HQ Air & Space Warfare Centre
Thomson Building
Royal Air Force Waddington
LINCOLN
LN5 9WA
Tel: 01522 726224
Email: Air-AirspaceTrial@mod.gov.uk

10 Jul 20

Future Combat Airspace Trial - Engagement

Dear UK Airspace User,

The MoD has identified a requirement for the generation of new, suitable and safe airspace in the UK to facilitate large scale exercises, allowing for modern military aircraft and systems to train to their full capabilities. The current existing airspace structures do not provide the MoD viable airspace to facilitate this essential Defence training. An airspace sharing agreement with NATS has been used in the past to facilitate this MoD activity however feedback from recent iterations has demonstrated that this airspace sharing agreement is untenable for both NATS and the MoD going forward. This agreement also does not incorporate other airspace users and as such, an airspace change process (ACP) – ACP-2020-026 - has been submitted, under CAP1616, to deliver a permanent airspace solution. In order to identify, investigate and test concepts to support ACP-2020-026 (particularly in relation to airspace management (ASM)), the MoD also launched the Future Combat Airspace (FCA) trial – ACP-2020-042. The FCA trial will run concurrently with ACP-2020-026. The airspace trial will allow for real time testing of ASM concepts as well as finessing the design of the physical airspace structures and air traffic management (ATM) procedures required to deliver and support this change. The data gathered and results of which will help inform the ACP for permanent change.

This engagement is in respect to the FCA trial only. The trial will follow the guidance and process laid down in CAP1616 for Airspace Trials (paras 311-335).

As part of this process, the MoD seek your views on our proposal for this trial airspace. This will allow us to understand and consider how our proposal may affect your operation and minimise any impacts where possible.

The submitted Statement of Need is below:

> ‘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 aircraft, in a 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 of aircraft

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. In the near term a trial is sought to safely facilitate essential Defence training and act as a test case for a workable permanent solution as part of ACP 2020-26.'

Key Principles/Requirements for the Trial

- The training area will be within efficient reach of RAF/USAFE Main Operating Bases.
- The design will provide a suitable training area to meet core requirements now and in the near future, which cannot be achieved in the current airspace structure.
- The design will provide a sufficient overland portion for running tactical scenarios, siting targets and simulated threats that facilitate representative collective training.
- The trial airspace design must be safe, with any hazards identified and risks mitigated such that they are tolerable and as low as reasonably practicable.
- Safe and efficient management of airspace utilising Flexible Use of Airspace (FUA) principles.
- Minimise impact upon the network and other airspace users, where possible.
- Simplicity - use existing structures where possible.
- Conformity – use standard airspace structures where possible.

Trial Dates

The trial will run over 2 stages and the dates are below. These are proposed dates and may have to flex based on military operational requirements, however MoD will contact stakeholders if there is any deviation.

Stage 1 – 19, 21, 26, 28 Oct and 2, 4 Nov 20 between 0900-1200 Zulu

Stage 2 –9, 11, 16 and 18 Mar 21 between 0900-1200 Zulu

Next Steps

As a result of discussions and feedback from an existing airspace sharing agreement with NATS and from previous exercise iterations, early engagement took place with NATS. This was to inform the safety and operational viability of our initial proposal. The design at Fig.1 in Annex A is what we believe to be the basis of a safe and viable design from both NATS and MoD perspective, however we recognise that other aviation stakeholders may be affected.

As a potentially affected stakeholder we will be engaging with you throughout the airspace trial over the coming months and welcome your comments and feedback throughout. The proposed trial airspace design is at Annex A. We invite you consider this proposal and submit any views or comments you may have by completing the return at Annex B, and returning via the email address Air-AirspaceTrial@mod.gov.uk. It is requested that any views you may have be submitted by Wed 24 Jul 20.

Once the feedback has been received, we will consider this in relation to the design and collate the trial proposal to submit to the CAA. The submission date will be 31 Jul 20 and the trial proposal will be available on the ACP portal.

We recognise that there may be concerns or questions within your organisation in relation to this airspace trial and, in time, the subsequent ACP for permanent change. We would like to reassure you that we are very early on in the process and will continue to engage with stakeholders throughout, with opportunity for you to provide comment or feedback. We would be grateful if you could confirm the best POC and contact details for continued engagement throughout this project. If you have any specific or pressing concerns or questions, please include them with any response you wish to make, and we will endeavour to respond.

Officer Commanding 92 Squadron
Air and Space Warfare Centre

Distribution:

NATMAC Contact List
JFACC
ASWC Gp Capt Ops & Trg
DACOS A7

Annex A to Future Combat Airspace Trial – Engagement

ACP-2020-042 Trial Airspace Design Proposal

Trial Process

The trial seeks to quantify an appropriate airspace that can safely facilitate exercising large forces of modern and future air platforms, in a representative combat environment. The data, feedback and engagement will inform decisions for a permanent solution under ACP-2020-026.

Initial engagement with NATS identified several constraints on the design creation due to the MoD's Air Activity Programme, Euro-Atlantic traffic patterns and historical experience from conducting collective training in this area of the UK over the past 5 years. This framed the airspace design and informed our early engagement.

Feedback from stakeholders will be sought throughout the process and a review will be conducted after each stage to inform and/or amend the proposed design for the next stage. This will ensure the trial objectives are met whilst allowing opportunity for stakeholder feedback to influence and be incorporated into the design. The trial will be conducted in a 2-stage process as detailed below.

Stage 1 will be conducted on 19, 21, 26, 28 Oct and 2, 4 Nov 20.

Stage 2 will be conducted on 9, 11, 16 and 18 Mar 21.

We also recognise that the COVID-19 pandemic has had an unprecedented effect on the industry and acknowledge that data gleaned in Stage 1 may not be reflective of realistic future demand and as such, we seek to validate any data in Stage 2. We will consider this throughout the trial as it is important for us that any outcome needs to be future-proofed as far as is practicable.

Following the trial, the data gathered will be used to inform the permanent ACP change under ACP-2020-026. It should be noted that the permanent airspace solution is anticipated to be activated only for specific military exercises - approximately 27 times per year for 3 hours per activation. This will equate to in the region of 80 hours activation per calendar year.

Physical Dimensions

To meet the needs of the MoD the trial aims to establish an airspace design similar to the design below in Fig 1. This is initially assessed to meet the MoD's requirements whilst minimising the impact to other airspace users. The MoD's aim is to provide airspace where it can safely conduct realistic collective training. Whilst it would have been MoD's preference to have conducted the trial with the dimensions of Fig 1 from the outset, engagement with NATS has identified the system changes and additional airspace structures required to facilitate this would be not achievable to be delivered in time for the Stage 1 gateway. Therefore, the desired airspace dimensions will not be established until Stage 2.

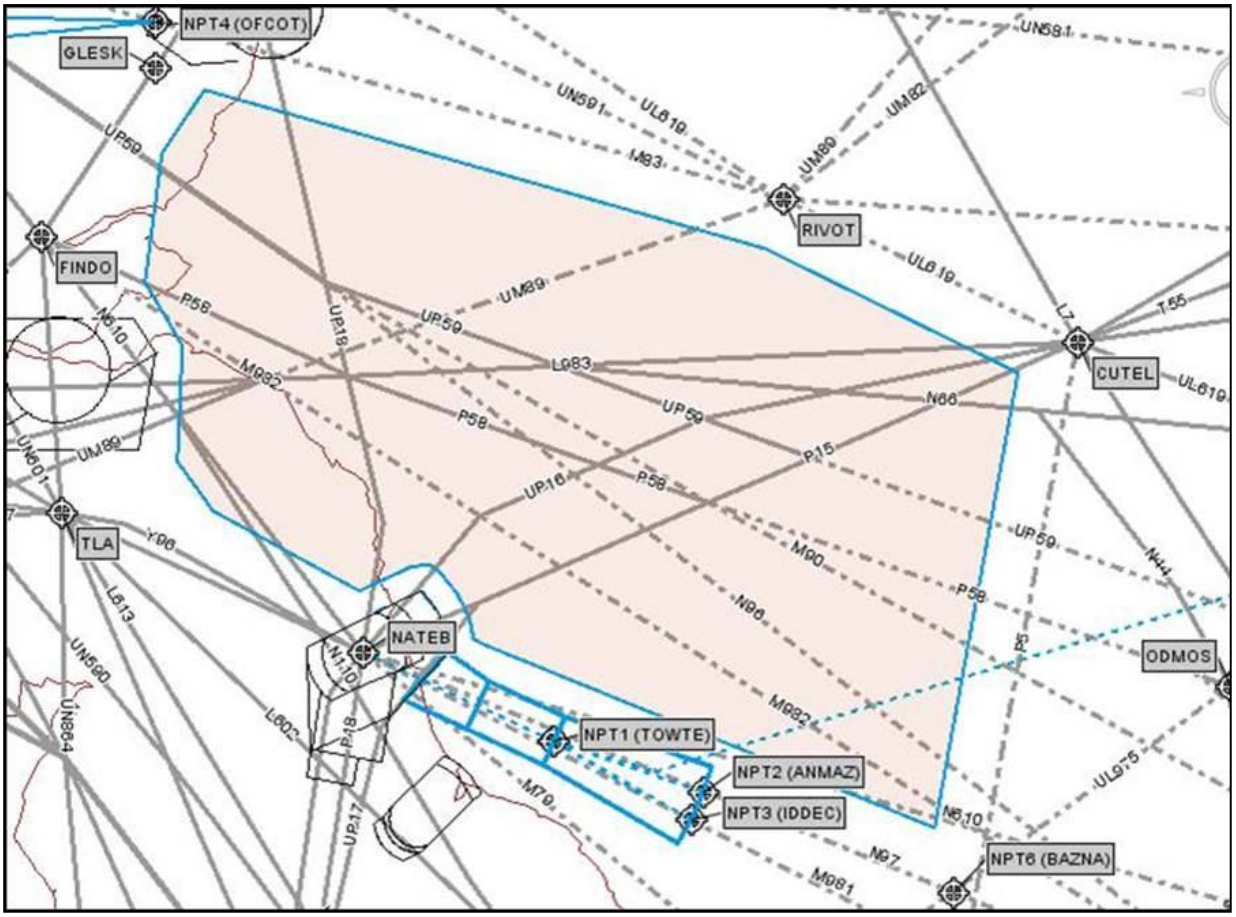

Figure 1 – Proposed Future Combat Airspace

Stage 1

Stage 1 will utilise airspace lateral dimensions used in previous exercise iterations under the previous airspace sharing agreement between NATS and the MoD, with increased vertical dimensions, as at Fig 2/3. Whilst the dimensions do not meet the full requirements of the MoD, it will enable some level of collective training which would otherwise not be achievable. This will also allow the MoD to measure the impact to our training as a result of the smaller airspace volume during Stage 1, and to validate our requirements for larger airspace dimensions during Stage 2. The Stage 1 design will also enable progress on the other key aspect of this airspace trial, Airspace Management, as detailed in the ASM section below. Improvements will be made on the procedures and structures to manage civil air traffic flow around the area as well as the co-ordination and management of military traffic transiting to and from and around the exercise area. Temporary Danger Area status is sought due to the exercise requirement for Unusual Air Activity to incorporate High Energy Manoeuvres, Electrical and Optical hazards and, in the future, Unmanned Aircraft Systems (VLOS and BVLOS).

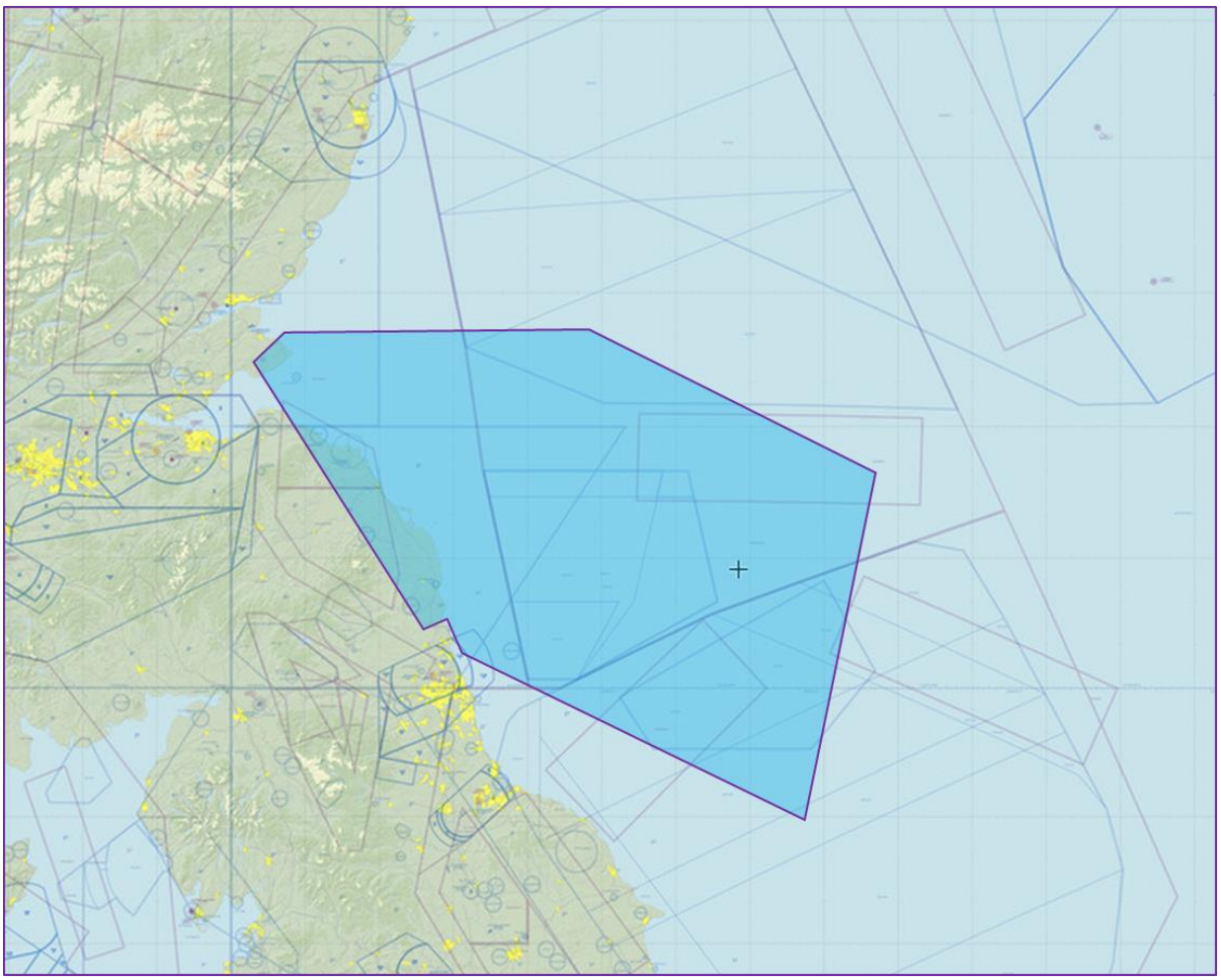

Figure 2 – Representation of airspace dimensions for Stage 1

Segment	Coordinates	Vertical	Classification	Operating Authority
No	Lat/longs nnnnnnN nnnnnnnW			
1	A-560938N 0024841W B-561625 N 0023238W C-561449N 0001312W D-555631N 0005309E E-553914N 0015615E F-542636N 0011534E G- 543003N 0005954E H-544237N 0001428E I- 550035N 0005050W J-550434N 0010814W K-550716N 0011424W L-551332N 0012117W	FL85 to FL660	Temporary Danger Area	HQ Air

Figure 3 - Cobra Advanced Combat Airspace Dimensions

To enable **Stage 1** of the trial, a temporary corridor (Fig 4/5) will be created to allow safe entry and exit of aircraft to Newcastle International Airport, whist remaining in controlled airspace. The activation of this temporary corridor will address the issues and concerns evidenced in feedback from previous exercises and will be available only trial during trial airspace activation.

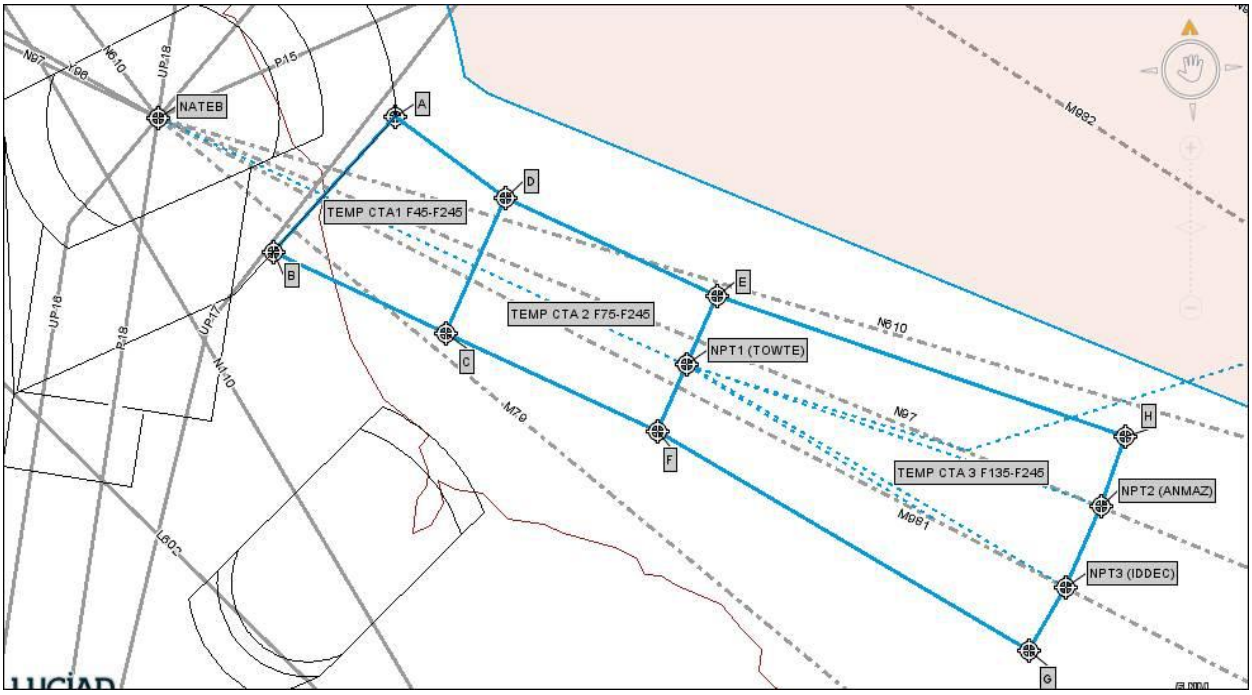

Figure 4 – Future Combat Airspace Newcastle corridor

Segment	Coordinates	Vertical	Classification	Operating Authority	Design Criteria
No	Lat/longs nnnnnnN nnnnnnnW				*Description of rationale for point.*
1	A-550025N 0011601W B-545257N 0012847W C-544704N 0010839W D-545557N 0010046W	FL45 to FL245	Class D Below FL195	Newcastle ATC	A CTA established in the form of a corridor, with a width of 10nm bisected by a line of bearing 116.29/243.71^0 from NATEB; abutting with Newcastle CTA 3. Base Level Calculation: Decent profile calculation based on 5^0 profile i.e. 500ft per NM or 2000ft per Min at 240Kts. Expected crossing level between Temp CTA 1 and NEW CTA 3: FL60
			Above FL195 Class C	Prestwick ACC	
2	C-544704N 0010839W D-545557N 0010046W E-544839N0003608W NPT1-544414N 0004008W F-543948N 0004405W	FL75 to FL245	Class D Below FL195	Newcastle ATC	A CTA established in the form of a corridor, with a width of 10nm bisected by a line of bearing 116.29/243.71^0 from NATEB. Base Level Calculation: Decent profile calculation based on 5^0
			Above FL195 Class C	Prestwick ACC	

					profile i.e. 500ft per NM or 2000ft per Min at 240Kts. Expected crossing level between Temp CTA 2 and Temp CTA 1: FL120 at a distance of 16nm from NATEB.
3	E-544839N 0003808W NPT1-544414N 0004008W F-543948N 0004405W G-542854N 0001616W NPT3-543302N 0001128W NPT2-543735N 0000724W H-544218N 0000430W	FL135 to FL245	Class C	Prestwick ACC	A CTA established in the form of a corridor, with a width of 10nm bisected by a line of bearing 116.29/297.5^0 from NATEB, extended laterally to produce 5nm containment between an intersecting point established at 40nm from NATEB (max radar range of New ATC) NPT 1 and points established at 60nm from NATEB on UARs N97 (NPT 2) and M981 (NPT 3) Base Level Calculation: Decent profile calculation based on 4^0 profile i.e. 400ft per NM from FL260 to ensure crossing of NPT 1 at FL200

Figure 5 - Dimensions of Temporary Newcastle corridor

Stage 2 will update the lateral dimensions of the military operating area, as at Fig 6/7, to meet the statement of need's core requirements, with opportunity for the feedback gained from Stage 1 to influence the design as appropriate. Whilst it is anticipated that a larger volume of airspace is required to facilitate training using the full envelope of military capability, the MoD will measure the impact of reduced airspace during the first exercise to demonstrate and validate our requirement for larger airspace in Stage 2. The temporary corridor detailed at Fig 4/5 is also expected to continue to be required to facilitate, pending feedback from Stage 1. We also seek to understand any additional procedures or airspace structures identified from Stage 1 feedback that are essential to support or would enhance our proposed design. Temporary Danger Area status is sought due to the exercise requirement for Unusual Air Activity to incorporate High Energy Manoeuvres, Electrical and Optical hazards and, in the future, Unmanned Aircraft Systems (VLOS and BVLOS).

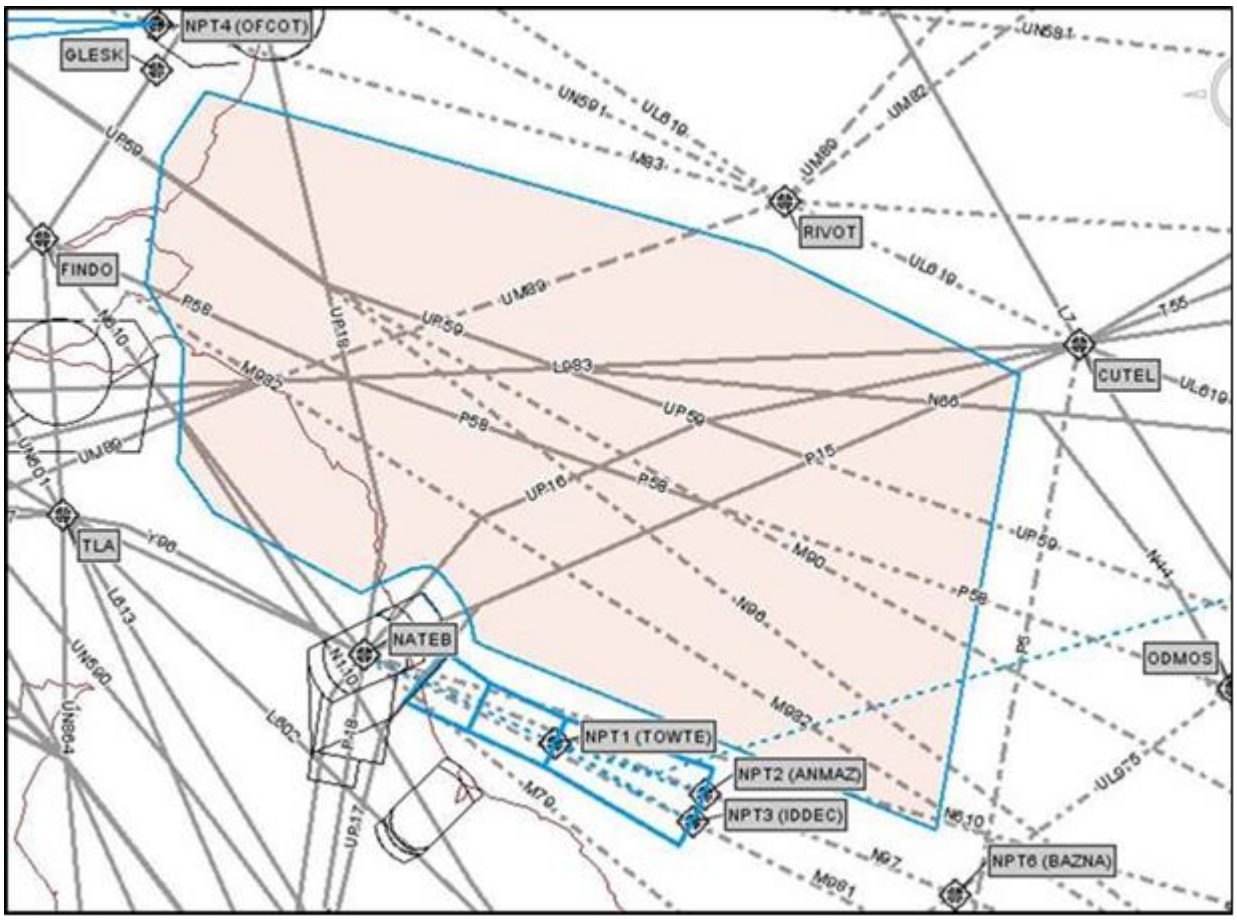

Figure 6 – Future Combat Airspace with Temporary Corridor

Segment	Coordinates	Vertical	Classification	Operating Authority
No	Lat/longs nnnnnnN nnnnnnnW			
1	A-5648.321N 00231.096W B-5649.252N 00159.894W C-5537.172N 00204.593E D-5428.352N 00113.525E E-5504.197N 00105.014W F-5511.568N 00109.691W G- 5519.172N 00116.390W H-5514.206N 00142.303W I- 5540.354N 00239.312W J-5603.863N 00240.197W K-5611.001N 00249.298W L-5637.536N 00247.654W	FL085 to FL660	Temporary Danger Area	HQ Air

Figure 7 - Future Combat Airspace Dimensions

Airspace Management

The MoD envisage that the FCA (Fig 6) will be managed to align with tFlexible Use of Airspace principles, whereby the airspace will only be activated when required for a specified purpose and deactivated when not required. MoD acknowledge that this is a large volume of airspace and throughout Stage 1 and Stage 2 of the trial, the MoD will identify, measure and test ASM procedures and protocols to ensure this airspace can be managed as flexibly and efficiently as possible, minimising impact to other airspace users.

The MoD seek to formalise this airspace structure and its activation such that all airspace users are aware and notified of its use. We envisage a new addition to the UK Aeronautical Information Publication (AIP) Supplementary will be required to support the trial, with airspace activation co-ordinated through the Military Airspace Booking and Co-ordination Cell (MABCC). The AIP entry will be reviewed and updated after each trial stage as required.

It is expected that management will conform to CAP740, whereby coordination of the intent to activate the FCA will be conducted through established military procedures at D-7. Activation of the temporary corridor (Fig 4) and the FCA will be at D-1 in order to allow publication of the Route Availability message. The trial aims to test and validate the processes and procedures required to support safe and efficient activation and deactivation of this airspace and dependent routes and structures.

The MoD foresee that notification of planned use of this airspace, on a more strategic ASM level (i.e. more than D-7) would be of benefit to all airspace users. This would provide early identification of potential clashes or pinch points and help to provide a more predictable and plannable environment for all parties. The trial seeks to understand the optimal notice period required for activation of the FCA, out with the standard activation protocols. This will also aid the military planning process – early confirmation of airspace allocation may be sought by MoD prior to D-7 to ensure that there is sufficient lead time to facilitate planning of the large scale and complex military activity that will take place within this airspace.

Activation of the FCA would, by default, suppress D613, D513 and D323 complexes to other military airspace users to facilitate network management and reduce impacts to the wider airspace. MoD seek to understand the best mechanism for doing so. In particular, the defined time buffer periods for suppression pre and post FCA activation. The same is required to be understood for other supporting airspace structures as well as route availability for flight planning purposes. Whilst a standard time buffer of +/- 15mins is used routinely, it is anticipated that this will be insufficient for the trial airspace due to its size and location. Therefore, the time buffer applied to each route and structure affected by FCA activation requires to be tested and confirmed through the trial.

At this stage it is unclear what impact the FCA activation may have on the wider network and if it will potentially require special management or suppression of other airspace volumes to facilitate its use. The trial will identify other areas that may require bespoke ASM protocols in order to safely manage the civil and military airspace demand. Civil Air Traffic Flow and Capacity Management procedures will be assessed to ensure that FCA activation does not result in sector/controller overload and to identify where capacity constraints may be experienced.

The MoD are working on internal procedures to safely manage the ingress and egress of military aircraft to the exercise area. This is likely to follow established military Airspace Control Procedures, where ingress and egress of aircraft will be established through entry and exit gates, with a ‘one-way flow’ established within the transit corridors within the internal structures of the airspace. This process would be briefed as a mandated safety procedure to all military users. This process would apply a level of procedural control to the transits to and from the airspace (conducted by RAF ASACS, AWACS or ATC) and a degree of predictability of the routing.

It is acknowledged that under the Airspace Modernisation Strategy, initiatives such as Free Route Airspace and Advanced Flexible Use of Airspace will see a step change in how airspace is utilised in the future. As such, this trial also aims to ensure that the airspace design and associated management protocols consider viability in both current and future airspace operations.

Impacts

Implementation

It is anticipated that the changes will incur a cost to NATS in the form of new structures and routes, system adaptation, airspace management and training to facilitate the trial airspace. To minimise these costs, the proposals minimise the changes required to existing route structures and introduction of new structures, wherever possible.

Likewise, there will be a cost to the MOD for the training and education, system adaptation and the additional airspace management required to facilitate the proposed airspace design.

Environmental

Noise: An assessment of noise impact is not intended to be carried out as part of this trial.
The airspace proposed will be above 7000ft and predominantly over the sea therefore little impact is expected to communities. The small area of land under the proposed Newcastle corridor (at Fig 4) below 7000ft only changes the airspace classification and is not expected to modify the air traffic density or traffic patterns currently experienced in this area.

Air Quality: An assessment of air quality is not intended to be carried out as part of this trial.

CO2: It is acknowledged that the proposal may result in unwanted impacts to operators, including increased track distance and increased CO2 emissions. The trial will measure the impact this proposed airspace design may have. We will work to minimise any negative impacts where possible both through optimal airspace design and robust airspace management protocols to ensure the most flexible and efficient use of airspace possible.

Feedback from and impacts to stakeholders will be monitored and assessed throughout Stages 1 and 2 to ensure the MoD are aware if there are any issues experienced as a result of this airspace trial. There may also be additional impacts or issues that we may not have considered at this stage. We welcome your initial feedback on anything you feel should be considered or included as part of our proposal.

Annex B to Future Combat Airspace Trial – Engagement

ACP-2020-042 Trial Airspace Proposal Design Engagement Response

To ensure that the trial is viable and meets the needs of all airspace users please complete the following questionnaire providing feedback on the trial airspace details contained in the covering letter, Annex A and / or details on the CAA Portal for ACP-2020-042.

Safety

Do you have any safety concerns about the airspace proposal?

☐ Yes ☐ No

Detail

Operational Impacts

Does the airspace proposal provide any positive or negative effects on your operations?

☐ Yes ☐ No

Are there any additional impacts, constraints or costs we should be aware of?

☐ Yes ☐ No

Detail

Design

Do you agree that this design meets the SoN?

☐ Yes ☐ No

Do you have any observations or concerns about the design proposal?

☐ Yes ☐ No

Are there any omissions or additions you feel should be considered for inclusion?

☐ Yes ☐ No

Detail

Airspace Management

Do you agree that this airspace should be managed?

☐ Yes ☐ No

Are there any protocols or agreements you think need to be made in relation to how this airspace is managed?

☐ Yes ☐ No

How much notice for airspace activation would be sufficient for your organisation?

☐ Yes ☐ No

Detail

Environment & Noise

Do the changes proposed raise any environmental or noise concerns from your perspective?

☐ Yes ☐ No

Are there any aspects you feel that we have not covered, that should be considered?

☐ Yes ☐ No

Detail

Other

Please provide any further comments, suggestions or considerations in relation to the trial airspace proposal.

Detail