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18 July 23

# Future Combat Airspace, ACP-2020-026:

# STAGE 4B, Final Submission

**Version 2.0**

## Notes

This publication provides notification of a Ministry of Defence sponsored proposal for the creation of a new portion of segregated *Special Use Airspace in the form of a Danger Area* in which military exercises involving large numbers of different aircraft types can train for operations. The Change Sponsor for this proposal resides within 11 Group, A7.

## Roles

| Action | Role | Date |
|---|---|---|
| Produce | 11Gp, A7 | 21 Jul 23 |
| Review | DAATM | 21 Jul 23 |

## Drafting and Publication History

| Version | Date | Change Summary |
|---|---|---|
| Initial Issue | 21 Jul 23 | Submitted |
| V2.0 | 16 Oct 23 | *Annex C - Draft EGD514 Letter of Agreement (V2.0)*<br><br>*Annex D - Airspace Data – Aeronautical Data Quality Implementing Rule (V2.0)*<br><br>*Annex E - EGD514 Non Aerodata (V2.0)*<br><br>*4.2.5 - b. Frequency of Activations*<br><br>*4.2.9 - Environmental Analysis includes all IFR GAT traffic within the simulated region*<br><br>*4.3.3 - Aim of non-aerodata changes*<br><br>*4.3.5 - Dispensation request from CAA Safety Buffer Policy*<br><br>*7.2.2 - Dundee Airport TCAS statement*<br><br>*7.6.14 - Environmental Analysis based upon 55 activations per year.* |

## Contents

# 1. References

1.1 Reference Material. The table below details all documents that will be referenced throughout this document. This includes previous material submitted as part of this Airspace Change Proposal.

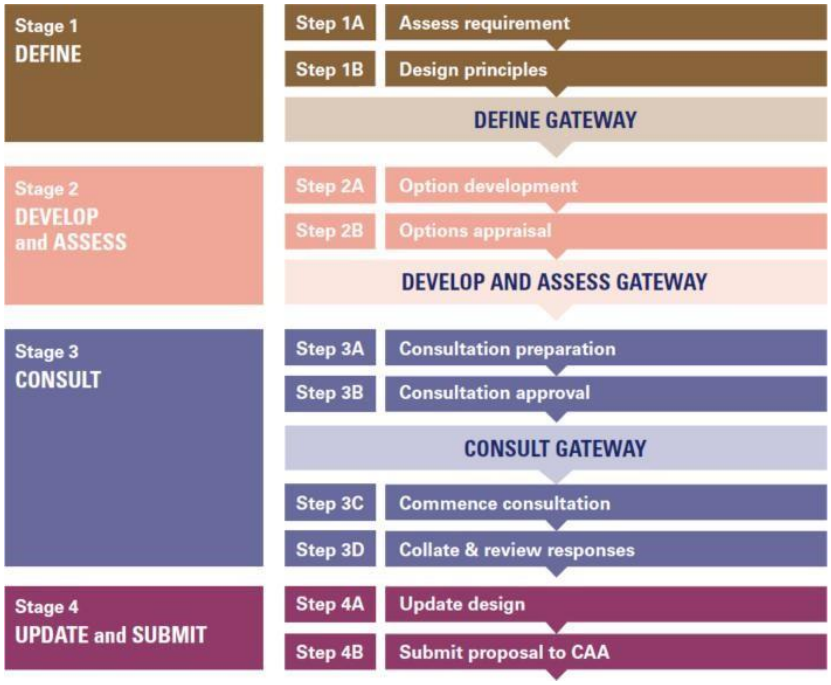
| Ref no. | Description | Hyperlink |
|---|---|---|
| 1 | Stage 1 Statement of Need | Link to document |
| 2 | Stage 1 Assessment Meeting Minutes | Link to document |
| 3 | Stage 1 Design Principles | Link to document |
| 4 | Stage 2 Design Options | Link to document |
| 5 | Stage 2 Design Principle Evaluation | Link to document |
| 6 | Stage 2 Initial Options Appraisal and Safety Assessment | Link to document |
| 7 | Stage 3 Consultation Strategy | Link to document |
| 8 | Stage 3 Consultation Document | Link to document |
| 9 | Stage 3 Full Options Appraisal | Link to document |
| 10 | Stage 3 Consultation Review | |
| 11 | Stage 4 Final Options Appraisal | |
| 12 | Airspace change: Guidance on the regulatory progress CAP 1616 | Link to document |
| 13 | UK Government Department for Transport's 2017 Guidance to the CAA on its environmental (abbreviated to ANG2017) | Link to document |
| 14 | ACP-2021-048 Future Combat Airspace - Interim Solution | Link to document |
| 15 | ACP-2020-042 Future Combat Airspace Trial | Link to document |
| 16 | ACP-2021-007 Future Combat Airspace Interim Solution | Link to document |
| 17 | Citizen Space Portal | Published Responses |

## 1.2 Glossary of Terms

| | |
|---|---|
| ACP | Airspace Change Proposal |
| ACT | Air Combat Training |
| AAL | Above Aerodrome Level |
| ACT | Air Combat Training |
| AMSL | Above Mean Sea Level |
| ANO | Air Navigation Order |
| AONB | Area of Outstanding Natural Beauty |
| AQMA | Air Quality Management Area |
| ARP | Aerodrome Reference Point |
| ASM | (Defence) Airspace Management |
| ATC | Air Traffic Control |
| ATS | Air Traffic Service |
| ATZ | Aerodrome Traffic Zone |
| BVLOS | Beyond Visual Line of Sight |
| CAA | Civil Aviation Authority |
| CAP | Civil Aviation Publication |
| CTA | Control Area |
| CTR | Control Zone |
| DIO | Defence Infrastructure Organisation |
| DP | Design Principle |
| FBZ | Flight Plan Buffer Zone |
| FL | Flight Level |
| FIR | Flight Information Region |
| FUA | Flexible Use of Airspace |
| ISTAR | Intelligence, Surveillance, Target Acquisition and Reconnaissance |
| LFE | Large Force Exercises |
| LoA | Letter of Agreement |
| MAA | Military Aviation Authority |
| MATZ | Military Aerodrome Traffic Zone |
| MOD | Ministry of Defence |
| MRP | Military (Aviation Authority) Regulatory Publication |
| NOTAM | Notice to Airmen |
| NVGs | Night Vision Goggles |
| QRA | Quick Reaction Alert |
| RA | Regulatory Article |
| RAF | Royal Air Force |
| SoN | Statement of Need |
| SID | Standard Instrument Departure |
| STAR | Standard Arrival Route |
| SQN | Squadron |
| SUA | Special Use Airspace |
| TMA | Terminal Control Area |
| TRA | Temporary Reserved Area |
| USAFE | United States Air Forces in Europe |
| VLOS | Visual Line of Sight |

## 2. Introduction

2.1 This document contributes towards Stage 4B of the Civil Aviation Publication (CAP 1616) Airspace Change Process for ACP-2020-026, which aims to facilitate the usage of a new *Danger Area* by the United Kingdom and coalition partners during infrequent but planned large scale, highly complex training exercises that are used to prepare aircrew for operational environments.




2.2 This proposal was categorised as a Level M1 ACP under CAP 1616. The proposal has been developed in line with the timeline agreed with the CAA:

| Stage | Date |
|---|---|
| DEFINE Gateway | 12 Apr 2021 |
| DEVELOP AND ASSESS Gateway | 11 Mar 2022 |
| CONSULT Gateway | 3 Feb 2023 |
| UPDATE AND SUBMIT | 21 Jul 2023 |
| DECIDE Gateway | 17 Nov 2023 |
| IMPLEMENT (Target AIRAC) | 02/2024 |

## 3. Executive Summary

As outlined in the Statement of Need at Reference 1, the Ministry of Defence is seeking to secure Segregated Airspace in the form of a *Danger Area,* for use by the UK and coalition partners during large scale, highly complex training exercises that are used to prepare aircrews for operational service.

Existing Danger Areas although suitable for routine flying training are of insufficient volume for modern military flying and the execution of large force exercises. New aircraft types, weapons and tactics requires appropriately sized areas to conduct integrated training.

Due to high energy manoeuvres and unpredictable changes in heading and level taken by aircraft participating in operational training, the airspace in which training is conducted should be segregated and notified to ensure that safety is *not compromised* for any airspace user.

In order for UK Danger Areas to comply with both the UK's Airspace Modernisation Strategy and incoming Free Route Airspace (FRA), every danger area requires a *"parent"* danger area in the UK AIP in order for Flight Plan Buffer Zones to be applied and thus enable FRA. In an increasingly busy UK airspace, segregated and notified airspace of a large enough size and in a suitable location will not exist after FRA is implemented and current solutions are untenable to deliver the required needs of Defence.

In accordance with CAP1616 the Sponsor sought feedback from identified Stakeholders on the draft design principles which would be used to assess various options as part of the Stage 2 development process.

Stage 2A saw the Design Options developed against the Design Principles (Reference 4), informing the Initial Options Appraisal at Reference 6 in which the Sponsor evaluated various Danger Area options against the 'do nothing' baseline. This also involved a period of Stakeholder engagement.

Stage 3 consisted of the development of consultation material (References 7 and 8) and the production of the Full Options Appraisal (Reference 9). Post the Consultation Gateway the Sponsor began a 13-week public consultation – facilitated mainly through the open source 'Citizen Space Portal' which hosted all consultation material, frequently asked questions and provided Stakeholders with a feedback questionnaire and an opportunity for any interested party to liaise directly with the Sponsor regarding the ACP. During this period, Consultation meetings were held with 3 primary Stakeholders.

Consultation for ACP-2020-026 generated 6 responses via Citizen Space, these responses were analysed and categorised accordingly into responses that either had

the potential to affect the proposal or not. This was summarised in the Consultation Review at Reference 10.

Following the Consultation Review and the Final Options Appraisal at Reference 11, it was determined that no significant changes were required to the preferred option. Therefore, as a result of the formal consultation, the Sponsor developed the Final Submission which is outlined within this document.

# 4. Current Airspace Design

## 4.1 Structure and Routes

The airspace within which this proposal resides is a combination of Class G (below FL195), Class C (FL195 (FL245 active TRA) and above) and straddles both the London and Scottish Flight Information and Upper Information Regions. A significant proportion of the airspace identified for segregation under ACP-2020-026 resides within the area allocated to Free Route Airspace (FRA). FRA will allow aircraft in the upper airspace to flight plan and fly between existing points and not be constrained to following the current network of routes, creating time efficiencies and reducing the associated environmental impact.

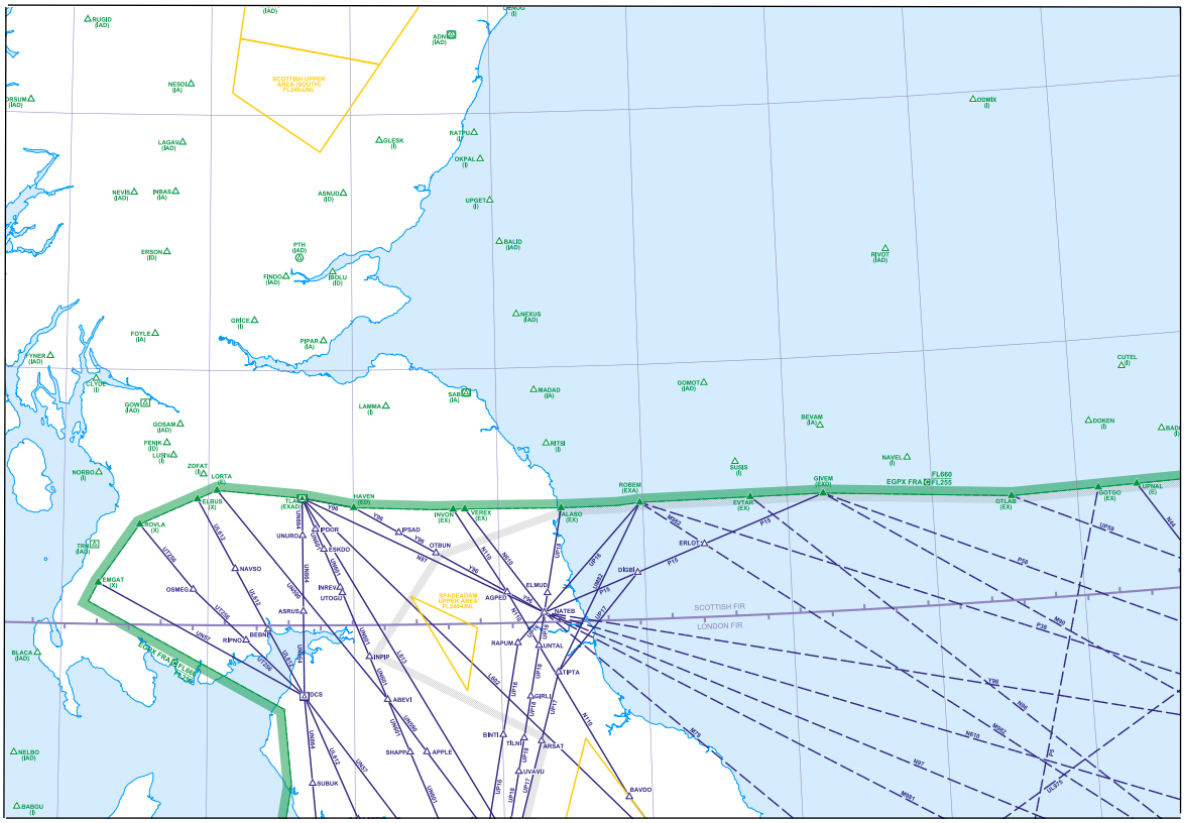


Figure 1, ENR 6-70, Upper Airspace Control Area, Free Route Airspace and Upper ATS Routes

## 4.2 Airspace Usage and Proposed Effect

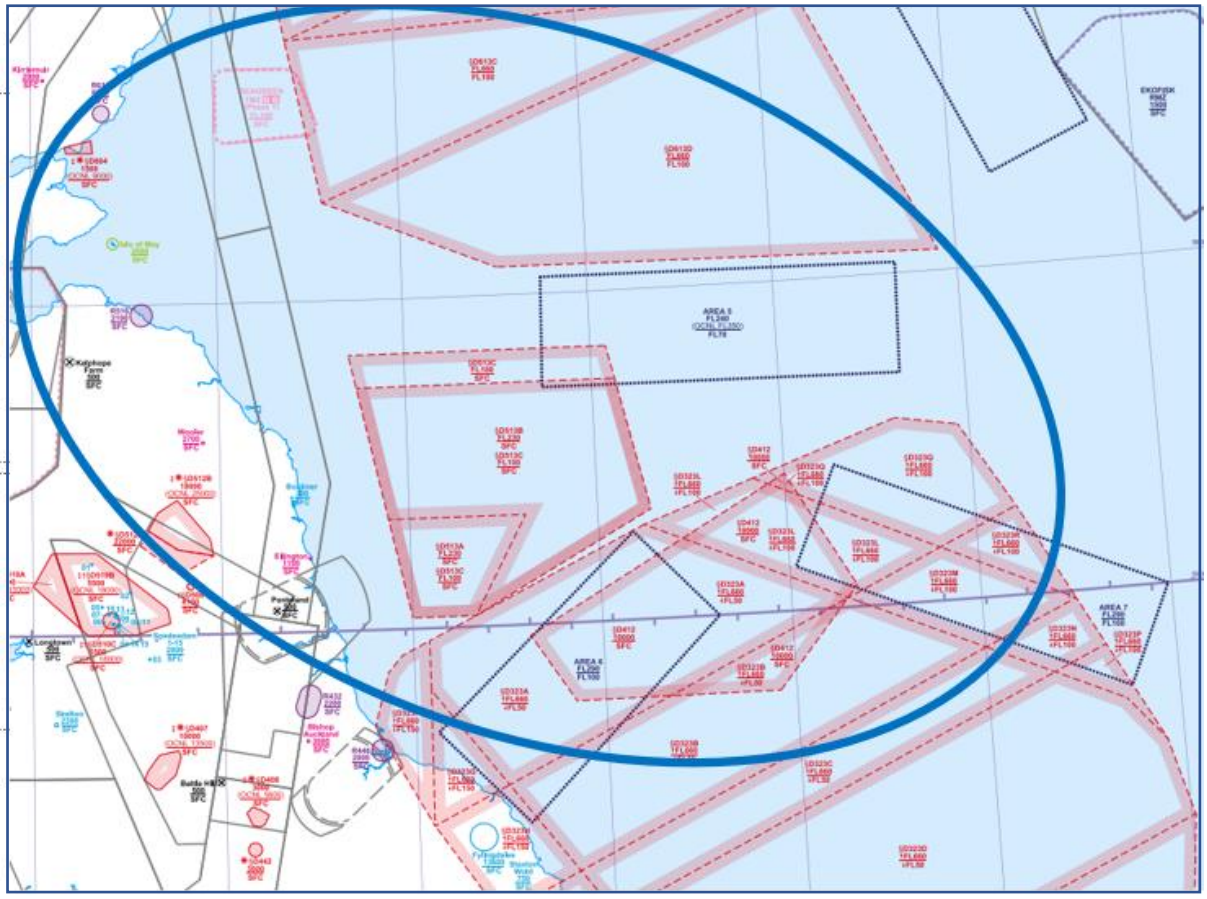


Figure 2, ENR 6-75 Chart of UK Airspace Restrictions and Hazardous Areas

4.2.1 The area associated with this proposal (depicted by the blue oval) contains a number of existing danger areas, more specifically:

- EGD613 A - D
- EGD513 A - C
- EGD323 A - R

These existing Danger Areas are utilised regularly by the MoD to conduct a multitude of air combat training, experimentation and high energy manoeuvres.

4.2.2 The area of interest contains the Temporary Reserved Areas (Gliding) Northumbria Areas (North and South)(Figure 3) with the following dimensions (UK AIP ENR 5.2)(Figure 4).

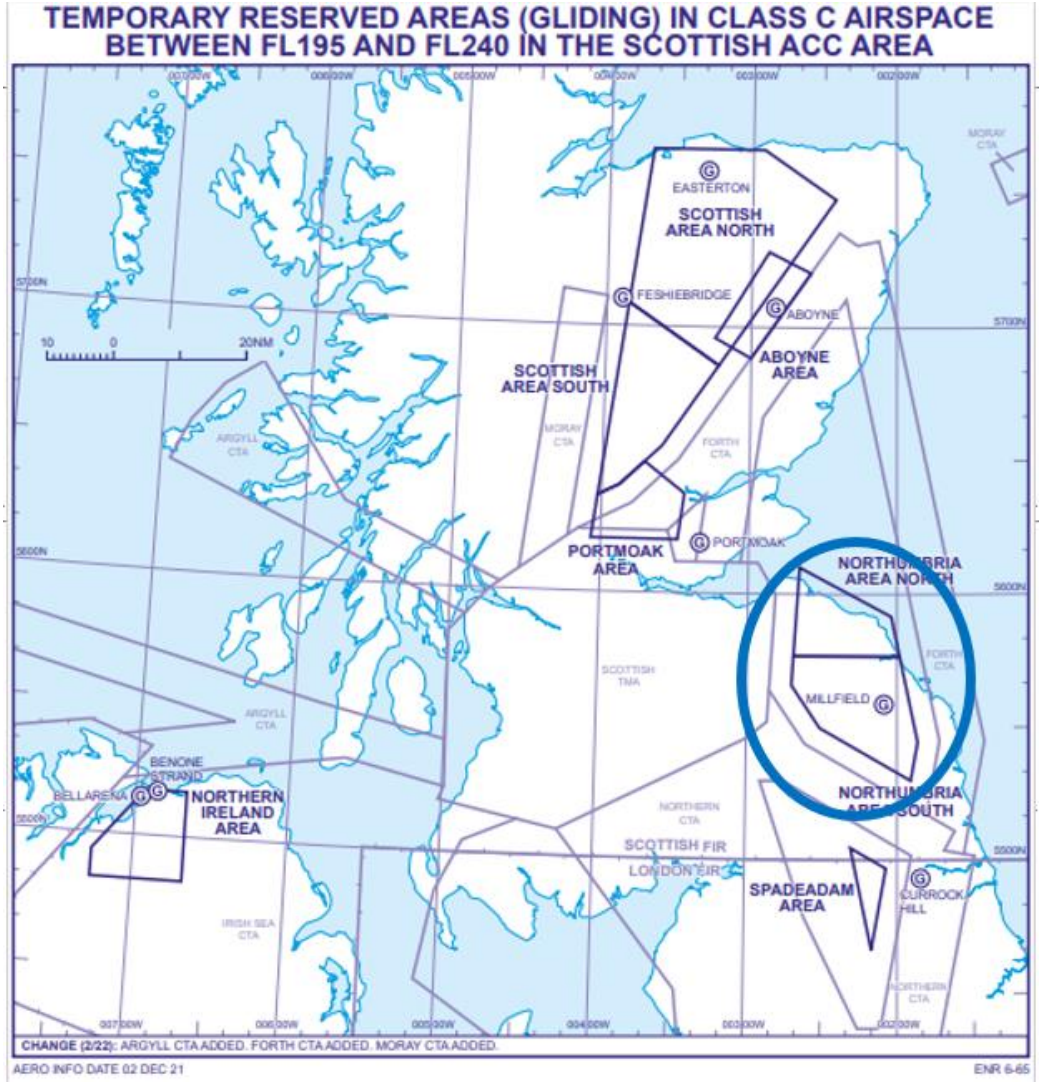



Figure 3, ENR 6-67 Temporary Reserved Areas (Gliding) in Class C Airspace Above FL240 in the Scottish ACC Area

| | | |
|---|---|---|
| TRAG NORTHUMBRIA NORTH AREA<br>560600N 0023914W - 555500N 0020216W - 554600N 0015854W - 554600N 0024128W - 560600N 0023914W | Upper limit: FL240<br>Lower limit: FL195 | Access requirements for gliders are specified in ENR 1.1, paragraph 1.11.<br><br>Note: A minimum notice of 2 hours is required to activate TRA (G), therefore NOTAM notification will normally take place on the day of activation.<br>See ENR 1.1, paragraph 1.11.3 and 1.11.4.<br>Hours: Activated by NOTAM. |
| TRAG NORTHUMBRIA SOUTH AREA<br>554600N 0024128W - 554600N 0015854W - 552644N 0015147W - 551803N 0015434W - 552951N 0023046W - 553928N 0024211W - 554600N 0024128W | Upper limit: FL240<br>Lower limit: FL195 | Access requirements for gliders are specified in ENR 1.1, paragraph 1.11.<br><br>Note: A minimum notice of 2 hours is required to activate TRA (G), therefore NOTAM notification will normally take place on the day of activation.<br>See ENR 1.1, paragraph 1.11.3 and 1.11.4.<br>Hours: Activated by NOTAM. |

Figure 4, ENR 5-2 Military Exercise and Training Areas and Air Defence Identification Zones

4.2.3 The Sponsor has considered the effect that this proposal will have on other airspace users. Whilst there will be an impact on General Air Traffic (GAT), the change Sponsor has made efforts to minimise this impact and highlights that environmental modelling using the STATFOR and the NATS Forecast indicate a net carbon benefit associated with these activations. The aspirational number of activations for this proposal were highlighted within the Consultation Document at Stage 3.

4.2.4 The Sponsor is cognisant of the close proximity of the TRA(G) Northumbria North and South Areas. There will be some impact to operations that usually occur within this airspace. Correspondence with the British Gliding Association (BGA) and more specifically Borders Gliding Club (as a primary Stakeholder) in Stage 1B, Stage 2A and 3C identifies that they have noted the impact but have continued to be supportive of the overall proposal.

**4.2.5 Usage statistics.** NATS Analytics produced an Environmental Impact assessment with the output derived from the following assumptions:

a. **Activation.** The Danger Area will be activated via NOTAM only when required and will be afforded the segregated status of Special Use Airspace (SUA) between FL85 and FL660 (CAP 740 Appendix A).

b. **Frequency of Flights.** An aspirational number of activations was provided in the Stage 3 Consultation Documentation. *There is a desire to increase the number of activations (up to 55 activations) longer term compared to the analytical assessment that was conducted based on forecast activations (32 activations) for 2023. This requested increase is driven by Defence requirements and real-world events.*

c. **Hours of Operation.** During exercise periods the Danger Area will usually be active for up to 4 hours typically between 0900 – 1300UTC. However, under the EUROCONTROL Flexible Use of Airspace (FUA), the airspace will be managed and returned to Civil should the Danger Area not be required (e.g. cancellation of aircraft, poor weather, early completion)

4.2.6 Simulated baseline air traffic models have been produced using tool NEST (V1.8) and emissions figures produced using BADA 4.2 data, made available by the European Organisation for the Safety of Air Navigation (EUROCONTROL).

4.2.7 The traffic sample was taken from the 2205 AIRAC from Eurocontrol. This AIRAC was chosen in order to provide a reasonable mid-point in traffic numbers, between the two expected activation periods of March and August/September. A 2022 AIRAC was required to give an up-to-date baseline set of traffic that was not considerably impacted by the COVID-19 pandemic.

4.2.8 Traffic included must have crossed the Traffic Filter Region (TFR) during the sample days. The TFR is a modified version of the UK FIR/UIR, reduced to remove flights with trajectories which would not be impacted by the danger areas of interest.

4.2.9 The conducted modelling and environmental analysis included all Instrument Flight Rules (IFR) General Air Traffic (GAT) within the Traffic Filter Region. Direction provided within FMARS study and confirmed with NATS via telecon on 10 Oct 23.

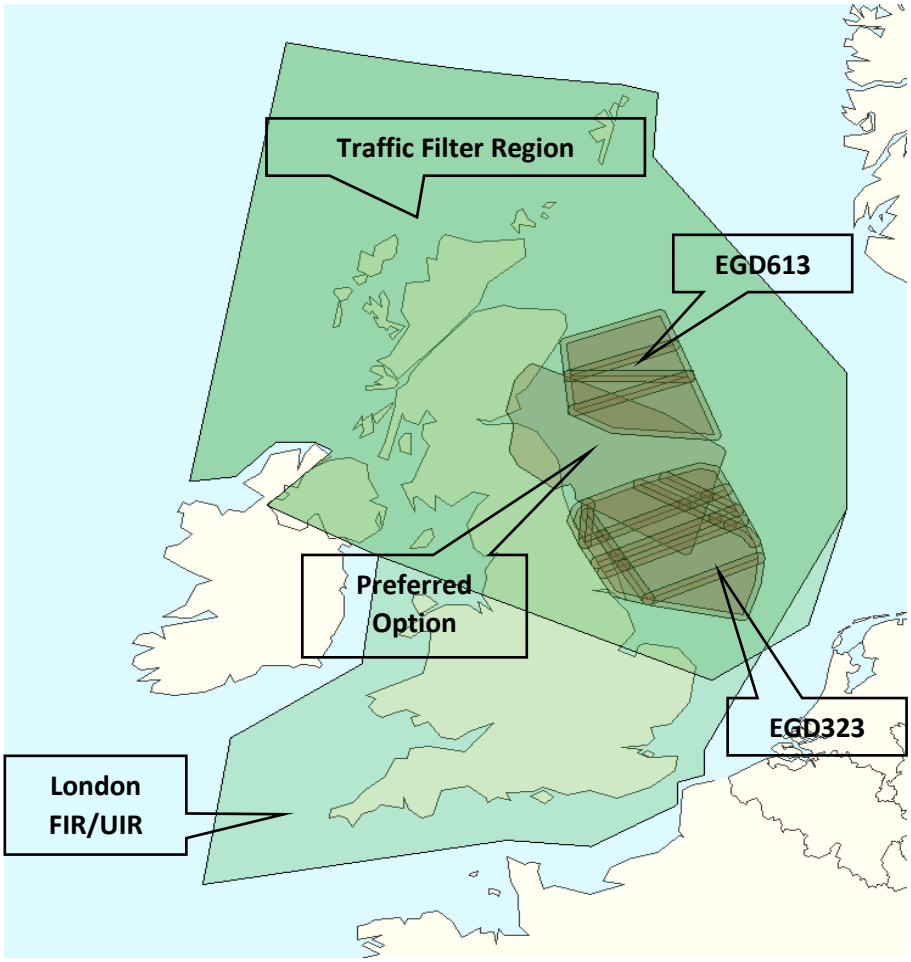



Figure 5, Traffic Filter Region with existing and proposed Danger Areas

| Year | Traffic |
|---|---|
| 2023 | 4230 |
| 2024 | 4412 |
| 2025 | 4474 |
| 2026 | 4541 |
| 2027 | 4609 |
| 2028 | 4678 |
| 2029 | 4748 |
| 2030 | 4819 |
| 2031 | 4892 |
| 2032 | 4965 |
| 2033 | 5039 |

Figure 6, simulated expected traffic numbers 10 years post deployment (32 activations)

## 4.3 Operational efficiency, complexity, delays and choke points.

4.3.1 The proposed airspace straddles both the London and Scottish FIR/UIR, incorporating areas of Free Route Airspace - allowing for the efficient routing of aircraft in and out of UK airspace. Civil airspace is controlled primarily by Prestwick; however the MoD facilitates access through 78 Squadron and 19/20 Squadron who collectively provide an air traffic service to MoD assets within the area of interest.

4.3.2 The Danger Area has been designed in such a way as to reduce the cognitive burden on aircrews as they participate in large force exercises, for example it does not have varied upper or lower limits.

4.3.3 The activation of the proposed Danger Area necessitates changes to a variety of Aeronautical Information Publications which includes ENR 2.1 (FIR, UIR, TMA and CTA) and describes when these CTAs will not be available. ENR 3.2 (Area Navigation Routes) including changes to permanent routes when the Danger Area is activated by NOTAM. ENR 4.4 (Name-Code Designators for Significant Points) which have been introduced to create flight plannable routes around the Danger Area. ENR 6.7 (Chart of United Kingdom ATS Airspace Classifications – SFC-FL195), ENR 6.8 (Chart of United Kingdom ATS Airspace Classifications – FL195-FL245) detailing the required notes of the charts in the AIP to reflect the changes in ENR2.2. All required submission changes of airspace data bound for the UK Aeronautical Information Publication which is not subject to Aeronautical Data Quality Implementing Rule (ADQ-IR) can be found at Annex E.

4.3.4 In order for UK Danger Areas to comply with both the UK's Airspace Modernisation Strategy and incoming Free Route Airspace (FRA), every danger area requires a "parent" danger area in the UK AIP in order for Flight Plan Buffer Zones to be applied and thus enable FRA.

4.3.5 A Flight Plan Buffer Zone is an area promulgated to ensure adequate flight plan trajectory separation from active Danger Areas. The FBZ extends around the boundary of the Danger Area, the distance of which will be determined by the level of risk of excursion determined by the activity being conducted. Flight plans will be rejected[1] by the Initial Flight Planning Processing System (IFPS) if the planned trajectory of the flight would enter the FBZ. This ACP seeks dispensation from the CAA Safety Buffer Policy (as described within Stage 4B, Final Submission – Supplementary/Clarification Information).

4.3.6 The requirement for a buffer between ATS Routes and Special Use Airspace is referenced within 2014 CAA SUA – Safety Buffer Policy for Airspace Design Purposes[2]. The policy states that a buffer is only required for specific activity within

[1] FBZ would be applicable to General Air Traffic (GAT) Flight Plans submitted to the European Network Manager. They would not affect Military Operational Air Traffic (OAT) flight plans.
[2] SARG Policy Statement (caa.co.uk)

SUA. This FBZ will be applied in accordance with the Policy Statement detailing the application of the airspace change process for the establishment of new and changes to existing *No Planning Zones and FBZ.*

4.3.7 This proposal incorporates a FBZ of 5nm which was designed in direct consultation with NATS, ensuring separation in both time and space. It is proposed that the danger area routings and FBZ will be made known to EUROCONTROL for network visibility reducing the risk of any late notice route changes to aircraft in flight. The proposed FBZ submission for ACP-2020-026 in the UK Aeronautical Information Publication will state that both the lower and upper limits of the FBZ should be notified '*as per AUP/UUP.'*

## 4.4 Safety Issues

4.4.1 In order to assess any safety issues with the proposed airspace structure, the Change Sponsor has conducted a Defence Air Safety Occurrence Report (DASOR) search through the Air Safety Information System (ASIMS), as well as a UK Airprox Board search for any safety incidents relating to the use of the Danger Area during any of the previous temporary activations. Search criteria within ASIMS were for 'location' to include the reference to the Temporary Danger Area descriptor. Of the 6 reports found, 5 were submitted based on routine operational incidents which occurred outside the proposed Danger Area, with 1 report based on aircrew distraction and an omission to change from the Standard Altimeter Setting to the Exercise pressure (QNH) when within the Danger Area. The design of the proposed Danger Area has not led to any notified safety incidents.

4.4.2 The sponsor also used UK Airprox Board (UKAB) data to understand whether the historical activation of the Danger Area translated into an increased air safety risk. The trawl of the UKAB interactive map[3] showed no direct or indirect airproxes related to the activation of the airspace proposed.

## 4.5 Environmental Issues

4.5.1 Considering that the proposed base level is FL85, focus has been given to the CAP1616 statement that for aircraft above 7,000 feet, the prioritised environmental impact is *CO2 emissions, and an assessment of noise impacts is not normally required.*

4.5.2 Proposals sponsored by the Ministry of Defence will be classified as Level M, with a further distinction between M1 and M2 proposals. Environmental impacts that are a direct result of military aircraft or military operations (including civil aircraft carrying out military function under contract) are not required to be considered or assessed.[4]

[3] Interactive map of UK Airprox locations | UK Airprox Board
[4] CAP1616 Appendix B, page 163, B.42

*4.5.3 Activation of the proposed danger area will result in a requirement for GAT to take a marginal deviation, and the associated environmental analysis demonstrates that there is a net CO2e emissions benefit as network aircraft take advantage of a more direct route across the filtered region.*

4.5.4 It is acknowledged that a certain number of Newcastle and Teesside movements will be directly affected by Danger Area activation and procedures articulated through a Letter of Agreement will aim to minimise this disruption. An attempt to understand the objective operational impact to Dundee was conducted during the Consultation Phase and this analysis is presented within the Options Appraisal (Phase III – Final)(Reference 11).

4.5.5 The Sponsor will discuss environmental considerations as a result of this ACP in Sections 7 and 14.

## 5. Statement of Need (SoN)

The SoN was submitted to the CAA at Stage 1 (June 2021) of the CAP1616 process.

*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 maximum extent whilst enabling:*

*Full tactical employment of aircraft and 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-2021-048.*

**Airspace Modernisation Strategy**

In order for Danger Areas to comply with both the UK's Airspace Modernisation Strategy and incoming Free Route Airspace (FRA), every danger area requires a 'parent' danger area in the UK AIP in order for Flight Plan Buffer Zones to be applied and support FRA. In an increasingly busy UK airspace, segregated airspace of a large enough size and in a suitable location will not exist after FRA is implemented and current solutions are untenable to deliver the required needs of defence.

## 6. Proposed Airspace Description

**6.1 Objectives/requirements for proposed design.** The objective of the proposed design is to create *segregated and notified airspace* in order to facilitate large force activity for certain exercises in support of collective training. The aim of the exercises is to provide weapons instructors with the ability to integrate effects within a dynamic environment in preparation for operational deployment. Consequently, the crews who will be flying in the Danger Area are professional aviators, who are Operational Conversion Unit (OCU) qualified and use the specified exercises as advanced summative tests.

**6.2 Proposed new airspace definition and usage**. As per Figures 9 - 11, the proposal is for the new Danger Area to be identical in both lateral and vertical dimensions to the Danger Area employed under the temporary activations of TDA EGD597 (ACP-2021-048). Subject to a successful ACP outcome the Permanent Danger Area will be redesignated accordingly (EGD514). The proposed lateral limits of Danger Area EGD514 are as follows:

| | | |
|---|---|---|
| EGD514 Point A | 561522.0091N | 0003907.5792E |
| EGD514 Point B | 554828.3171N | 0020147.5592E |
| EGD514 Point C | 542336.8487N | 0012224.6980E |
| EGD514 Point D | 550309.6454N | 0010229.1251W |
| EGD514 Point E | 550418.6752N | 0010502.8039W |
| ARC Centre | 550216.5200N | 0014123.3200W |
| EGD514 Point F | 551920.1891N | 0012006.5646W |
| EGD514 Point G | 551609.6637N | 0013433.3562W |
| EGD514 Point H | 551426.4483N | 0014100.0384W |
| EGD514 Point I | 551402.9632N | 0014228.5294W |
| EGD514 Point J | 552951.7065N | 0023046.9369W |
| EGD514 Point K | 553928.3441N | 0024211.5167W |
| EGD514 Point L | 560121.5366N | 0023945.4024W |
| EGD514 Point M | 561317.0166N | 0025226.3416W |
| EGD514 Point N | 563754.0691N | 0024600.5643W |
| EGD514 Point O | 564943.6576N | 0023058.8126W |
| EGD514 Point A | 561522.0091N | 0003907.5792E |

Figure 7, proposed Mil AIP ENR 5-2 extract

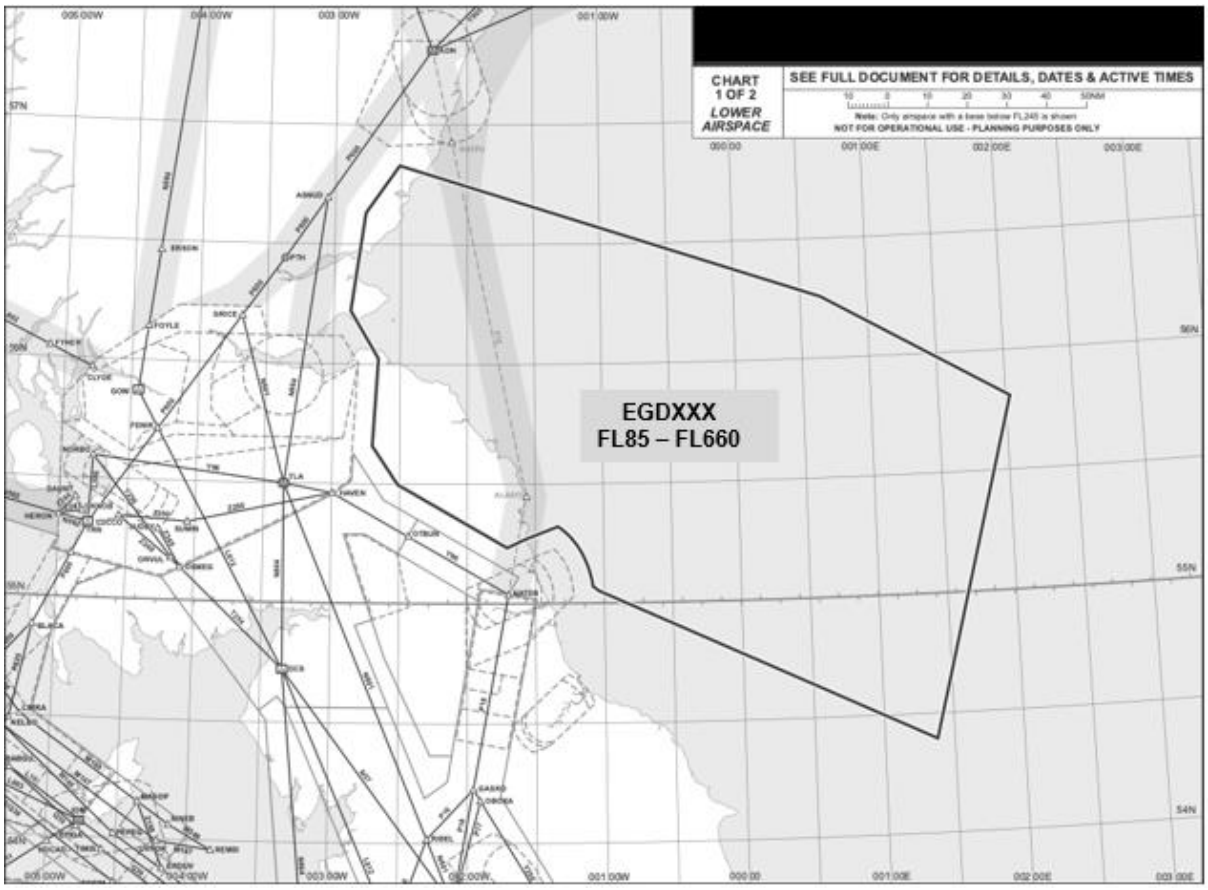



Figure 8, proposed Danger Area overlaid on Lower Airspace Chart

As part of the introduction into the UK AIP, the proposed design will specify a 5nm FBZ. The sponsor has worked in conjunction with NATS to obtain the FBZ data for the proposed airspace and a 5nm buffer has been applied. The FBZ will be given the designation EGD514Z.

The lateral limits of EGD514Z are proposed as:

| | | |
|---|---|---|
| EGD514Z Point A | 561955.4146N | 0004252.0974E |
| EGD514Z Point B | 555153.9614N | 0020853.7461E |
| EGD514Z Point C | 554846.9201N | 0021107.6136E |
| EGD514Z Point D | 542003.3899N | 0012939.0748E |
| EGD514Z Point E | 541805.3570N | 0012216.5063E |
| EGD514Z Point F | 545851.4440N | 0010700.5120W |
| EGD514Z Point G | 550148.6195N | 0011335.6583W |
| ARC Centre | 550216.5200N | 0014123.3200W |
| EGD514Z Point H | 551337.5504N | 0012146.7774W |
| EGD514Z Point I | 551133.9998N | 0013108.0005W |
| EGD514Z Point J | 550954.9997N | 0013719.0011W |
| EGD514Z Point K | 550825.5211N | 0014255.7560W |
| EGD514Z Point L | 552605.9989N | 0023654.9989W |
| EGD514Z Point M | 553804.9992N | 0025110.9991W |
| EGD514Z Point N | 560008.0010N | 0024849.0007W |
| EGD514Z Point O | 561214.4031N | 0030145.0802W |
| EGD514Z Point P | 563946.7766N | 0025440.0618W |
| EGD514Z Point Q | 565354.7506N | 0023645.0242W |
| EGD514Z Point R | 565458.2490N | 0023110.3455W |
| EGD514Z Point A | 561955.4146N | 0004252.0974E |

Figure 9, proposed Mil AIP ENR 5-2 extract for Flight Plan Buffer Zone

*The Airspace Data (Aeronautical Data Quality Implementing Rule)* for ACP-2020-026 can be found at Annex D.

The draft entry (ENR 5.2 Military Exercise and Training Areas and Air Defence Identification Zone (ADIZ)) is suggested as:

| | | |
|---|---|---|
| ***EGD514 Combat Airspace (Special Use Airspace) Segregated*** | ***Upper Limit: FL660***<br><br>***Lower Limit: FL85*** | ***AMC: Manageable***<br><br>***Activity: High Energy Manoeuvres / Ordnance, Munitions, Explosives (OME) / Electrical/Optical Hazards/Unmanned Aircraft System (VLOS)***<br><br>***Service: DAAIS: Scottish Information on 119.875MHz and London Information 125.475MHz***<br><br>***Contact: Booking: Military Airspace Management Cell – Managed Airspace Tel: 01489 612495***<br><br>***Danger Area Authority: HQ Air***<br><br>***Hours: Activated by NOTAM*** |

With the associated FBZ entry suggested as:

| | | |
|---|---|---|
| ***EGD514Z (Combat Airspace)*** | ***Upper Limit: as per AUP / UUP*** | ***For IFR flight planning purposes only*** |

## 7. Impacts and Consultation

During Stage 1 the Sponsor engaged with a wide variety of potential stakeholders and sought their feedback on the initial Design Principles that was used to frame the Design Options during Stage 2.

Engagement for ACP-2020-026 began on 7 Jan 21 as per the Engagement_Letter (3).pdf. There was a relatively low response rate at this stage and some feedback was deemed to fall outside of the specific feedback on Design Principles – responses ranged from requesting further detail regarding the dimensions of the proposal to the expected frequency of activations.

As a result of the engagement, one Design Principle was modified, and a further 3 Design Principles were added. The draft principles have also been categorised in priority order however there was limited feedback specifically relating to priorities.

During Stage 2 the Sponsor invited Stakeholders to assess whether the Design Principles developed in Stage 1, were adhered to in the Design Options proposed.

The following options were proposed:

a. *Option 0 - Do Nothing, this created the baseline to measure all the other extant danger area options against b:*

b. *Option 1 - Create new Danger Area with overland portion.*

During Stage 3 the Sponsor conducted a 13-week (6 February 23 to 8 May 2023) Consultation. The consultation documentation included the Full Option Appraisal with Environmental Impact Assessments and supporting evidence. A total of 52 Stakeholders were directly targeted (a full list of stakeholders can be found in the Consultation Review (Reference G) this included:

a. Primary Stakeholders (developed during Stage 1)

b. NATMAC members (based on a distribution list from 8 Nov 2022)

c. Internal MoD members (coordinated through DAATM)

A total of 6 responses were uploaded to Citizen Space. 3 responses from Primary Stakeholders, 2 were sent by NATMAC members and one response was received from a Military Airspace User Working Group (MAUWG) member; post analysis of Military responses by Defence Airspace and Air Traffic Management (DAATM).

## 7.1 Net impact summary

7.1.1 Due to the position and level of the proposed Combat Airspace, there will be a requirement to alter aircraft flight routing. To assist in the safe and efficient flow of air traffic, the UK Airspace Management Cell will undertake the suppression of specified areas to enable the expeditious routing of General Air Traffic – this requirement is captured in the *draft Letter of Agreement at Annex C.*

7.1.2 In order to ensure the safe and expeditious flow of air traffic a number of changes to the airspace data bound for the UK Aeronautical Information Publication which is not subject to Aeronautical Data Quality Implementing Rule (ADQ-IR) is provided at Annex E.

## 7.2 Units affected by this proposal

7.2.1 **Newcastle International Airport.** Have been consulted as a Primary Stakeholder throughout ACP-2020-026 given the close proximity of the proposed Danger Area to Newcastle Controlled Airspace and the requirement for certain Newcastle movements to route in a less expeditious manner around the Danger Area when active. An assessment of this forecast impact was conducted in the Stage 3 Consultation Document using the October 2021 STATFOR forecast and NATS forecast to estimate the annual impact over a 10-year period. A virtual Consultation meeting was held with Newcastle on 12 April 2023 with a record of the meeting contained within the Stage 4A Consultation Review Document. *The Stakeholder was keen to understand the proposed number of activations expected longer term and hours of operation,* the Sponsor subsequently signposted this information to the Stakeholder. *The Stakeholder expressed a requirement for a 6-month notice period of any planned activations,* this notice period will be implemented by the exercise organisers with a more exacting activation time provided in the 2 weeks before any activation. *Peak operational timings for Newcastle were identified as 0600, 1400 and 2400 UTC* – exercise planners will be asked to deconflict proposed activations with these timings accordingly in order to minimise any impact.

7.2.2 **Dundee Airport Limited.** Were Consulted as a Primary Stakeholder, a face-to-face meeting was conducted as part of the Consultation Stage at Dundee Airport on 4 April 2023. As a result of the Consultation meeting the Sponsor was required to provide analysis to better understand the baseline operational position for this airport – this detail was subsequently included in the meeting record contained within the Stage 4A Consultation Review Document. *The Stakeholder advised that TCAS events are more likely to occur when operating runway 09 against simultaneous danger area activations,* the Sponsor requested that any TCAS events that occurred whilst the Proposed Danger Area is active should be shared accordingly, at the time of this submission there had been no reported TCAS incidents during any previous activation. *The Stakeholder requested a minimum of a 1 months' notice period of any*

*proposed activation* – this action will be conducted by exercise organisers*. In order to minimise disruption the Stakeholder is requested to provide the Sponsor with any proposed peak operational periods which can subsequently be discussed with exercise planners.* A consideration was given to the development of a Letter of Agreement between Dundee Airport Limited and the Ministry of Defence, in addition to the pre-existing Letter of Agreement that exists between Dundee Airport and Leuchars Diversion Aerodrome – this was subsequently discounted because the reporting of any TCAS event requires a Mandatory Occurrence Report or Defence Safety Occurrence Report and would therefore be reported anyway. *There was also discussion regarding the publishing of entry/exit points for Dundee departures/arrivals*, however Consultation revealed that any one of three air traffic service providers could be in control of Dundee movements and this requirement would simply create additional complexities and increase confusion amongst service providers. *The Stakeholder requested that a revision to the Leuchars Lower Airspace Radar Service (LARS) provision was made so that a radar service could be provided during activation periods of the Danger Area*, given the usual activation times for the Danger Area this requirement is largely met, and the Sponsor will engage with Leuchars to secure (where possible) ad-hoc LARS provision to meet this request.

7.2.3 **NATS.** The change sponsor has remained in close contact with NATS throughout this ACP and previous temporary iterations of this Danger Area. *The Stakeholder fed back through Citizen Space that they supported the preferred design option.* As per the proposed Letter of Agreement, there will be a need for aircraft to flight plan and route around the Danger Area. *The Stakeholder expressed a requirement to receive 6 months' notice regarding any potential activations.* The Sponsor will ensure that this notification period is adopted by exercise planners. *Consultation necessitated clarification regarding peak traffic flow timings and the Stakeholder indicated that the procedures previously introduced for the temporary activations of the danger area had proved to be entirely appropriate and that these agreements should remain in place and be reviewed and managed periodically.* The Sponsor will ensure that this review is conducted at the 6-month post implementation phase (if the application is successful). *The Stakeholder expressed a desire for further analysis on the defined FBZ to be conducted.* The Sponsor advised that the FBZ had been designed in direct consultation with NATS.

### 7.3 Military impact and consultation

7.3.1 Consultation has been conducted on behalf of the Sponsor via Defence Airspace and Air Traffic Management (DAATM). Based on DAATM Consultation; no major concerns were reported, and all responses supported the ACP.

7.3.2 78 Squadron reiterated that the provision of an ATS to Newcastle arrivals and departures to and from the Copenhagen boundary during the activations of the airspace, is an entirely separate matter from the derogated service 'Pennine Radar' task. They are aware of the requirement to prioritise an ATS to Copenhagen crossers during exercise periods in order to reduce the impact on Newcastle. Any

'turning off' of the Pennine Radar traffic is in relation to the spare capacity that 78 Sqn would not have as a result of the exercise and other military activity taking place at the time, as per extant orders, agreements and any procedures already in place with the relevant impacted stakeholders.

7.3.3 The Consultation response received via DAATM, provided by Warton was uploaded to Citizen Space. *The Stakeholder was supportive of the proposed design and the Stakeholder advised that they required 'zero notice' regarding any activations. The stakeholder questioned that during activations of the proposed danger area 'would any military air traffic migrate over the Irish Sea.'* The Sponsor indicated that this would be highly unlikely and conducted some objective analysis using ADS-B Exchange – focussing on previous temporary activations of the danger area, neither military nor commercial traffic was seen to shift over the Irish Sea as a result of the activation of the preferred design option.

## 7.4 General Aviation airspace users' impact and consultation

7.4.1 **Light Aircraft Association.** This Stakeholder supported the preferred design option and requested just a single days' notice of any proposed activity.

7.4.2 **Borders Gliding Club (Milfield).** Have been Consulted as Primary Stakeholder and provided a response via the Citizen Space platform. *The responding representative supported the airspace design for the proposed danger area. The Stakeholder was keen to ensure that 6 months' notice was provided regarding any activation and further commented that the relationship that had been fostered based on the temporary activations of ACP-2021-048 was working well.* The Sponsor will ensure that this notification period is adhered to following any successful introduction of the permanent danger area, this early engagement will also seek to minimise disruption to the peak operational gliding periods.

## 7.5 Commercial air transport impact and consultation.

7.5.1 Due to the location of the proposed Danger Area there will be an impact to commercial air transport, however there was no engagement from the NATMAC listed commercial air transport partners regarding this proposal.

## 7.6 CO2 environmental analysis impact and consultation

7.6.1 **Air Traffic Sampling**. NATS Analytics were requested to produce an Environmental Impact Assessment (A22131), with the output being derived from the following assumptions:

- 32 activations per year (based on planned activations for 2023)
- EGD323 and EGD613 are simultaneously active
- Fuel impact of this change would occur at cruise

- 124 flights per activation period

- 0900 – 1300 UTC identified as most common activation time

7.6.2 Simulated baseline air traffic models have been produced using NEST (v1.8) and emissions figures produced using BADA 4.2 data, made available by the European Organisation for the Safety of Air Navigation (Eurocontrol).

7.6.3 The traffic sample was taken from the 2205 AIRAC from Eurocontrol. This AIRAC was chosen in order to provide a reasonable mid-point in traffic numbers, between the two expected activation periods of March and August/September. A 2022 AIRAC was required to give an up-to-date baseline set of traffic that was not considerably impacted by the COVID-19 pandemic.

7.6.4 The following 4 days were picked to simulate: 20/05/2022, 28/05/2022, 06/06/2022 and 08/06/2022. These 4 days were picked to give a good overall representation of traffic, with the following factors considered: Weekday, Traffic count and City pair flows. The traffic sample is defined as any flight whose simulated trajectory changed due to the activation of EGD514 or the deactivation of EGD323 and EGD613.

7.6.5 Due to the proximity of the danger areas to the eastern edge of the London/Scottish - UIR/FIR, many flights need to change their UK entry/exit point between the Baseline and Scenario simulations in order to produce a valid flight plan. Therefore, the trajectories were simulated within the Simulated Region, with the entry and exit points matching those from the initial flight plan.

7.6.6 The image below shows an example pair of Baseline (red) and Scenario (green) trajectories. The green dots mark the points where the flight enters or exits the London/Scottish UIR/FIR.

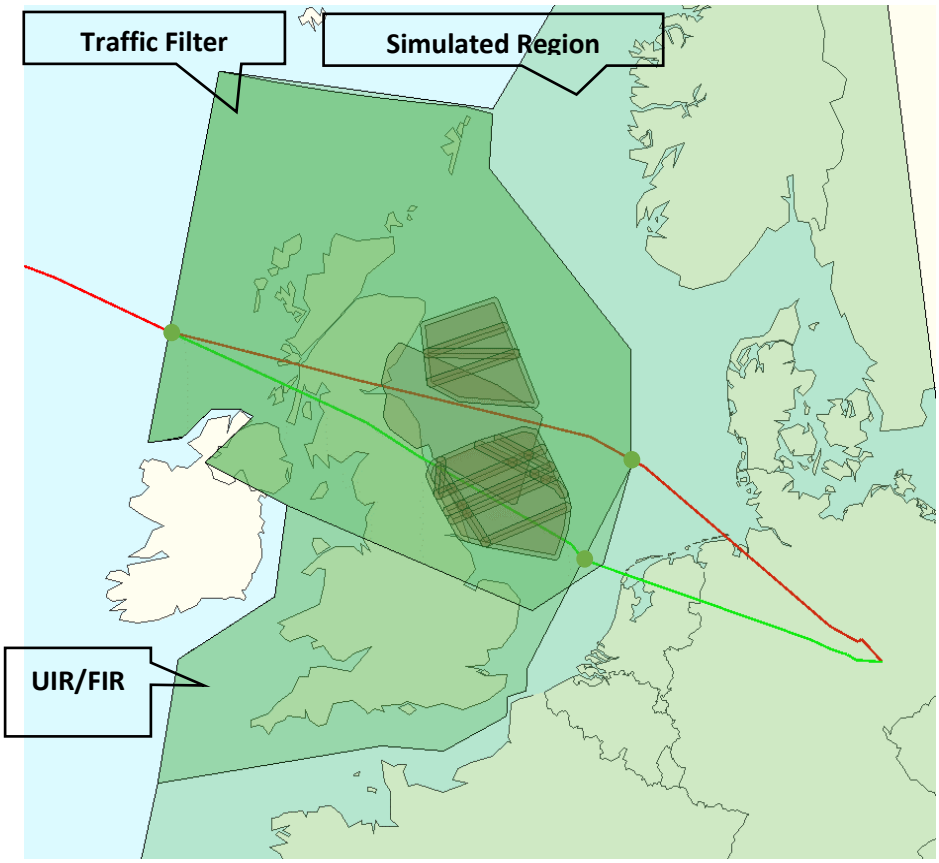


Figure 10, projected flight profile during various simulated scenarios NATS Analytics

7.6.7 In the Scenario, where the EGD323 complex is not active, the flight can take a shorter route through this airspace.

7.6.8 Method - the track distance flown (nm) within the UIR/FIR was taken from the Baseline and Scenario models and used to calculate the change in distance flown. The fuel burn at cruise by aircraft type was then taken from the BADA 4.2 PTF tables and used to calculate the fuel burn change based on the difference in distance flown.

7.6.9 The traffic was used to represent an activation of the preferred Danger Area and the number of activations has been scaled to represent an annual benefit (32 activations per year assumed based on the number of activations planned in 2023).

7.6.10 Traffic was grown using the October 2021 STATFOR forecast and NATS forecast when STATFOR was not available, to estimate the annual impact to 2033 (10 years post deployment).

7.6.11 The table below shows the estimated impact of the change within UK airspace for the 10 years following implementation.

| Civil Flights within UK FIR | | | |
|---|---|---|---|
| Year | Traffic | Fuel Impact (Tonnes) | $CO_2e$ Impact (Tonnes) |
| 2023 | 4230 | -332 | -1,055 |
| 2024 | 4412 | -346 | -1,100 |
| 2025 | 4474 | -351 | -1,115 |
| 2026 | 4541 | -356 | -1,132 |
| 2027 | 4609 | -361 | -1,149 |
| 2028 | 4678 | -367 | -1,166 |
| 2029 | 4748 | -372 | -1,184 |
| 2030 | 4819 | -378 | -1,202 |
| 2031 | 4892 | -384 | -1,220 |
| 2032 | 4965 | -389 | -1,238 |
| 2033 | 5039 | -395 | -1,256 |

Figure 11, estimated impact of change within airspace (over 10 years). Positive fuel numbers indicate additional contribution (penalty), negative numbers indicate lower contribution (benefit)

*7.6.12 The analysis suggests that fuel burn and CO2e emissions within the London/Scottish UIR/FIR will reduce as a result of this proposal.*

7.6.13 Assumptions have been made to fix the many variables which impact the estimated benefit. Therefore, the observed benefit may change considerably if these assumptions such as the number, length and time of activations do not hold true.

7.6.14 To ensure accuracy with the provided environmental analysis, fuel and CO2e impact was also assessed against 55 activations of the proposed Danger Area per year. These figures are presented on Page 6 of the Stage 4B, Final Submission – Supplementary/Clarification Information document.

## Average Results

The average route length, fuel burn and carbon dioxide equivalent (CO2e) emissions per flight within the UIR/FIR are given in the table below. The average flight has a reduced track distance subsequently lowering the fuel burn and emissions.

| Average per Flight from 2022 4 day Sample | Average Track Distance within UK FIR (NM) | Average Fuel Burn within UK FIR (Kg) | Average $CO_2e$ within UK FIR (Kg) |
|---|---|---|---|
| Baseline | 417.28 | 3,730.6 | 11,863.2 |
| Scenario | 408.21 | 3,652.2 | 11,613.9 |
| Difference | -9.07 | -78.4 | -249.3 |

Figure 12 - $CO_2e$ is a standard measurement that considers the impact of all greenhouse gas emissions due to fuel burn as if they were all carbon dioxide. For aviation fuel, the conversion rate is 1kg fuel to 3.18kg of $CO_2e$

## Annual Environmental Impact

The table below shows the annualised impact of this change in terms of fuel burn and CO2e emissions for years 2023 – 2033.

| Civil Flights within UK FIR | | | | | | | |
|---|---|---|---|---|---|---|---|
| Year | Traffic | Baseline Fuel Burn (Tonnes) | Scenario Fuel Burn (Tonnes) | Fuel Impact (Tonnes) | Baseline $CO_2e$ (Tonnes) | Scenario $CO_2e$ (Tonnes) | $CO_2e$ Impact (Tonnes) |
| 2023 | 4,230 | 15,780 | 15,448 | -332 | 50,180 | 49,126 | -1,055 |
| 2024 | 4,412 | 16,458 | 16,113 | -346 | 52,338 | 51,238 | -1,100 |
| 2025 | 4,474 | 16,689 | 16,338 | -351 | 53,071 | 51,955 | -1,115 |
| 2026 | 4,541 | 16,939 | 16,583 | -356 | 53,867 | 52,735 | -1,132 |
| 2027 | 4,609 | 17,193 | 16,832 | -361 | 54,675 | 53,526 | -1,149 |
| 2028 | 4,678 | 17,451 | 17,084 | -367 | 55,495 | 54,329 | -1,166 |
| 2029 | 4,748 | 17,713 | 17,341 | -372 | 56,327 | 55,143 | -1,184 |
| 2030 | 4,819 | 17,979 | 17,601 | -378 | 57,172 | 55,971 | -1,202 |
| 2031 | 4,892 | 18,248 | 17,865 | -384 | 58,030 | 56,810 | -1,220 |
| 2032 | 4,965 | 18,522 | 18,133 | -389 | 58,900 | 57,662 | -1,238 |
| 2033 | 5,039 | 18,800 | 18,405 | -395 | 59,784 | 58,527 | -1,256 |

Figure 13, positive numbers indicate additional contribution (penalty), negative numbers indicate lower contribution (benefit)

## 7.7 Local environmental impact and consultation.

7.7.1 CAP1616 para B52 states that for proposals sponsored by the Ministry of Defence, the environmental impacts that are a direct result of military aircraft or military operations (including civil aircraft carrying out military function under contract) are not required to be considered or assessed. Tabulated qualitative assessments (Options Appraisal - Page 34) offers a comparison between the ‘baseline’ and ‘preferred design option.’

## 7.8 Economic impacts

7.8.1 No economic impacts have been identified as part of the consultation, tabulated qualitative assessments (Options Appraisal – Page 36) offers a comparison between the ‘baseline’ and ‘preferred design option.’

# 8. Analysis of Options

## 8.1 Summary of Options Appraisal.

8.1.1 The Options Appraisals conducted at each stage of the ACP required an assessment of the impacts of the Design Options against a "Do Nothing" Option. The Appraisal for each stage can be found at References 6, 9 and 11. The impact on commercial air traffic transiting the area was analysed by NATS using NEST (V1.8) and emissions figures have been produced using BADA 4.2 data. Quantitative analysis of baseline aviation activity was presented at Stage 3 by the Sponsor and developed further during the Consultation Stage following discussion with Stakeholders. Further qualitative assessments have been conducted throughout this ACP of the different options, against the outstanding headings identified in CAP1616, Appendix E, Table E2: "Guide to expected approach to key analysis for a typical airspace change". The application of a qualitative assessment for these remaining criteria is deemed proportional and is compliant both with CAP1616 and the Government Green Book[5]. The impact of this ACP on military air traffic has been managed internally by the MOD and has therefore not been included in this document.

*8.1.2 At each stage, the options taken forward have been further appraised before being retained or discounted, following information received during Consultation.*

8.1.3 **Stage 2.** No further evidence was gained for the alteration of Option 1 – *'Create new SUA with overland portion.'* The Initial Options Appraisal stated that for Stage 3, the Sponsor would approach NATS and/or EUROCONTROL for modelling to assess the environmental and operational impact to civil aviation.

8.1.4 **Stage 3.** Stage 3 included modelling and a quantitative environmental assessment produced by NATS to assess the environmental and operational impact to civil aviation in the Full Options Appraisal (Ref F, Annex A). This Stage also included a Baseline Aviation Activity Assessment completed by the Sponsor.

8.1.5 Option 0 - 'Do nothing'. A summary below is an abridged version of the assessment of the current situation as part of the Final Options Appraisal at Reference 11.

8.1.6 The below table compares the 'baseline' against the preferred design option. Although there is only one proposal alongside the do-nothing option, the Sponsor has considered and discounted a number of options which do not align with the Statement of Need, Design Principles or satisfy the requirements of the Stakeholders. The 'do-nothing' option is described for use as a baseline which

[5] The Green Book (publishing.service.gov.uk)

informs the WebTag[6] quantitative data, however this baseline option is not considered by the Sponsor to be the preferred choice.

| | Option | Description |
|---|---|---|
| 0 | Baseline | The "do nothing" option. Keep everything as it is currently, continue to use existing MDAs. Large Force Exercises will still take place but use MDAs and existing Class G/C airspace. |
| 1 | Create new SUA with overland portion. | Create new Special Use Area, predominantly positioned in high seas airspace with overland portions on which ground threats and targets can be positioned. |

**Option to be progressed:**

| ***Stage 3C*** | | ***Stage 4B*** |
|---|---|---|
| ***Option 0, Do Nothing*** | **>** | ***Option 0, Do Nothing*** |
| ***Option 1, Special Use Airspace*** | **>** | ***Option 1, Special Use Airspace*** |

[6] WebTag, the Department for Transport's Appraisal Guidance.

**8.2 Analysis of Options.** *These Tables are based on CAP1616 Fourth Edition, Table E2. The Sponsor has provided a table for the preferred design option. Note that the combined baseline 'do-nothing' scenario is included for comparison purposes only.*

| Group | Impact | Level of Analysis | Baseline 'do-nothing' | Preferred Design Option (Danger Area) |
|---|---|---|---|---|
| Communities | Noise impact on health and quality of life | Qualitative | Noise levels are expected to remain unchanged from present state. Existing danger areas in this vicinity (D323/613) are entirely over the high seas area and therefore traffic routing to and from these exercise locations is anticipated to be at or above a minimum of 7000 feet unless the aircraft have planned to conduct operational low flying (which is not part of this consultation). | CAP 1616 states that for aircraft above 7000', the prioritised environmental impact is CO2 emissions, and an assessment of noise impact is not normally required. This proposal has the base of the Danger Area at FL85, this has been designed in order to reduce any noise impact from participating military aircraft, the Sponsor would also like to emphasise that the majority of the Danger Area is positioned over the high seas area in order to reduce any possible noise impact. As exercise participants proceed towards the exercise area, they will normally be configured in such a way to be not below FL85, therefore minimising any noise impact.<br>It is understood that the second order effects on civil traffic should be taken into account therefore targeted engagement took place with those airports in the affected area with the direct question "will this proposal affect your traffic patterns below 7000'?" There were no quantitative responses indicating that there will be any change resulting from this proposal. It is possible that some routes will be affected, the distance between the proposed Danger Area and those airports affected is great enough that standard arrival and departure profiles can still be flown within existing controlled airspace structures. In accordance with the requirements laid down in CAP2091, the sponsor anticipates no or negligible change to the noise effects on the ground. |
| Communities | Air quality | N/A | As per present activity there would be no change due to altitude criteria of 1000 feet. | In accordance with CAP1616, para B72 this assessment is not required because the proposal will not affect emissions below 1000 feet. |

| | | | | |
|---|---|---|---|---|
| Wider society | Greenhouse gas impact | Monetise and quantify | Opportunities to reduce the impact of Greenhouse gas would be missed as aircraft in the cruise would not be able to take advantage of the proposed shorter routing across the UK. Certain Stakeholders may permit arrivals/departures outside of controlled airspace which may however offer an unquantifiable fuel saving. | This proposal would create a portion of segregated airspace which would have to be avoided, this will result in extra miles being flown on some routes when it is active. However, this is outweighed by the addition of a protocol prohibiting the concurrent activation of other Danger Areas, this would make some more direct routes between the UK, Europe and North Atlantic available. Quantitative Greenhouse Gas calculations have been made using WebTag (May 23 workbook)(period 2023 – 2033) and a positive network benefit is forecast. Quantitative calculations over a 10-year appraisal period indicate that a saving of 12,817 tonnes will be made, with the opening year saving 1,055 tonnes. |
| Wider society | Capacity/resilience | Qualitative | The advantages associated with an increase in network capacity could not be harnessed if the baseline 'do-nothing' option were to remain. | There is not expected to be any impact on Wider society. Although routes for some passenger flights may be disrupted, other routes would be available, and each activation is for a pre-notified, specific time period. Given the forecast reduction in track mileage it is anticipated that greater capacity within the network can be achieved. |
| General Aviation | Access | Qualitative | Operations would continue as present using existing Danger Area structures, however as mentioned by the Sponsor these areas are not of sufficient size in order to carry out Large Force Exercises and whilst there may be greater access for General Aviation the uncertainty of carrying out these exercises in airspace that is not segregated will likely create greater uncertainty and therefore compromise safety for all airspace users. | Newcastle International Airport have raised concern over this proposal as it has the possibility to affect their traffic, particularly routing to/from the Southeast. Edinburgh Airport have commenced their own ACP, in addition the Sponsor is aware of proposals regarding the Scottish TMA and the Firth of Forth ACPs for controlled airspace. It is expected that the MOD will establish a procedure for notifying activations well in advance so that deconfliction and appropriate notification can be provided. The Sponsor will work with Stakeholders to design airspace with the minimum disruption to general aviation as possible. Routes affected will not be closed, but alternative routes will be proposed. With the majority of the preferred design being located over the high seas area, with a base level of FL85 there will be minimal impact on Visual Flight Rule traffic given that analysis of ADS-B data shows that the majority of this activity occurs below 3000 feet AMSL. The Borders Gliding Club previously expressed a desire to be contacted |

| | | | | |
|---|---|---|---|---|
| | | | | early in the notification process regarding the Danger Area, effective lines of communication have been established with this Stakeholder group during Stages 1 and 2.<br><br>*Further analysis using Electronic Conspicuity modelling for Dundee Airport was conducted with the results displayed at Annex B. The Sponsor assesses that the overall access impact to Dundee is negligible, and the Sponsor is keen to continue an engagement relationship with Dundee to ensure any impacts remain low.*<br><br>*Consultation with the British Hang Gliding and Para Gliding Association (BHPA) was conducted and whilst tangible statistics could not be provided to the Sponsor it was determined that with the majority of BHPA operations conducted to between 6500-7000AGL the preferred design option would not limit the access for this stakeholder group.* |
| General Aviation/ commercial airlines | Economic impact from increased effective capacity | Quantitative | The 'do-nothing' baseline option is less expeditious for transit traffic crossing the UK and therefore there may be a detrimental economic impact if there is no change (Appendix A) | This concept was not designed with the intention of increasing the capacity of this region of airspace, however trial data has suggested that there may be a benefit in terms of reduced track distance for aircraft that cross the UK. In addition proposed enhanced Airspace Management may increase the availability of routes along the East coast. Modelling using STATFOR and NATS forecasts with the SUA active indicate that in 2023, 4230 transit aircraft can take advantage of a shorter route. |
| General Aviation/ Commercial airlines | Fuel burn | Monetise | A quantitative saving in fuel burn could not be harnessed if the 'do-nothing' option were to be employed. It is noted that for some immediate Stakeholders there may be a fuel saving if more expeditious routings could be followed, however the Sponsor argues | The forecast number of aircraft likely to be inconvenienced by the activation of the Danger Area is expected to be significantly lower than those aircraft crossing the UK that are due to experience a net benefit in CO2 Emissions.<br>It is noted that the segregation of a large volume of airspace will undoubtedly add extra track miles to some routes.<br>The Overall Assessment Score, Net Present Value of CO2 equivalent emissions of the proposal £833,163. The Net |

| | | | | |
|---|---|---|---|---|
| | | | that this would be significantly offset by traffic in the cruise. | Present Value of Traded Sector CO2 equivalent emissions is £683,951 (WebTag workbook May 23)<br><br>*An assessment is made at Reference 11 regarding the maximum number of potentially impacted Newcastle International Airport commercial flights based upon the STATFOR and NATS forecasts. In the absence of data provision from the commercial stakeholder, the Sponsor conducted Electronic Conspicuity modelling of the Sep 2022 activations of TDA EGD597 and determined that only 3 aircraft during the entire September activation period required a re-route.* |
| Commercial airlines | Training cost | N/A | N/A | No additional training was identified by the commercial airlines. |
| Commercial airlines | Other costs | N/A | N/A | There are no other known costs which would be imposed on commercial aviation. |
| Airport/ANSP | Infrastructure costs | N/A | N/A | There would be no costs associated with infrastructure. |
| Airport/ANSP | Operational costs | Qualitative | N/A | Once established the Sponsor offers that there would be no longer term Operational Cost associated with the operation of the Danger Area. |
| Airport/ANSP | Deployment costs | Monetise and quantify | If the 'do-nothing' option was continued it could be stated that a cost saving in both capital and resources could be made, however given that a number of the associated costs have likely already been absorbed during previous activations of the exercise airspace, the Sponsor would argue that providing a tangible figure for the exact operational | It is likely that training will be required for air traffic controllers at certain regional airports and at the Area Control Centres (Prestwick and Swanwick) in order to safely implement new procedures associated with the preferred airspace design. SIDs and STARs are unlikely to be affected given that the proposed Danger Area does not impinge on the route network. It is anticipated that there is likely to be some monetary cost in the design of the airspace structure. In addition there are likely to be workforce hours spent in creating and promulgating the changes. Procedures for the infrequent departures/arrivals which would normally route through the affected airspace must be changed. A considerable amount of money and |

| | | | | |
|---|---|---|---|---|
| | | | costs would be difficult to quantify. | workforce hours have gone into the design for temporary activations, the sponsor suggests that this previous work can be used as a basis for the permanent solution in order to minimise costs to ANSPs. The Sponsor is aware of a requirement to amend the current naming convention of the preferred design option. For previous implementations and the establishment of 'TDA EGD597' the cost to NATS was approximately £130,000 – this cost allowing for system regression testing to take place. NERL En-Route indicate that Rough Order of Magnitude Costs are indicating £40,000 to implement a Permanent Airspace Change. An early informal discussion with Newcastle International Airport indicates that the cost could be circa £8,000 to include map adaptations, documentation, training plan and sim updates, the Sponsor thinks that it is reasonable to assume that given the previous activations and knowledge of the required process this estimate would be fairly accurate.<br><br>*Dundee Airport did not provide a quantifiable cost but stated that updates would be required to documentation.* |

8.2.1 Option 1 meets 8 of the 11 DPs, with 3 DPs partially met. DP(e) – ‘minimise impact on other airspace users and the network’, (h) – ‘minimise the impact to commercial air traffic flow, sector complexity and sector capacity’ – (j) ‘minimise complexity in flight planning.’

8.2.2 With any large force exercise there will likely always be an impact to other airspace users. Producing a Letter of Agreement to suppress other airspace during Combat Airspace activation and having Airspace Management Cell oversight will mitigate this impact. This is largely the same for environmental impacts; where the MoD’s requirement is to operate in large, segregated airspace, GAT will be routed around.

8.2.3 It is assessed that this new Danger Area will have only a limited impact on a small number of key Stakeholders who have been Consulted throughout this ACP.

## 8.3 Selected Preferred Option.

8.3.1 Option 1 ‘create Special Use Airspace with overland portion’ is the selected preferred option. The Options Appraisal (Phase III – Final) can be found at Reference 11.

## 9. Airspace Description Requirements

| | The proposal should provide a full description of the proposed change including the following: | Description for this proposal: |
|---|---|---|
| **a** | The type of route or structure; for example, airway, UAR, Conditional Route, Advisory Route, CTR, SIDs/STARs, holding patterns, etc. | Special Use Airspace in the form of a Danger area (activated by NOTAM) in Class C and G airspace in order to provide segregation and notification for certain Large Force Exercises. |
| **b** | The hours of operation of the airspace and any seasonal variations | Danger Area activated via NOTAM when required only for certain Large Force Exercises, typically early Spring and mid to late Summer. Max activation can be up to 4 hours from mid-morning. Under EUROCONTROL Flexible Use of Airspace (FUA), the airspace will be managed and returned to Civil should the Danger Area not be required. |
| **c** | Interaction with domestic and international en-route structures, TMAs or CTAs with an explanation of how connectivity is to be achieved. Connectivity to aerodromes not connected to CAS should be covered. | Danger Area within both London and Scottish FIR/UIR. Current interaction with Free Route Airspace (D1) and proposed interaction with FRA (D3). Annex E details all affected ATS routes. Network access is not inhibited, but less expeditious routings are required for Newcastle and Teesside movements, mitigations are offered through a Stakeholder Letter of Agreement. |
| **d** | Airspace buffer requirements (if any). Where applicable describe how the CAA policy statement on 'Special Use Airspace – Safety Buffer Policy for Airspace Design Purposes' has been applied. | Danger Area incorporates a 5nm FBZ. Dimensions specified. Designed in consultation with NATS. Applied during previous temporary danger area activations and accounts for fast jets conducting high energy manoeuvres. |
| **e** | Supporting information on traffic data including statistics and forecasts for the various categories of aircraft movements (passenger, freight, test and training, aero club, other) and terminal passenger numbers. | Military traffic covered as per Statement of Need. Objective analysis conducted (including Newcastle data) for 10 years post deployment. Dundee traffic, GA baseline and British Hang Gliding and Paragliding Association data provided at Options Appraisal (Phase III - Final) through objective analysis. |
| **f** | Analysis of the impact of the traffic mix on complexity and workload of operations. | When the airspace is active, it will be exclusively for the use of military Large Force Exercises. There will be no increase in GAT due to the activation of the airspace, no change is anticipated on complexity or workload. |
| **g** | Evidence of relevant draft Letters of Agreement, including any arising out of consultation and/or airspace management requirements. | See Annex C for draft Letter of Agreement, informed by temporary activations of proposed Danger Area under ACP-2021-048. |

| | | |
|---|---|---|
| **h** | Evidence that the airspace design is compliant with ICAO Standards and Recommended Practices (SARPs) and any other UK policy or filed differences, and UK policy on the Flexible Use of Airspace (or evidence of mitigation where it is not). | The airspace design is compliant with CAA policy Document 20200721 - “CAA Policy for the established for permanent and temporary Danger Areas” issued by the SARG and is in accordance with CAP 740. |
| **i** | The proposed airspace classification with justification for that classification. | Special Use Airspace, Danger Area – this will provide the most efficient type of airspace to be implemented (in terms of activation, access to airspace and workforce). The background classification of the airspace will be Class C and G. |
| **j** | Demonstration of commitment to provide airspace users equitable access to the airspace as per the classification and where necessary indicate resources to be applied or a commitment to provide them in line with forecast traffic growth. 'Management by exclusion' would not be acceptable. | A Letter of Agreement demonstrates the transparent communication between all signatories. Bespoke service provided to commercial operators if the most expeditious routes are not available due to Danger Area activation. Baseline of Danger Area creates negligible impact to VFR traffic and is supported by analytics within Stage 3 Documentation. |
| **k** | Details of and justification for any delegation of ATS. | Extant ATS procedures will be employed by 19/20 and 78 Squadron in order to execute the Large Force Exercise in a safe and expeditious manner. |

## 10. Safety Assessment.

A safety assessment was presented with the Stage 2 (Phase I – Initial) and Stage 3 (Phase II – Full) Options Appraisals. The detail is repeated here with amendments to report searches and up to date information. The rest of the report has remained extant since there has been no alteration to the proposed airspace design.

10.2 This assessment provides a qualitative overview of the impact of this ACP on flight safety. The evidence feeding into this safety assessment has been obtained from the results of previous activations of the proposed design under ACP-2021-048. The MoD have successfully ensured the safety and integrity of the danger area during use, through appropriate classification as segregated airspace and positive control from an air traffic service provider.

*The evidence supporting this safety assessment has been obtained through Stakeholder feedback and from the results of previous activations under Temporary Danger Area activation status (most recently ACP-2021-048, March 2023 activations).*

Currently airlines deconflict from active Special Use Airspace where necessary using strategic deconfliction methods and published waypoints. This proposal would introduce a new Danger Area and make some of these waypoints unavailable, necessitating the introduction of alternative routes. This unfamiliarity is a hazard in itself and new procedures may need to be designed and published. There alternate routes are well understood given numerous operations during the temporary activations.

High energy manoeuvres will occur during Large Force Exercises which require segregation from General Air Traffic for the protection of both military exercise traffic and civil aviation, this is the main driver for this proposal and segregated airspace. As part of the design process, the proposal has incorporated a FBZ in addition to a temporal buffer to ensure separation in both time and space. National Air Traffic Service (NATS) are of the opinion that the Flexible Use of Airspace processes, flight plan management and FBZ have been a success during both trials and temporary activations of the Danger Area associated to this proposal and, although this is a new proposal for a permanent danger area, the benefits to safety from using familiar airspace with existing structures and protocols cannot be understated. The SUA, routings and FBZ should be made known to Eurocontrol for network visibility reducing the risk of any late notice route changes to aircraft in flight.

The proposed FBZ will be activated by the UK Airspace Management Cell 15 minutes prior to Danger Area activation until 15 minutes after deactivation, via the UK Airspace Usage Plan (AUP), with this FBZ created in direct consultation with NATS.

There is potential for an increase in fast jet traffic taking up Air Traffic Controller workload, infringing controlled airspace or recovering to civil airports in an emergency, but there have been no safety reports of this nature during the

temporary activations or previous exercises. It is, however acknowledged by the Sponsor that a robust procedure should be implemented so that traffic routing in and out of the proposed danger area is sufficiently deconflicted from commercial operations. Stakeholders will ultimately require a level of assurance regarding entry/exit points in order to conduct their operational activity with minimal disruption, this requirement will be a mandated operational procedure and specified within the Draft Letter of Agreement – Annex C.

Accompanying procedures should provide Stakeholders with a guaranteed level of service if usual routes cannot be flown. This service offering should be captured within the Letter of Agreement and if for whatever reason the level of service cannot be provided the proposed Danger Area would not be activated. This level of certainty will assist with predictability and ensure the safe provision of transit traffic.

### *Air Safety Information Management System Analysis*

The Sponsor received *nil* direct feedback regarding any safety related aspects of the preferred design option utilising ACP-2021-048 (Future Combat Airspace – Interim Solution 2022-2023) to inform this safety assessment.

Interrogation of the Air Safety Information Management System was therefore conducted by the Sponsor, with all related Defence Air Safety Occurrence Reports (DASORs) analysed.

The following criteria were utilised:

*Date Range – Year to Date from 8 May 22 to 8 May 23*

*Brief Title – TDA597 and TDA EG D597 and Ex Cobra Warrior and Ex Storm Warrior*

*Filters – nil applied*

During the study period, **6 DASORs** were submitted that met the above criteria.

2 reports related to the same incident (ATC/aircrew poor communication – 20 March 2023), this incident did not relate to the proposed design of airspace, robust operating procedures specified within the Letter of Agreement should help to prevent such instances.

1 report related to a non-exercise typhoon that was denied an air traffic service due to military air traffic controller capacity levels (20 March 2023). This incident was not as a result of the proposed airspace design and implementation of the preferred design option will not subsequently remedy a similar incident from occurring.

1 report related to issued avoiding action for a pair of typhoons (16 March 2023) against a civil transit aircraft whilst outside of the TDA EGD597 – the perceived severity of this incident was described as low by the author. The Investigation/Findings/Recommendations have not yet been published; however the Sponsor would suggest that this incident could have occurred irrespective of the Danger Area in use.

A single incident (18 August 2022) was observed which referred to a loss of standard separation whilst exercise traffic was outside of segregated airspace and routing

back to home station following an exercise in TDA EGD597 – at the closest point the typhoon was 4000 feet vertically separated from civil traffic (but was not however subject to co-ordination). This incident could have occurred irrespective of the airspace design.

The final report (18 August 2022) observed that met the filter criteria above related to the incorrect pressure setting when within the danger area – referred to as the 'Force QNH.' The report refers to a high cockpit workload for the crews distracting them from the briefed procedure. The pressure setting was subsequently corrected following 20 minutes of manoeuvring within the danger area. Vertical separation against other exercise participants was stated to be 'not less than 600 feet' during this time. This incident is not related to airspace design and could have been witnessed in any other danger area. The applied vertical criteria within the danger area ensured that vertical separation from other exercise participants was maintained and due to segregated airspace there was no impact on external stakeholders.

## 11. Operational Impact

| | An analysis of the impact of the change on all airspace users, airfields and traffic levels must be provided, and include an outline concept of operations describing how operations within the new airspace will be managed. Specifically, consideration should be given to: | Evidence of compliance / proposed mitigation: |
|---|---|---|
| **a** | Impact on IFR general air traffic and operational air traffic or on VFR General Aviation (GA) traffic flow through the area. | There will be an impact on GAT in the area. Routing around the proposed Danger Area has proved to be straightforward during trial activations under ACP-2021-048. The Danger Area is notified by the Airspace Management Cell and visible to the Network Manager. |
| **b** | Impact on VFR operations (including VFR routes where applicable). | Due to the proposed position and base-level of the Danger Area there should be no impact on VFR operations. Baseline analysis was included within the Stage 3 Consultation Documentation. |
| **c** | Consequential effects on procedures and capacity, i.e. on SIDs, STARs and/or holding patterns. | Stakeholders have agreed with the Sponsor that there is '*no impact on operations below 7000 feet.'* |
| **d** | Impact on aerodromes and other specific activities within or adjacent to the proposed airspace. | A Letter of Agreement will establish and seek to minimise the impact on aerodromes and airspace users. |
| **e** | Any flight planning restrictions and/or route requirements. | Existing network structure and Free Route Airspace allows routing around proposed Danger Area whilst active. Airspace bookable through the MAMC iaw extant Airspace Management Procedures which will inform airlines when the FBZ is active for flight planning purposes. Airspace will be handed back when not in use through the Airspace Management Cell. |

## 12. Supporting Infrastructure

| | General requirements: | Evidence of compliance / proposed mitigation: |
|---|---|---|
| **a** | Evidence to support RNAV and conventional navigation as appropriate with details of planned availability and contingency procedures. | N/A |
| **b** | Evidence to support primary and secondary surveillance radar (SSR) with details of planned availability and contingency procedures. | Assured radar provision through military air traffic service providers and where necessary for exercise objectives – airborne command and control units. |
| **c** | Evidence of communications infrastructure including R/T coverage, with availability and contingency procedures. | Assured communications infrastructure through military air traffic service providers and where necessary for exercise objectives – airborne command and control units. |
| **d** | The effects of failure of equipment, procedures and/or personnel with respect to the overall management of the airspace must be considered. | Multiple layers of redundancy to prevent equipment failure. Mandated participant brief to ensure correct application of procedures. Required workforce provision to support Large Force Exercise and second order dependencies – without these essential elements the exercise parameters will not be met, and the airspace not activated. |
| **e** | Effective responses to the failure modes that will enable the functions associated with airspace to be carried out including details of navigation aid coverage, unit personnel levels, separations standards and the design of the airspace in respect of existing international standards or guidance material. | Multiple layers of redundancy to prevent equipment failure. Mandated participant brief to ensure correct application of procedures. Required workforce provision to support Large Force Exercise and second order dependencies – without these essential elements the exercise parameters will not be met, and the airspace not activated. |
| **f** | A clear statement on SSR code assignment requirements. | SSR codes will be pre-briefed and assigned to exercise participants in accordance with the exercise rules. In the event of an emergency – routine SSR codes will be applied. |
| **g** | Evidence of sufficient numbers of suitably qualified staff required to provide air traffic services following the implementation of a change. | Appropriate workforce levels will be assigned at squadron level – with supporting units advising exercise planners if they are unable to meet this provision. If there is an insufficient number of staff to provide a service in the proposed danger area – the airspace will not be activated. |

## 13. Airspace and Infrastructure/Resources

| | General requirement: | Evidence of compliance/proposed mitigation: |
|---|---|---|
| **a** | The airspace structure must be of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to fully contain horizontal and vertical flight activity in both radar and non-radar environments. | Temporary activations of the proposed Danger Area have indicated that the airspace is of sufficient size to meet the exercise requirements. |
| **b** | Where an additional airspace structure is required for radar control purposes, the dimensions shall be such that radar control manoeuvres can be contained within the structure, allowing a safety buffer. This safety buffer shall be in accordance with agreed parameters as set down in CAA policy statement 'Safety Buffer Policy for Airspace Design Purposes Segregated Airspace'. Describe how the safety buffer is applied, show how the safety buffer is portrayed to the relevant parties, and provide the required agreements between the relevant ANSPs/ airspace users detailing procedures on how the airspace will be used. This may be in the form of Letters of Agreement with the appropriate level of diagrammatic explanatory detail. | Incorporation of a 5nm FBZ allows adequate protection of surrounding airspace for conduct of High Energy Manoeuvres. Dispensation is sought from CAA Safety Buffer Policy (17 July 2023). |
| **c** | The Air Traffic Management system must be adequate to ensure that prescribed separation can be maintained between aircraft within the airspace structure and safe management of interfaces with other airspace structures. | An assured Air Traffic Management System is provided by the MOD. Military air traffic control personnel work in close proximity to civilian colleagues. |
| **d** | Air traffic control procedures are to ensure required separation between traffic inside a new airspace structure and traffic within existing adjacent or other new airspace structures. | Routine air traffic control procedures will be applied by military controllers operating within and when transiting to and from the proposed danger area. |
| **e** | Within the constraints of safety and efficiency, the airspace classification should permit access to as many classes of user as practicable. | The airspace is exclusively for the use of Military Large Force Exercises. When not active, the airspace should revert to Class C and G. |
| **f** | There must be assurance, as far as practicable, against unauthorised | Changes to the airspace, if successful, will be notified through the AIRAC publication. |

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| | incursions. This is usually done through the classification and promulgation. | Airspace will be published on aeronautical charts and detailed within the UK AIP. Notification of activation will be via NOTAM through the AMC. Trend analysis of temporary activations indicates that no unauthorised incursions have occurred. |
| **g** | Pilots shall be notified of any failure of navigational facilities and of any suitable alternative facilities available and the method of identifying failure and notification should be specified. | Mitigations provided as part of robust pre-exercise briefing for all crews. |
| **h** | The notification of the implementation of new airspace structures or withdrawal of redundant airspace structures shall be adequate to allow interested parties sufficient time to comply with user requirements. This is normally done through the AIRAC cycle. | Changes to the airspace, if successful, will be notified and promulgated via AIRAC 02/2024. |
| **i** | There must be sufficient R/T coverage to support the Air Traffic Management system within the totality of proposed controlled airspace. | Assured communications infrastructure through military air traffic service providers and where necessary for exercise objectives – airborne command and control units. |
| **j** | If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered. | A Letter of Agreement explains the interaction between the proposed danger area and existing structures. The management of these activations will be coordinated by the Airspace Management Cell. |
| **k** | Should there be any other aviation activity (low flying, gliding, parachuting, microlight site, etc) in the vicinity of the new airspace structure and no suitable operating agreements or air traffic control procedures can be devised, the change sponsor shall act to resolve any conflicting interests. | The Borders Gliding Club (Milfield) have been consulted as Primary Stakeholders and are supportive of the proposal. The relationship that has been developed during temporary activations will be continued for any permanent implementation. |
| | ATS route requirements | Evidence of compliance/proposed mitigation: |
| **a** | There must be sufficient accurate navigational guidance based on in-line VOR/DME or NDB or by approved RNAV derived sources, to contain the aircraft within the route to the published RNP value in accordance with ICAO/Eurocontrol standards. | N/A |
| **b** | Where ATS routes adjoin terminal airspace there shall be suitable link routes as necessary for the ATM task. | N/A |

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| **c** | All new routes should be designed to accommodate P-RNAV navigational requirements. | N/A |
| | Terminal airspace requirements | Evidence of compliance/proposed mitigation: |
| **a** | The airspace structure shall be of sufficient dimensions to contain appropriate procedures, holding patterns and their associated protected areas. | N/A |
| **b** | There shall be effective integration of departure and arrival routes associated with the airspace structure and linking to designated runways and published instrument approach procedures (IAPs). | N/A |
| **c** | Where possible, there shall be suitable linking routes between the proposed terminal airspace and existing en-route airspace structure. | N/A |
| **d** | The airspace structure shall be designed to ensure that adequate and appropriate terrain clearance can be readily applied within and adjacent to the proposed airspace. | N/A |
| **e** | Suitable arrangements for the control of all classes of aircraft (including transits) operating within or adjacent to the airspace in question, in all meteorological conditions and under all flight rules, shall be in place or will be put into effect by the change sponsor upon implementation of the change in question (if these do not already exist). | N/A |
| **f** | The change sponsor shall ensure that sufficient visual reference points are established within or adjacent to the subject airspace to facilitate the effective integration of VFR arrivals, departures and transits of the airspace with IFR traffic. | N/A |
| **g** | There shall be suitable availability of radar control facilities. | N/A |
| **h** | The change sponsor shall, upon implementation of any airspace change, devise the means of gathering (if these do not already exist) and of maintaining statistics on the number of aircraft transiting the airspace in question. Similarly, the change sponsor shall maintain records on the numbers of aircraft refused permission to transit the | N/A |

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| | airspace in question, and the reasons why. The change sponsor should note that such records would enable ATS managers to plan staffing requirements necessary to effectively manage the airspace under their control. | |
| **i** | All new procedures should, wherever possible, incorporate Continuous Descent Approach (CDA) profiles after aircraft leave the holding facility associated with that procedure. | N/A |
| | Off-route airspace requirements | Evidence of compliance/proposed mitigation: |
| **a** | If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered. | A Letter of Agreement explains the interaction between the proposed danger area and existing structures. The management of these activations will be coordinated by the Airspace Management Cell. |
| **b** | Should there be any other aviation activity (military low flying, gliding, parachuting, microlight site etc) in the vicinity of the new airspace structure and no suitable operating agreements or air traffic control procedures can be devised, the change sponsor shall act to resolve any conflicting interests. | The Borders Gliding Club (Milfield) have been consulted as Primary Stakeholders and are supportive of the proposal. The relationship that has been developed during temporary activations will be continued for any permanent implementation. |

## 14. Environmental Impact

| | Theme | Content | Evidence of compliance/ proposed mitigation: |
|---|---|---|---|
| **a** | WebTAG | Output and conclusions of the analysis (if not already provided elsewhere in the proposal). | WebTAG was scoped as part of this ACP in Stage 3 – See Options Appraisal (Phase III – Final)(May ’23 WebTag workbook) |
| **b** | Assessment of noise impacts (Level 1/M1 proposals only) | Consideration of noise impacts, and where appropriate the related qualitative and/or quantitative analysis, including whether the anticipated noise impact meets the criteria for a proposal to be called-in by the Secretary of State (paragraph 5(c) of Direction 6 of the Air Navigation Directions 2017) If the change sponsor expects that there will be no noise impacts, the rationale must be explained. | Refer to Options Appraisal (Phase III – Final) B.1 for rationale to provide only qualitative analysis. Consequential noise impacts are subjectively assessed to remain unchanged. |
| **c** | Assessment of CO2 emissions | Consideration of the impacts on CO2 emissions, and where appropriate the related qualitative and/or quantitative analysis If the change sponsor expects that there will be no impact on CO2 emissions impacts, the rationale must be explained. | Refer to Options Appraisal (Phase III - Final). |
| **d** | Assessment of local air quality (Level 1/M1 proposals only) | Consideration of the impacts on local air quality, and where appropriate the related qualitative and/or quantitative analysis If the change sponsor expects that there will be no impact on local air quality, the rationale must be explained. | Refer to Options Appraisal (Phase III – Final). |
| **e** | Assessment of impacts upon tranquillity (Level 1/M1 proposals only) | Consideration of any impact upon tranquillity, notably on Areas of Outstanding Natural Beauty or National Parks, and where appropriate the related qualitative and/or quantitative analysis If the change sponsor expects that there will be no tranquillity impacts, the rationale must be explained. | Refer to Options Appraisal (Phase III – Final). |
| **f** | Operational diagrams | Any operational diagrams that have been used in the consultation to illustrate and aid understanding of environmental impacts must be provided. | N/A |

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| **g** | Traffic forecasts | 10-year traffic forecasts, from the anticipated date of implementation, must be provided (if not already provided elsewhere in the proposal). | 10-year traffic forecasts are provided in Options Appraisal (Phase III – Final). |
| **h** | Summary of environmental impacts and conclusions | A summary of all of the environmental impacts detailed above plus the change sponsor's conclusions on those impacts. | Level M1 ACP, impact to fuel burn & CO2e levels by affected aircraft investigated. WebTAG data shows a worst-case scenario or maximum activations during Danger Area periods. Quantitative calculations over a 10-year appraisal period indicate that a saving of 12,817 tonnes will be made, with the opening year saving 1,055 tonnes. |