



10 Nov 18

AIRSPACE CHANGE PROPOSAL - HOLBEACH AIR WEAPONS RANGE

CAP1616 STAGE 2b Options Appraisal

This document forms part of the Airspace Change Proposal process as defined in CAP 1616. For ease of reading the *Statement of Need*, *Design Principles* and a summary of the *Options Development* stage are reiterated. The second part of the document contains the options appraisal with the initial safety assessment.

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1. Statement of Need

The UK Academic Air Weapons Ranges (AAWRs) have needed to evolve since the infancy of military flying and the requirement to practice weaponry tactics. DIO Holbeach (EG D207) has barely altered since the cold-war; when training focused on high speed, low-level hit-and-run style attack profiles using dumb bombs. Modern air weaponry profiles using smart weapons and associated tactics are conducted in a significantly different fashion and often assume air-superiority; enabling modern Air Systems to loiter on station overhead the range for an extended period whilst working ground-based Joint Terminal Attack Controllers (JTACs) for talk-ons to varied targets in Close Air Support (CAS) scenarios. To cater for these modern flight profiles, training and new weapons, the airspace needs to be enhanced. The principals of FUA will be considered throughout the ACP to ensure that, wherever possible, the minimum volume of airspace required to achieve the military mission is requested.

2. Design Principles

Key Principles/Requirements

- a. The design will provide a suitable safe training area.
- b. Management of airspace to utilise FUA principles (Efficiency + Airspace Sharing).
- c. Consider Environmental & Ecological impact.
- d. Safety – ensure airspace design safely caters for all profile types.
- e. Minimise impact upon the network where possible (Efficiency + Airspace Sharing).
- f. The training area will be within reach of UK/USAFE Main Operating Bases.
- g. Minimise impact upon any other airspace users.
- h. Simplicity - utilise existing structures where possible (Efficiency, Simplicity + Safety).

3. Options Developments Summary

A number of design options were examined during stage 2a. The *Design Principle Evaluation* letter (dated 4 Oct 18) expands on how each option was rejected or accepted when measured against each design principle. After testing the 7 design options against the design principles, 4 options were put forward to all stakeholders as 'Accepted'.

The 'No change' option is not feasible due to 2 of the design principles not being met (including the critical key principle - *The design will provide a suitable safe training area*).

The 4 options going forward each meet the key design principles, and all options have just one **amber** 'partial' (partially meets the design principle). The 'partial' for all 4 potential options is the same (*Minimise impact upon the network where possible (Efficiency + Airspace Sharing)*).

The main concern from stakeholders was how the final design would affect traffic & tracks in the vicinity. The MOD acknowledge GA traffic may have to track further away from current routes, and therefore further evidence needs to be sought on exactly how the options going forward will affect local airspace users.

Given the geographical options are limited (ie the new airspace must be centred/close to the current range infrastructure and factor adjacent airspace/users) and once military requirement has been met, other than safety, the need to minimise impact of the network has driven development. Hence the MOD have reiterated within engagement to date that although 'lines on charts' have occurred to demonstrate that there needs to be a new design, the MOD and stakeholders will work together to factor in all concerns.

4. Methodology

Following the Statement of Need, the MOD proposed several design options ivo Holbeach that met the Statement of Need and then factored in the design principles and raised concerns from stakeholders that must be taken forward.

Stakeholders are aware (and support in principle) of the need for enhancing the Holbeach airspace – based on the Statement of Need – and their earlier input resulted in an extra design principle (*Consider Environmental & Ecological impact*).

CAP 1616 encourages the development of multiple options that can be tested against criteria in order to provide an objective rationale for an option choice. The original 7 options highlighted to stakeholders that the final design can take any shape; as long as it is not confusing, abides the Buffer Rule, and adheres to the design principles (where possible).

The 2-way engagement highlighted the importance of FUA, resulting in option 6 (*7nm radius to the SW, then a separate extended stub over the sea to the NE to cater for greater 'range spill out'*).

In sum,

- The Statement of Need highlighted the need for enhanced airspace at Holbeach.
- 2-way engagement has shaped the way forward (eg addition of design principle and highlighting concerns that must be taken forward).
- Multiple options were proposed to the stakeholders and measured carefully again the design principles.

To facilitate the appraisal, a baseline of 'Do Nothing' is used:

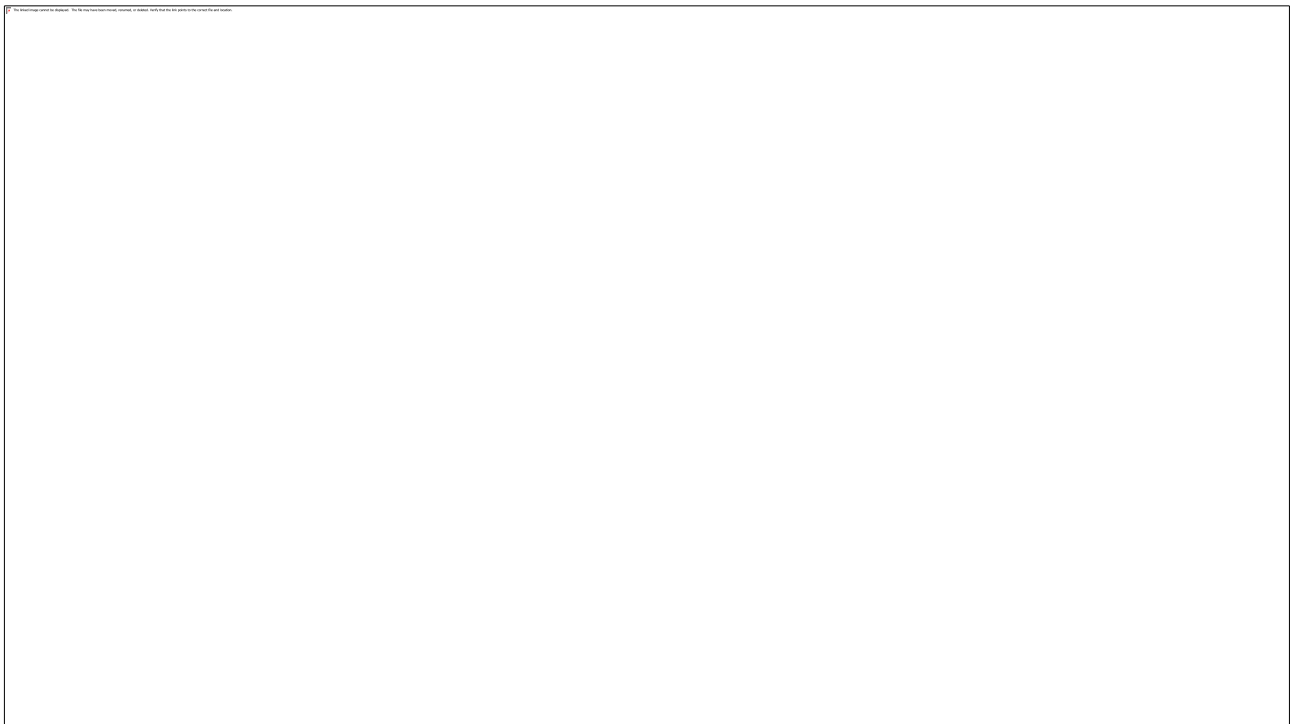
No Change	REJECT		
Description of Option			
No change to the current airspace at Holbeach.			
Design Principle 1: The design will provide a suitable safe training area. (Key)	NOT MET	PARTIAL	MET
The airspace is currently only big enough to cater for some older style profiles/training. Current profiles result in the aircraft 'spilling out' of the segregated airspace (ie not safely protected).			
Design Principle 2: Management of airspace to utilise FUA principles (Efficiency + Airspace Sharing). (Key)	NOT MET	PARTIAL	MET
Potentially.			
Design Principle 3: Consider Environmental & Ecological impact. (High)	NOT MET	PARTIAL	MET
Design Principle 4: Safety – ensure airspace design safely caters for all profile types. (High)	NOT MET	PARTIAL	MET
The airspace needs to be enhanced to cater for modern & future profiles (see principle 1 above).			

Design Principle 5: Minimise impact upon the network where possible (Efficiency + Airspace Sharing). (High)	NOT MET	PARTIAL	MET
Design Principle 6: The training area will be within reach of UK/USAFE Main Operating Bases. (High)	NOT MET	PARTIAL	MET
Holbeach is within range of RAF Marham & RAF Lakenheath.			
Design Principle 7: Minimise impact upon any other airspace users. (High)	NOT MET	PARTIAL	MET
The current (smaller) airspace does not impact adjacent units/airways.			
Design Principle 8: Simplicity - utilise existing structures where possible (Efficiency, Simplicity + Safety). (Medium)	NOT MET	PARTIAL	MET

Whilst this clearly does not meet MOD requirements, it does allow an assessment of change from what happens now to what is likely to happen in the future with the new airspace.

5. Current Design Option

Fig 1 Current Design Option



To meet the SoN the accepted options to go forward include expanding EG D207 to the North East, and also include a 7 or 8nm radius circular airspace around Holbeach.

5.1 Network and wider airspace impact.

a. **T999.**

T999 is rarely used. If T999 was to be activated whilst EG D207 was active, then in the spirit of FUA and flight safety, Holbeach would temporarily close and allow safe use of T999.

b. **Norwich.**

The Norwich POC highlighted concerns with L602. Extending Holbeach to the NE may result in restricting traffic into L602, and therefore, further evidence and impact will be required as we move forward to stage 3.

NATS raised an issue due to possible altitude/level confliction with L603. The lowest level used with L603 is FL 250, which might conflict with Holbeach's upper level of 23,000ft. To eliminate that risk, it is proposed that the upper level of Holbeach is changed from 23,00ft to FL230.

c. **RAF Wittering.**

The options going forward may impact RAF Wittering's patterns and push civil and low flying traffic towards the SW of the Fenland ATZ; as well as impact on Wittering's increased probability of conflictions to their runway 25 approach. Continuous engagement will ensure this potential issue is considered and mitigated.

d. **Design.**

NATS highlighted that there are already various areas defined on airspace charts containing the name 'Wash'. The MoD should consider aligning D207 boundaries with one of those, in order to reduce chart complexity and potential confusion.

5.2 Further Impact Mitigation

There are clearly potential issues with extending Holbeach to the NE. NATS' East controllers are conscious of the base level change at AMVEL and, where traffic is slow climbing, may elect to provide a deconfliction service if the aircraft fails to make FL245+. This option would be removed if needing to avoid the Danger area and additional vectoring/workload required to remain in the confines of Y70. Additionally, whilst the flight planned route for Norwich EGSN arrival traffic is via SUPEL, the ability to route more directly is removed when expanded EG D207 is active (more applicable where RFL is 170-).

Doncaster EGCN eastbound traffic is flight planned to climb through FL160 ROGAG–L603 (base FL245-FL660), with a requirement for East controller to vector to remain in Y70 CAS and transfer to S10 climbing to FL230 (or provide ATSOCAS service and coordinate to remain beneath but within the confines of L603 to join climbing through FL245). Additional caution would be required when expanded EG D207 is active, and there are potential RT Failure issues based on the ROGAG-L603 standard route.

Careful mitigation is required to ensure that an enhanced Holbeach ensures a safe and expeditious flow of traffic in the surrounding area. Further evidence is required to ascertain the track changes, and solutions to the above must be discussed at subsequent stages.

5.3 Other Impacts

- There will be a cost to the MOD for the education, publication and the additional management required for the new segregated airspace.
- If the over-land portion of any enhanced airspace is above 7,000ft, then this alleviates ground impact.
- Impact upon General Aviation must be considered.

6. Environmental Impact

Communities There are no proposed changes below 7000ft overland therefore no assessment of environmental impact upon communities is required.

Air Quality There is no requirement for an assessment of Air Quality.

7. Identified Stakeholders

RAF Coningsby
RAF Cranwell
RAF Marham
RAF Wittering
Swanwick (Mil)
Low Flying
Provost Marshall
Norwich Airport
NATS
Natural England (East Midlands)
RSPB
Environment Agency
MMO
HM Coastguards
EIFCA
WNNMP
Harbour Masters, Boston
Harbour Master, Wisbech
Trinity House
DIO Ecologist, Environmental Support & Compliance
MAUWG Members
General Aviation

Platform Stakeholders.

Typhoon
Lightning
Tornado
DAATM
RPA
P8
USAFE
41(R) Sqn
Hawk
JHC
JALO

8. Safety Summary

An initial Safety Assessment has been conducted on the impact of the new Airspace Designs. It is assessed that any new hazards are those concerned with introduction of new airspace - familiarity and mitigating traffic flow to the NE.

To mitigate against any introduced hazards, thorough consultation with the relevant stakeholders will ensure that affected airspace users and controllers are content with any new Letters of Agreement, orders and mitigation. In addition, bespoke training and education will be provided to aircrew, controllers and Airspace Managers.

The additional airspace structures add complexity to both the operation and management of the airspace. Adherence to FUA and careful management of the airspace will ensure safe and expeditious use by all airspace users.

All change creates an element of risk to safe operations. In this case, the potential new hazards are broadly understood and the barriers/mitigations required can be readily applied. It is therefore considered that at this stage the accepted design options will meet the required level of safety.

9. Option Appraisal

Appraisal forms have been completed comparing the proposed designs with the 'Do Nothing' baseline. As can be seen from the forms below, the 'Do Nothing' option does not meet the airspace requirements to facilitate enhanced airspace at Holbeach. As such the 'Do Nothing' option is discounted and the proposed design put forward as the preferred option.

Preferred Options

8nm radius around Holbeach	ACCEPT		
Description of Option			
A relatively simple 8nm radius circular design to capture all current & future profiles (with option of being above 7000ft for the overland portion).			
Design Principle 1: The design will provide a suitable safe training area. (Key)	NOT MET	PARTIAL	MET
Design Principle 2: Management of airspace to utilise FUA principles (Efficiency + Airspace Sharing). (Key)	NOT MET	PARTIAL	MET
Potentially.			
Design Principle 3: Consider Environmental & Ecological impact. (High)	NOT MET	PARTIAL	MET
Potentially.			
Design Principle 4: Safety – ensure airspace design safely caters for all profile types. (High)	NOT MET	PARTIAL	MET
Design Principle 5: Minimise impact upon the network where possible (Efficiency + Airspace Sharing). (High)	NOT MET	PARTIAL	MET
Option development must consider the development of the MOD Combat Air ACP and factor in the impact on surrounding aerodromes; specifically, Norwich.			
Design Principle 6: The training area will be within reach of UK/USAFE Main Operating Bases. (High)	NOT MET	PARTIAL	MET
Holbeach is within range of RAF Marham & RAF Lakenheath.			

Design Principle 7: Minimise impact upon any other airspace users. (High)	NOT MET	PARTIAL	MET
As per principle 5 above. Other airspace users (both Mil <i>and</i> Civ) have been included as stakeholders and their say will help with the design throughout this process.			
Design Principle 8: Simplicity - utilise existing structures where possible (Efficiency, Simplicity + Safety). (Medium)	NOT MET	PARTIAL	MET
No change to Holbeach infrastructure.			

7nm radius around Holbeach	ACCEPT		
Description of Option			
A relatively simple 7nm radius circular design to capture all current & future profiles (with option of being above 7000ft for the overland portion). <i>The only difference between this option and the previous option is that the radius is reduced to 7nm – to still capture the modern profiles, but has reduced the buffer and enhanced FUA for other users.</i>			
Design Principle 1: The design will provide a suitable safe training area. (Key)	NOT MET	PARTIAL	MET
Design Principle 2: Management of airspace to utilise FUA principles (Efficiency + Airspace Sharing). (Key)	NOT MET	PARTIAL	MET
Potentially.			
Design Principle 3: Consider Environmental & Ecological impact. (High)	NOT MET	PARTIAL	MET
Potentially.			
Design Principle 4: Safety – ensure airspace design safely caters for all profile types. (High)	NOT MET	PARTIAL	MET
Design Principle 5: Minimise impact upon the network where possible (Efficiency + Airspace Sharing). (High)	NOT MET	PARTIAL	MET
Option development must consider the development of the MOD Combat Air ACP and factor in the impact on surrounding aerodromes; specifically, Norwich.			
Design Principle 6: The training area will be within reach of UK/USAFE Main Operating Bases. (High)	NOT MET	PARTIAL	MET
Holbeach is within range of RAF Marham & RAF Lakenheath.			
Design Principle 7: Minimise impact upon any other airspace users. (High)	NOT MET	PARTIAL	MET
As per principle 5 above. Other airspace users (both Mil <i>and</i> Civ) have been included as stakeholders and their say will help with the design throughout this process.			
Design Principle 8: Simplicity - utilise existing structures where possible (Efficiency, Simplicity + Safety). (Medium)	NOT MET	PARTIAL	MET
No change to Holbeach infrastructure.			

7nm radius to the SW, then an extended stub over the sea to the NE to cater for greater 'range spill out'.	ACCEPT
Description of Option	
A 7nm radius circular design to the SW, continuing into an extended stub over the sea (with option of being above 7000ft for the overland portion).	

Design Principle 1: The design will provide a suitable safe training area. (Key)	NOT MET	PARTIAL	MET
Design Principle 2: Management of airspace to utilise FUA principles (Efficiency + Airspace Sharing). (Key)	NOT MET	PARTIAL	MET
Design Principle 3: Consider Environmental & Ecological impact. (High)	NOT MET	PARTIAL	MET
Potentially.			
Design Principle 4: Safety – ensure airspace design safely caters for all profile types. (High)	NOT MET	PARTIAL	MET
Design Principle 5: Minimise impact upon the network where possible (Efficiency + Airspace Sharing). (High)	NOT MET	PARTIAL	MET
Option development must consider the development of the MOD Combat Air ACP and factor in the impact on surrounding aerodromes; specifically, Norwich.			
Design Principle 6: The training area will be within reach of UK/USAFE Main Operating Bases. (High)	NOT MET	PARTIAL	MET
Holbeach is within range of RAF Marham & RAF Lakenheath.			
Design Principle 7: Minimise impact upon any other airspace users. (High)	NOT MET	PARTIAL	MET
As per principle 5 above. Other airspace users (both Mil and Civ) have been included as stakeholders and their say will help with the design throughout this process.			
Design Principle 8: Simplicity - utilise existing structures where possible (Efficiency, Simplicity + Safety). (Medium)	NOT MET	PARTIAL	MET
No change to Holbeach infrastructure.			

7nm radius to the SW, then a <u>separate</u> extended stub over the sea to the NE to cater for greater 'range spill out'.	ACCEPT		
Description of Option			
A 7nm radius circular design to the SW, continuing to a <u>separate</u> extended stub over the sea (with option of being above 7000ft for the overland portion). Dividing the design to enhance FUA is the only difference to the previous design (option 5).			
Design Principle 1: The design will provide a suitable safe training area. (Key)	NOT MET	PARTIAL	MET
Design Principle 2: Management of airspace to utilise FUA principles (Efficiency + Airspace Sharing). (Key)	NOT MET	PARTIAL	MET
In the spirit of FUA (and future AFUA as it develops), dividing the airspace and only booking what is required – and in conjunction with other airspace user's bookings – seems a logical and pragmatic approach.			
Design Principle 3: Consider Environmental & Ecological impact. (High)	NOT MET	PARTIAL	MET
Potentially.			
Design Principle 4: Safety – ensure airspace design safely caters for all profile types. (High)	NOT MET	PARTIAL	MET

Design Principle 5: Minimise impact upon the network where possible (Efficiency + Airspace Sharing). (High)	NOT MET	PARTIAL	MET
Option development must consider the development of the MOD Combat Air ACP and factor in the impact on surrounding aerodromes; specifically, Norwich.			
Design Principle 6: The training area will be within reach of UK/USAFE Main Operating Bases. (High)	NOT MET	PARTIAL	MET
Holbeach is within range of RAF Marham, RAF Coningsby & RAF Lakenheath.			
Design Principle 7: Minimise impact upon any other airspace users. (High)	NOT MET	PARTIAL	MET
As per principle 5 above. Other airspace users (both Mil <i>and</i> Civ) have been included as stakeholders and their say will help with the design throughout this process.			
Design Principle 8: Simplicity - utilise existing structures where possible (Efficiency, Simplicity + Safety). (Medium)	NOT MET	PARTIAL	MET
No change to Holbeach infrastructure.			

Do Nothing Option

No Change	REJECT		
Description of Option			
No change to the current airspace at Holbeach.			
Design Principle 1: The design will provide a suitable safe training area. (Key)	NOT MET	PARTIAL	MET
The airspace is currently only big enough to cater for some older style profiles/training. Current profiles result in the aircraft ‘spilling out’ of the segregated airspace (ie not safely protected).			
Design Principle 2: Management of airspace to utilise FUA principles (Efficiency + Airspace Sharing). (Key)	NOT MET	PARTIAL	MET
Potentially.			
Design Principle 3: Consider Environmental & Ecological impact. (High)	NOT MET	PARTIAL	MET
Design Principle 4: Safety – ensure airspace design safely caters for all profile types. (High)	NOT MET	PARTIAL	MET
The airspace needs to be enhanced to cater for modern & future profiles (see principle 1 above).			
Design Principle 5: Minimise impact upon the network where possible (Efficiency + Airspace Sharing). (High)	NOT MET	PARTIAL	MET
Design Principle 6: The training area will be within reach of UK/USAFE Main Operating Bases. (High)	NOT MET	PARTIAL	MET
Holbeach is within range of RAF Marham & RAF Lakenheath.			
Design Principle 7: Minimise impact upon any other airspace users. (High)	NOT MET	PARTIAL	MET
The current (smaller) airspace does not impact adjacent units/airways.			
Design Principle 8: Simplicity - utilise existing structures where possible (Efficiency, Simplicity + Safety). (Medium)	NOT MET	PARTIAL	MET

10. Summary

The proposed design options have been appraised in accordance with CAP1616 Stage 2. It meets the Design Principles and is achievable. Although it meets the requirements of the SON, engagement must continue to ensure the concerns raised by stakeholders are factored in. The designs have been reached in consultation with the stakeholders and it is considered to be compliant with the CAP 1616 process and suitable for progression to Stage 3.

[REDACTED]

[REDACTED] RAF

Danger Area Airspace Manager