progressed.

The table below comprises a consolidated list of the DPs at the end of Stage 1B, prioritised as shown and ready to take forward into Stage 2. Safety is the highest priority and DP(a) is automatically assigned Priority 1.

The MoD feels that the ability to complete its training and operational objectives is next in priority after safety and, since no stakeholder contested this, DP(b) is assigned Priority 2 along with the corresponding DP(e) about minimising impact to other airspace users.

The method of determining the remaining DPs order of prioritisation has been determined by the comments received, not just upon the volume of responses. It is anticipated in CAP1616 that design principles may conflict or that some would be more important to one organisation that another. Therefore, blending of the principles is required and, recognising all the comments provided through engagement, they are summarised as follows:

Priority	Design Principle
1	DP(a) The airspace design must be safe, with any hazards identified and risks mitigated such that they are as low as reasonably practicable and tolerable.
2	DP(c) Optimise the airspace design to accommodate periodic large-scale multi-domain collective training activities. DP(e) Minimise impact on other airspace users and the network.
3	DP(h) Minimise the impact to Commercial Air Traffic flow, sector complexity and sector capacity. DP(g) Minimise environmental impacts including CO2 emissions. DP(f) Minimise environmental impacts including noise (where relevant).
4	DP(d) Optimise Airspace Management (ASM) applying Flexible Use of Airspace (FUA) principles and ASM Policy. DP(b) The training area will be within efficient reach of RAF / United States Air Force (Europe) (USAFE) Main Operating Bases.
5	DP(j) Minimise complexity in flight planning. DP(i) Optimise protocols for deconfliction of simultaneous activations of multiple volumes of Special Use Airspace. DP(k) Maximise the incorporation of results of the MOD's supporting Airspace trial – ACP-2020-042.

Table 1. Design Principles

Background

This proposal has its roots in the trial ACP-2020-042, completed previously using airspace in the NE of England, the data from which has been consulted in the production of some of the options presented in this document. Phase 1 of the trial was in the form of an airspace sharing agreement with NATS. This was known as Cobra Advanced Combat Airspace (CACA) and TDA 598 was created; its use was discontinued as it was labour intensive, not visible to the network and relied heavily on tactical interventions. In addition, the MOD requires a more significant overland portion on which to place simulated ground threats. TDA 598 is shown below, and its geographical dimensions form one of the proposals.

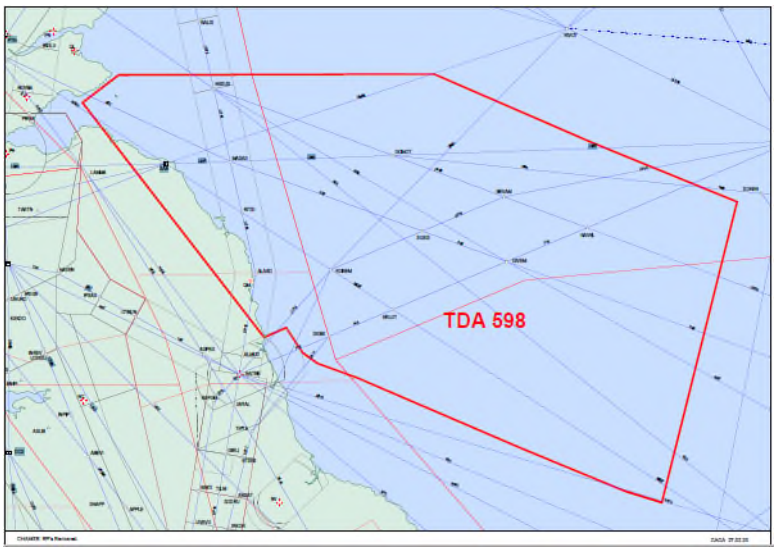

Figure 2. Depiction of TDA 598

The next evolution of the trial was the creation of TDA 597 which created Special Use Airspace between FL85-FL660 in the area shown in Figure 3. This TDA included a larger overland area and was an Airspace Management Cell Managed Area. Activated by NOTAM for the duration of the exercise it featured a flight plan buffer zone and enhanced network connectivity. A considerable amount of feedback has been presented as part of ACP-2020-042 and this has been considered during this options development phase.

Further engagement with stakeholders will be sought during this phase with additional stakeholders consulted if necessary. It should be noted by all stakeholders that this ACP is for a permanent portion of Special Use Airspace to be created however it will only be active during certain large-scale exercises that will be agreed upon with relevant stakeholders as the process develops.

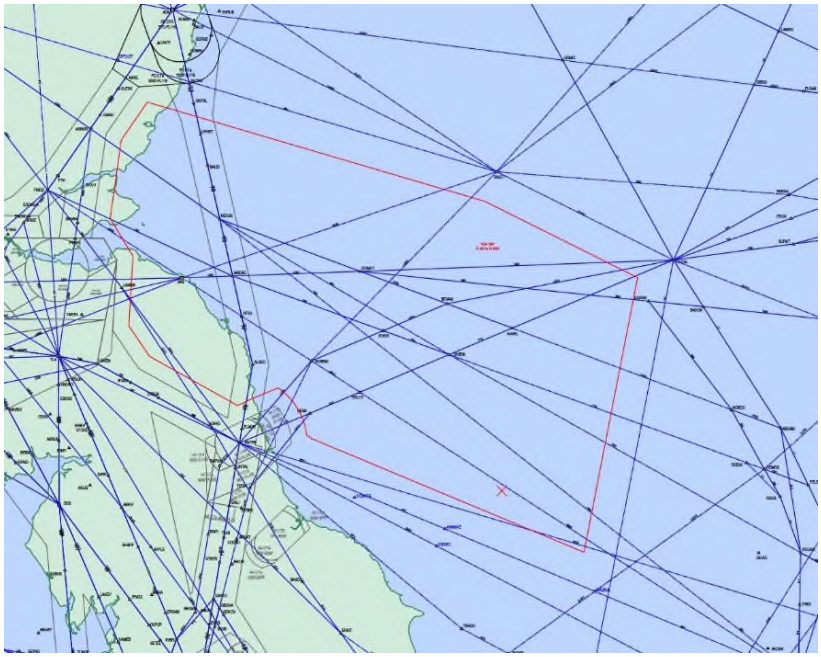

Figure 3. Depiction of TDA 597

Geographical considerations

In addition to identifying geographical locations that meet the airspace requirements, any chosen location must satisfy the constraint presented by the Design Principle that requires the area to be within efficient reach of UK/USAFE Main Operating Bases, in so doing, this also satisfies the requirement to minimise CO2 emissions, at least on the part of the aircraft participating in exercises within the new airspace.

The Main Operating Bases that will routinely provide aircraft are RAF Coningsby, RAF Marham, RAF Lossiemouth and RAF Lakenheath. Air-to air Tanker support will be in place, but on completion of any training serial it is impossible to refuel all participants prior to their returning to base. Therefore, to maximise training time, allow exercise objectives to be met and ensure aircraft have enough fuel to reach their base safely, transit distance to the exercise area should be minimised. Figure 4 below displays the location of these bases and the desired area for Special Use Airspace for large scale exercises involving participants from these bases.

Figure 4 RAF Lossiemouth, RAF Coningsby, RAF Marham and RAF Lakenheath locations. The orange shaded area the preferred approximate location of Special Use Airspace.

Design options summary

Table 2 below summarises the list of design concept options considered. MOD's preferred option is highlighted in green. Each option is described in the following pages.

	Option	Description
0	Baseline	The “do nothing” option. Keep everything as it is currently, continue to use D323 and D613.
1	Create new Special Use Airspace with overland portion (preferred option).	Create new Special Use Airspace with similar dimensions to TDA 597 with overland portions on which ground threats and targets can be positioned.
2	Create new Special Use Airspace with overland portion based upon trial TDA 598	Airspace based upon the dimensions of TDA 598.
3	Create Special Use Airspace as in option 1 with additional lateral dimensions for air to air re-fuelling and force regeneration.	Additional areas in order to avoid aircraft “spilling over” outside of the exercise airspace.

Table 2. Design Options Summary

Option 0 Do nothing option (Baseline)

A ‘Do Nothing’ option representing the current day situation must be included and is used as the baseline against which other options are measured.

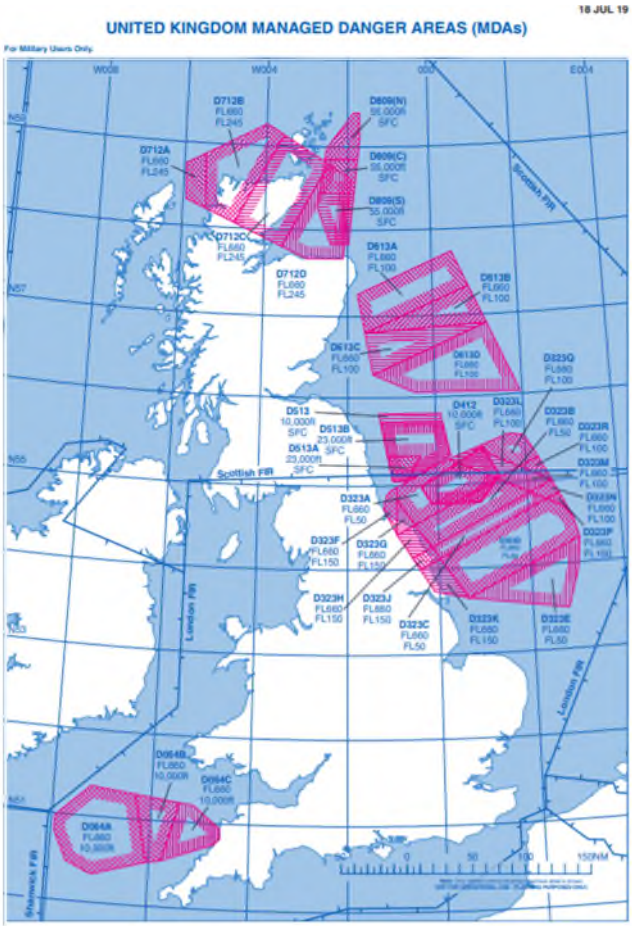

Figure 5 Current MDA structure

The current MDA structure caters for day to day, single force element training and will continue to be used for this. The Statement of Need for this ACP articulates the limitations placed upon the MOD by being restricted to the existing MDAs. With the introduction of 5th Generation Fast Jet aircraft, for the Air Exercise Programme in 2020/21, two iterations of a TDA were trialled which satisfied collective training requirements involving multiple aircraft types and, indeed air forces; however it is acknowledged that trial data is inaccurate due to the effect of COVID-19 on civil aviation.

Because of their distance from the RAF main operating bases, the D064 structure and the North Wales Military Training Area are not feasible areas for consideration.

It is important to note that the existing D323 and D613 complexes, when both active create a funnel for any traffic routing via the east coast of the UK. With use of the special use airspace at option 1, it is anticipated that D323 and D613 would not be active concurrently.

Option 1 Create Special Use Airspace over the North Sea with overland portions in NE England and SE Scotland (preferred option).

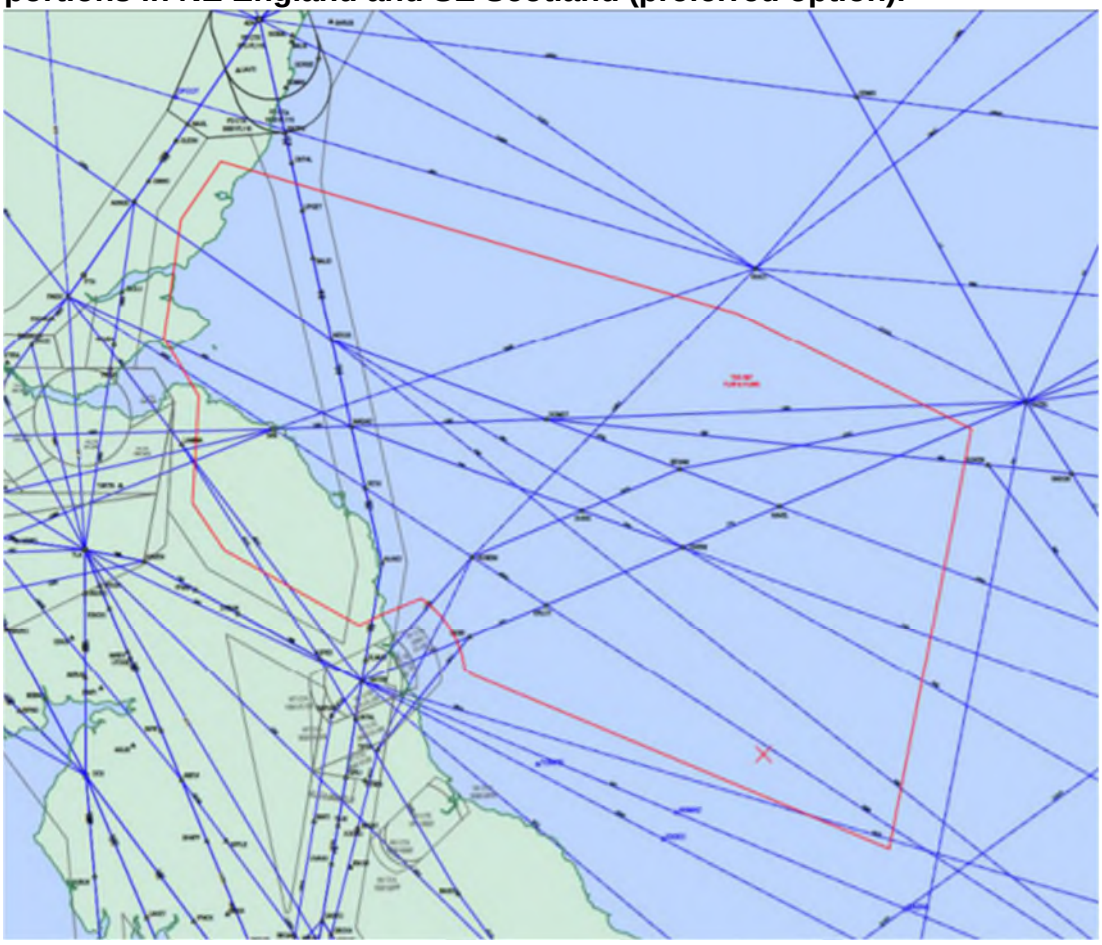

Figure 6 Illustration of preferred option, dimensions of proposed new MDA.

This airspace was trialled in part 2 of ACP-2020-42. However, as this ACP is for a permanent change those stakeholders will be engaged again in order for them to provide feedback on all options.

This option is the MOD's preferred option due to the geographical location, the dimensions and the opportunity provided by the overland portion to situate ground threats.

The sponsor acknowledges the challenges this change poses to civil aviation and will work with those stakeholders in order to propose solutions. It is also recognised that the trial took place during an unprecedented downturn in traffic levels due to Covid-19 and the resulting travel bans. Whilst this is recognised it must be stated that it is in the interests of national security that military training has and will continue through the pandemic.

Option 2 Create Special Use Airspace over the North Sea with overland portions in NE England

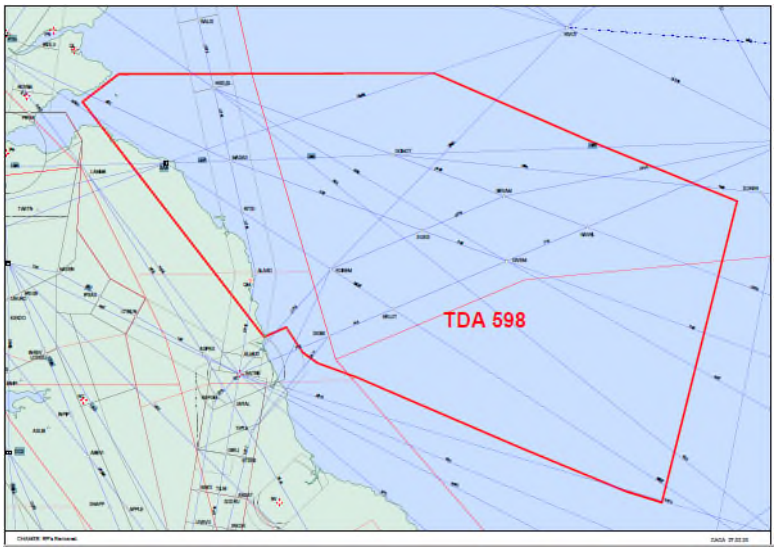

Figure 7 Special Use Airspace with smaller overland portion.

The dimensions of this option formed the first phase of the previously mentioned trial. Although the dimensions are acceptable for large scale military exercises, there is limited overland area in which to train for the air-to-ground combat role.

Option 3 Create Special Use Airspace with additional airspace for air refuelling and force regeneration.

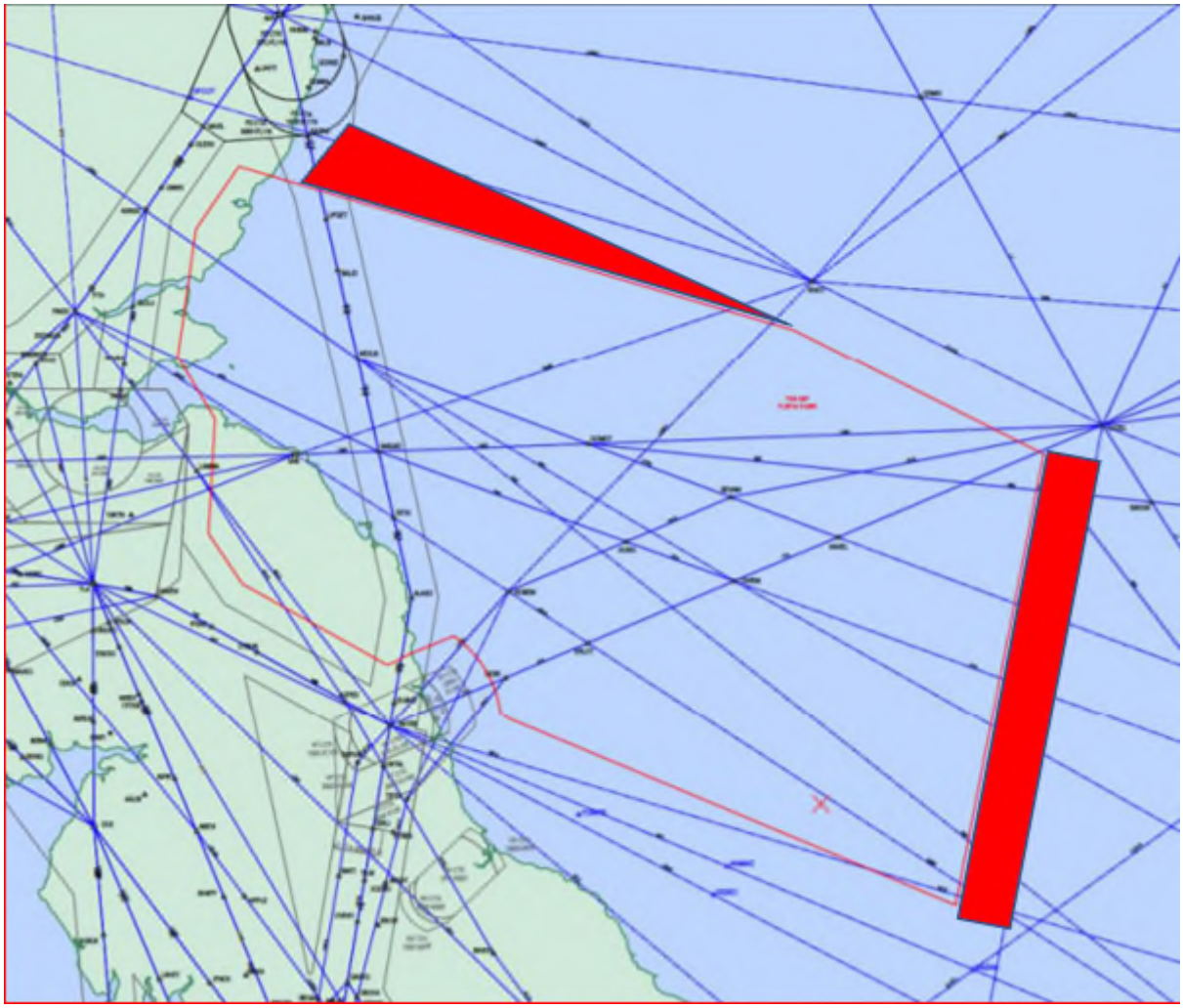

Figure 8 Additional areas to option 1

MOD stakeholder feedback acknowledged that some aircraft spilled outside of the segregated airspace of D597. This option adds a fillet of airspace to the north for the use of air to air refuelling and a portion to the east as an administration and force regeneration area.

This option would not necessarily increase the footprint of the aircraft involved but by segregating the airspace further, would increase safety.

Stakeholder engagement

This proposal is closely linked to ACP-2021-007, use of temporary airspace D597 and a previous airspace trial, ACP-2020-042. However, these ACPs were for temporary airspace. As this proposal is for a permanent change, stakeholders identified in part 1 will be engaged at this stage.

All stakeholders will be emailed a copy of this document and an on-line survey; face to face meetings will be arranged with those stakeholders who require further in-depth engagement. The key questions at this point in the process are:

- Do the options presented align with the design principles?
- How would the implementation of the options impact on your operation?
- Do any of the options affect your traffic pattern below 7000'?
- Do you have any other comments?

Feedback received from this engagement will allow the sponsor to evaluate the options against the design principles and be in a position to make qualitative assessment of each of the options.

Importantly at this stage is the assessment of whether traffic patterns below 7000' will be affected by the change; this could result in additional stakeholders requiring engagement.

Responses are requested via the questionnaire at this link or by email to air-airspacetrial@mod.gov.uk no later than **Friday 13th August 2021**. Documentation for Stage 2 will be submitted to CAA on 10th September 2021. Having commenced the preparation of this document on 14 June 2021 this timeline satisfies the CAP 1616 requirement.

It is important to note that this stage of the airspace change process is engagement in order to assess how the design options have responded to the design principles. Further in-depth consultation with affected stakeholders will take place during stage 3. However, if further dialogue between stakeholders is required during the engagement stage then the sponsor will work to resolve issues as they are identified.

This stakeholder engagement will be submitted to the portal as part of the CAP 1616 Stage 2 process.

Summary

The definition of a Danger Area is “Airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times”. In addition to the “do nothing” option, three options have been considered and proposed which the sponsor believes align to the design principles. Renewed engagement will take place with stakeholders at this stage in order to pursue a palatable agreement to allow the many users of the limited airspace to achieve their aims.

The purpose of the Royal Air Force is to deliver air and space power to protect the nation. Without the increased amount of airspace, the RAF would not be able to meet its key deliverables of having Force Elements at Readiness nor would it be able to meet its air commitments to NATO.

Our purpose in the Ministry of Defence is to protect the people of the United Kingdom and our overseas territories, prevent conflict, and be ready to fight our enemies. The importance of suitable airspace in which to conduct flying training cannot be overstated.