ACP-2020-092

GATEWAY DOCUMENTATION:
STAGE 2 DEVELOP AND ASSESS

STEP 2A OPTIONS DEVELOPMENT

Contents

Introduction

The Ministry of Defence, specifically Joint Training and Exercise Planning Staff (JTEPS) is the change sponsor for this proposal. The proposal seeks to secure suitable segregated airspace for use by the UK and other NATO nations during the twice-yearly, large scale, strategic and tactical, collective training exercise called Ex Joint Warrior, Europe's largest annual exercise.

The purpose of this document is to demonstrate that the change sponsor has followed the 'CAP1616 Airspace Change' processes. It forms part of the overall requirement for the Stage 2 Develop and Assess Gateway.

For ease of reading, the statement of need and design principles have been restated with the document then outlining the options considered that meet the Statement of Need and align with the design principles, as required by the CAP1616.

Where are we in the Airspace Design Process?

We have completed Stage 1 Define, where we established the need for an airspace change and the design principles underpinning it. We are now in Stage 2; Develop and Assess. You can see the progress and any documents submitted on the CAA Portal HERE.

Why is the change required?

In the past, the Fast Jet Areas (FJAs) have been used by the MoD, solely for the delivery of Ex Joint Warrior, for over a decade. These exercises have seen many air systems operate within the FJAs safely and effectively. The presence of the FJAs has allowed defence to push its systems to the limit, testing capabilities, enabling participant's training objectives to be achieved, resulting in very successful and effective exercises, that attracts units from NATO partners.

The introduction of Free Route Airspace at the end of last year makes current solutions untenable to deliver the required needs of Defence during Ex Joint Warrior, as the Fast Jet Areas have ceased to exist. Using alternate airspace would make meeting training objectives very challenging for Defence and increases the risk to all air users to an unpalatable level, therefore a solution to this is necessary.

Statement of Need

In order to meet the complex training objectives of Defence during Ex Joint Warriors, a large scale multi-national military exercise, segregated airspace is required that:

- Is within reach of Navy Forces, more specifically a Carrier Strike Group (with embarked 5th generation air systems) operating within Deep Water, which through the development of the scenario is likely to span hundreds of miles.

- Provides a sufficient mixture of overland and overseas areas which offers exercise planners flexibility to create more complex scenarios across both environments, for necessary littoral operations.

- Crucially caters for kinetic and non-kinetic ranges within the area, which allows for necessary Air Land integration.

- Is of large enough size to accommodate representative operational numbers.

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 Buffer Zones to be applied and thus enable 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.

Design Principles

The design principles (DPs) were set following engagement with representative stakeholder groups as part of CAP1616 Stage 1; the DPs and their relative priorities are shown below. The aim of this document is to satisfy stakeholders that the design option aligns with these design options.

The table below displays a consolidated list of the DPs at the end of Stage 1B. Safety is the highest priority therefore DP(a) is automatically assigned priority 1.

The MoD feels that the ability to complete its training and conduct a successful exercise is next in priority, therefore DP(b), (c) and (e) are assigned priority 2, with DP(d) being assigned priority 3 given slightly lesser importance. Minimising impact to other airspace users, DP(g) is also priority 2 because it's just as important for other airspace users to have access to the airspace they require.

Management of the network, DP(f) and DP(j), and minimising the accumulative overall effect of Defence airspace needs, DP(k), were then assigned the next two priorities down, based on the feedback received from the engagement.

Priority	Design Principles
1	DP(a) The airspace design must be safe, with any hazards identified and risks mitigated such that they are as low as reasonably practicable and tolerable.
2	DP(b) Must be within reach of Navy Forces, more specifically a Carrier Strike Group (with embarked 5th generation air systems) operating within Deep Water, which through the development of the scenario is likely to span hundreds of miles. DP(c) Provides a sufficient mixture of overland and overseas areas which offers exercise planners flexibility to create more complex scenarios across both environments, for necessary littoral operations. DP(e) Must be of large enough size to accommodate representative operational numbers. DP(g) Will be FL 245 and above and suitable dimensions to minimise impact on other airspace users and the network, where possible.
3	DP(d) Crucially caters for kinetic and non-kinetic ranges within the area, which allows for necessary Air Land integration. DP(i) Minimise environmental impacts, where relevant.
4	DP(f) Safe, efficient and standardised management, notification and activation of airspace, utilising Flexible Use of Airspace (FUA) principles. DP(h) Minimise noise impacts, where relevant.
5	DP(k) Protocols for the prioritisation of area activation shall be established to minimise the accumulative overall effect of Defence airspace needs on other airspace users.

	DP(j) The design shall provide a Flight Plan Buffer Zone (FBZ) for the purposes of Free Route Operations and flight planning.

Table 1 - Design Principles

Design options summary

Table 2 summarises the list of design concept options considered. Each option is described in the following pages.

Option		Description
0	Baseline	The “do nothing” option, which means not create an airspace to replace the lost FJAs, therefore will involve the MoD using D701 and D712.
1	Establishing FJA(N) and FJA(S) as per previous dimensions	FJA(N) and FJA(S) are kept the same: same dimensions, heights and location.

Table 2 - Design Options Summary

Option 0 – Do nothing

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

Below is a graph of the current UK’s Managed Danger Areas (MDAs).

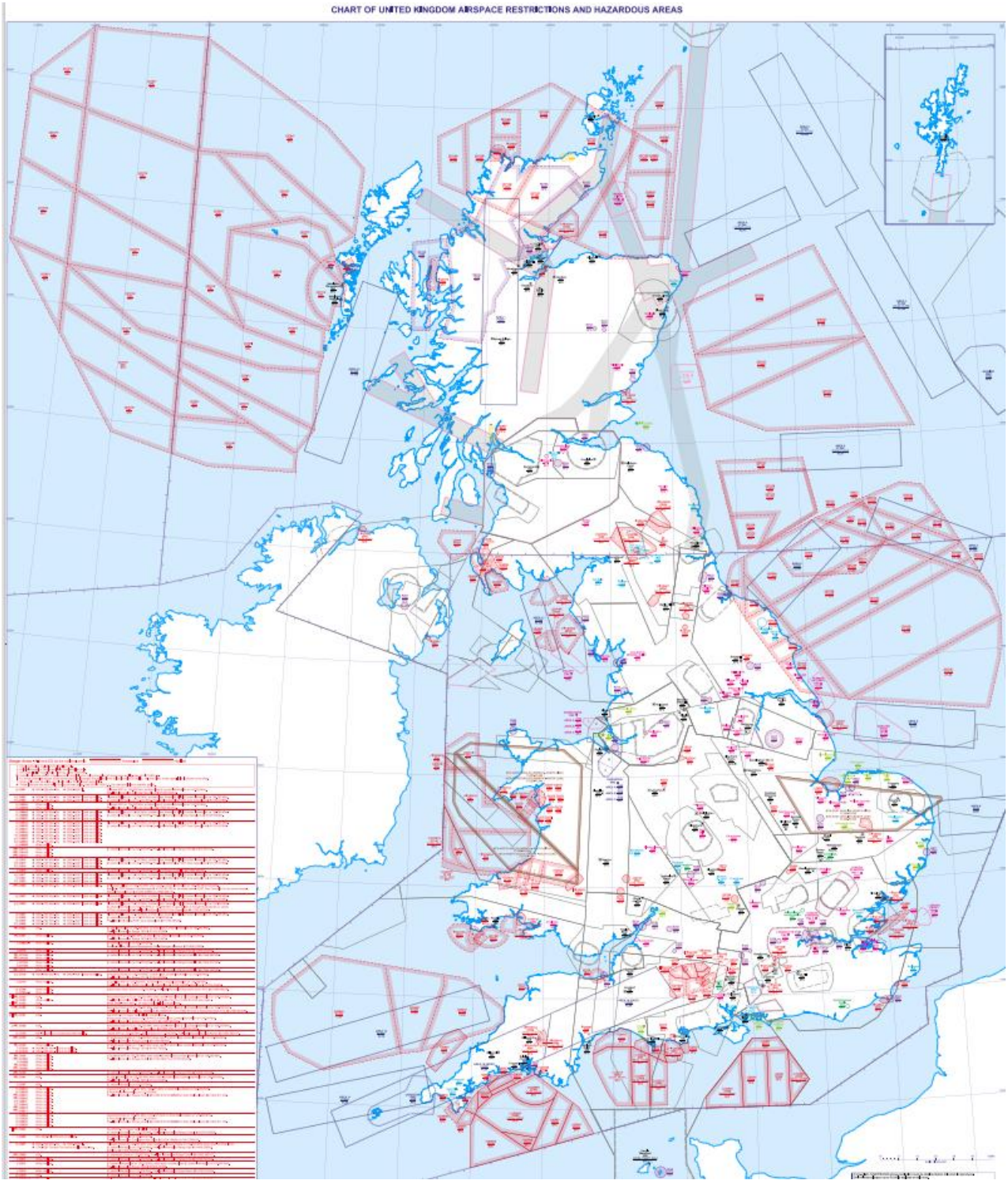

Figure 1 - Current MDA areas

The current MDA structure seen in Figure 1, caters for day to day, single force element training and will continue to be used for this. The Statement of Need for this ACP articulates the limitations placed upon the MOD by being restricted to the existing MDAs.

For the Royal Navy (RN) to train effectively and meet their training objectives, they will always require the option to operate in deep water (> 200m depth). This can't be found off the East Coast of the UK, therefore there will always be a need for the RN to be location in the Atlantic Ocean. Figure 2, shows the rough operating area of the Navy's aircraft carrier, HMS Queen Elizabeth (with the F-35 aircraft embarked) during Ex Joint Warrior 211 (May 2021), which successfully met the training requirements required to certify as operationally capable, prior to Her first operational deployment.

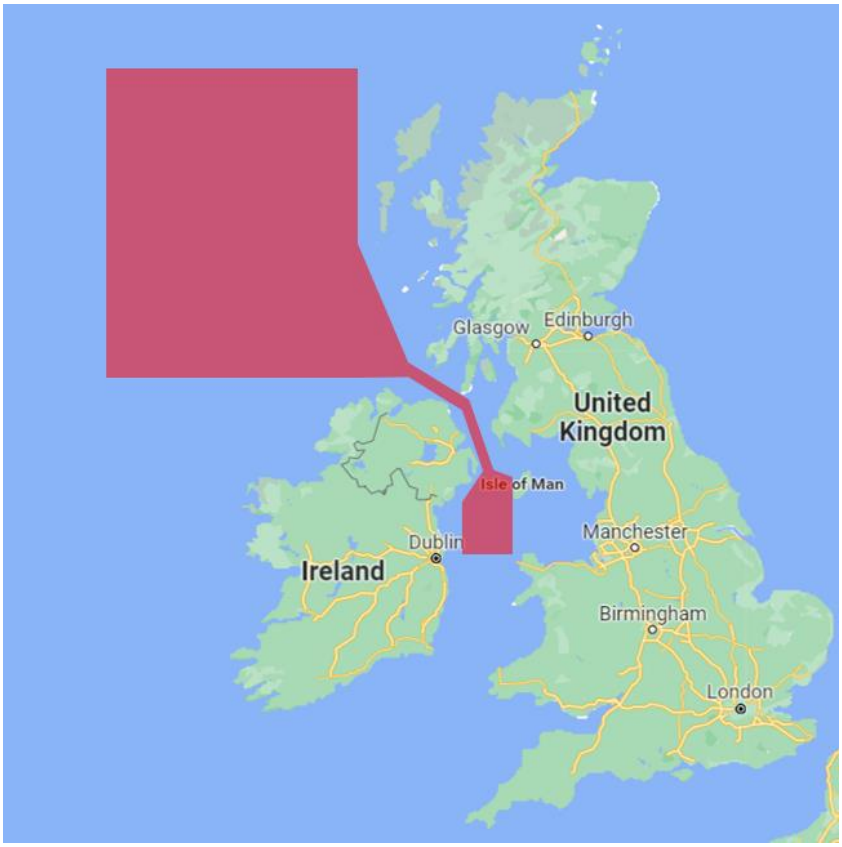

Figure 2 - HMS Queen Elizabeth operating area during Ex JW211

The operating area of HMS Queen Elizabeth is important to consider, as the aircraft carrier had F-35 aircraft and rotary assets embarked, which accounted for a significant amount of the air activity for exercise JW211. As the MoD looks ahead to conduct joint operations with NATO partners, the requirement to exercise with an aircraft carrier cannot be understated. As a consequence, suitable segregated airspace on the North and West of the UK is necessary to support missions in the air, ground and at sea, that underpin the training objectives that are critical to UK Defence.

It is evident from Figure 1 that there is a significant lack of MDAs on the West or North coast of the UK, leaving just D064s, D701s and D712s. The MDAs on the East coast will be too far away to transit from an Aircraft carrier situated off the West coast; it is unfeasible to route them this distance given Air-to-Air Tanker support isn't always guaranteed, and even when it is, on completion of any training serial it is impossible to refuel all participants prior to their returning to base/ship. Therefore, to maximise training time, allow exercise objectives to be met and ensure aircraft have enough fuel to reach their base safely, transit distance to the exercise area should be minimised. This would also satisfy the requirement to minimise CO2 emissions, at least on the part of the aircraft participating in Ex Joint Warriors.

Through the exercise, multiple 4th and 5th generation aircraft from various NATO countries, tankers, enablers (Hawks, DA-20s) and potentially UAVs (which has been up to 40 aircraft on previous exercises), will be required to be flying in the same airspace concurrently. D064s and D712s simply aren't large enough to cater for such numbers or complexity of training serials.

Without any other solution, it leaves the majority of the air activity to take place in the D701s. The D701 complex is used for a broad range of activities including trials and has significant limitations placed against it for its annual use, due to the impact on Oceanic routing for general air traffic. These limitations and restrictions placed on activity means it cannot be relied upon to regularly meet the MoD's bi-annual needs. Lastly, the D701s don't have suitable areas of land beneath them for effective joint operations training, which is a core training objective of Ex Joint Warrior and required for complex scenarios.

Option 1 – Two separate volumes of Airspace: FJA(N) and FJA(S)

Our proposal is for two permanent segregated volumes of airspace. One over the Hebrides on the West coast of Scotland, Fast Jet Area South and the other, overhead North Scotland and the North Sea / Atlantic Ocean, Fast Jet Area North. Both airspaces will be from FL245-FL660. See below for diagram and lateral limits.

Following feedback from stakeholders and careful internal analysis, we plan to keep the base level of the airspace at FL245 as it would impact significantly fewer airspace users and as a consequence, reduce the engagement required. It should be noted that these proposed airspaces are identical to the Fast Jet Areas that have previously been used for over 10 years.

FJA(S) overlaps with D701 complex, therefore activating both areas is not possible due to airspace confliction. To mitigate some of the areas impacted, FJA(S) was designed with a smaller area contained within it called Fast Jet Area South East, which could be activated on its own. This would mean that an activation of FJA South East would not impact on D701 A/B/C/D/E/F/I/J, whereas an activation of the whole FJA South would. This offers greater flexible use of airspace and would potentially allow simultaneous use of airspaces. Please consult Figure 5 and Table 3 for greater detail.

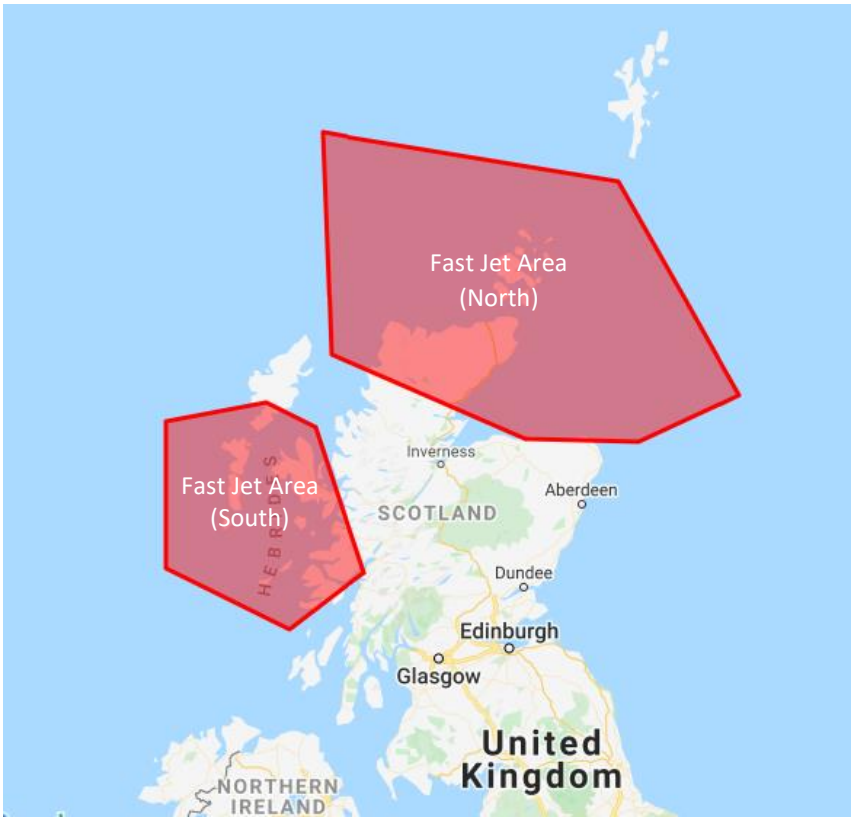

Figure 3 - Potential area to be affected by Option 1

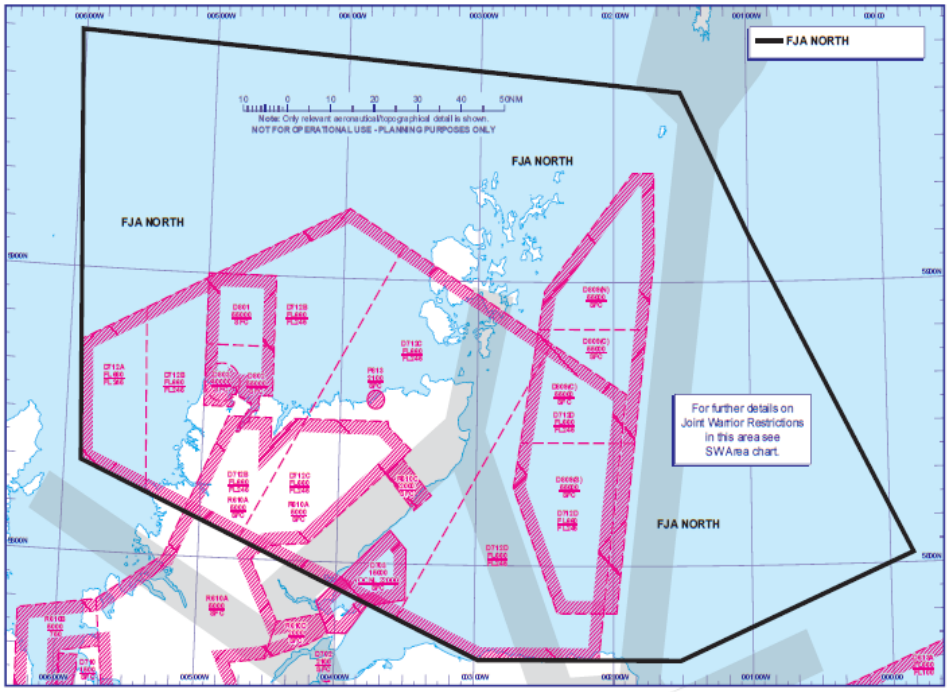

Figure 4 – FJA North dimensions

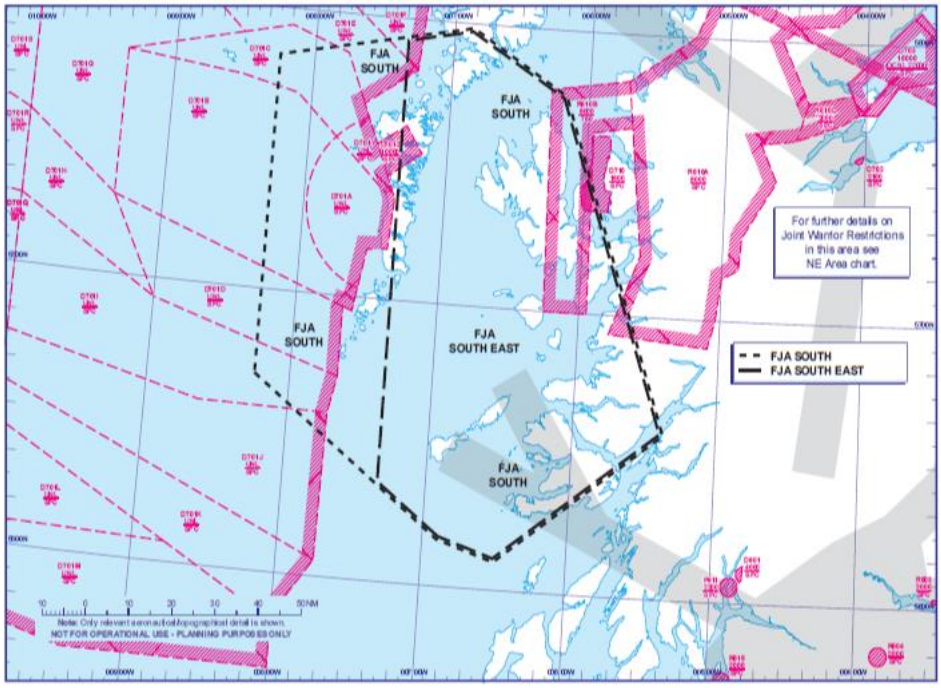

Figure 5 – FJA South and South East (enclosed within) dimensions

Name	Lateral Limits	Limits
FJA North	594000N 0013000W 591000N 0010000W 580215N 0000948E 574700N 0010000W 574000N 0013100W 574000N 0025821W 581920N 0055243W 595000N 0060149W 594000N 0013000W	Upper limit: FL550 Lower limit: FL245
FJA South	575900N 0065200W 574600N 0061000W 563500N 0052200W 560600N 0063000W 561000N 0065400W 564200N 0081500W 575000N 0081500W 575900N 0065200W	Upper limit: FL550 Lower limit: FL245
FJA South East (wholly contained within FJA South)	575600N 0072000W 575900N 0065200W 574600N 0061000W 563500N 0052200W 560600N 0063000W 561000N 0065400W 562028N 0072000W 575600N 0072000W	Upper limit: FL550 Lower limit: FL245

Table 3 – Lateral Limits of Fast Jet Areas

Why has only one option been presented?

The change sponsor believes that the FJAs meet the design principle (DPs) proposed in this ACP. The airspaces were created specifically and solely for the MoD to have a bespoke, segregated airspace for the purpose of Ex Joint Warrior; and they have been used safety and successfully for longer than a decade and the airspace community are well versed with that use.

The requirement for this airspace has not gone away, but unfortunately the MoD's access to it has, with the introduction of FRA. The FJAs still are the optimum shape and size and in the correct location to meet all of our design principle and the needs for Defence moving forwards. This was particularly shown during Ex JW211 (May 2021) which saw the UK's fifth-generation aircraft, the F-35, operate off HMS Queen Elizabeth as part of the certification of the UK's Carrier Strike Group (CSG). The FJAs were fundamental to support the level of training and integration the CSG required to reach certification for deployment. After this exercise, the UK's CSG deployed around the world on Operation FORTIS, which was the first strike group deployment for the Queen-Elizabeth-class aircraft carriers.

Stakeholder engagement

All stakeholders will be emailed a copy of this document and we invite you to consider the key questions at this point:

- Do the options presented align with the design principles?
- How would the implementation of the option impact on your operation?
- Do you have any other comments?

Annex A may help you as a prompt. Feedback received from this engagement will allow the sponsor to evaluate the option against the design principles and be in a position to make qualitative assessment of each of the options (do nothing and Option 1 or another option is required).

Responses are requested via email to Air-FastJetAreasProposal@mod.gov.uk no later than Monday 9th May 2022, please. If you feel you might need a longer consultation period, please let the change sponsor know, via the email above, as soon as you can.

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

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

Joint Training and Exercise Planning Staff

Northwood Headquarters

Annex A to Inclusion of FJAs into UK AIP (ACP-2020-092) – Airspace Change Proposal Stage 2A: Engagement

ACP-2020-092 Options Development - Stakeholder Engagement

Name of your organisation:

Do the options presented align with the design principles?

How do the options differ from the design principles?

How would the implementation of the options affect your operation(s)?

Do you have any other comments?

Would you like the change sponsor contact you directly for a one to one discussion?

☐ Yes ☐ No

If yes, please provide the change sponsor with your preferred contact method.