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COMBAT AIR – TRAINING AIRSPACE

CAP1616 STAGE 3 Option Appraisal

	Description	Hyperlinks
1	Stage 1 Assessment Meeting Presentation	Link
2	Stage 1 Assessment Meeting Minutes	Link
3	Stage 1 Design Principles	Link
4	Stage 2 Design Options	Link
5	Stage 2 Design Principle Evaluation	Link
6	Stage 2 Options Appraisal	Link

Contents

1. Introduction
2. Options Appraisal
3. Safety Assessment

Enclosures:

- A. 20180713 – Combat Air Training Airspace ACP Webtag Analysis with new routes
- B. 20180713 – Combat Air Training Airspace ACP Webtag Analysis without new routes

1. Introduction

1.1 This document forms part of the document set required in accordance with the requirements of the CAP1616 airspace change process.

1.2 This document aims to provide adequate evidence to satisfy Stage 3 Consult Gateway, Steps 3A and 3B Options Appraisal (Full).

1.3 See Stage 1 Gateway Design Principles for full details of the proposed design principles.

1.4 A number of geographical options were assessed against the design principles as described in Stage 2 Design Options. The preferred option was then assessed against the do nothing baseline in Stage 2 Design Principle evaluation.

1.5 Previous documents and stakeholder engagement described in the consultation strategy have reduced the geographical location to a single option and an iterative design has been developed from this. This preferred option is the single shortlist option we are consulting on. This document describes the differences between the do nothing baseline and the preferred design option. Whilst the impact has been captured both below and the Stage 2 option appraisal, this needs to be weighted against the benefit to the UK from not only the essential National Security requirements as directed by Government, but with the significant contribution that Defence makes to the UK economy.

2. Option Appraisal

The following table is based on key analyses described in CAP1616 Table E2 on pages 160-162

Group	Impact	Level of Analysis	Description
Communities	Noise Impact on health and quality of life	N/A	N/A – airspace changes are above 7,000ft and over the sea
Communities	Air quality	N/A	N/A – airspace changes are above 7,000ft and over the sea
Wider society	Greenhouse gas impact	Monetise and quantify	The worst case scenario, i.e. the segregated airspace being active permanently from 0645-2015 Mon-Fri, forcing the permanent use of new routes would increase overall annual fuel burn by 1545T. WebTAG worksheets outputs for both the monetarised cost of the proposal are at Annex A, also shown are the monetarised costs of implementing the new segregated airspace without new routes to mitigate. The reality is that this figure will be significantly lower, as the airspace will not be active for the full time used in the scenario and is subject to Airspace Management protocols that permits civil traffic to have primacy under certain conditions i.e. when civil demand is high. It also doesn't account for tactical routing that becomes available when segregated airspace is released. There are a number of variables and airspace configurations so it has been decided to present worst case figures. Also, currently unquantifiable but will further mitigate Greenhouse gas impact are the enhanced Airspace Management procedures currently being trialled. These should provide benefits both for this ACP and other parts of the UK.
Wider society	Capacity/resilience	Qualitative	It is assessed that the addition of new routes will provide greater options for routes when segregated

			airspace is not active, thus increasing resilience and potentially efficiency. Additionally, enhanced Airspace Management will provide some efficiencies throughout the FIR and also act as a pathfinder for the future application of FUA.
General Aviation	Access	Qualitative	There would be minimal impact to General Aviation airspace users. Only those who operate above FL150 could be impacted when segregated airspace active.
General Aviation/ commercial airlines	Economic impact from increased effective capacity	N/A	N/A – this concept was not designed with the intention of increasing the capacity of this region of airspace. However the new routes may provide further options regardless of segregated airspace activity. In addition, proposed enhanced Airspace Management may well increase the availability of routes in this portion of airspace and elsewhere.
General Aviation/ commercial airlines	Fuel burn	Monetise	Based on the worst case scenario, i.e. the segregated airspace being permanently active from 0645-2015 Mon- Fri, there would be an increase in fuel usage and burn, at a cost of £818,850 per year. This was based on the IATA jet fuel price of May 18, £530 per tonne and presumes a constant fuel price and exchange rate. The reality is that this figure will be significantly lower, as the airspace will not be active for the full time used in the scenario and is subject to Airspace Management protocols that permits civil traffic to have primacy under certain conditions i.e. when civil demand is high. It also doesn't account for tactical routing that becomes available when segregated airspace is released. There are a number of variables and airspace configurations so it has been decided to present worst case figures.
Commercial airlines	Training cost	N/A	N/A – there are no known training costs to commercial airlines.
Commercial airlines	Other costs	N/A	N/A – there are no other known costs which would be imposed on commercial aviation.
Airport/ Air navigation service provider	Infrastructure costs	N/A	N/A – there would be no costs attributable to infrastructure.
Airport/ Air navigation service provider	Operational costs	N/A	Operational costs N/A – this proposal would not lead to changes in operational costs.
Airport/ Air navigation service provider	Deployment costs	Qualitative and quantitative	A number of Prestwick ACC controllers will require training within the simulator. Airspace Management staff at the AMC will require face to face briefings. NATS estimate that implementation will cost between £1m and £1.5m. It is unlikely there would be an appreciable impact on service delivery due to the deployment of this change.

2.1 The information above is based on a worst case scenario of the Segregated Airspace being implemented with the proposed mitigating routes. As explained in the text there are a number of variables and configurations available. The actual impact on fuel burn will be considerably less. The airspace is not historically active for 13 hrs a day. Civil will have primacy when demand is high and tactical routing is available. For information, the WEBTAG calculations showing impact of the segregated airspace with no mitigating routes is also included as an enclosure.

3. Safety Assessment

3.1 Both NATS and the MOD have mature Safety Management Systems. This airspace change will be subject to full hazard analysis by both parties. For the MOD this will require sign off at appropriate levels. In addition to the MOD initial safety assessment produced at stage 2 ([Link](#)) NATS have produced a safety summary below. The issues discussed in para 3.7 concerning UK 4 and the USAFE 'Refueler' tanker route have been resolved. A reduced coordination area will feature in the proposal. It is likely that the MOD will amend slightly the design to mitigate the OAT transit issues at NATEB referred to at para 3.8 below – this is currently undergoing internal consultation.

Safety Summary

3.2 The safety manager shall assess the scale of change, to ensure the CAA-accepted; NATS Safety Management System is followed. In addition, their role is to submit safety arguments with supporting evidence to the CAA's En-route safety regulator, to clearly demonstrate each airspace change is tolerably safe for implementation and the right assurances are in place. As the initial step in this process a Real Time Simulation (RTS) was completed as an airspace design development activity in April 2018. It was supported by a safety assurance expert and metrics were compiled to identify potential areas of safety concern. The findings were collated in an overarching project simulation report. It concluded that:

3.3 Minimal impact to Tyne and Humber sectors provided that P58 and UP59 remain available, at and above FL320, to ensure capacity to meet peak flow requirements.

3.4 Minimal impact to LAC S10/1, but protocols on the simultaneous use of L602 and MU2 need to be developed.

3.5 Minimal impact to Deancross is, but airspace delegations used within the simulation need to be revised.

3.6 The primary workload driver for East sector remains the suspension of the Former Pennine Task by Swanwick Military and the consequential handling of Newcastle in/out bounds, which is not directly attributable to the re-design of D323. Alternative airspace or service structures should be considered as part of RP3 to alleviate this issue. The availability of MU2 facilitates both joins and turboprop transits and is considered essential to mitigate for the loss of L602. The availability of MU1 at FL260 and above produced undesirable interaction issues with MTMA departures. The lowest available FL for this route should be amended and raised to remove the route from East sector.

3.7 Montrose South is the most impacted sector by the proposed change, effectively reducing the sector dimension by 50% when all segments of the re-designed danger area are activated. The use of capped activation levels (areas F to J) for overflight using the existing L602 route is not considered viable where activation exceeds FL250 (area F being of particular concern). The availability of MU2 mitigates for the loss of L602 and the availability of MU1 removes some traffic from the NATEB area which was considered beneficial. The presence of UK 4 significantly restricts climbing and descending traffic on the new routes and a recommendation is therefore made that this area should be removed as part of the re-design proposal. The presence of the USAFE 'Refueler' tanker formation route produces the same affect as UK 4; this route should therefore amended so that it is removed from Montrose South and an alternative join and break up position north of Newcastle introduced.

3.8 The observed compression of traffic in the vicinity of NATEB increases sector complexity and workload and has the potential to reduce the Monitor Value of the sector when the danger area is fully active. Compression also limits the available space to accommodate co-ordination requests for OAT transits; something especially pertinent for Non-RVSM capable aircraft. The MoD should therefore consider the overall wider impact on GAT and OAT affect by its proposed design, which produces funnelling, with a view to removing this issue either by amendment to the design or by facilitating the transit of OAT through the danger area itself. In addition, alternative airspace structures should be considered within RP3 to facilitate ScTMA arrivals and departures to central European destinations thereby reducing the funnelling affect. Furthermore, the route availability document should be amended to offer more efficient routings which bypass Montrose South where appropriate.

3.9 The introduction of a Reduced Co-ordination Area was considered beneficial by all sectors and essential by Montrose South. Its introduction allowed for the optimum tactical use of airspace freed up by non-activated segments of the danger area and should therefore be seen as an extension to the concept of Flexible Use Airspace. Additionally, for Montrose South this area provided the ability to vector aircraft to facilitate climb and decent profiles within the limited airspace available. Military feedback indicated that there was little impact associated with the concept.

3.10 A plan documenting the strategy to produce the requisite safety assurance shall be produced in the near future. Based on the findings of the initial development RTS, refinements will be made to the design and further tested in an additional development RTS scheduled for July 2018. On completion of this activity a formal hazard analysis shall be conducted and allocation of risk classes against all identified hazards shall be attributed to the design. At this time it is not possible to state categorically that the risk classes will be tolerable but initial indications from the first RTS development simulation highlighted with a degree of confidence that the change can be assured following modification in line with the recommendations made. However, the additional airspace structures add complexity to both the operation and management of the airspace and all change creates an element of risk to safe operations. These will be tested against the potential additional complexity, though it is expected that current procedures will prove to be robust and sufficient.